Approved baseline and monitoring methodology AM0090

"Modal shift in transportation of cargo from road transportation to water or rail transportation"

I. SOURCE, DEFINITIONS AND APPLICABILITY

Sources

This baseline and monitoring methodology is based on elements from the proposed new methodology:

- NM0320 "Modal shift transportation from road modal to a less intensive GHG emission", prepared by ArcelorMittal Tubarão.

This methodology also refers to the latest approved versions of the following tools:

- Combined tool to identify the baseline scenario and demonstrate additionality;
- Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion;
- Tool to calculate baseline, project and/or leakage emissions from electricity consumption.

For more information regarding the proposed new methodologies and the tools as well as their consideration by the Executive Board please refer to <http://cdm.unfccc.int/goto/MPappmeth>.

Selected approach from paragraph 48 of the CDM modalities and procedures

"Existing actual or historical emissions, as applicable".

and/or

"Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment".

Applicability

This methodology is applicable to project activities that result in modal shift in transportation of a specific cargo (excluding passengers) from road transportation using trucks to water transportation using barges or ships or rail transportation.

The methodology is applicable under the following conditions:

- The owner of the cargo is one of the project participants. If the entity investing in the CDM project activity is not the owner of the cargo, it should also be a project participant;
- The project participants should have made at least one of the below listed new investments:

- Direct investment in new infrastructure, including facilities (new ports, handling areas) and/or equipments[1] (ships, barges, etc.) for water transportation;
- Direct investment in new infrastructure, including facilities (new ports, handling areas, railway track)[2] and/or equipments[1] (trains, wagons, etc) for rail transportation;
- Refurbishment/replacement of existing water and rail transportation infrastructure or equipments, with transport capacity expansion.

- The transport infrastructure/equipment in which these new investments are made is at least 50% used by the cargo transported under the project activity, i.e. the cargo transported under the project activity constitutes at least 50% of the cargo transported annually by/with this infrastructure/equipment;
- With respect to fuels, the following conditions[3] apply:
  - In the case of gaseous fossil fuels, the methodology is applicable if it can be demonstrated that equal or more gaseous fossil fuels are used in the baseline scenario than in the project activity. The methodology is not applicable in its current form if more gaseous fossil fuels are used in the project activity compared to the baseline scenario;[4]
  - In the case of biofuels, the methodology is applicable if it can be demonstrated that equal or more biofuels are used in the baseline scenario than in the project activity. The methodology is not applicable in its current form if more biofuels are used in the project activity compared to the baseline scenario.
- The project transportation mode is defined in the CDM-PDD at the validation of the project activity and no change of transportation mode is allowed thereafter;
- The cargo is transported from the same origin (point A) to the same destination (point B) throughout the whole crediting period. These two points and transportation routes are defined in the CDM-PDD at the validation of the project activity and are fixed along the crediting period;

[1] Investment on intermodal containers is not considered as investment in this case.

[2] Not necessarily the whole railway track, but a part of the track can be built (for example, from the industrial facility to a nearest connecting point).

[3] No provisions to calculate upstream emissions from the production of the fuels are provided in order to keep the methodology simple. Therefore, in order to ensure that the calculated emission reductions are conservative, this applicability condition aims to limit the use of the methodology to cases where the upstream emissions under the project activity are likely to be equal or lower than in the baseline scenario. Note that other methodologies involving fuel switch situations usually require the consideration of upstream emissions. Note also that as this methodology is about a switch from road transportation using trucks to water transportation using barges or ships or rail transportation, most project activities can comply with these requirements. If required, project participant may submit a request for revision to this methodology.

[4] Project participants wishing to consider a higher consumption of gaseous fuels in the project activity than in the baseline may propose a revision of this methodology by adding the relevant upstream emission terms that a fuel switch towards gaseous fuels entails, taken e.g. from ACM0009.

