

CSO Meeting – Carbon Footprinting

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PART 1: Harmonisation in Energy Sector

IFI Approach to GHG Accounting for Renewable Energy Projects

November 2015

Overview:

This note sets out a harmonized approach for assessing the mitigation benefits, or net greenhouse gas (GHG) emissions, of renewable energy (RE) projects in accordance with the International Financial Institution (IFI) Framework for a Harmonized Approach to Greenhouse Gas Accounting.¹ A Technical Working Group (TWG)² of IFIs has agreed to use a common set of emission factors for GHG accounting of electricity production from Renewable Energy (RE) projects.³ The purpose is to harmonize GHG accounting through the application of common emission factors to RE GHG calculations. Further iterations of this approach note will include the treatment of off-grid RE activities.

¹http://www.worldbank.org/content/dam/Worldbank/document/IFI_Framework_for_Harmonized_Approach%20to_Greenhouse_Gas_Accounting.pdf

²The TWG for this methodology includes technical specialists from ADB, AfDB, AFD, EBRD, EIB, GEF, GIB, NIB, NEFCO, IDB, IFC, and WB, with support from the UNFCCC secretariat; to be widened to include more IFIs as work progresses. This note will be reviewed and updated periodically by the TWG.

³ This approach is generally consistent with similar approaches to account for GHG emissions from a broader set of power generation projects.

IFI Approach to GHG Accounting for Energy Efficiency Projects

November 2015

Overview:

This note sets out a common approach of accounting for net greenhouse gas GHG emissions of energy efficiency (EE) projects in accordance with the International Financial Institution (IFI) Framework for a Harmonised Approach to Greenhouse Gas Accounting¹.

Scope:

This document, developed by a Technical Working Group (TWG)² of IFIs, provides guidance for net (against a baseline) emissions accounting for EE projects and/or EE project components, including as defined in the joint MDB-IDFC principles document under the categories " low carbon and energy efficient generation" and "energy efficiency projects" respectively³.

¹http://www.worldbank.org/content/dam/Worldbank/document/IFI_Framework_for_Harmonized_Approach%20to_Greenhouse_Gas_Accounting.pdf

² The TWG for this methodology includes technical specialists from ADB, AfDB, AFD, EBRD, EIB, GEF, GIB, NIB, NEFCO, IDB, IFC, and WB, with support from the UNFCCC secretariat; to be widened to include more IFIs as work progresses. This note will be reviewed and updated periodically by the IFIs.

³ <http://www.worldbank.org/content/dam/Worldbank/document/Climate/common-principles-for-climate-mitigation-finance-tracking.pdf> ; <https://www.idfc.org/Press-And-Publications/other-publications.aspx>

Creating a Common Data Set

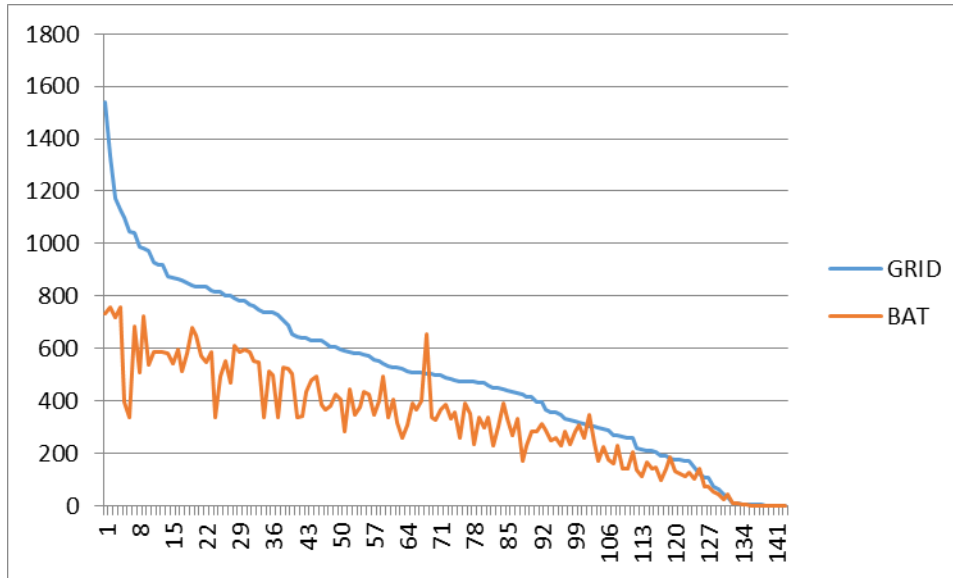
- The common dataset containing constructed using a Combined Margin (CM) for the grid that is comprised of an Operating Margin (OM) and a Build Margin (BM)
- Common dataset comprised of UNFCCC standardized baselines
- For countries with certified and registered CDM projects, from the dataset managed by the Institute for Global Environmental Strategies
- For the remaining countries, an estimated OM-BM will be used based on internationally recognised emissions data

