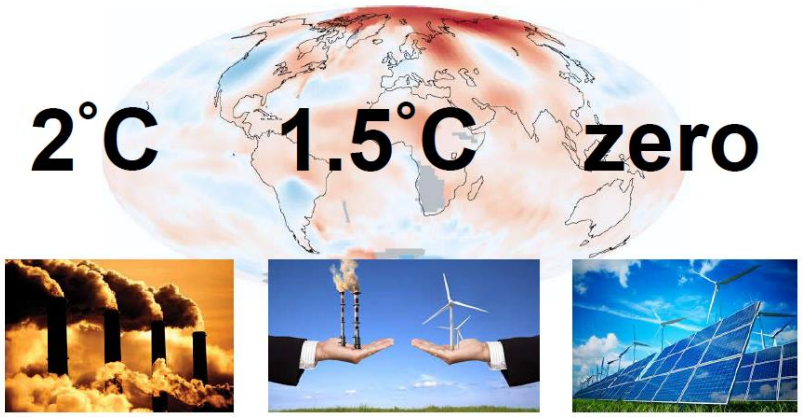
United Nations Framework Convention on Climate Change

Clean Development Mechanism (CDM) and Climate Finance

Training Workshop and Public Consultation on
Developing Standardized Baseline-Grid
Emission Factor

