Ref. Ares(2024)4361756 - 17/06/2024

EUROPEAN
COMMISSION

Brussels, 17.6.2024
C(2024) 4008 final

ANNEX

ANNEX

to the

COMMISSION DECISION

on a request for an internal review of Commission Delegated Regulation (EU) 2023/2485 submitted in accordance with Article 10 of Regulation (EC) No 1367/2006

EUROPEAN COMMISSION

Mairead McGuinness
Member of the Commission

Brussels
FISMA.B.2/

Dear Madam, Dear Sir,

I am referring to your request sent on 14 January 2024 to the European Commission for an internal review in accordance with Article 10 of Regulation (EC) 1367/2006 (the Aarhus Regulation) of Commission Delegated Regulation (EU) 2023/2485 of 27 June 2023 amending Delegated Regulation (EU) 2021/2139 establishing additional technical screening criteria for determining the conditions under which certain economic activities qualify as contributing substantially to climate change mitigation or climate change adaptation and for determining whether those activities cause no significant harm to any of the other environmental objectives (the Amended Climate Delegated Act).

The Commission has considered the admissibility of your request in light of the provisions of Title IV of the Aarhus Regulation, in particular its Articles 10 and 11. The Commission considers that the organisations you represent comply with the criteria set out in Article 11 of the Aarhus Regulation and that they are therefore entitled to request an internal review. Your request was lodged by the deadline, indicating the grounds for your request for a review, in accordance with the second subparagraph of the Article 10(1) Aarhus Regulation.

The Commission has carefully assessed your allegations and considers that your request is unfounded. Its detailed assessment of the grounds for the review is in the Annexes to this letter, as follows:

- Annex I contains the Commission's response concerning the admissibility of the request in general and provides a description of the methodology and procedure for developing the technical screening criteria for the activities challenged by the three organisations who requested the review.

- Annex II contains the Commission's response to the claims made in the request submitted by the three organisations with the number 86 allocated to it in the Commission's repository of requests for internal review.

On the basis of the detailed reasons given in the Annexes to this letter, the Commission considers that the Amended Climate Delegated Act complies with the applicable EU legislation.

If you disagree with this reply, you may bring the matter before the Ombudsman or the General Court in accordance with the conditions laid down in Articles 228 or 263, respectively, of the Treaty on the Functioning of the European Union.

Yours faithfully,

Mairéad McGuinness

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GLOSSARY

Term or acronym	Meaning or definition
2030 CTP	2030 Climate Target Plan, supporting the Fit for 55 legislative package Commission Communication 'Stepping up Europe's 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people' ([1]), accompanied by Impact Assessment ([2]) Further analysis on the transport sector contribution to the 2030 CTP is set out in the Commission Staff Working Document (sections 5 and 6) ([3]) accompanying Commission Communication 'Sustainable and Smart Mobility Strategy – putting European transport on track for the future' ([4])
2040 CTP	2040 Climate Target Plan Commission Communication 'Securing our future: Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society' ([5]), accompanied by Impact Assessment ([6])

([1]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'Stepping up Europe's 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people (COM/2020/562 final).

([2]) Commission Staff Working Document, Impact Assessment accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people' (SWD(2020) 176 final).

([3]) Commission Staff Working Document Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions Sustainable and Smart Mobility Strategy – putting European transport on track for the future (SWD/2020/331 final).

([4]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions Sustainable and Smart Mobility Strategy – putting European transport on track for the future (COM/2020/789 final).

([5]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society (COM/2024/63 final).

([6]) Commission Staff Working Document Impact Assessment Report Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society (SWD/2024/63 final), Part 3 on transport.

Aarhus Regulation	Regulation (EU) 1367/2006 ([7])
Action Plan on Financing Sustainable Growth	Commission Communication 'Action Plan: Financing Sustainable Growth' ([8])
AFIR	Alternative Fuels Infrastructure Regulation (EU) 2023/1804 ([9])
Amended Climate Delegated Act	Regulation (EU) 2023/2485 ([10])
ASTM	American Society for Testing and Materials
Aviation activities	Activities in sections 3.21., 6.18. and 6.19. to Annex I of the Climate Delegated Act (as amended by the Amended Climate Delegated Act)
AZEA	Alliance for Zero-Emission Aviation ([11])
CAEP	ICAO's Committee on Aviation Environmental Protection
CAJU	Clean Aviation Joint Undertaking
Capex	Capital expenditure

([7]) Regulation (EC) No 1367/2006 of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies (OJ L 264, 25.9.2006, p. 13).

([8]) Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions Action Plan: Financing Sustainable Growth (COM(2018) 097 final).

([9]) Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU (OJ L 234, 22.9.2023, p. 1).

([10]) Commission Delegated Regulation (EU) 2023/2485 of 27 June 2023 amending Delegated Regulation (EU) 2021/2139 establishing additional technical screening criteria for determining the conditions under which certain economic activities qualify as contributing substantially to climate change mitigation or climate change adaptation and for determining whether those activities cause no significant harm to any of the other environmental objectives (OJ L, 2023/2485, 21.11.2023).

([11]) For more information, see: https://defence-industry-space.ec.europa.eu/eu-aeronautics-industry/alliance-zero-emission-aviation_en

CBAM	Carbon Border Adjustment Mechanism Regulation (EU) 2023/956 ([12])
Climate Delegated Act	Delegated Regulation (EU) 2021/2139 ([13])
Climate Delegated Act Impact Assessment	Impact Assessment accompanying the Climate Delegated Act ([14])
Commission	European Commission
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CountEmissions EU	Proposal for a Regulation 'on the accounting of greenhouse gas emissions of transport services' ([15])
ECJ	Court of Justice of the European Union
DNSH (or 'do no significant harm')	Do no significant harm as referred to in Article 3 (b) and (d) of the Taxonomy Regulation
EASA	European Union Aviation Safety Agency
EED	Directive (EU) 2023/1791 ([16])
EEDI	Energy Efficiency Design Index

([12]) Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism (OJ L 130, 16.5.2023).