Operating Margin methodology

Country	Country Grid Factor	High Voltage Grid +2%	Medium Voltage Grid +4%	Low Voltage Grid +7%	Operating Margin
Argentina	403	411	419	433	606
Armenia	115	117	120	124	453
Australia	924	942	962	993	1012
Austria	204	208	213	220	599
Azerbaijan	490	500	510	527	574
Bahrain	682	696	710	733	682
Bangladesh	631	644	658	679	642
Belarus	486	496	506	522	487
Belgium	227	232	237	244	511
Benin	774	790	807	833	780
Bolivia	452	461	470	486	702
Bosnia and Herzegovina	892	910	929	959	1457
Botswana	1923	1962	2003	2068	1923

- Grid Factor – used for estimating emissions savings for EE (changed by new methodology, now based on OM/BM)
- OM represents the marginal generating capacity in the existing dispatch hierarchy that will most likely be displaced by the project

Grid emission factors vs. BMs based on the existing generation mix (BAT)



- GRID – average grid emission factors for 142 countries
- BAT - BMs calculated using existing generation mix for each country and applying BAT emissions factors for each fuel type

Constructing a Combined Margin (CM)

- Common dataset will consist of a CM arrived at by combining the OM and BM, using the following weighting:
- Variable generation (e.g. most wind and solar PV), the weighting is 75% OM: 25% BM
- Firm generation (e.g. hydropower, geothermal and biomass), the weighting is 50% OM: 50% BM
- Over time, the TWG in coordination with the UNFCCC, will consider future modifications of the weights applied between OM and BM to account for additional factors, such as countries with high or low demand growth

Key Outcomes of Joint EIB-AfD-UNFCCC meetings with IEA, 21-22 Sept.

- BMs from IEA WEO-NPS model are forward looking and consistent with approved policies and INDC; represents most likely emissions trajectory in near future (5-10 years)
- 450 ppm scenario sets an aspirational baseline, but not consistent with current construction and planning
- WEO-NPS output for 7 years is most appropriate for BM; includes early years (0-3) when plant choice is almost fixed and later years (4-7) when policy preferences influence plant choice
- Regional data cannot be disaggregated into individual countries without further work; solutions to be discussed with IEA

