

Reporting and compliance options

FuelEU Maritime

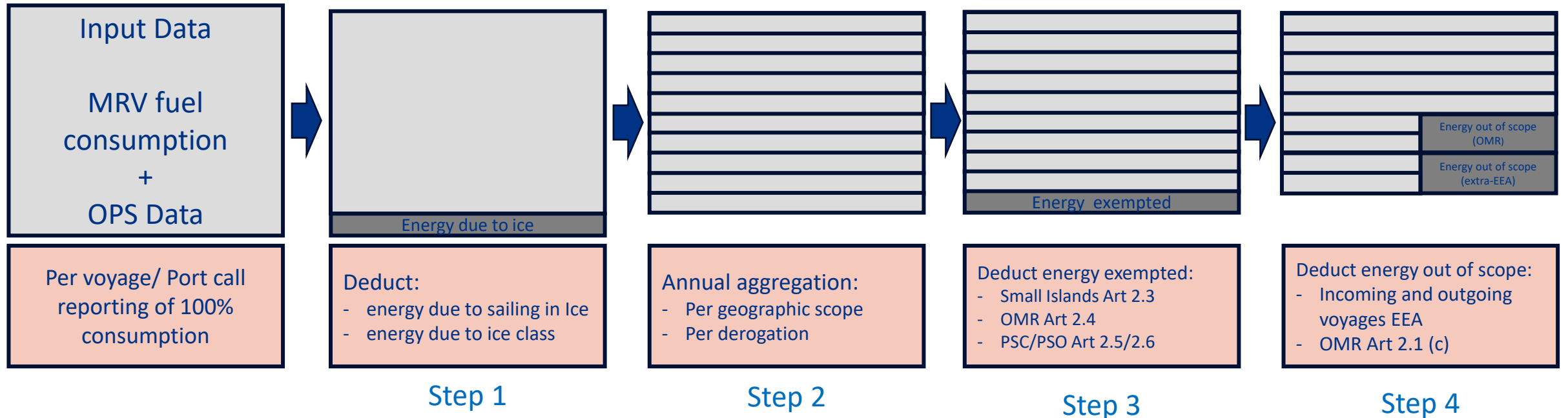
Unit 1.1 Sustainability

Department 1: Sustainability and Technical Assistance

28 November 2024

1. Allocation of the energy in the FUEL EU Report by ISM companies
2. Calculation of the GHG intensity of the energy used by the ships
3. Calculation of Compliance Balance of the reporting period
4. Compliance options:
 1. Borrowing
 2. Banking
 3. Pooling
5. Calculation examples

Reporting of energy used on board



Ice derogations are calculated based on MRV data

- Annex IV of FEUM sets the calculation for the exclusion of the energy due to Ice class and due to sailing in ice conditions: the mass to be considered in compliance balance calculation is Mass Adjusted after the deduction
- due to technical characteristics of the ship having ice class IA or super IA or an equivalent class - x
- due to sailing in ice conditions (for ice classes IC IB IA or IA Super or equivalent) until 31 December 2034 - z

Energy
Energy additional due to ice class – x
Energy voyages, total – y
Energy additional due to ice conditions – z
Energy voyages, open water – a
Energy voyage, ice conditions – b
Energy voyages, ice conditions – c