- Under the project activity, the route from origin to destination may combine the different transportation modes: Trucks, ships, barges and/or rail but a part of the route must consist of either ships, barges or rail;
- Both in the baseline and project activity, only one type of cargo, owned by the project participants, is transported and no mix of cargo is permitted (this condition does not apply to the return trip cargo). The cargo type of the project activity is defined in the CDM-PDD at the validation of the project activity and is fixed along the crediting period;
- The railway infrastructure or waterway has enough capacity to accommodate new transportation demand under the project activity and will not displace other existing transportation demand due to limited capacity of infrastructure.

In addition, the applicability conditions included in the tools referred to above apply.

Finally, this methodology is only applicable if the most plausible baseline scenario, as identified per the section "Selection of the baseline scenario and demonstration of additionality" hereunder, is M1 (Road transportation).

II. BASELINE METHODOLOGY PROCEDURE

Project boundary

The **spatial extent** of the project boundary encompasses the complete route, from origin to destination, involved in the transportation of the cargo described in the CDM-PDD, including complementary modes of transport i.e. from the facility to the port or station and vice versa. The project boundaries do not include production facilities where the cargo is produced or facilities that will use those cargo. Only transportation of the cargo is included within the boundary.

Table 1 illustrates which emission sources are included and which are excluded from the project boundary for the determination of both baseline and project emissions.

Table 1: Overview on emission sources included in or excluded from the project boundary

Source		Gas	Included?	Justification / Explanation
Baseline	Fuel consumption for cargo transportation	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification. This is conservative
		N_2O	No	Excluded for simplification. This is conservative
Project Activity	Fuel and/or electricity consumption for cargo transportation	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification
		N_2O	No	Excluded for simplification

Selection of the baseline scenario and demonstration of additionality

The selection of the baseline scenario and the demonstration of additionality should be conducted using the latest version of the "Combined tool to identify the baseline scenario and demonstrate additionality". The following additional guidance should be used when applying the tool.

When applying "Sub-step 1a" of the tool, alternative scenarios for cargo transportation should include all realistic and credible alternatives to the project activity that are consistent with current laws and regulations of the host country.

The following likely scenarios of transportation modes shall be assessed, *inter alia*:

M1: Road transportation;

M2: Rail transportation;

M3: Water transportation;

M4: Other transportation modes (e.g. air transportation, pipelines, electric conveyors, ropeway, if relevant).

All considered scenarios should provide the same service, i.e. they should be able to transport the same amount of cargo as transported under the project activity from the same origin to the same destination.

If the demand for the transportation of cargo is new,[5] it has to be demonstrated that road transportation is a realistic option from a technical point of view and that appropriate road infrastructure is available in the project activity region. It shall also be proved that road transportation is a common practice for the

[5] For the purpose of this methodology, a new demand for transportation means that there is no history of transportation of the same cargo type that is being transported in the project activity between the same points prior to the start of the project activity. For example, transportation of cargo from/to a greenfield industrial facility

transportation of the project cargo type in the host country or other relevant region as defined in the common practice analysis of the tool.

The Step 3 of the tool, investment analysis, is mandatory regardless of the outcome of Step 2 of the tool. In applying this step, the following guidance should be followed:

- The investment analysis shall be carried out from the perspective of the project participants, including the owner of the cargo and the investing entity (if different from the owner).
- In the case that the cargo is not transported by the owner of the cargo and the transport service provider is not a project participant, the transport tariffs of this third party transport service provider shall be used in the investment analysis and verified by the DOE.
- In case the project activity infrastructure/equipment is only partially used for the cargo transported under the project activity and the same infrastructure/equipment is also used to transport cargo of third parties and/or the cargo owned by the project participants which are the not included under the project activity (T_y as describe in equation 2 below), then the investment analysis shall consider all revenues generated by the use of this infrastructure for the transport of cargo other than the project cargo, including non CDM transportation activities (including any non CDM return cargo). The cargo transported under the project activity must constitute at least 50% of the total amount of cargo transported.
- If the project activity provides a different quality of service than other alternative scenarios, such as faster or more reliable transportation, these benefits may be monetized and be taken into account in the investment analysis. Any monetization of time or quality of service shall be supported by "revealed/stated preference" type studies to be verified by the DOE. The typical transport time for the cargo from origin to the destination for both the project activity and baseline scenario shall be estimated and documented in the CDM-PDD.