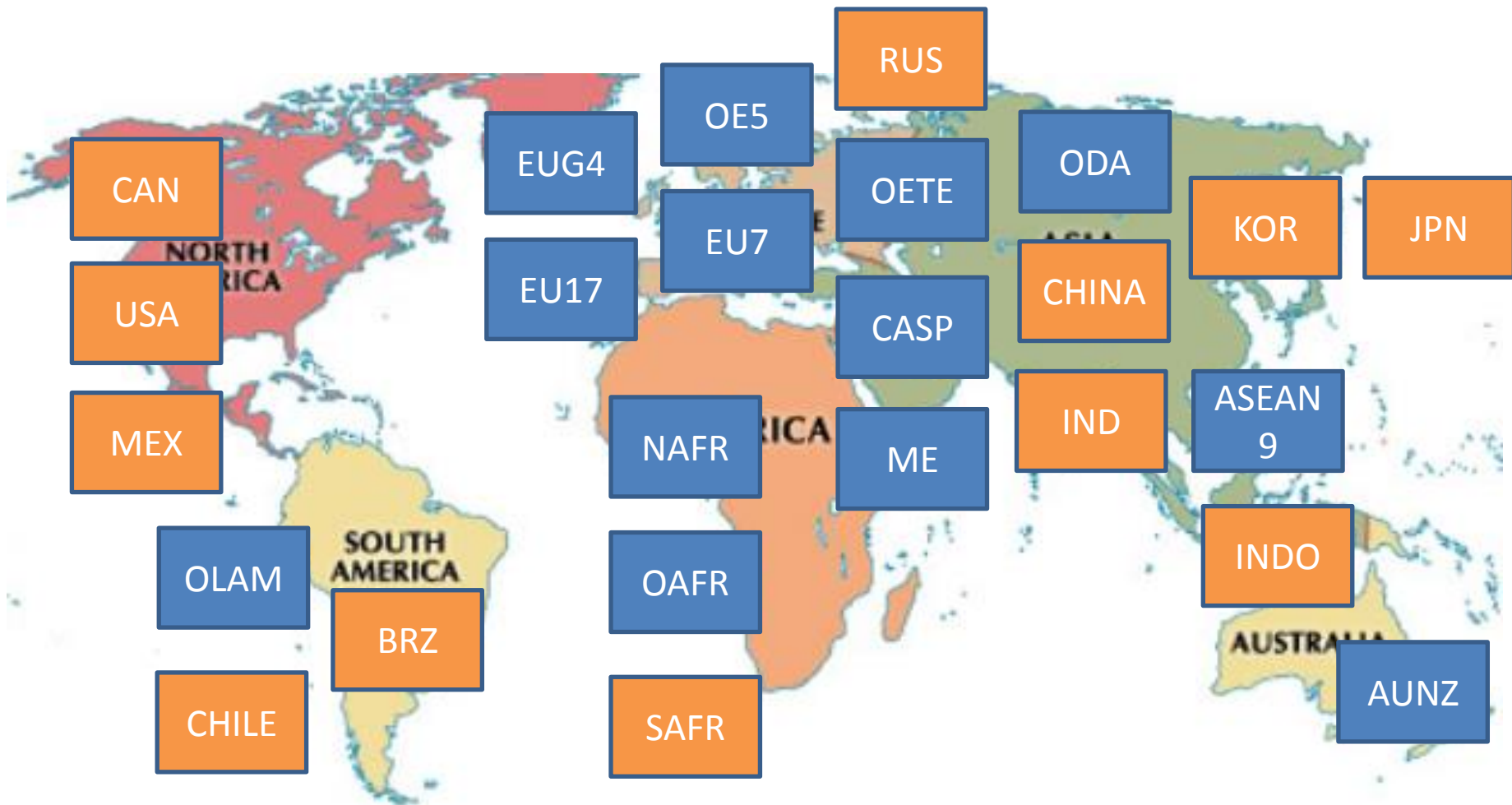
WEO model – 3 scenarios & outputs

CO2 emissions	From all electricity only plants (g CO2/kWh)						From new electricity only plants (g CO2/kWh)				
	2015	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
World	503.0	491.2	480.9	471.4	460.9	451.6	380.5	375.0	371.8	365.8	358.2
OECD Total	403.9	390.6	381.2	370.4	358.1	346.7	265.3	265.7	258.8	249.7	245.2
OECD Americas	430.2	418.2	412.5	403.2	392.9	382.7	176.1	199.0	200.8	181.7	181.6
US	472.7	459.8	453.8	443.2	431.6	420.7	185.6	209.2	209.4	185.3	184.7
CAN	148.1	144.1	140.5	139.3	137.7	133.7	40.1	69.6	101.0	123.0	129.9
Mexico	468.5	448.1	441.0	434.6	422.0	409.6	225.7	226.0	225.5	221.3	218.3
Chile	420.7	411.1	397.8	385.9	375.6	367.1	111.4	143.3	127.9	93.0	97.3
OECD Asia Oceania	555.5	527.9	506.7	484.6	461.4	441.9	344.7	347.1	337.0	337.7	333.3
Japan	546.4	515.9	484.2	455.7	430.1	408.5	284.3	276.9	283.6	293.5	304.3
Korea	504.4	477.1	470.4	455.6	432.6	413.7	436.9	478.8	444.1	422.8	391.7
AUNZ	676.0	657.9	647.6	634.6	618.9	605.2	271.9	276.9	290.4	309.4	304.3
OECD Europe	264.9	258.5	249.8	243.4	234.3	225.7	295.5	271.6	255.2	242.0	236.5
OE5	289.1	280.2	275.1	272.1	272.1	270.3	372.3	332.1	342.9	341.1	337.0
EUG4	282.8	276.7	267.9	263.5	253.1	241.5	252.9	214.0	210.5	205.2	203.6
EU17	216.1	211.1	200.7	188.7	176.2	168.6	314.9	321.1	272.6	243.1	233.1
Non-OECD Total	578.9	566.3	553.6	543.3	532.4	522.8	426.7	420.1	419.1	413.0	403.9