$$x + z = \text{Energy additional ice}$$

$$\sum E_{i \text{ additional ice}} = E_{\text{additional ice}}$$

For each fuel i,

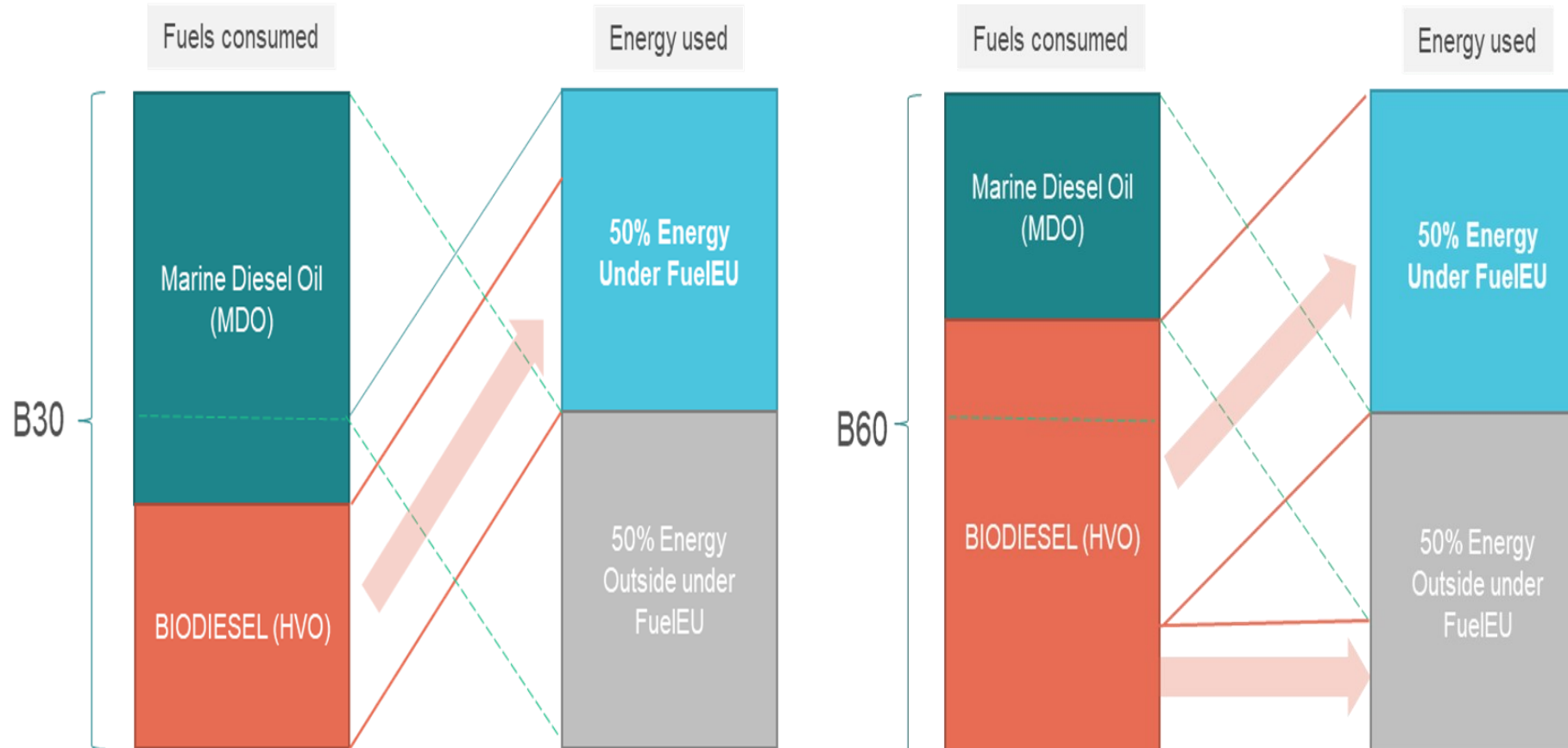
$$E_{i, \text{additional ice}} \leq M_i \times LCV_i$$

The $[M_{i,A}]$ adjusted mass of fuel is calculated as follows:

$$M_{i,A} = M_i - \frac{E_{i, \text{additional ice}}}{LCV_i}$$

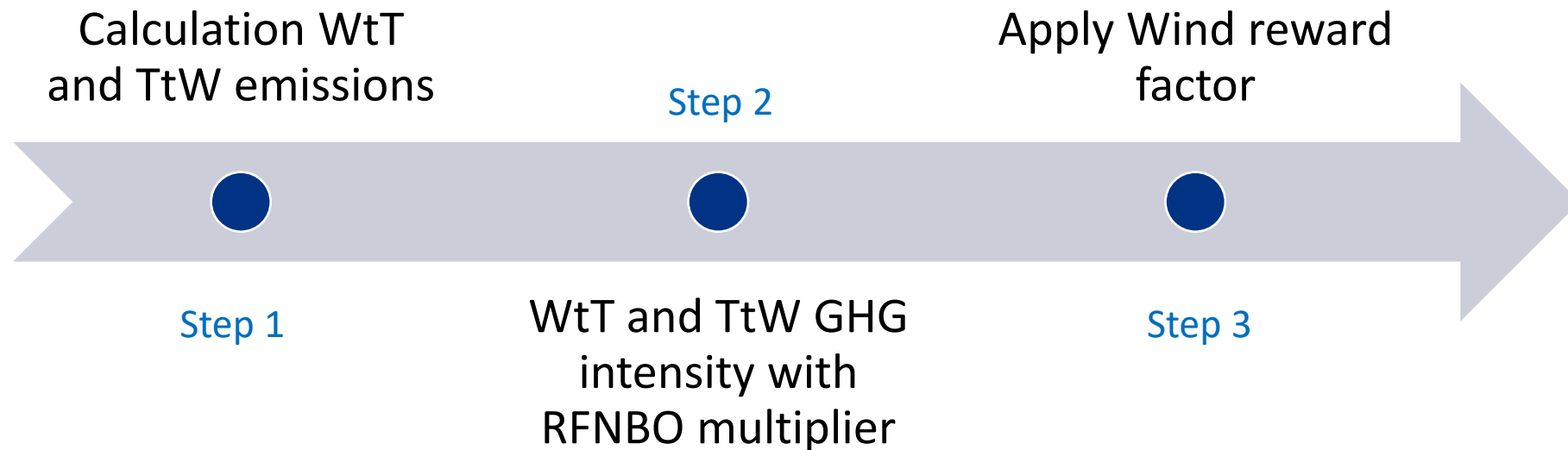
Mass to be used for the calculation of GHGI actual

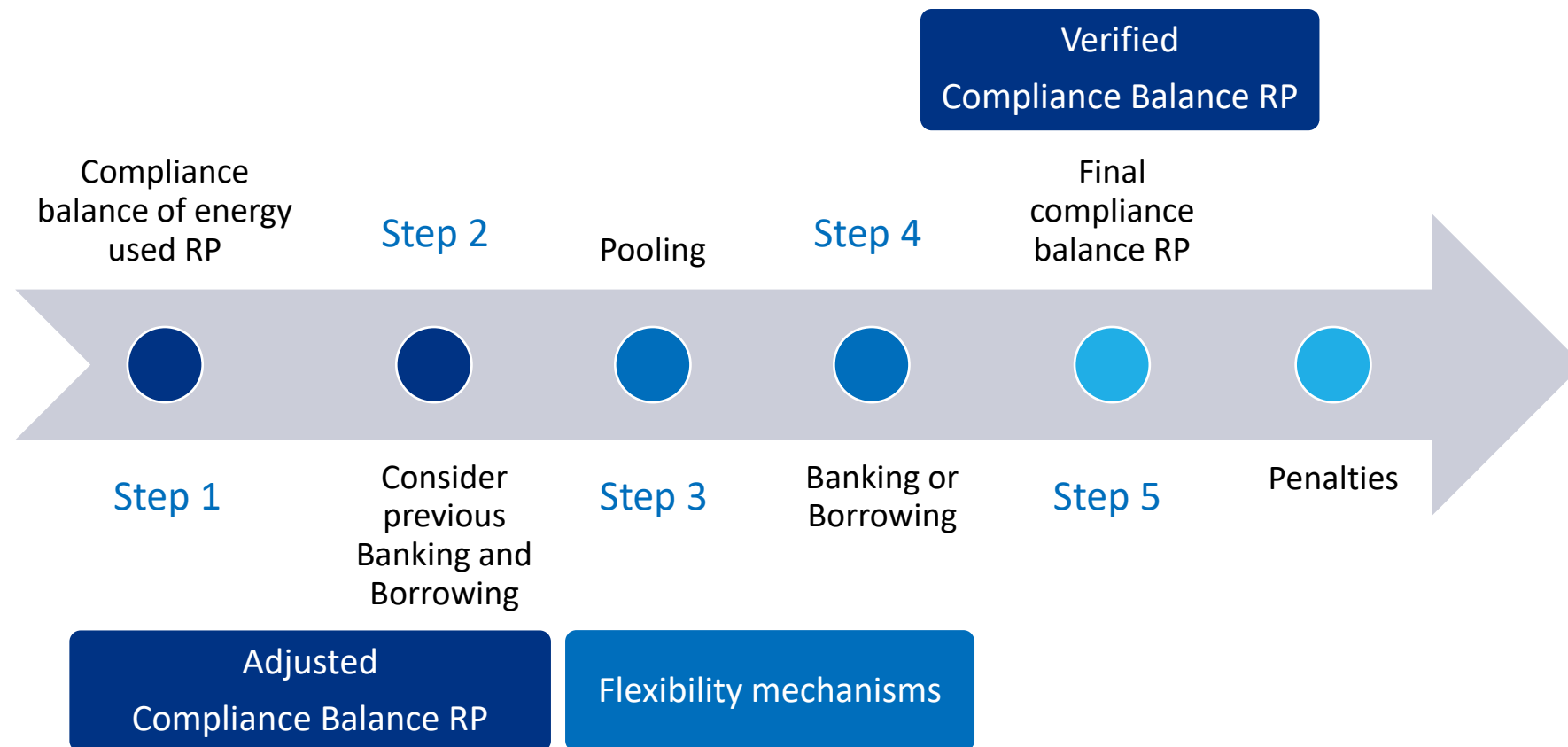
After the aggregation companies may allocate annually fuels to the scope of 50% of energy