Emission Reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad \textbf{(1)}$$

Where:
ER_y = Emission reductions in year y (tCO_2)
BE_y = Baseline emissions in year y (tCO_2)
PE_y = Project emissions in year y (tCO_2)

Baseline Emissions

The baseline emissions from the transportation of the cargo are calculated based on the amount of cargo transported under the project activity, the distance of the baseline trip route (i.e. the distance between origin and destination for transportation of cargo by trucks) and a baseline emission factor in g CO_2 per kilometer and tonne of cargo transported. The amount of cargo transported under the project activity is monitored along the crediting period. The baseline trip route is determined once at the validation of the project activity and fixed throughout the crediting period. The baseline emission factor can be determined through two options: The first option is applying a conservative default emission factor. This option can,

for example, be used if the project participants do not have historical records of the fuel consumption in trucks. The second option allows project participants to calculate the emission factor based on historical records of the fuel consumption for transportation of cargo by trucks.

Baseline emissions are calculated as follows:

$$BE_y = T_y \cdot AD \cdot EF_{BL} \cdot 10^{-6} \quad \textbf{(2)}$$

Where:

BE_y	=	Baseline emissions in year y (tCO_2)
T_y	=	Amount of cargo transported by the project transportation mode in year y (tonne)
AD	=	Distance of the baseline trip route (km)
EF_{BL}	=	Baseline emission factor for transportation of cargo (g CO_2 per tonne.km, i.e. g CO_2 per tonne of cargo and km travelled)

Step 1: Determination of the cargo type transported

At the validation stage, project participants should clearly identify and describe in the CDM-PDD the type of cargo transported under the project activity, including to which category in Table 2 the cargo belongs to.

Step 2: Determination of the distance of the baseline trip route (AD)

At the validation stage, project participants should clearly identify and document the origin and destination from/to where the cargo is transported. The distance of the baseline trip route (AD) is considered as the one way distance between the origin (point A) and destination (point B) that is travelled in the baseline scenario. If there is a documented historical record of the route used for the transportation of cargo prior to the implementation of the project activity, the historical route should be considered. If such historical records are not available or if more than one route was used prior to the implementation of the project activity, then the project participants should provide, with justification, a route between origin and destination which lead to the least fuel consumption. The distance of the baseline trip route (AD) should be documented transparently in the CDM-PDD.

Step 3: Determination of baseline emission factor (EF_{BL})

The baseline emission factor (EF_{BL}) for transportation of cargo should be determined using one of the following options:

Option A: Conservative default[6] values

The project participants can use the default emission factors[7] provided in the table below depending upon the type of cargo transported in the baseline scenario identified in the Step 1 above. These default

[6] Project participants wishing to use different default factors for road transportation may propose a revision of this methodology.

[7] These default factors take into account the emissions generated by the empty trips caused by the main trips.

emissions factors (in **Table 2**) are determined on the basis of trucks consuming petrodiesel. Furthermore, the emission factors can also be used if trucks consume gasoline in the host country (this is conservative as gasoline trucks are less energy efficient than diesel trucks). However, the emission factors shall be adjusted if trucks consume natural gas or if petrodiesel is blended with biofuels in the host country, as follows:

(a) If trucks consume natural gas in the host country, the default values in **Table 2** shall be multiplied by the ratio of the emission factor of natural gas to the emission factor of petrodiesel (both expressed in g CO_2/GJ);

(b) If petrodiesel is blended with biofuels in the host country, the default values in **Table 2** shall be multiplied by the share (fraction) of petrodiesel in blended diesel determined on an energy basis.