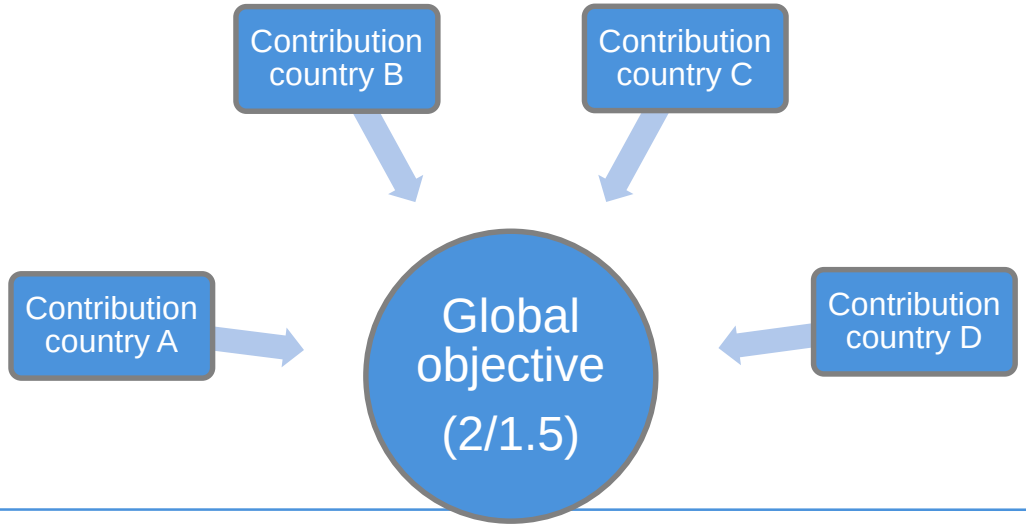
Paris Agreement

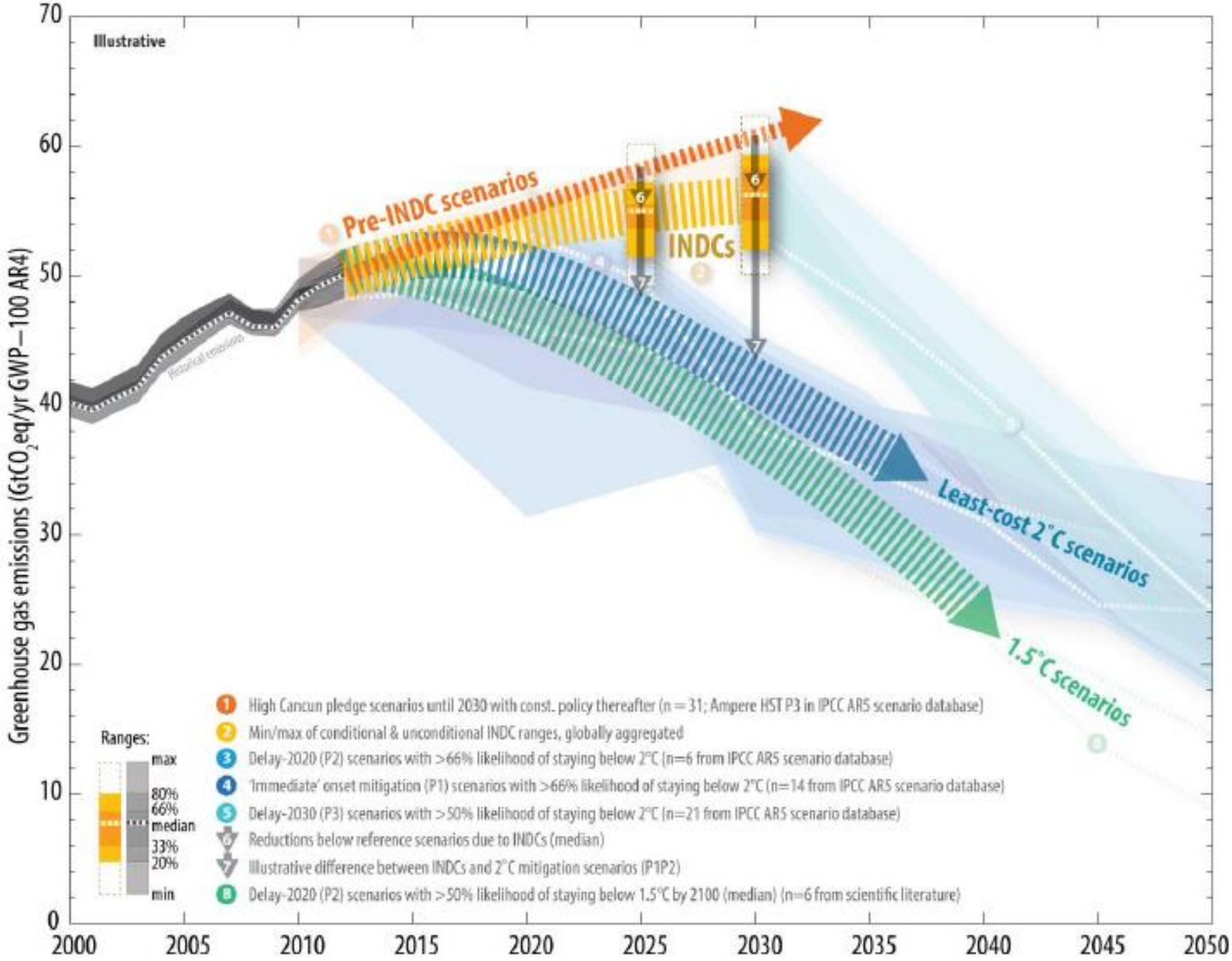
Increased ambition of the long term goal



- Implementation of NDCs
- Higher ambitions by Parties
- Collaborative actions

168 out of 197 Parties have ratified the Paris Agreement




Illustrative
Pre-INDC scenarios
INDCs
Least-cost 2°C scenarios
1.5°C scenarios
Historical emissions
Greenhouse gas emissions (GtCO2eq/yr GWP–100 AR4)
70
60
50
40
30
20
10
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Ranges:
max
80%
66%
median
33%
20%
min
1 High Cancun pledge scenarios until 2030 with const. policy thereafter (n = 31; Ampere HST P3 in IPCC AR5 scenario database)
2 Min/max of conditional & unconditional INDC ranges, globally aggregated
3 Delay-2020 (P2) scenarios with >66% likelihood of staying below 2°C (n=6 from IPCC AR5 scenario database)
4 'Immediate' onset mitigation (P1) scenarios with >66% likelihood of staying below 2°C (n=14 from IPCC AR5 scenario database)
5 Delay-2030 (P3) scenarios with >50% likelihood of staying below 2°C (n=21 from IPCC AR5 scenario database)
6 Reductions below reference scenarios due to INDCs (median)
7 Illustrative difference between INDCs and 2°C mitigation scenarios (P1P2)
8 Delay-2020 (P2) scenarios with >50% likelihood of staying below 1.5°C by 2100 (median) (n=6 from scientific literature)

Context: Post Paris Agreement

- **Significant increase** in the number of countries taking climate action, often within the **national scope**

- However, the emission levels **do not fall within 2°C or 1.5℃ scenarios**

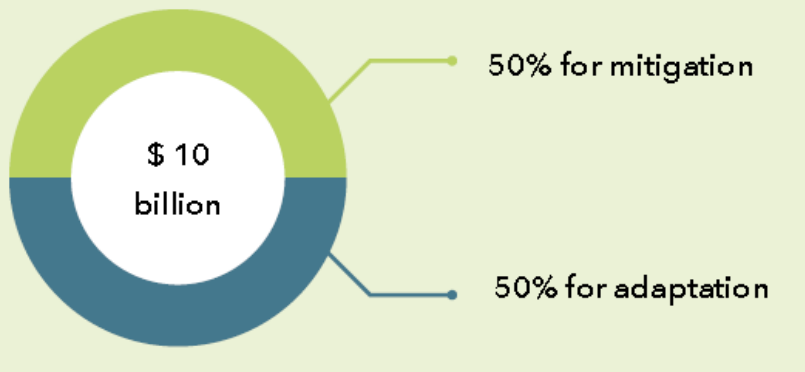
- Achieving 2°C or 1.5℃ depends on enhanced reductions **before and after 2030** and on **long-term changes** in key social, economic and technology drivers