Also applies to voyages arriving at or departing from a port of call located in an outermost region under the jurisdiction of a Member State - Art. 2.1 (c)

$$\mathbf{GHG\ intensity} = f_{wind} \times (\mathbf{WtT} + \mathbf{TtW})$$





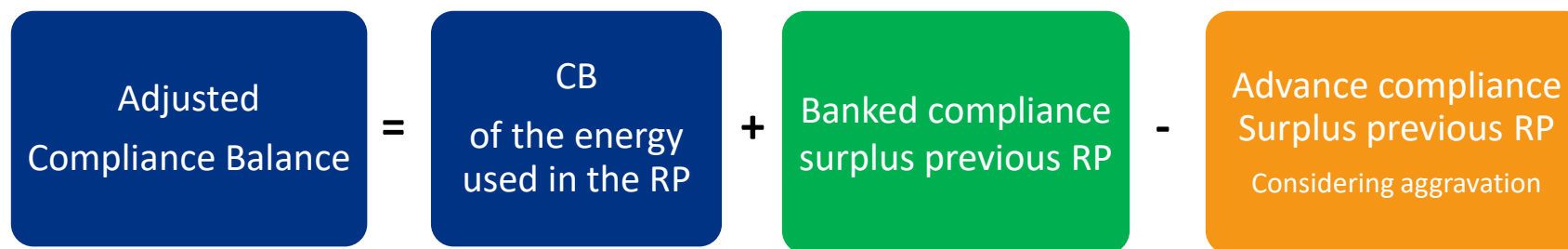
Calculation Compliance Balance energy used in Reporting Period

$$\text{Compliance Balance RP}^* (g_{CO_2eq}) = (GHGIE_{target} - GHGIE_{actual}) \times \left[\sum_i^{n \text{ fuel}} M_i \times LCV_i + \sum_i^l E_i \right]$$