([13]) Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives (OJ L 442, 9.12.2021, p. 1).

([14]) Commission Staff Working Document, Impact Assessment Report Accompanying the Document Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives (SWD(2021) 152 final).

([15]) Proposal for a Regulation of the European Parliament and of the Council on the accounting of greenhouse gas emissions of transport services (COM/2023/441 final).

([16]) Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (OJ L 231, 20.9.2023, p. 1).

EEXI	Energy Efficiency Existing Ship Index
EMSA	European Maritime Safety Agency
EPC	Energy Performance Certificate
ESSF-SAPS	Sustainable Power for Ships subgroup of the European Sustainable Shipping Forum
ETS	EU Emissions Trading System Directive 2003/87/EC ([17])
EU	European Union
European Climate Law	Regulation (EU) 2021/1119 ([18])
European Green Deal	Communication from the Commission: The European Green Deal ([19])
Fit for 55	Communication from the Commission: Fit for 55: delivering the EU's 2030 Climate Target on the way to climate neutrality ([20])
Fit for 55 package	Legal documents on Delivering the European Green Deal ([21])
FuelEU Maritime (or 'FuelEU')	Regulation (EU) 2023/1805 ([22])

([17]) Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC (OJ L 275, 25.10.2003, p. 32).

([18]) Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (OJ L 243, 9.7.2021, p. 1).

([19]) Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal (COM/2019/640 final).

([20]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality (COM/2021/550 final).

([21]) For more information, see: https://commission.europa.eu/publications/legal-documents-delivering-european-green-deal_en

([22]) Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC (OJ L 234, 22.9.2023, p. 48).

GHG	Greenhouse gas
ICAO	International Civil Aviation Organisation
ICCT	International Council on Clean Transportation
IEA	International Energy Agency
IMO	International Maritime Organisation
Interinstitutional Agreement on Better Law-Making ('Better Regulation' or 'Interinstitutional Agreement')	Interinstitutional Agreement between the European Parliament, the Council of the European Union and the European Commission on Better Law-Making ([23])
LCA	Life-cycle analysis
LNG	Liquefied natural gas
MARIN	Maritime Research Institute Netherlands
Maritime activities	Activities in sections 6.10. and 6.11. of Annex I to the Climate Delegated Act (as amended by the Amended Climate Delegated Act)
MARPOL	International Convention for the Prevention of Pollution from Ships ([24])
MEP	Member of the European Parliament
MEPC	IMO's Marine Environment Protection Committee
MJ	Megajoule

([23]) Interinstitutional Agreement between the European Parliament, the Council of the European Union and the European Commission on Better Law-Making (OJ L 123, 12.5.2016, p. 1).

([24]) For more information, see: https://www.imo.org/en/about/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx

MSEG	Member States Expert Group on sustainable finance referred to in Article 24 of the Taxonomy Regulation ([25])
NGO	Non-governmental organisation
NT	New Type
NZEB	Net Zero Energy Building
OEMs	Original Equipment Manufactures
Opex	Operational expenditure
Paris Agreement	Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) ([26])
Platform on Sustainable Finance (or 'Platform')	Platform on Sustainable Finance as referred to in Article 20 of the Taxonomy Regulation ([27])
Platform's March 2022 Report	Report of the Platform on Sustainable Finance published in March 2022 ([28])
Platform's November 2022 Report	Report of the Platform on Sustainable Finance published in November 2022 ([29])
R&D	Research & Development

(25) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&do=groupDetail.groupDetail&groupID=3603

(26) Paris Agreement Under the United Nations Framework Convention on Climate Change (OJ L 282, 19.10.2016, p. 4).

([27]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&do=groupDetail.groupDetail&groupID=3731

(28) For more information, see: https://finance.ec.europa.eu/document/download/c9c66978-63bc-47ca-bbac-fc758c454370_en?filename=220330-sustainable-finance-platform-finance-report-remaining-environmental-objectives-taxonomy_en.pdf , and its Annex https://finance.ec.europa.eu/document/download/fd418fe7-7f84-479f-8c47-d75533353808_en?filename=220330-sustainable-finance-platform-finance-report-remaining-environmental-objectives-taxonomy-annex_en.pdf

(29) For more information, see: https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf

RED	Renewable Energy Directive (EU) 2018/2001 ([30])
ReFuelEU Aviation	Regulation (EU) 2023/2405 ([31])
ReFuelEU Aviation impact assessment	Impact Assessment accompanying the Proposal for a Regulation on ensuring a level playing field for sustainable air transport ([32])
RFNBO	Renewable fuels of non-biological origin
RLCF	Renewable and Low Carbon Fuels Industrial Alliance
SAF	Sustainable Aviation Fuels
SRIA	Strategic Research and Innovation Agenda
Staff Working Document (or 'SWD')	Staff Working Document accompanying the Amended Climate Delegated Act ([33])
Steer Study (or 'Steer Report')	Study on sustainable finance taxonomy for the aviation sector ([34])

(30) Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82).

([31]) Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on ensuring a level playing field for sustainable air transport (OJ L, 2023/2405, 31.10.2023).

([32]) Commission Staff Working Document Accompanying the Proposal for a Regulation of the European Parliament and of the Council on ensuring a level playing field for sustainable air transport (SWD/2021/633 final).