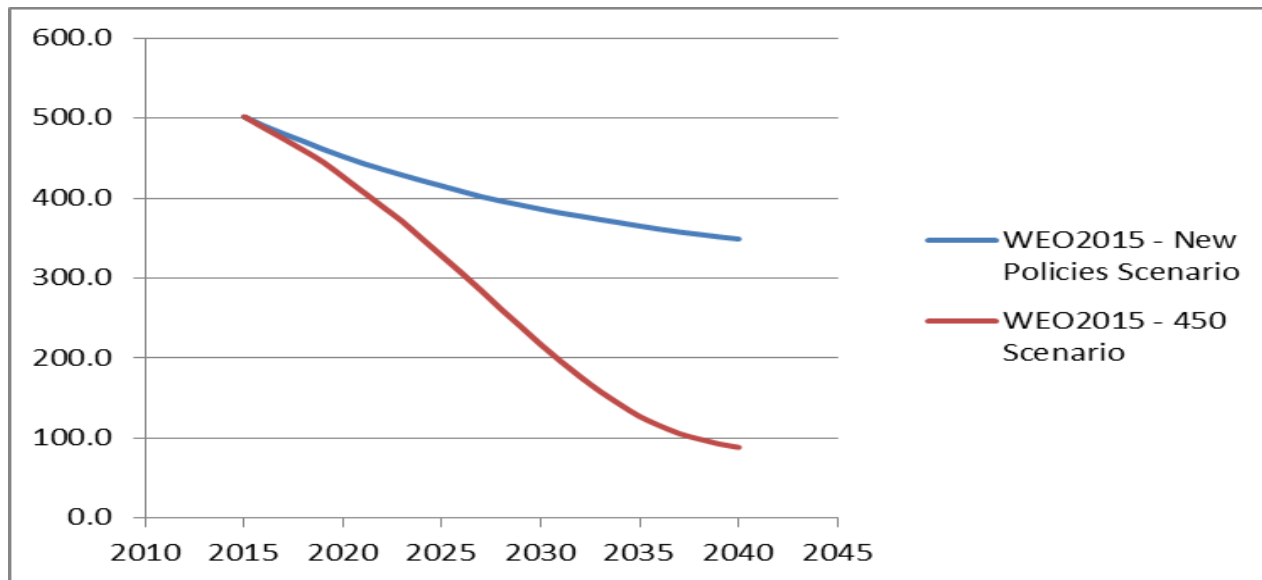
- WEO – 3 scenarios modeled – “Current Policies”, “New Policies” and “450 ppm”
- Output – average CO2 intensity; new generation intensity (BM)

World Energy Outlook (WEO)

– 12 countries and 13 regions



WEO model – 2 scenarios of interest to the GHG Harmonisation TWG



- WEO (NPS) – “New Policy Scenario” models the impact of adopted plans and the *unconditional* elements of the INDCs
- WEO (450ppm) – “450 Scenario” models the decarbonisation path required to meet COP21 objectives - 2°C

What next?

- For COP22:
 - Disaggregate regional data using correlated data (e.g. GDP/cap, elect. demand growth, etc.) or use regional data directly for individual countries; to be analysed with IEA
 - Establish OM and BM, CM for LDCs, islands and countries with small grids; to be analysed with UNFCCC
 - Finalise OM and BM using Interim Dataset v1.0 and above
- Next year:
 - Finalise disaggregation;
 - Review IEA generation dispatch model to improve OM
 - Review weighting of OM / BM for LDCs, high/low growth, etc.

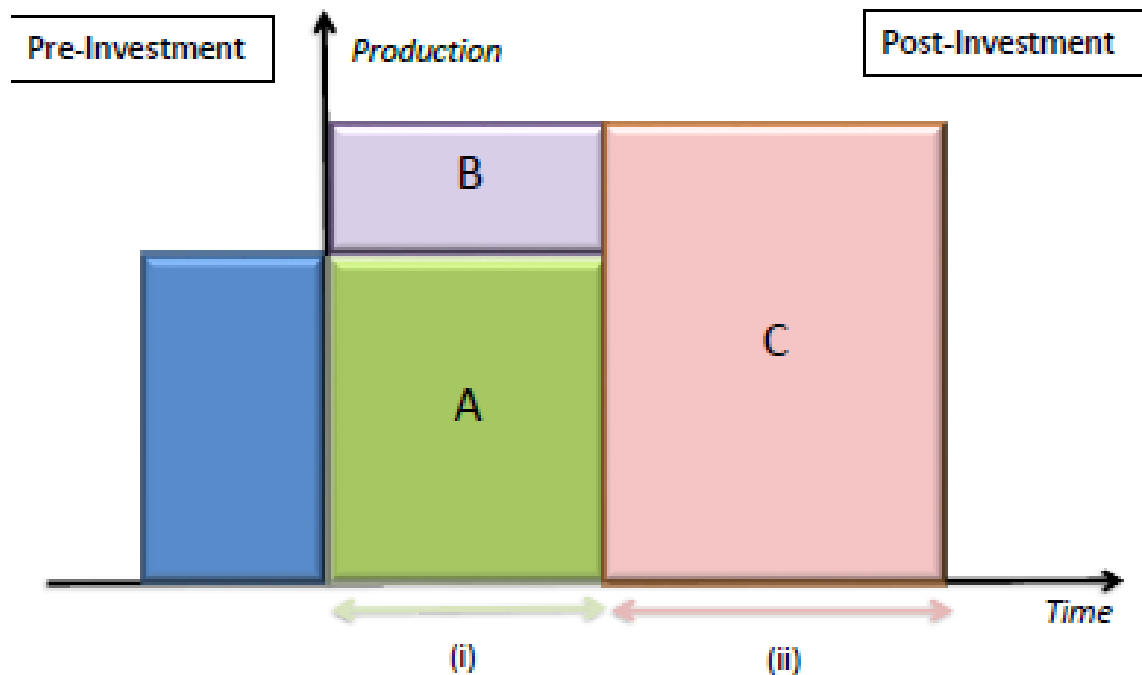
Proposed changes to EIB Carbon Footprinting Methodology in Energy