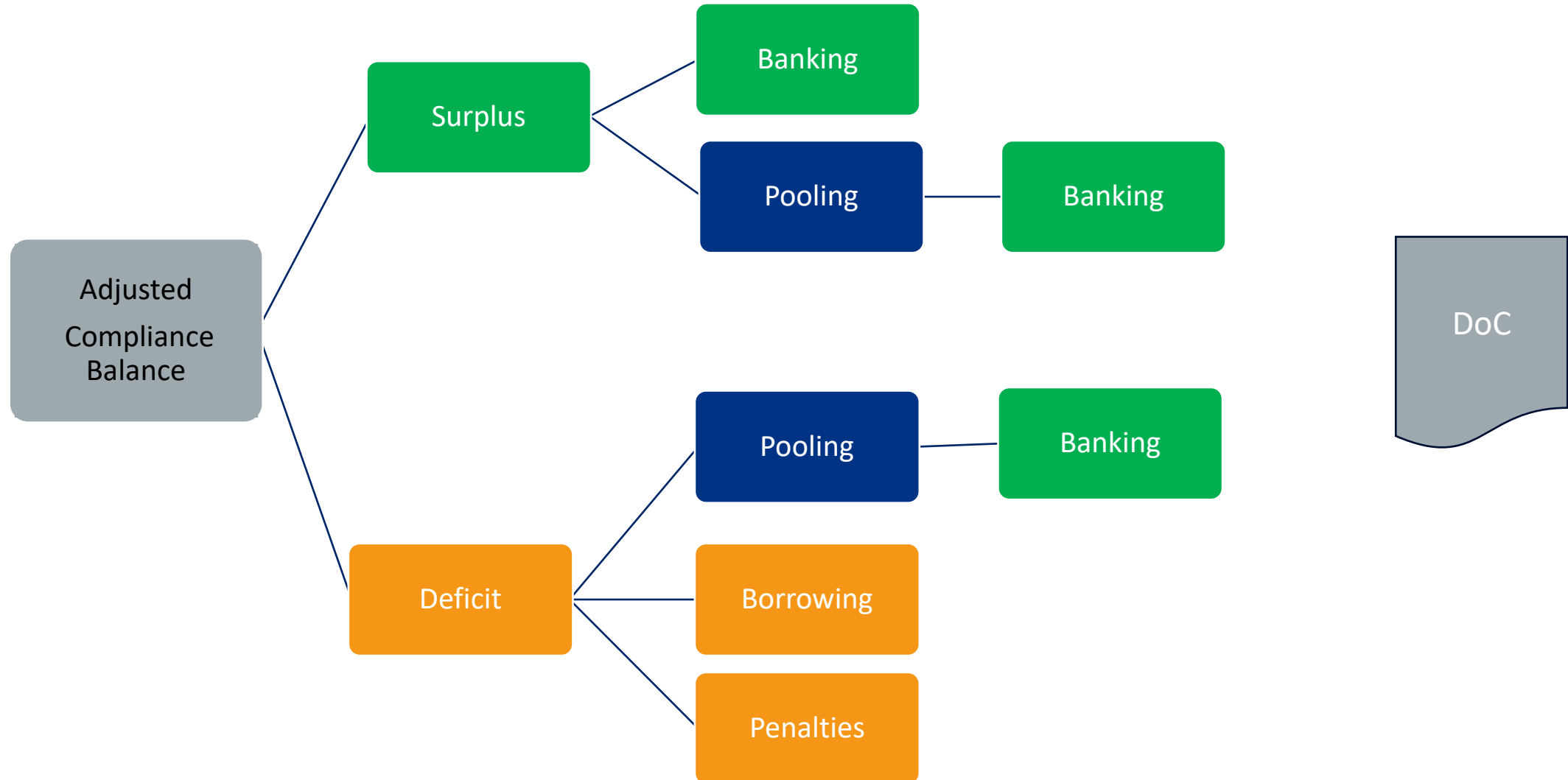
Reference value	91.16 gCO ₂ eq/MJ
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Year	Reduction target	Target value gCO ₂ eq/MJ
2025	2.0%	89.34
2030	6.0%	85.69
2035	14.5%	77.94
2040	31.0%	62.90
2045	62.0%	34.64
2050	80.0%	18.23