([33]) Commission Staff Working Document Accompanying the document Commission Delegated Regulation (EU) 2023/2486 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to the sustainable use and protection of water and marine resources, to the transition to a circular economy, to pollution prevention and control or to the protection and restoration of biodiversity and ecosystems and for determining whether that economic activity causes no significant harm to any of the other environmental objectives and amending Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities and the Commission Delegated Regulation (EU) 2023/2485 amending Delegated Regulation (EU) 2021/2139 by establishing additional technical screening criteria for determining the conditions under which certain economic activities qualify as contributing substantially to climate change mitigation or climate change adaptation and for determining whether those activities cause no significant harm to any of the other environmental objectives (SWD/2023/0239 final).

([34]) For more information, see: European Commission, Directorate-General for Mobility and Transport, Wiener, P., Scott, M., Toro, A. et al., Sustainable finance taxonomy for the aviation sector – Final report, Publications Office, 2021, https://data.europa.eu/doi/10.2832/500890

Sustainable and Smart Mobility Strategy	Strategy (COM(2020)789) ([35])
Taxonomy Environmental Delegated Act	Regulation (EU) 2023/2486 ([36])
Taxonomy Impact Assessment	Impact Assessment accompanying the Proposal for a Regulation of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment ([37])
Taxonomy Regulation / EU Taxonomy	Regulation (EU) 2020/852 ([38])
TEG	Technical expert group on sustainable finance ([39])
TEG Report	Report of the Technical Expert Group on Sustainable Finance ([40])
TFEU	Treaty of the Functioning of the EU ([41])
TSC ('technical screening criteria' or 'criteria')	Technical screening criteria as set out in the Climate Delegated Act/Amended Climate Delegated Act

([35]) For more information see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12438-Sustainable-and-Smart-Mobility-Strategy_en

([36]) Commission Delegated Regulation (EU) 2023/2486 of 27 June 2023 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to the sustainable use and protection of water and marine resources, to the transition to a circular economy, to pollution prevention and control, or to the protection and restoration of biodiversity and ecosystems and for determining whether that economic activity causes no significant harm to any of the other environmental objectives and amending Commission Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities (OJ L, 2023/2486, 21.11.2023).

([37]) Commission Staff Working Document Impact Assessment Accompanying the document Proposal for a Regulation of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment (SWD (2018) 264 final).

([38]) Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (OJ L 198, 22.6.2020, p. 13).

([39]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&do=groupDetail.groupDetail&groupID=3588

([40]) For more information, see: https://finance.ec.europa.eu/document/download/9101b639-ebe5-413e-9c86-3e291722899e_en?filename=200309-sustainable-finance-teg-final-report-taxonomy_en.pdf

([41]) Consolidated version of the Treaty on the Functioning of the European Union (OJ C 326, 26.10.2012, p. 47).

ULCC	Ultra Large Container Carriers
UNFCCC	United Nations Framework Convention on Climate Change ([42])
Union	European Union
WtW (Well-to-Wake)	Method for calculating emissions that takes into account the GHG impact of energy production, transport, distribution and use, including combustion – as defined in Article 3(18) of FuelEU Maritime.

([42]) For more information, see: https://unfccc.int/process-and-meetings/the-convention/history-of-the-convention/convention-documents

ANNEX I - ASSESSMENT OF THE ADMISSIBILITY OF THE REQUEST IN GENERAL AND GROUNDS FOR INTERNAL REVIEW OF COMMISSION DELEGATED REGULATION (EU) 2023/2485

1. Section 1 of this Annex provides the Commission's assessment of the admissibility of the request for internal review under the Aarhus Regulation in general, without prejudice of findings of inadmissibility of specific claims, which are dealt with in Annex II.

2. In Section 2 of this Annex, building on the Explanatory Memorandum of the Amended Climate Delegated Act, the Commission provides the requesting parties (referred as 'Applicants' in this reply) with some elements of context related to the policies and process concerning the development of technical screening criteria of economic activities in the sectors covered by the request. These elements show that the Amended Climate Delegated Act is based on the outcome of extensive technical and scientific feedback and its adoption followed the requirements of the Taxonomy Regulation and the Better Regulation principles.

1. ASSESSMENT OF THE ADMISSIBILITY OF THE REQUEST IN GENERAL

1.1. Assessment of whether the Applicants meet the criteria set out in Article 11 of the Aarhus Regulation

3. The Commission has assessed the admissibility of the request for internal review on the basis of the provisions of Articles 10 and 11 of the Aarhus Regulation. It assessed whether the request for internal review is submitted by organisations that meet the criteria set out in Article 11 of the Aarhus Regulation.

4. The Commission received a request submitted jointly by three organisations, namely (1) Dryade VZW, (2) Stichting ter bevordering van de Fossielvrij-beweging (Fossielvrij), (3) Protect our Winters Austria – Verein für Klimabildung und nachhaltigen Wintertourismus (Protect Winters). From the information provided by the Applicants in accordance with Article 2(1) of Commission Decision (EU) 2023/748 ([43]), it seems that each of these three organisations complies with the criteria set out in Article 11(1) of the Aarhus Regulation and they are therefore entitled to make a request for internal review.

1.2. The Delegated Act is an administrative act in accordance with Article 2(1), point (g) of the Aarhus Regulation

a) Non-legislative act adopted by a Union institution

5. The Amended Climate Delegated Act was adopted by the European Commission, which is an EU institution, and constitutes a non-legislative act in accordance with Article 290 TFEU.

b) The Contested Act has legal and external effects

([43]) Commission Decision (EU) 2023/748 of 11 April 2023 laying down detailed rules for the application of Regulation (EC) No 1367/2006 of the European Parliament and of the Council as regards requests for the internal review of administrative acts or omissions (OJ L 99, 12.4.2023, p. 23).