- Network investments in electricity and gas
 - Improving quality of service, security of supply, or mandated investments (no carbon footprint impact)
 - Rehabilitation/replacement resulting in reduction of losses and/or fugitive emissions (% savings of existing emissions)
 - Meeting demand growth (all additional losses/emissions)
- Rehabilitation/refurbishment of industrial facilities
 - Energy efficiency savings apply only to existing output capacity and only for remaining economic life of existing facilities
 - Emissions baseline for increased capacity and life extension is BAT greenfield

Rehabilitation / Refurbishment of industrial facilities

Baselines:

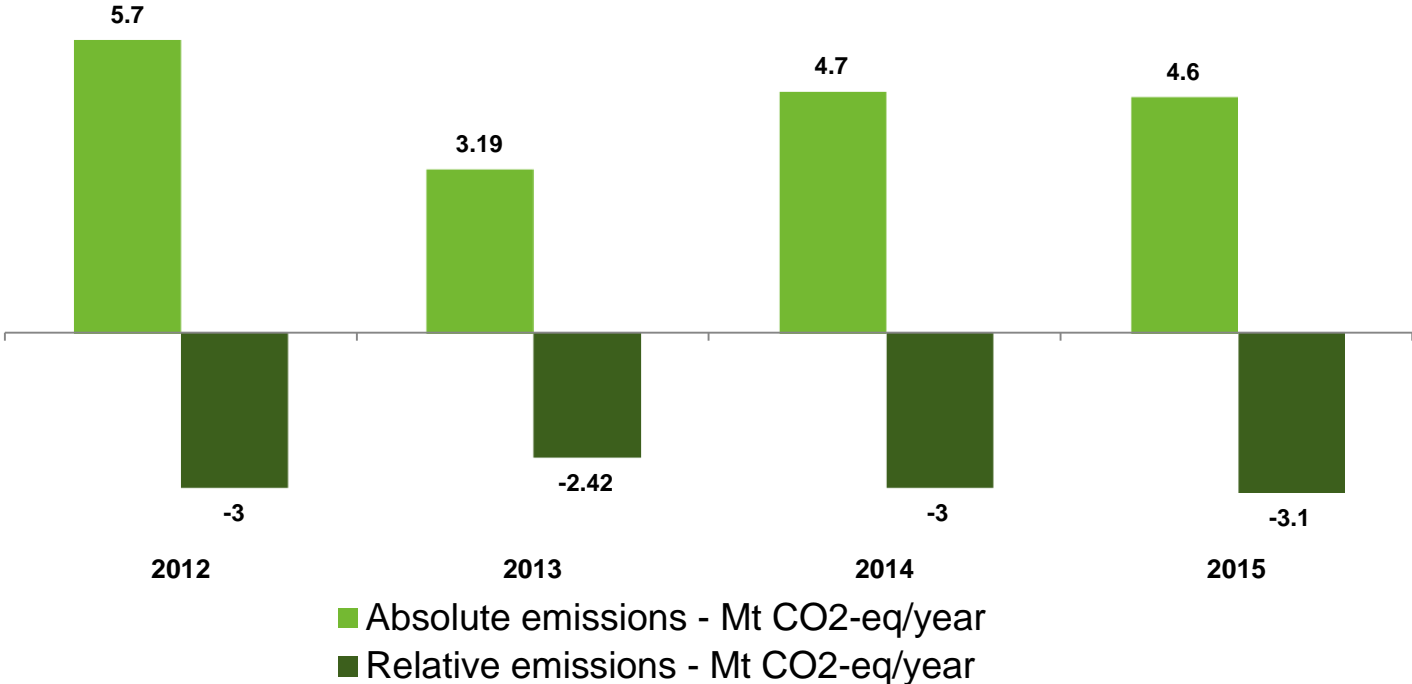
The baseline should be viable for the expected project lifetime. Equipment that is evidently operationally unviable (e.g. at the end of equipment life, or expected to cease operating due to high costs or other market barriers, or not conforming to legal requirements), do not constitute an acceptable baseline.