- **Carbon finances** will be the main driver of the mitigation activities needed to be implemented to fill the gap

Linking CDM with Green Climate Fund

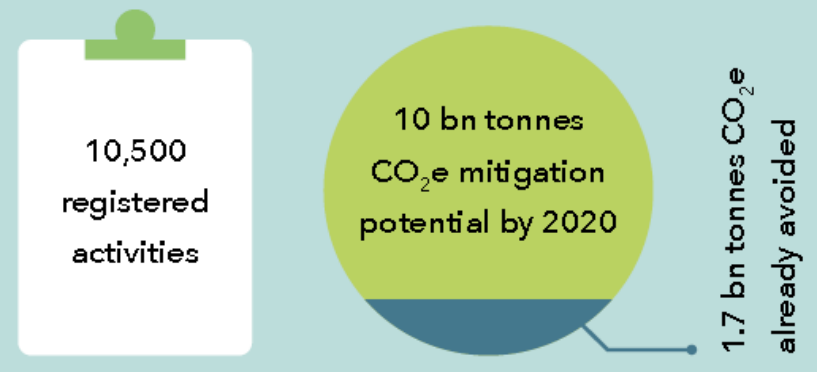
GCF

- GCF offers funding opportunities to **transformative projects** targeting mitigation and adaptation to climate change



CDM

- CDM rewards **emissions reduction projects/ programmes** with carbon credits based on actual performance.



United Nations Framework Convention on Climate Change

Baseline setting for evaluation of GHG mitigation projects

Training Workshop and Public Consultation on Developing Standardized Baseline-Grid Emission Factor

Paramaribo, Suriname
26-27 October 2017

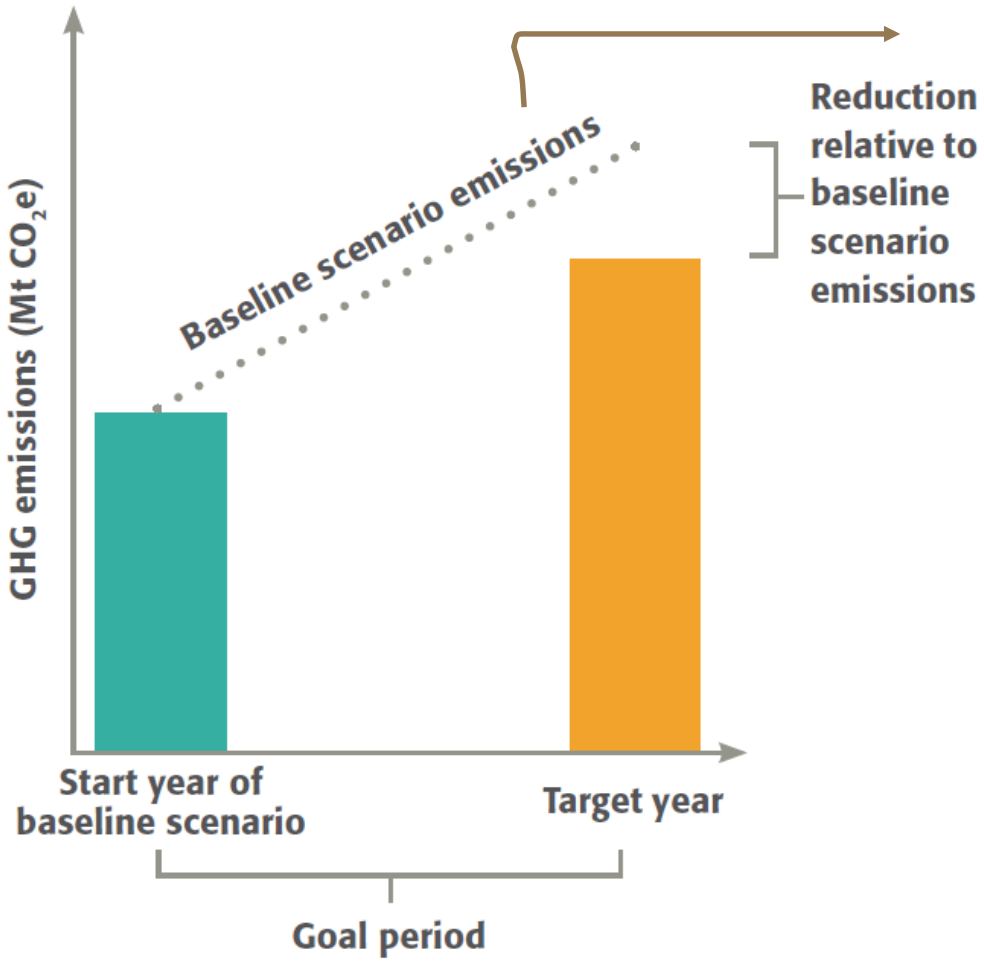
What is baseline ?