6. The Amended Climate Delegated Act is a Commission Delegated Regulation. It constitutes, therefore, an act which has legal and external effects.

2. DEVELOPMENT OF TECHNICAL SCREENING CRITERIA IN THE AMENDED CLIMATE DELEGATED ACT FOR SUSTAINABLE ECONOMIC ACTIVITIES IN AVIATION AND SHIPPING SECTORS

2.1. The Commission's approach to the development of the technical screening criteria laid down in the Amended Climate Delegated Act

7. The Taxonomy Regulation sets out a framework to define environmentally sustainable economic activities to facilitate sustainable investment. This framework is designed to help scaling-up of investments in environmentally sustainable economic activities and projects and thus to play a major role in supporting the Union's efforts to meet its climate and environmental targets for 2030 and 2050, in line with the European Green Deal and the Paris Agreement.

8. In June 2021, the Commission adopted the Climate Delegated Act to implement the Taxonomy Regulation with respect to economic activities that are contributing substantially to climate change mitigation and adaptation objectives. The general and specific objectives of the Climate Delegated Act are consistent with those of the Taxonomy Regulation, which were explained in detail in the Taxonomy Impact Assessment. Specifically, the development of a uniform and granular EU Taxonomy together with other sustainable finance policies aims to address two out of three general objectives presented in the Action Plan on Financing Sustainable Growth. Those are: (i) reorienting capital flows towards sustainable investments, and (ii) fostering transparency in financial and economic activities on sustainability by reducing investor search costs in identifying environmentally sustainable economic activities. To do so, the Amended Climate Delegated Act needs to meet the relevant specific objective of providing clarity at EU level on economic activities that are environmentally sustainable.

9. The Climate Delegated Act aims to establish technical screening criteria (TSC) for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation and to climate change adaptation without causing significant harm to the other environmental objectives, pursuant to Articles 10 (3) and 11(3) of the Taxonomy Regulation. As explained in recital (47) of the Taxonomy Regulation, to avoid overly burdensome compliance costs on economic operators, the Commission should establish TSC that provide for sufficient legal clarity, that are practicable and easy to apply, and for which compliance can be verified within reasonable cost-of-compliance boundaries, thereby avoiding unnecessary administrative burden. It is important to note that if an activity is not included in the Taxonomy Regulation, it does not mean it that it is not sustainable. The activity could be only marginally contributing to an environmental objective, or simply might have not been assessed yet. The TSC for climate change mitigation need to comply with the Taxonomy Regulation, especially with the requirements of its Article 19. Notably, TSC need to be established in the light of scientific evidence, take into account existing EU legislation, be easy to use and should not lead to market distortion and inconsistent incentives when used by companies and investors. The requirements for TSC in the Taxonomy Regulation refer to both criteria for what is a substantial contribution to environmental objectives and criteria for 'do no significant harm' (DNSH). These requirements reflect some of the main concerns stakeholders raised in the process of developing and negotiating the Taxonomy Regulation.

10. In June 2023, the Commission adopted the Taxonomy Environmental Delegated Act for the remaining environmental objectives and amended the Climate Delegated Act by adding criteria for new activities in the manufacturing and transport sectors (Amended Climate Delegated Act). This concerns, amongst other activities, aviation and shipping activities that have been challenged by the Applicants for which at present there is no technologically and economically feasible low-carbon alternative and which would be necessary in the transition towards climate neutrality.

11. The Commission carried out an assessment of impacts of the Amended Climate Delegated Act. The assessment of impacts did not take the form of a formal impact assessment, but it took the form of an analytical Staff Working Document. This is because the Amended Climate Delegated Act follows the policy choices already made in the Taxonomy Regulation and, to a large extent in the Climate Delegated Act.

12. The assessment provided in the Staff Working Document that:

    (i) describes the context and purpose of the initiative;
    (ii) explains the approach taken for the definition of the specific TSC, including how those criteria are expected to work in practice;
    (iii) explains any divergences or additions made to the recommendations of the Platform on Sustainable Finance (Platform);
    (iv) describes and assesses the public feedback received on the draft Amended Climate Delegated Act;
    (v) summarises the expected benefits and costs of this initiative, including in particular administrative costs; and
    (vi) describes how this initiative will be monitored and evaluated.

13. The Commission assessed, the consistency of the Amended Climate Delegated Act with the climate-neutrality objective set out in Article 2(1) of the European Climate Law and with the objective ensuring progress on adaptation as referred to in its Article 5.

14. The criteria for substantial contribution to climate change mitigation and climate change adaptation and the respective DNSH criteria ensure that the Amended Climate Delegated Act is consistent with the European Climate Law. In accordance with requirements of Article 17 of the Taxonomy Regulation, the calibration of the DNSH criteria takes into account the environmental risks inherent to specific activities. Wherever possible and appropriate, these DNSH criteria refer to compliance with requirements set out in Union law.