Table 2: Default emission factors for road transportation depending on the type of cargo transported

Type of cargo transported	Emission factor (g CO_2/tonne.km)
Agricultural products and live animals	83
Beverage	61
Groceries	76
Perishable and semi-perishable foodstuff and canned food	94
Other food products and fodder	74
Solid mineral fuels and petroleum products	76
Ores and metal waste	90
Metal products	80
Mineral products	57
Other crude and manufactured minerals and building materials	70
Fertilizers	76
Chemicals	70
Transport equipment	100
Machinery and metal products	119
Glass and ceramic and porcelain products	84
Grouped goods	94
Other manufactured articles	113

Sources: "Repérage des produits les plus concernés par la maîtrise de la demande de transport routier", Beauvais Consultants, ADEME, 2006 and "Le point sur N°25, Les émissions de CO_2 par les poids lourds français entre 1996 et 2006 ont augmenté moins vite que les volumes transportés", Commissariat général du developpement durable,, Ministère de l'écologie, de l'énergie, du développement durable et de la mer, 2009.

Option B: Historical data[8]

The baseline emission factor (EF_{BL}) is calculated based on historical data on the amount of fuels consumed for transportation of the cargo, the net calorific values and CO_2 emission factors of the fuel types used, the amount of cargo transported, the distance of the baseline trip route and a factor to account for non-empty return trips. This option can be applied only if:

- The cargo was transported in dedicated trucks which were not used for other purposes than transportation of cargo; and
- Data on the amount of cargo transported, the amount of fuel consumed and the fuel types used is available for the trucks dedicated to the transportation of the type of cargo (see Table 2).

The baseline emission factor is calculated as follows:

$$EF_{BL} = \frac{\sum_{i} FC_{BL,i,x} \cdot NCV_{i,x} \cdot EF_{CO2,i,x} \cdot F_{RT,BL}}{T_x \cdot AD} \quad \textbf{(3)}$$

Where:

EF_{BL}	=	Baseline emission factor for transportation of cargo (g CO_2 per tonne.km)
$FC_{BL,i,x}$	=	Amount of fuel *i* consumed by the trucks in year *x* (liter or m^3)
$EF_{CO2,i,x}$	=	CO_2 emission factor of fuel *i* consumed by the trucks in year *x* (g CO_2/GJ)[9]
$NCV_{i,x}$	=	Average net calorific value of fuel *i* consumed by the trucks in year *x* (GJ per liter or m^3)
$F_{RT,BL}$	=	Factor to account for non-empty return trips in the baseline scenario (fraction)
T_x	=	Amount of cargo transported in trucks in year *x* (tonne)
AD	=	Distance of the baseline trip route (km)
x	=	Year (365 days) prior to the implementation of the project activity

Determination of $F_{RT,BL}$

The factor to account for non-empty return trips in the baseline scenario ($F_{RT,BL}$) is calculated based on the one year of historical data on the number of empty return trips. In cases where project participants can demonstrate that all the return trips in year *x* were empty, $F_{RT,BL}$ is 1. In cases where there are non-empty return trips in year *x*, $F_{RT,BL}$ is determined as follows:

$$F_{RT,BL} = \frac{T_x \cdot AD}{T_x \cdot AD + T_{RT,x} \cdot RTD_x} \quad \textbf{(4)}$$

[8] This option is not applicable if the demand for the transportation of cargo is new.

[9] If the fuel is blended with biofuel, the emission factor of the blend shall be calculated assuming an emission factor of zero for the biofuel.

Where:

$F_{RT,BL}$ = Factor to account for non-empty return trips in the baseline scenario (fraction)
T_x = Amount of cargo transported in trucks in year x (tonne)
AD = Distance of the baseline trip route (km)
$T_{RT,x}$ = Amount of cargo transported in trucks in the return trips in year x (tonne)
RTD_x = Distance of the return trip route in year x (km)
x = Year (365 days) prior to the implementation of the project activity

Project emissions

The project emissions include the emissions resulting from the consumption of fossil fuel in the ships/barges/trains, the consumption of electricity in trains, and the consumption of fossil fuel in the trucks used for the transportation of cargo in complementary routes[10] under the project activity. If the project transportation mode carries other cargo in the return trips from the destination (point B) to the origin (point A) of the project activity trip, the emissions associated with the transportation of the cargo in the return trips are not accounted for. Project emissions are calculated as follows:

$$PE_y = \left(PE_{FC,y} + PE_{EC,y}\right) \cdot F_{RT,PJ,y} + PE_{CR,y} \quad \textbf{(5)}$$