* Compliance balance of the energy used in the Reporting period, before considering Banking and borrowing from previous reporting periods



- **Adjusted Compliance balance** - compliance balance before Flexibility Mechanisms, outcome before the 31 march of the Verification period, but taking in consideration banking and borrowing mechanism applied in previous verification periods.
- **Banked compliance surplus** can be from other different reporting periods since this could be cumulative through different RPs
- **Advance compliance surplus** is only from the previous Reporting Period



Borrowing

Year N	Year N	Year N+1
		
CB = (A) < 0	CB + (A) = 0	CB - 1,1x(A) ≥ 0
Deficit = (A) Ship non-compliant	Advance compliance surplus = (A)	Aggravated

Specific Rules:

$$1 - Amount \leq 2\% \times GHGIE_{target\ Year\ N} \times \left[\sum_i^{n\ fuel} M_i \times LCV_i + \sum_i^l E_i \right]$$

2 – Not possible to borrow for more than 2 consecutive periods;

3 – If the ship has no port calls in the following RP, it has to pay a penalty corresponding to the aggravated advance compliance surplus.

To which reduction target does the 2% apply?




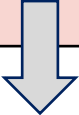
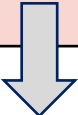

It is related to the current reporting period, not the one from which the compliance balance is being borrowed.

Example: for a borrowing related to RP 2029, where an advance compliance balance is being borrowed from 2030, the 2% limit should be calculated using with $GHGIE_{target}$ of 2029.

Can a ship use borrowing following a pooling?

NO, the ship cannot use pooling and borrowing in the same verification period, but a ship with an advance compliance surplus from a previous RP can participate in a pool.

Banking

Year N	Year N+1	Year N+2
		
$C_{Bi} > 0$	$C_{Bi} > 0$	$C_{Bi} < 0$
Banked Surplus 	Banked Surplus 	Use Banked Surplus 

Does the banked surplus have an expiration date?

NO, the banked surplus can be cumulatively banked with no expiration and can be used for pooling in the following reporting periods.

Pooling

Pre-conditions:

- The ship is in the scope of FuelEU;
- The ship hasn't borrowed compliance in the current verification period;
- The ship is not included in another pool of compliance balance for GHG intensity;
- **The sum of the initial compliance balance of the ships included in the pool is positive** (including banking and borrowing of previous periods);
- Ships in the pool must have a valid DoC, if they were in the scope of FuelEU in previous VP.

Company request for pooling:

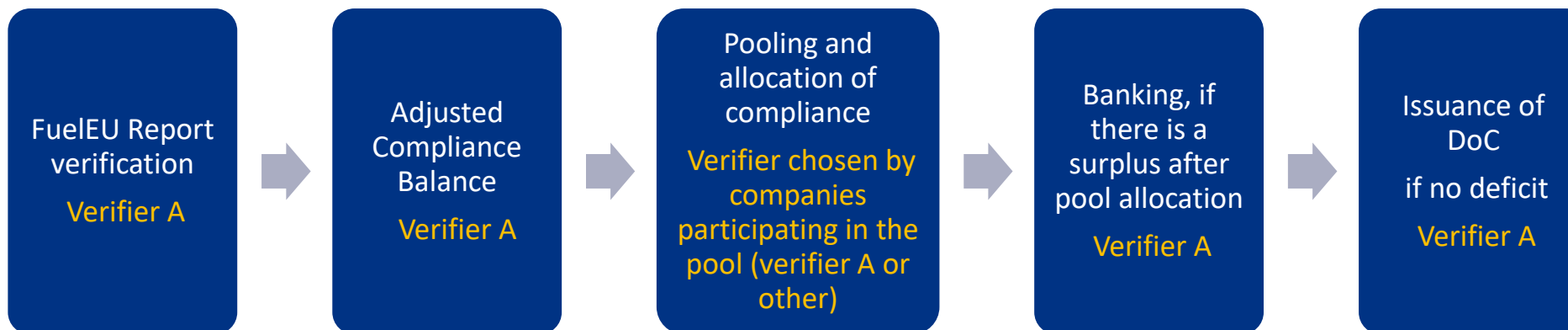
- Identifies Ships and responsible companies;
- Propose allocation of the total compliance balance of the pool to each individual ship;
- Identifies the verifier for the pool.