PART 2 : Link from carbon footprinting to climate finance tracking

EIB Carbon Footprint (audited)

Emissions from direct EIB financing (weighted by EIB's share of the project cost)



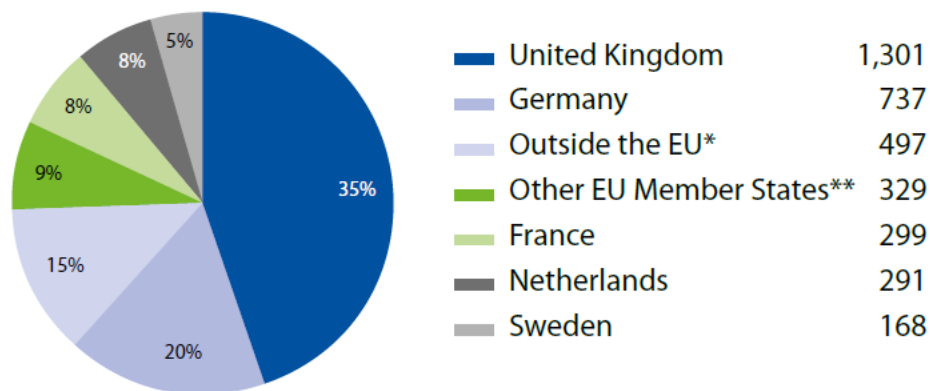
Carbon footprint data for projects

- Emissions calculated for investment projects at appraisal, and are then reported each year on basis of lending volume i.e. Finance contracts signed.
- Carbon Footprinting Methodologies is on EIB website – this CSO event on Carbon Footprinting today allows for further discussion and input
- Absolute and Relative figures for projects are published on EIB’s public register
- The annual Carbon Footprint Exercise (signatures in a calendar year) was audited for the last 3 years as part of EIB’s sustainability audit.

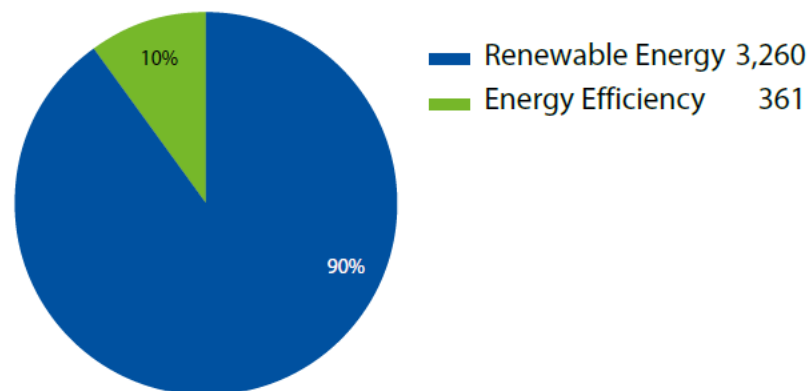
PART 3 : Impact Reporting on Green Bonds

In 2015, EUR 3.6bn of proceeds from CAB issuance were allocated to 63 projects in 30 countries of which 15 were EU Member States (EUR 3.3bn in 2014 to 56 projects in 28 countries).