15. Pursuant to Article 20 of the Taxonomy Regulation, the Amended Climate Delegated Act is based on the recommendations of the Platform published on 3 August 2021 (44). The draft TSC proposed by the Platform were published for stakeholder feedback from August to September 2021. The feedback provided by stakeholders was considered by the Platform before the publication of its final recommendations in March and November 2022. The final recommendations of the Platform were also discussed with the Member States Expert Group on Sustainable Finance (MSEG) on several occasions and in particular on 6

(44) For more information, see: https://finance.ec.europa.eu/publications/call-feedback-platform-sustainable-finance-preliminary-recommendations-technical-screening-criteria_en

April ([45]), 8 July ([46]), 4 October ([47]), 15 December 2022 ([48]) and 24 January 2023 ([49]). The draft recommendations of the Platform were subject to two rounds of consultation with the Commission (first review in mid-2021, and second review in early 2022).

16. The Commission duly considered the recommended TSC developed by the Platform in the elaboration of the Amended Climate Delegated Act and conducted further work to ensure that the criteria met the requirements set out in Article 19 of the Taxonomy Regulation. The draft Amended Climate Delegated Act was shared with the MSEG and the Platform on 5 April 2023 and published for four weeks to gather stakeholder feedback from 5 April to 3 May 2023.

17. In addition, the draft Amended Climate Delegated Act was discussed with the Platform on 19 April (50) and 24 May 2023 (51). The draft was also presented to and discussed with the Member States' experts and observers from the European Parliament, at meetings of the MSEG on 20 April 2023 (52) and 25 May 2023 (53). An ad hoc discussion with the Members of European Parliament also took place on 25 May 2023.

18. Based on a careful examination of the feedback received, some targeted calibrations of certain criteria as well as other technical modifications were made for the finalisation of the Amended Climate Delegated Act. These concern, in particular, technical clarifications further explained in sections 2.2.1.1 and 2.2.2.1 of Annex I to this reply, alignments to ensure greater consistency with existing sectoral legislation, the inclusion of references to upcoming reviews, as well as alignments to improve the coherence of the DNSH criteria for several activities.

19. The Amended Climate Delegated Act was adopted on 27 June 2023. Given that neither the European Parliament nor the Council objected to it within the objection period set out in Article 23(6) of the Taxonomy Regulation, it was published in the Official Journal on 21 November 2023. It started applying on 1 January 2024.

([45]) For more information, see: https://ec.europa.eu/transparency/expert-groups register/screen/meetings/consult?lang=en&meetingId=46090&fromExpertGroups=3603

([46]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=46091&fromExpertGroups=3603

([47]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=46092&fromExpertGroups=3603

([48]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=48955&fromExpertGroups=3603

([49]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=48956&fromExpertGroups=3603

([50]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=48143&fromExpertGroups=3731

([51]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=48145&fromExpertGroups=3731

([52]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=48957&fromExpertGroups=3603

([53]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=48958&fromExpertGroups=3603

2.2. Development of technical screening criteria in the sectors that are in the scope of the request for internal review

2.2.1 Aviation activities

2.2.1.1. Development of the technical screening criteria

20. The Technical Expert Group on sustainable finance (TEG), the predecessor of the Platform, was established to help the Commission to develop the EU Taxonomy in line with the Commission's legislative proposals of May 2018 ([54]) and taking into account the objectives of the European Green Deal. On 9 March 2020, the TEG published its final TEG Report, following several public consultation rounds where a substantial number of technical recommendations had been submitted to the Commission. Member States were then given the opportunity to provide feedback on the final TEG Report recommendations at the meeting of the MSEG in May 2020 ([55]), with observers from the European Parliament.

21. The TEG concluded in the TEG Report that it was important to include aviation and maritime transport sectors within the scope of the EU Taxonomy. However, due to the complexity of the issues and limited time, the TEG was not able to include recommendations for the TSC for aviation amongst other sectors. In particular, the TEG Report states the following ([56]):

'The activities identified by the TEG using this methodology reflect the majority – but not all – of the economic activities which can avoid significant harm or substantially contribute to climate change mitigation. In some cases, the TEG was not able to fully evaluate the potential contribution of a sub-sector with the resources available, in the timeframe available. The TEG therefore recommends that the Platform on Sustainable Finance undertake further evaluation of activities within the existing sectors, with a particular focus on:

- *Manufacturing – additional high emitting activities*

- *Transport - including maritime and aviation.'*

22. The Sustainable and Smart Mobility Strategy adopted by the Commission in December 2020 recognises the important socio-economic role of air transport and the necessity to decouple the sector's growth from emissions. The Sustainable and Smart Mobility Strategy identified a need to define the TSC based on the Taxonomy Regulation for all transport modes while recognising the specific investment needs to support the sector's transition.

23. This work was therefore prioritised in the work programme of the Platform. The Platform was tasked with advising the Commission on the TSC for transport and its work has served as a basis for the preparation of the TSC.

24. The members of the Platform were selected based on an open call and careful consideration of applications received to ensure a balanced and representative mix of expertise. A

([54]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1185-Institutional-investors-and-asset-managers-duties-regarding-sustainability_en

([55]) For more information, see: https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=22977&fromExpertGroups=3603

([56]) Page 17 of the TEG Report Technical Annex: https://finance.ec.europa.eu/system/files/2020-03/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

transport group within the Platform was created to work on the criteria for aviation along with other modes. This group included air transport experts from the aeronautics industry, the financial sector and environmental NGOs. In view of the need for targeted technical expertise, field experts were invited to join the Platform subgroup meetings on an *ad-hoc* basis to share their expertise. One of the technical inputs considered by the Platform was a study carried out by an independent consultancy firm – the Steer Study. This Study was commissioned by the Commission to provide supporting analysis for the development of the EU Taxonomy for aviation. The study reflected inputs received from:

(i) European Union Aviation Safety Agency (EASA), notably on the environmental performance of aircraft based on the PIANO aircraft characteristics evaluation software;

(ii) EUROCONTROL on CO_2 emissions indicators using EUROCONTROL historical flight data sources; and

(iii) bilateral interviews with stakeholders and a workshop organised on 29 September 2020, as well as a literature review.