Where:

PE_y = Project emissions in year y (tCO_2)
$PE_{FC,y}$ = Project emissions from fossil fuel combustion in the project activity in year y (tCO_2)
$PE_{EC,y}$ = Project emissions from electricity consumption in the project activity in year y (tCO_2)
$F_{RT,PJ,y}$ = The factor to account for non-empty return trips in the project scenario in year y (fraction)
$PE_{CR,y}$ = Project emissions from transportation of cargo in complementary routes in trucks in year y (tCO_2)

Determination of $PE_{FC,y}$

Project emissions from fossil fuel combustion in the project activity in year y ($PE_{FC,y}$) are calculated using the latest approved version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion", where the sources j in the tool correspond to all sources of fossil fuel consumption in the project activity, including the ships/barges/trains used under the project activity and return trips. Fossil fuel consumption, if any, for electricity generation should not be included. Fossil fuel consumption for the transportation of part of the cargo, if any, by the baseline transportation mode (trucks) from origin to destination should not be included. All emission sources should be documented transparently in the CDM-PDD.

Determination of $PE_{EC,y}$

Project emissions from electricity consumption in the project activity in year y ($PE_{EC,y}$) are calculated using the latest version of the "Tool to calculate baseline, project and/or leakage emissions from electricity

[10] Complementary routes, for the purpose of this methodology, are routes to transport the cargo (i) from the origin point of the cargo (point A), to the point of departure of the ships/barges/trains and return trips, and (ii) from the point of arrival of the ships/barges/trains to the destination point of the cargo (point B) and return trips.

consumption" where the electricity consumption sources *j* in the tool corresponds to all electricity consumption sources under the project activity, including trains used under the project activity and return trips. In case the project activity consumes electricity from more than one electricity grid, the parameter $EF_{EL,j/k/l,y}$ in the tool shall refer to the emission factor of the grid with highest emission factor among the electricity grids that the project activity consumes the electricity. All emission sources should be documented transparently in the CDM-PDD.

Determination of $F_{RT,PJ,y}$

The factor to account for non-empty return trips in the project scenario in year *y* ($F_{RT,PJ,y}$) is calculated based on amount of cargo transported by the project transportation mode in the return trips in year *y*. In cases where project participants can not demonstrate that the project transportation mode carries other cargo in return trips in year *y,* $F_{RT,PJ,y}$ is 1. In cases where the project transportation mode carries other cargo in return trips from the destination (point B) to the origin (point A) of the project activity trip in year y, $F_{RT,PJ,y}$ is determined as follows:

$$F_{RT,PJ,y} = \frac{T_y}{T_y + T_{RT,y}} \quad \textbf{(6)}$$

Where:

$F_{RT,PJ,y}$ = The factor to account for non-empty return trips in the project scenario in year *y* (fraction)
T_y = Amount of cargo transported by the project transportation mode in year *y* (tonne)
$T_{RT,y}$ = Amount of cargo transported by the project transportation mode in the return trips in year *y* (tonne)

Determination of $PE_{CR,y}$

Project emissions from transportation of cargo in complementary routes in trucks in year *y* ($PE_{CR,y}$) are calculated using the latest approved version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion", where the sources *j* in the tool correspond to fossil fuel consumption in the trucks used for the transportation of cargo in complementary routes[10].

Leakage

Leakage emissions are negligible and are accounted for as zero.

Changes required for methodology implementation in 2nd and 3rd crediting periods

Refer to the "Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period" (Annex 1 of the "Procedures for renewal of the crediting period of a registered CDM project activity").[11]

[11] <https://cdm.unfccc.int/Reference/Procedures/reg_proc04.pdf>.

Data and parameters not monitored

In addition to the parameters listed in the tables below, the provisions on data and parameters not monitored in the tools referred to in this methodology apply.