Share and amount of 2015 CAB allocation by destination
(% and EUR m)



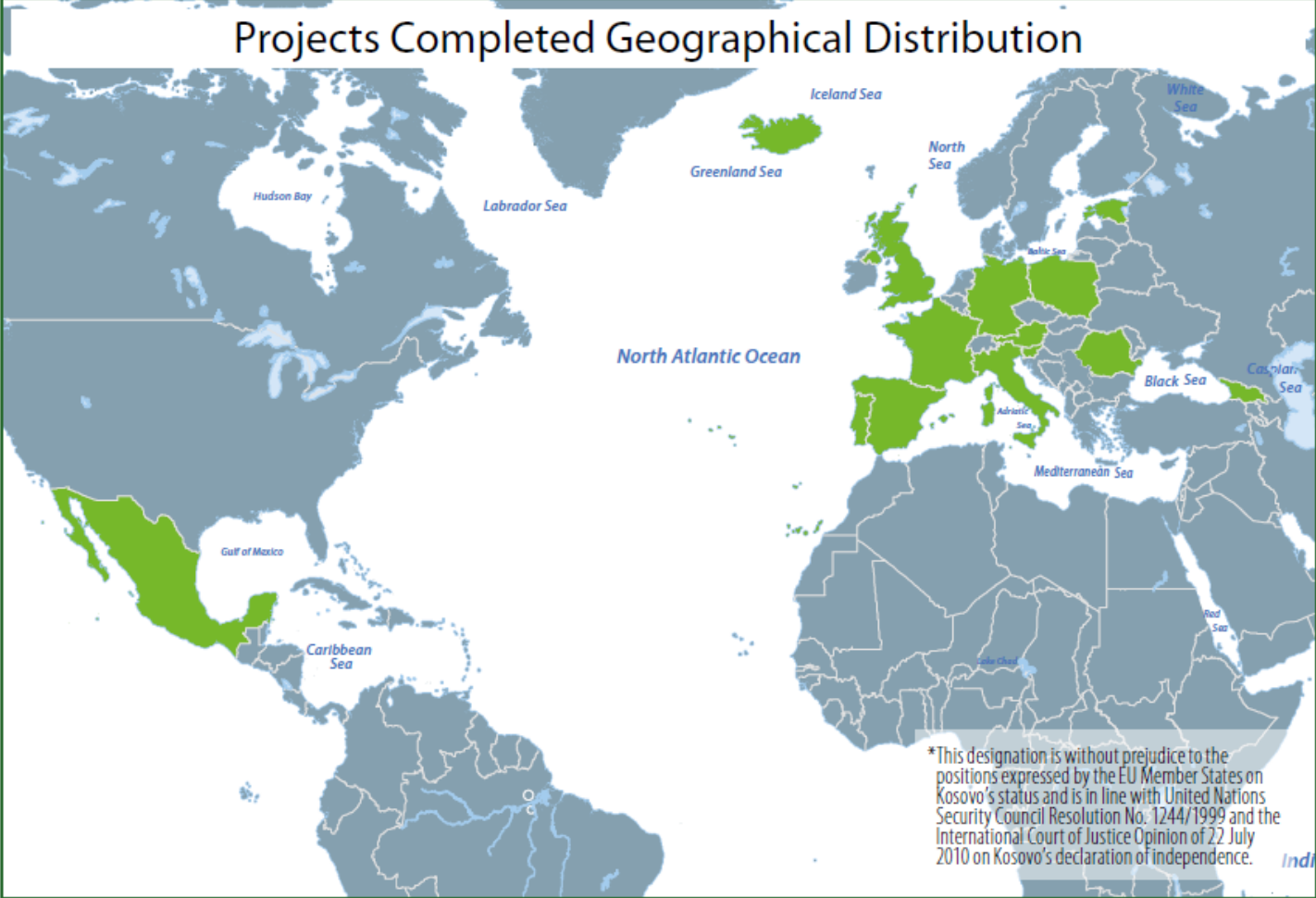
2015 CAB allocation per sector
(% and EUR m)