25. The Platform's work on the EU Taxonomy for aviation was supported by several rounds of extensive feedback from stakeholders and targeted scientific and technical inputs involving industry representatives, academia, environmental experts, civil society, and Member States, as explained in section 2.1. of Annex I to this reply. The final report with recommendations on aviation criteria was adopted unanimously by the members of the Platform in March 2022 (57).

26. The Commission Amended Climate Delegated Act relied in substance on these recommendations by the Platform on technical screening criteria for aviation. The Commission made several changes to the recommended criteria to improve their clarity and usability, and to reinforce the ambition level of the EU Taxonomy criteria by taking into account the public feedback received.

27. First, an additional condition was introduced as concerns aircraft to be withdrawn from use whereby aircraft must be within the fleet for at least 12 months prior to their withdrawal. This is to avoid that an old aircraft is purchased solely for the purposes of meeting the requirements of the EU Taxonomy by circumventing the established rules.

28. Second, a requirement on the use of sustainable aviation fuels (SAF) was added for leasing companies, to incentivise investments into SAF also by leasing companies and consequently to better align the criteria for them with those for aircraft operators.

29. Third, the requirement for SAF use as from 2030 for aircraft operators (and leasing companies) was increased to reflect the status of the market for SAF and anticipated developments under ReFuelEU Aviation legislation.

30. Finally, the criteria on DNSH to pollution control and prevention were modified by introducing a cumulative margin compared to International Civil Aviation Organisation (ICAO) noise standards in order to reflect the level of technological improvement already

(57) For more information, see: https://finance.ec.europa.eu/system/files/2022-03/220330-sustainable-finance-platform-finance-report-remaining-environmental-objectives-taxonomy-annex_en.pdf, and https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf, please note that dissenting views in Annex I do not concern transport.

reached by most new aircraft, and exclude from the EU Taxonomy older, less performing aircraft.

2.2.1.2. Content of technical screening criteria

31. The Amended Climate Delegated Act has included four types of new activities in the EU Taxonomy:

- Activity 3.21. Manufacturing of aircraft;
- Activity 6.18. Leasing of aircraft;
- Activity 6.19. Passenger and freight air transport;
- Activity 6.20. Air transport ground handling operations.

Manufacturing of aircraft, leasing of aircraft, and passenger and freight air transport:

32. For the activities of manufacturing of aircraft, leasing of aircraft, and passenger and freight air transport, following the Platform recommendations, the Commission decided that the TSC on the substantial contribution to climate change mitigation cover:

- the manufacturing, leasing and operation of zero direct CO_2 emissions aircraft as a low carbon activity under Article 10(1) of the Taxonomy Regulation;

- the manufacturing, leasing and operation of the latest generation aircraft technology as a transitional activity under Article 10(2) of the Taxonomy Regulation, providing there is a significant performance improvement in terms of fuel efficiency and related GHG emissions reduction compared to the previous generation of aircraft; and

- the operation of aircraft with SAF as a transitional activity under Article 10(2) of the Taxonomy Regulation.

33. The TSC for air transport will:

- accelerate the development and introduction in the market of zero direct CO_2 emission aircraft fuelled by hydrogen or electricity;

- incentivise the replacement of previous generation, less fuel -efficient aircraft with the latest generation of fuel -efficient ones without contributing to fleet expansion and accelerate the technical readiness of the aircraft to operate with 100% SAF produced notably from sustainable biomass or renewable hydrogen;

- incentivise the replacement of fossil jet fuel with SAF.

The TSC for transitional activities related to the latest generation aircraft referred to in sections 3.21. (b) and (c), 6.18. (b) and (c), and 6.19. (b), (c) and (d) of Annex I to the Climate Delegated Act

34. The TSC for aircraft manufacturing, leasing and operations referred to in sections 3.21. (b) and (c), 6.18. (b) and (c), and 6.19. (b), (c) and (d) of Annex I to the Climate Delegated Act require that aircraft of the latest generation does not contribute to increasing the aircraft fleet, which in itself could result in the growth of absolute emissions until the aircraft is operated with SAF.

35. The latest generation aircraft are:

- identified by reference to fuel efficiency and associated GHG performance in relation to the margins to the New Type (NT) aircraft CO_2 emissions standards of the ICAO; and
- differentiated in three aircraft classes according to their maximum take-off mass (corresponding to regional, narrowbody and widebody aircraft).

36. The aircraft not meeting the margins represent the previous generation aircraft that are significantly less fuel efficient. The replacement of the previous generation aircraft with the new generation aircraft leads to around 20-25% of GHG emission reductions per flight (58). The margins to the ICAO NT CO2 standard were set by taking into account the technical analysis of EASA, which is the competent authority in Europe for certifying aircraft types against the ICAO standards (59).

37. The criteria for manufacturing of the latest generation aircraft are applicable until 31 December 2032 in order to ensure that the newest technological developments of the latest generation aircraft are properly reflected in the EU Taxonomy. Beyond this timeframe, the criteria for aircraft manufacturing, and in particular the margins to the ICAO CO2 standard, will be reviewed. This review may also impact the criteria for aircraft leasing and passenger and freight air transport involving the latest generation aircraft, which apply beyond this timeframe, subject to regular review. Independently of the outcome of any possible review of the criteria pertaining to the aircraft manufacturing, lessors and aircraft operators are obliged to progressively increase the use of SAF from 2030 to maintain the Taxonomy-alignment of such aircraft.