Rules for pooling allocation:

- ships which had a compliance deficit may not have a higher compliance deficit after the allocation;
- ships with a compliance surplus may not have a compliance deficit after the allocation.

Pooling



Rounding Rules



	Unit	Rounding proposal for FUEL EU
Mass Fuel	m Tonnes	Five decimal
Volume	m ³	Five decimal
Mass Cargo		Five decimal
Density	M tonnes/m ³	Five decimal
Emissions	m Tonnes	Five decimal
GHG Intensity	gCO ₂ eq/MJ	Five decimal
LCV	MJ/g	Five decimal
EF WtT	gCO ₂ eq/MJ	Five decimal
Cf CO ₂	gGHG/gFuel	Five decimal
Cf CH ₄	gGHG/gFuel	Five decimal
Cf N ₂ O	gGHG/gFuel	Five decimal
Cslip	Fraction (0..1)	Five decimal
Slip EF	gGas/ gFuel	Five decimal
Energy	GJ	Five decimal
Electricity	MWh	Five decimal
Electricity EF	gCO ₂ eq/KWh	Five decimal
Distance	n mile	Five decimal
Time	hour	Five decimal
Compliance Balance	gCO ₂ eq	Five decimal
GHGIE target	gCO ₂ eq/MJ	Five decimal
GHGIE actual	gCO ₂ eq/MJ	Five decimal
Penalty	€	integer

Calculation examples

SCENARIOS	1	2	3	4	5	6	7	8	9	10	11
	HFO/MDO intra-EU	HFO/MDO/OPS intra- EU	HFO + MDO / OPS Intra-EU (NC Port Calls)	HFO/MDO/OPS/Wind intra-EU	HFO + UCO / OPS intra-EU	HFO/FTD/OPS intra- EU	HFO+UCO/OPS extra- EU	E-MeOH intra-EU	LNG/ HPLS D extra-EU	LNG/ LPMS Intra-EU	LBM/HLPMS Intra-EU
Intra/Extra	Intra	Intra	Intra	Intra	Intra	Intra	Extra	Intra	Extra	Intra	Intra
Main (tonnes)	12000	12000	12000	12000	12000	12000	12000 5472,84	13 000	20000 9043,39	12000	12000
	HFO	HFO	HFO	HFO	HFO	HFO	HFO	HFO	HFO	HFO	HFO
Aux (tonnes)	1 400	2 000	1200	2 000				2 000	2200		
	MDO	MDO	MDO	MDO				MDO	2200,00 MDO		
Energy (million MJ)	545,78	546,1	546,1	564,1	546,1	546,0 (588)	545,8 (281,4)	546,1	1076 (538)	1076,00	1076,00
OPS (million kWh)	-	4,75	2,38	4,75	4,74	4,74	4,74				
Biofuel/RFNBO	-	-	-		1220	1000	1220	25277			2000
					HVO/UCO	FTD	HVO/UCO	e-MeOH			LBM
Fwind	-	-		0,97	-	-		-	-	-	
CO _{2eq} WtW (tonnes)	4,99E+04	4,84E+04	4,92E+04	4,84E+04	4,46E+04	4,46E+04	2,04E+04	3,93E+04	4,23E+04	9,79E+04	9,06E+04
GHG Intensity (tCO _{2eq})	91,50	88,67	90,09	86,01	81,70	75,78	72,38	6,79	78,67	91,00	84,20
Compliance balance 2025 (tonnes)	-1180,64	363,92	-411,08	1815,71	4167,90	7398,82	4771,89	45045,17	5738,42	-1789,51	5526,89
Penalty (€)	753.470		266.453								1.148.318



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