Data / Parameter:	$FC_{BL,i,x}$
Data unit:	liter or m^3
Description:	Amount of fuel *i* consumed by the trucks in year *x*
Source of data:	Historical data from the project participants
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter:	$EF_{CO2,i,x}$
Data unit:	g CO_2/GJ
Description:	CO_2 emission factor of fuel *i* consumed by the trucks in year *x*
Source of data:	The following data sources may be used if the relevant conditions apply:

Data source	**Conditions for using the data source**
a) Values provided by the fuel supplier in invoices	This is the preferred source
b) Measurements by the project participants	If a) is not available
c) Regional or national default values	If a) is not available. These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances)
d) IPCC default values at the lower limit of the confidence interval with 95% confidence level, as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available

Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards
Any comment:	For a): If the fuel supplier provides the CO_2 emission factor on the invoice and the value is based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, Options b), c) or d) should be used. If the fuel is blended with biofuel, the emission factor of the blend shall be calculated assuming an emission factor of zero for the biofuel

Data / Parameter:	$NCV_{i,x}$
Data unit:	GJ per liter or m^3
Description:	Average net calorific value of fuel *i* consumed by the trucks in year *x*
Source of data:	The following data sources may be used if the relevant conditions apply:

Data source	Conditions for using the data source
a) Values provided by the fuel supplier in invoices	This is the preferred source
b) Measurements by the project participants	If a) is not available
c) Regional or national default values	If a) is not available. These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances)
d) IPCC default values at the lower limit of the confidence interval with 95% confidence level, as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available

Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards
Any comment:	QA/QC procedures: Verify that the values under a), b) and c) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values out of this range, collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b) or c) should have ISO17025 accreditation or justify that they can comply with similar quality standards

Data / Parameter:	AD
Data unit:	Km
Description:	Distance of the baseline trip route (km)
Source of data:	Historical data or measurement from the project participants
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter:	T_x
Data unit:	tonne
Description:	Amount of cargo transported in trucks in year *x*
Source of data:	Historical data from the project participants
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter:	$T_{RT,x}$
Data unit:	tonne
Description:	Amount of cargo transported in trucks in the return trips in year *x*
Source of data:	Historical data from the project participants
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter:	RTD_x
Data unit:	km
Description:	Distance of the return trip route in year *x*
Source of data:	Historical data from the project participants
Measurement procedures (if any):	-
Any comment:	In many cases, RTDx will be the same as AD, where the trucks take the same route in the return trip. However, in cases where the trucks take different route (diversion) in the return trip, the RTDx is the actual length of the return trip

III. MONITORING METHODOLOGY

Monitoring procedures

Describe and specify in the CDM-PDD all monitoring procedures, including the type of measurement instrumentation used and the responsibilities for monitoring and QA/QC procedures that will be applied. Where the methodology provides different options (e.g. use of default values or on-site measurements), specify which option will be used. Meters should be installed, maintained and calibrated according to equipment manufacturer instructions and be in line with relevant standards. If such standards are not available, use national standards. If a national standard is not available, then use international standards.

All monitoring should be attended to by appropriate and adequate personnel, as assessed by the project participants. All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. 100% of the data should be monitored if not indicated otherwise in the tables below. All measurements should be conducted with calibrated measurement equipment according to relevant industry standards.

In addition, the monitoring provisions in the tools referred to in this methodology apply.

Data and parameters monitored

Data / Parameter:	PTM_y
Data unit:	
Description:	The project transportation mode in year *y*
Source of data:	Onsite records by project participants
Measurement procedures (if any):	The project participants will record the mode of transportation in each trip. The verifying DOE will check the records for confirmation.
Monitoring frequency:	Each trip
QA/QC procedures:	-
Any comment:	The project transportation mode (either ships, barges or rail) in year *y* should be the same project transportation as defined in the CDM-PDD at the validation of the project activity This monitored parameter is required in order to comply with the following applicability condition: • The project transportation mode is defined in the CDM-PDD at the validation of the project activity and no change of transportation mode is allowed thereafter