- **Baseline Scenario/emissions:**
  a) describe future GHG emissions in the absence of defined mitigation efforts and policies
  b) Counterfactual emissions scenario against which emission reductions are counted

- **Why robust/credible baseline**
  a) To ensure a project will result in real GHG emissions reductions that would not have occurred in the absence of the project.
  b) Serves as a reference level to define national mitigation goals and targets
  c) Provide a benchmark for mitigation targets
  d) Support national climate change policy preparation
  e) Estimate the mitigation impact and assess progress in implementation

- Baselines are constructed and/or depend on the type of mitigation goals

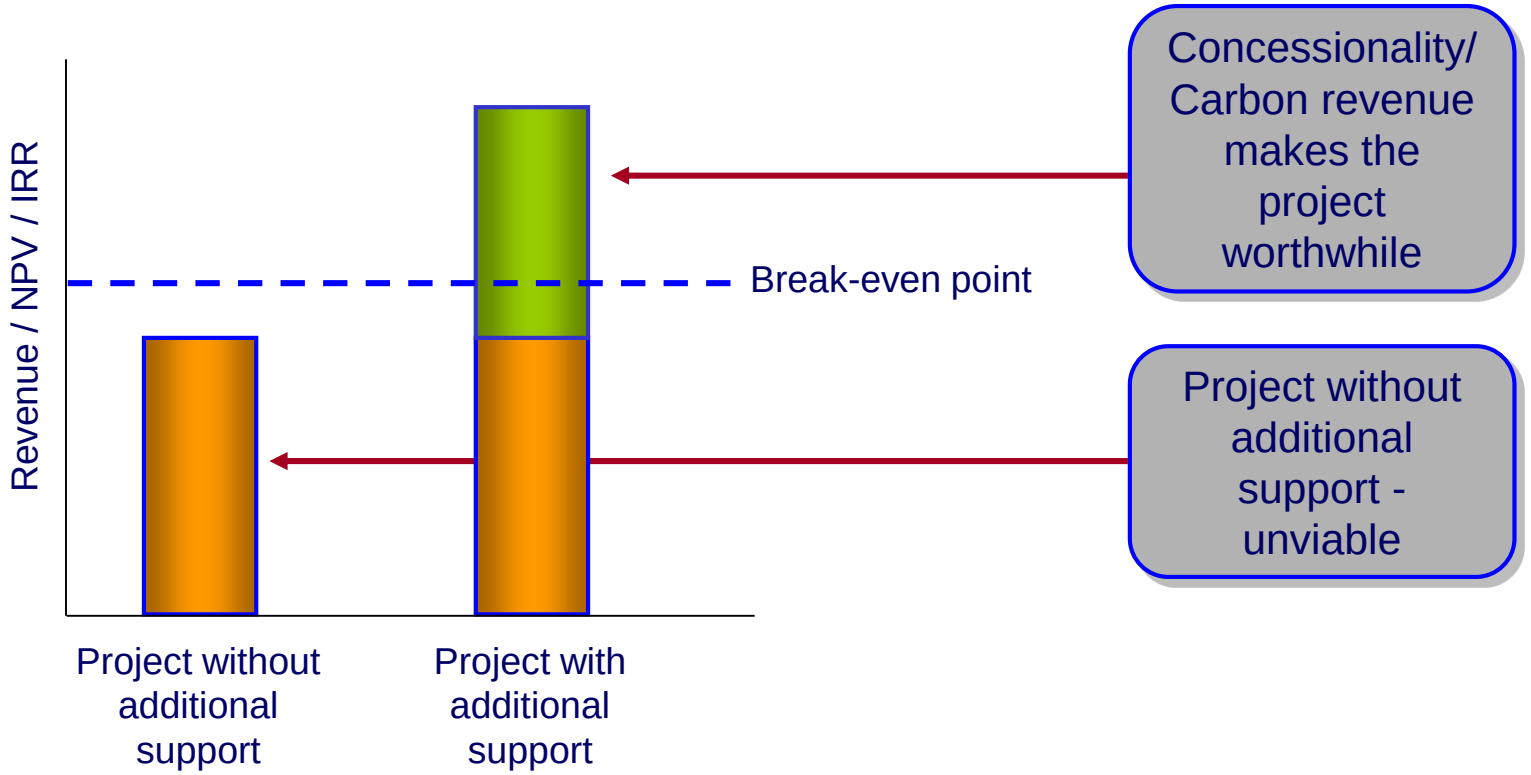
Example of a baseline-scenario goal



The ex-ante baseline scenario: Most likely to occur in the absence of policies or measures to meet a mitigation goal.