38. The TSC implement an aircraft replacement approach, in specific cases, through a replacement ratio representing the proportion of aircraft permanently withdrawn from use (such as through decommissioning or other measures that guarantee that the withdrawn aircraft is not returned to use anywhere worldwide) to aircraft delivered at a global level. The ratio is averaged over the preceding 10 years to provide a long-term stable indicator, minimising yearly variations.

39. The ratio is then applied to the Taxonomy-eligible aircraft produced by the manufacturer to identify the percentage of its respective aircraft production fleet that does not increase the global fleet. This implies that only the revenues associated to that identified part of the aircraft fleet, which does not increase the global fleet, can be labelled as Taxonomy-aligned.

40. The ratio enables reflecting the extent to which the uptake of the latest generation aircraft is linked to the permanent withdrawal of the previous generation models, which leads in turn to substantial GHG reduction as explained above. The data on aircraft permanently withdrawn from use and delivered at global level, which are needed to calculate the replacement ratio, are accessible from independent data providers (such as Cirium). The Commission, with the help of EASA, intends to publish the relevant data on an annual basis in order to facilitate its use and the public disclosures of market participants involved in Taxonomy-eligible activities.

41. Specifically, in accordance with sections 3.21, 6.18 and 6.19 of Annex I to the Climate Delegated Act the replacement ratio is applied in the following cases:

- manufacturing of latest generation aircraft;

(58) For more information, see the footnote 22 of the Sustainable and Smart Mobility Strategy.

(59) For more information, see the section 5 of the Steer Study.

- leasing of aircraft, and passenger and freight air transport where:
    - the latest generation aircraft were purchased before 11 December 2023; or
    - non-complaint aircraft are permanently withdrawn from the fleet (i.e. sold or otherwise permanently transferred to another economically independent entity without decommissioning requirement).

42. The replacement ratio is not applied where:

- lessors and aircraft operators purchase the latest generation aircraft after 11 December 2023; and
- non-compliant aircraft of the previous generation are permanently withdrawn from use (such as through decommissioning or other measures that guarantee that the withdrawn aircraft is not returned to the use anywhere worldwide). In this case, the TSC implement the 'one-in, one-out' aircraft approach. This implies that the lessor and aircraft operators could claim Taxonomy-alignment only for aircraft that effectively replace older aircraft from the previous generation in their fleet.

43. The TSC also require in sections 6.18(c) and 6.19(c) of Annex I to the Climate Delegated Act that the aircraft being withdrawn should fulfil several requirements in order to guarantee that a fleet replacement results in effective and significant GHG reductions at aircraft level:

- the withdrawn aircraft GHG emissions do not meet the margins to the ICAO (NT) CO_2 standards (i.e. the withdrawn aircraft does not represent the latest generation aircraft);
- the new generation aircraft should replace the old generation aircraft that is of similar or greater category (i.e. at least 80% of maximum take-off weight of the compliant new aircraft), to ensure that a small size aircraft is not replaced with a large size aircraft;
- to exclude aircraft already parked in long-term storage facilities, the withdrawn aircraft must have a proof of airworthiness dating back to less than 6 months prior to the delivery of the new aircraft;
- the withdrawn aircraft should have remained in the fleet of operators or leasing companies within at least 12 months prior to its withdrawal to avoid that an old aircraft is purchased solely for the purposes of meeting the requirements of the EU Taxonomy.

44. Furthermore, the TSC require in section 3.21(c) of Annex I to the Climate Delegated Act that the Taxonomy-aligned aircraft is compatible with the use of 100% SAF as from 1 January 2028. The current international jet fuel standards allow only for the maximum use of up to 50% SAF blend ([60]). Given the increased importance of SAF and the future need to use SAF at a higher than 50% blending ratio, international industry started in April 2021

([60]) For more information, see: https://www.icao.int/environmental-protection/GFAAF/Pages/Conversion-processes.aspx

to work on a standardised specification of 100% SAF at ASTM International ([61]). Airframe and engine original equipment manufacturers (OEMs) have to ensure in the definition of the fuel standard that the fuel can be safely used and operated worldwide. There is no timeline that would guide by when this work will be finalised and which SAF development pathway will be eventually agreed. Therefore, the TSC took an approach to advance the timeline to 2028 from the aeronautics industry commitment of 2030. Considering that the SAF market is under constant development and that these criteria are relevant for a transitional activity, the Commission is to regularly review them. In addition, as of 2030, the TSC require in section 6.19. (d) of Annex I to the Climate Delegated Act that air transport lessors and operators operate the aircraft acquired for the replacement of the previous generation model with the 15% SAF blend, increased by 2 percentage points annually thereafter. Section 6.18 of Annex I to the Climate Delegated Act thereof refers to those requirements for aircraft in its points (b) or (c). This incentivises a progressive replacement of fossil jet fuel use with the use of increasingly higher SAF blending ratios.

The TSC related to aircraft operated on SAF referred to in section 6.19. (e)

45. In addition to substantial GHG reduction expected from the replacement of aircraft of previous generation, the use of SAF provides for an additional source of such reductions. Based on various decarbonisation roadmaps for the sector ([62]), and the 2030 CTP, the SAF will play the major role in decarbonising aviation and climate neutrality. SAF is required to achieve, at minimum, 65% for biofuels and 70% for hydrogen-based fuels life cycle CO_2 emissions savings compared to conventional jet fuel, with the potential to generate life cycle emissions savings up to 95% based on the feedstock used.