Data / Parameter:	OD_y
Data unit:	
Description:	The origin and destination point and transportation route of the cargo transported by the project transportation mode in year *y*
Source of data:	Onsite records by project participants
Measurement procedures (if any):	The project participants will record the origin and destination point and transportation route in each trip. The verifying DOE will check the records for confirmation
Monitoring frequency:	Each trip
QA/QC procedures:	-
Any comment:	The origin and destination point and the transportation routes of the cargo transported by the project transportation mode in year *y* should be the same origin and destination points and transportation route as defined in the CDM-PDD at the validation of the project activity. This monitored parameter is required in order to comply with the following applicability condition: • The cargo is transported from the same origin (point A) to the same destination (point B) throughout the whole crediting period. These two points and transportation routes are defined in the CDM-PDD at the validation of the project activity and are fixed along the crediting period

Data / Parameter:	CT_y
Data unit:	
Description:	Type of cargo transported by the project transportation mode in year *y*
Source of data:	Onsite records by project participants
Measurement procedures (if any):	The project participants will record the type of cargo transported by the project transportation mode in each trip. The verifying DOE will check the records for confirmation.
Monitoring frequency:	Each trip
QA/QC procedures:	-
Any comment:	The cargo type transported in year *y* should be the same type as defined in the CDM-PDD at the validation of the project activity. This monitored parameter is required in order to comply with the following applicability condition: • Both in the baseline and project activity, only one type of cargo, owned by the project participants, is transported and no mix of cargo is permitted (this condition does not apply to the return trip cargo). The cargo type of the project activity is defined in the CDM-PDD at the validation of the project activity and is fixed along the crediting period

Data / Parameter:	T_y
Data unit:	tonne
Description:	Amount of cargo transported by the project transportation mode in year *y*
Source of data:	Onsite measurements by project participants
Measurement procedures (if any):	The amount of cargo transported under the CDM project by the project transportation mode shall be measured at the point of origin using weight scales. The amount shall be crosschecked with the cargo received at destination
Monitoring frequency:	Daily, summed for a year
QA/QC procedures:	-
Any comment:	The project participants shall estimate the T_y to be used for *ex ante* calculation in the CDM-PDD and for the investment analysis and document in the PDD. The sensitivity analysis shall be performed as per the procedure in the combined tool. Changes to the value of T_y during the crediting period as compared to the *ex ante* estimate (e.g. by more than 10%) represent a change to the project design document and the relevant procedures shall apply ~~If in any year *y*, the monitored value of T_y is higher than the *ex ante* value used in the CDM-PDD plus the uncertainty range used for the sensitivity analysis (e.g. 10%), then the verifying DOE shall apply the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document"~~

Data / Parameter:	$T_{RT,y}$
Data unit:	tonne
Description:	Amount of cargo transported by the project transportation mode in the return trips in year *y*
Source of data:	Onsite measurements by project participants
Measurement procedures (if any):	The amount of cargo transported by the project transportation mode in the return trips shall be measured at the point of origin using weight scales. The amount shall be crosschecked with the cargo received at destination
Monitoring frequency:	Daily, summed for a year
QA/QC procedures:	-
Any comment:	The project participants shall estimate the $T_{RT,y}$ to be used for *ex ante* calculation in the CDM-PDD and for the investment analysis and document in the PDD. The sensitivity analysis shall be performed as per the procedure in the combined tool. Changes to the value of $T_{RT,y}$ during the crediting period as compared to the *ex ante* estimate (e.g. by more than 10%) represent a change to the project design document and the relevant procedures shall apply. ~~If in any year *y*, the monitored value of $T_{RT,y}$ is higher than the *ex ante* value used in the CDM-PDD plus the uncertainty range used for the sensitivity analysis (e.g. 10%), then the verifying DOE shall apply the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document"~~

IV. REFERENCES AND ANY OTHER INFORMATION

Not applicable.

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History of the document

Version	Date	Nature of revision(s)
01.1.0	EB 61, Annex 9 3 June 2011	Amendment to remove the reference to the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document" from the monitoring tables.
01.0.0	EB 56, Annex 4 17 September 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Standard **Business Function**: Methodology		