Investments analysis- with/without climate finance

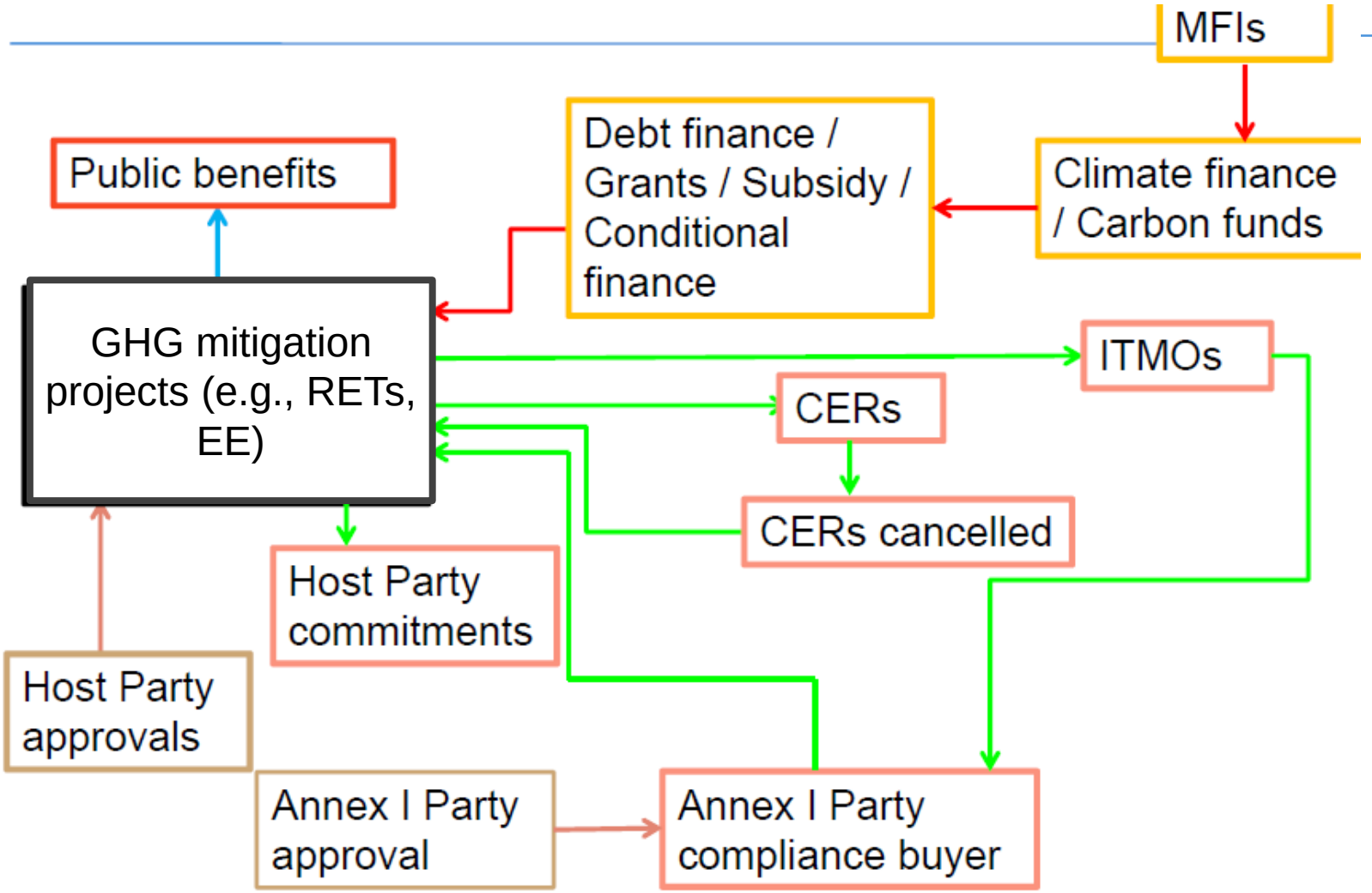
Choose an appropriate financial indicator, such as IRR, NPV or benefit-cost ratio, to demonstrate additionality



Financing models for GHG mitigation projects linking CDM

Grant financing	• where grant disbursements are linked to GHG impacts **via upfront or results-based payments**.
Debt funding	• where the **Fund pegs** its debt terms and conditions to greenhouse gas mitigation results **tracked under the CDM**.
Equity financing	• where the **Fund pegs** its equity terms and conditions to greenhouse gas mitigation results **tracked under the CDM.**
Guarantees	• where the **Fund offers** revenue support through price guarantees **linked to issued carbon credits**.