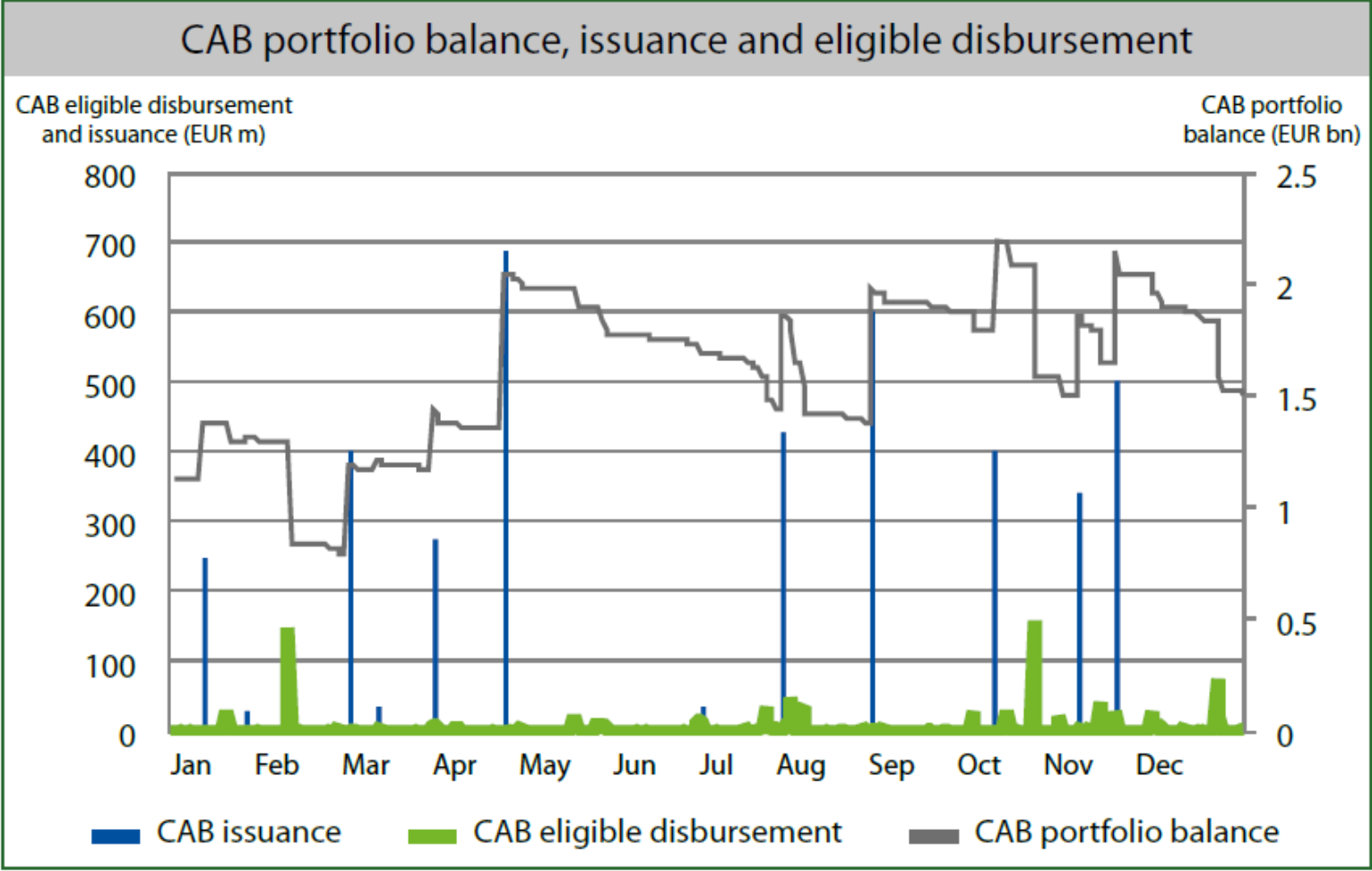
* Non-EU countries where CAB proceeds were allocated in 2015 are China, Costa Rica, DRC (Congo), Egypt, Georgia, India, Israel, Jordan, Kenya, Liberia, Morocco, Russian Federation, South Africa, Turkey and Zambia.

** Other EU Member States where CAB proceeds were allocated in 2015 are Austria, Belgium, Czech Republic, Finland, Greece, Italy, Poland, Romania, Slovenia and Spain.

Climate Awareness Bonds (CAB) 2008 - 2015



A significant difference for CAB is that impact reporting on a project is proportional to the disbursements.



Reporting indicators for Climate Awareness Bonds

Statistics are provided for investment loans which represent 89% of total disbursements. For the remaining disbursements which relate to intermediated loans, project statistics may be provided at completion stage. The following statistics are not based on aggregated data of the projects, but on pro-rata data weighted by CAB-allocations in 2015.

Annual expected impact based on aggregate data of projects cost prorated to CAB-relevant disbursements in 2015 (investment loans only)

Absolute GHG emissions	502 kt CO ₂ -equivalent
GHG emissions saved / avoided	1,289 kt CO ₂ -equivalent
Gross additional installed electricity capacity	665 MW-e
Gross additional installed heat capacity	115 MW-th
Additional electricity produced	2,378 GWh-e
Additional heat produced	635 GWh-th
Energy (heat and electricity) saved	531 GWh
Additional length of transmission line	407 km

	Projects receiving CAB allocations 2007-2015	Of which projects completed	Of which projects completed in alignment with EIB's Environmental and Social standards*
Number of Projects	131	36	36

*Two out of 36 completed projects are still undergoing ex-post assessment, but are generally considered to have complied with EIB's standards as well

Thank You

Questions?