Climate finance under the Paris Agreement



Why Standardized Baseline

- Moving away from project by project baseline determination

- Sector-specific standards (regional, national, or sub-national)
- Either calculates baseline emission factor for broad class of mitigation activities (measures) taken up in the sector, or baseline emission factor for entire sector
- **Reduce transaction costs**

Why Standardized baseline

- Addresses the environmental integrity and transparency issues
- Payment for performance to ensure delivery
- Provide visibility to the contribution of institutional investors in mitigating climate change
- **Robustly setting baseline matters !**

Why Standardized baseline?

- Baseline, baseline factors developed using SBs can be used for wider mitigation actions including **NAMAs and NDCs**, to calculate impact of an mitigation intervention (emission reduction).

- SBs are not only used for an offsetting mechanism, but also for wider mitigation outcomes including those for;
  a) Carbon finance
  b) Climate finance
  c) Result based finance
  d) NAMAs and NDCs

- SB is a **reliable, UN-recognized tool** that offers a **transparent means** to develop **baseline or baseline factors** for monitoring, reporting and verification purpose of mitigation outcomes.

Baseline in the context of power sector (RE and EE)

Grid Connected Projects

- What would have happened in the absence of project intervention:
  a) the baseline scenario is the operation of grid-connected power plants and the addition of new generation sources – in the absence of intervention
  b) Emission factor (tCO2/MWh) serving as a performance indicator applicable to **multi-project**

Off-grid projects

- What would have happened in the absence of project intervention
  a) Operation of existing Mini-grid
  b) For users who didn't have access to electricity prior to project implementation, BL depends upon type of technology and consumption level of users

Present Status

- **About 30 SBs** are approved

- **12 bottom up** and **8 top down** submissions are under processing

- Sectors covered are:
  - ✓ Electricity generation
  - ✓ Rural electrification
  - ✓ Cement
  - ✓ Charcoal
  - ✓ Waste (LFG flaring and electricity/power generation)
  - ✓ Rice mill
  - ✓ Rice cultivation
  - ✓ Cook stoves
  - ✓ Forestry

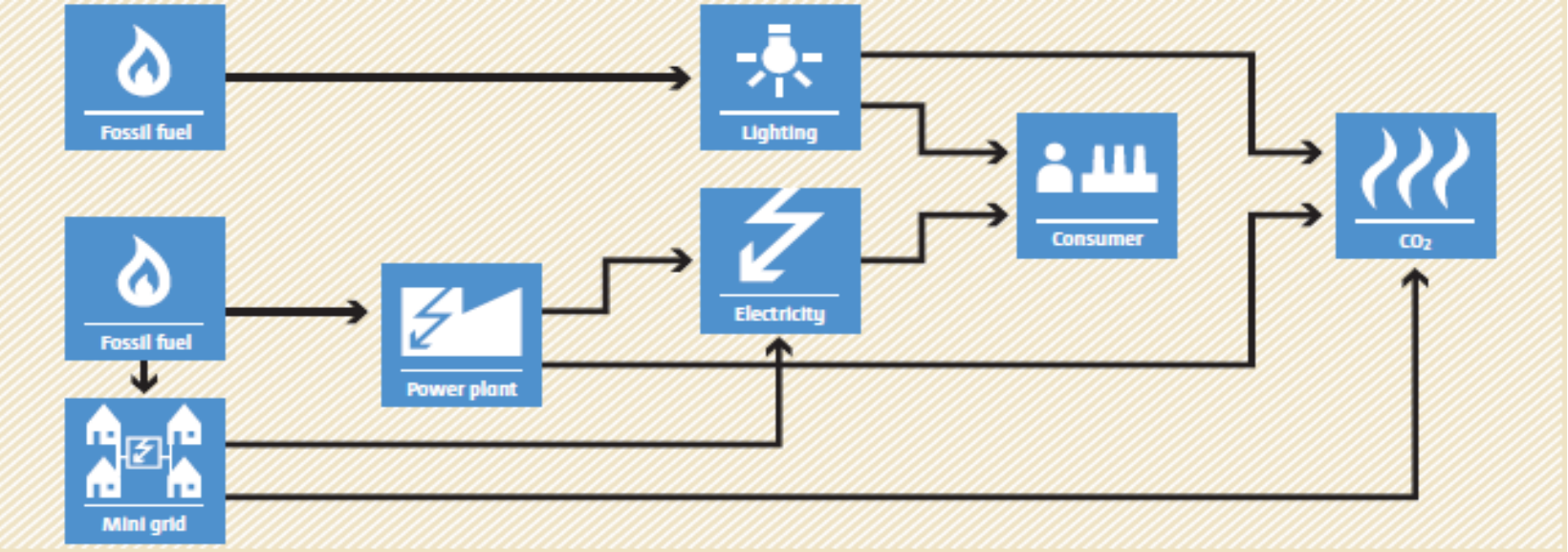
Approach to derive baseline emission factor for off-grid projects

Provisions under CDM Methodologies

Standardized Methodologies for off-grid

Meths.	Title	Default Baseline EF tCO2/MWh
AMS-I.A.	Electricity generation by the user	0.8
AMS-I.B.	Mechanical energy for the user with or without electrical energy	0.8
AMS-I.F.	Renewable electricity generation for captive use and mini-grid	0.8
AMS-I.L	Electrification of rural communities using renewable energy	6.8/1.3/1.0
AMS-III.AW.	Electrification of rural communities by grid extension	0.8
AMS-III.BB	Electrification of communities through grid extension or construction of new mini-grids	6.8/1.3/1.0
AMS-III.BL	Integrated methodology for electrification of communities (covers the scope of all above methodologies)	6.8/1.3/1.0

AMS-IIII.BL. Electrification of communities



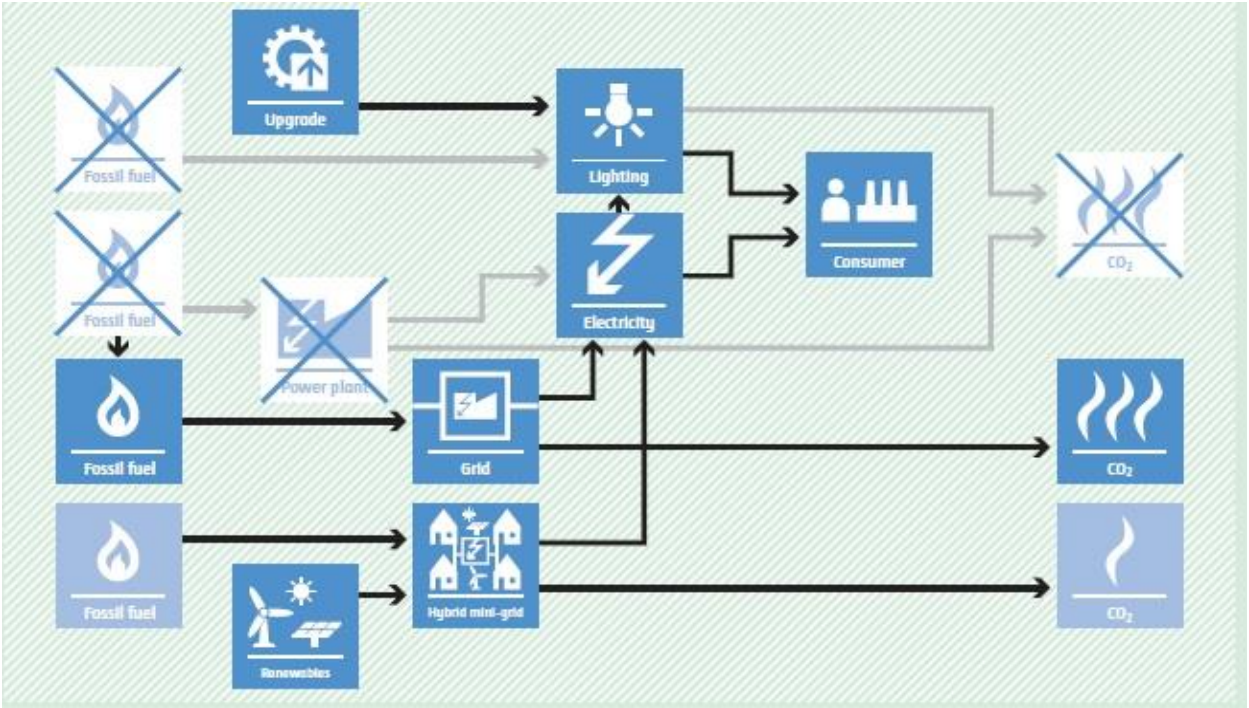
BASELINE SCENARIO

In the absence of the project activity, the end users would have used fossil fuel based lighting, stand-alone diesel electricity generators for appliances other than lighting (e.g. TV) or would have been supplied by carbon-intensive mini-grid.

AMS-IIII.BL. Electrification of communities

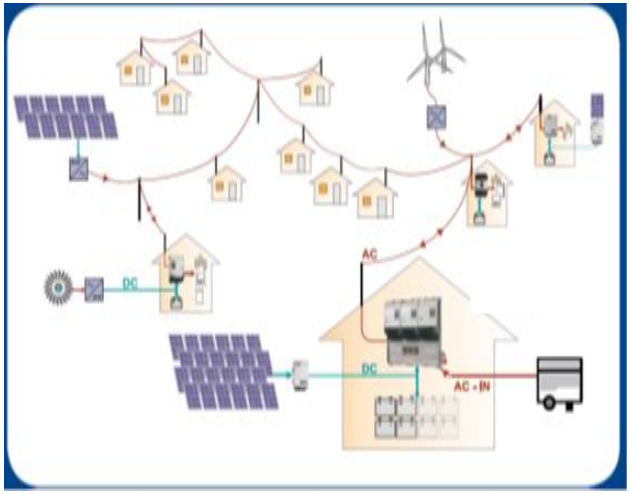
PROJECT SCENARIO

Consumers are supplied with electricity by new construction of renewable energy system or hybrid energy system or rehabilitation/refurbishment of renewable energy system or connection to a national or regional or mini-grid.



AMS-III.BL: Scope

- Displacement of fossil based lighting system, standalone DGs or DG-mini-grid
- Consumers [partly or fully]
  - Not connected to national/regional grid
  - supplied with fossil fuel systems
- Technology/measures:
  - New construction / Rehabilitation or refurbishment (renewable energy system , hybrid energy system)
  - Hybridization of existing fossil-fuel mini-grids
  - Installation, extension of a mini-grid
  - Extension of a grid



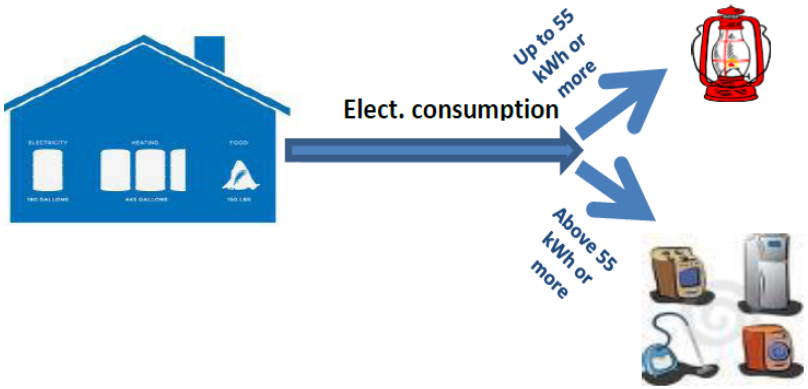
Default Emission factor for DG mini-grid

Type of grid	Mini-grid with 24-hour service	i) Mini-grid with 4- to 6-hour service ii) Productive applications iii) Water pumps	Mini-grid with storage
Load factor	25%	50%	100%
< 15 kW	2.4	1.4	1.2
>= 15 to < 35 kW	1.9	1.3	1.1
>= 35 to < 135 kW	1.3	1	1
>= 135 to < 200 kW	0.9	0.8	0.8
>= 200 kW ****	0.8	0.8	0.8

$$BE_{T3,y} = \sum_{w=1}^{P} \left(EC_{T3,w,y} \times EF_{CO2,T3} \right)$$

Baseline emissions using default factors (for consumers without prior access to electricity)

- Displacement of carbon intensive lighting and electricity sources
- Default EF using tiered approach based on consumption level and type of consumers



Tiered emission factors:

Tranche 1: [EC_x < 55 kWh/year] = 6.8 kg CO_2/kWh;

Tranche 2: [55< EC_y <250] = 1.3 kg CO_2/kWh;

Tranche 3: [EC_z > 250] = 1.0 kg CO_2/kWh.

For EC_k> 500kWh/y ➔ 1.0 kg CO_2/kWh and no tranche applies.

Table 1. Grid emission factors for the central grid of The Gambia

Parameter	SI unit	Description	Value
$EF_{grid,CM,y}$	tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system applicable to wind and solar power generation project activities.	0.697
$EF_{grid,CM,y}$	tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system applicable to all project activities other than wind and solar for the first crediting period.	0.682

Table 1. Emission factor for the six independent regional mini-grids of The Gambia

Mini-grids	Emission factor tCO_2/MWh
Essau	0.8
Kerewan	
Farafenni	
Kaur	
Bansang	
Basse	