46. For this reason, the TSC introduce a standalone criterion for passenger and freight air transport activity in section 6.19(e) of Annex I to the Climate Delegated Act, whereby an aircraft is Taxonomy-aligned when it is operated with SAF, corresponding to 5% SAF blend used in 2022, with the percentage of SAF increasing by 2 percentage points annually thereafter. The SAF use threshold reflects the broad scope of the TSC, since it applies to the fuel consumption by Taxonomy-aligned aircraft on all its flights, which includes flights departing from airports located within and outside the EU. The low initial threshold is calibrated to reflect that the production of SAF and its use are currently very limited both at the EU and global level and most of the SAF technologies are not yet commercially mature ([63]). However, this production is expected to progressively increase over the time as a result of the SAF supply mandates introduced by the ReFuelEU Aviation. As such the threshold of SAF usage required in the TSC is also progressively increased.

A summary of the key components of the TSC is provided in the table below:

([61]) ASTM International, formerly known as American Society for Testing and Materials, is a standards organization that develops and publishes voluntary consensus technical international standards for a wide range of materials, products, systems and services, including jet fuels standards that apply internationally. For more information on ASTM, see: https://www.astm.org/committee-d02#:~:text=ASTM%20Committee%20D02%20on%20Petroleum,five%20days%20of%20technical%20meetings, as well as section 8 of the slides: icao.int/environmental-protection/Documents/ACT-SAF/ACT SAF series 3 - SAF production technologies and certification.pdf.

([62]) For more information, see: the IATA 2024 publication on Aviation Net-Zero CO2 Transition Pathways that provides a comparative review of various roadmaps: https://www.iata.org/contentassets/8d19e716636a47c184e7221c77563c93/nz-roadmaps.pdf.

([63]) For more information, see the Annex 14, Table 24 of the ReFuelEU Aviation impact assessment.

Type of substantial contribution	3.21. Manufacturing of aircraft	6.18. Leasing of aircraft	6.19. Passenger and freight air transport
Case 1: low carbon activity	Zero direct CO_2 emissions aircraft	Zero direct CO_2 emissions aircraft	Zero direct CO_2 emissions aircraft
Case 2: transitional activity with aircraft	Latest generation aircraft, other than produced for private or commercial business aviation, meeting the following margins to the ICAO New Type CO_2 standard: • at least minus 11% for aircraft of 5.7t < MTOM = or < 60t • at least minus 2% for aircraft of 60t < MTOM = or < 150t • at least minus 1.5% for aircraft of 150t < MTOM **and** limited by the replacement ratio (defined as aircraft permanently withdrawn from use/ aircraft delivered at global level averaged over the preceding 10 years) **As of 2028 (until 31/12/2032)**, aircraft needs also to be certified to run on 100% blend of SAF	Aircraft delivered **before** 11 December 2023 follow the same criteria as those under as 3.21 Aircraft delivered **after** 11 December 2023 follow the same criteria as those in section 3.21, except: • In case another non-compliant aircraft is **permanently withdrawn from use** replacement ratio from section 3.21 does not apply. [NB: In case another non-compliant aircraft is **permanently withdrawn from fleet**, the replacement ratio from section 3.21 applies] Where aircraft permanently withdrawn from use/fleet - Is not compliant with 3.21 (ICAO CO_2) margins - Has at least 80% MTOM of compliant aircraft - Has remained in the fleet at least 12 months prior to withdrawal - Proof of airworthiness dates back less than 6 months prior to the delivery of the compliant aircraft **As of 2030,** aircraft complying with the above conditions and using at least 15% SAF, increased by 2 % annually.	Aircraft delivered **before** 11 December 2023 follow the same criteria as those under 3.21 Aircraft delivered **after** 11 December 2023 follow the same criteria as those in section 3.21, except: • In case another non-compliant aircraft is **permanently withdrawn from use** replacement ratio from section 3.21 does not apply. [NB: In case another non-compliant aircraft is **permanently withdrawn from fleet**, the replacement ratio from section 3.21 applies] Where aircraft permanently withdrawn from use/fleet - Is not compliant with 3.21 (ICAO CO_2) margins - Has at least 80% MTOM of compliant aircraft - Has remained in the fleet at least 12 months prior to withdrawal - Proof of airworthiness dates back less than 6 months prior to the delivery of the compliant aircraft **As of 2030,** aircraft complying with the above conditions and using at

		SAF as defined in the ReFuelEU Aviation and purchased at fleet level (no physical tracing to individual aircraft)	least 15% SAF, increased by 2 % annually. SAF as defined in the ReFuelEU Aviation and purchased at fleet level (no physical tracing to individual aircraft)
Case 3: transitional activity with SAF			Aircraft using at least 5% SAF in 2022, increased by 2 % annually. SAF defined in the ReFuelEU Aviation regulation and purchased at fleet level (no physical tracing to individual aircraft) Aircraft exceeds the ICAO standards for noise and engine emissions (part of DNSH)

2.2.2 Shipping activities

2.2.2.1. Development of the technical screening criteria

47. The initial TSC for maritime activities were developed on the basis of the EU Taxonomy design recommendations of the TEG Report published on 9 March 2020 ([64]). The TEG Report concluded, in respect of maritime transport (and aviation) that it was important to include these sectors and relevant corresponding activities in the EU Taxonomy. However, due to complexity and limited time, the TEG was not able to include further recommendations for maritime criteria.

48. The initial TSC laid down in the Climate Delegated Act as adopted on 4 June 2021 included:

- a substantial contribution criterion (i.e. zero (direct) tailpipe CO_2 emissions vessels) for the activity to be qualified as low-carbon under Article 10(1) of the Taxonomy Regulation; and
- three TSC for the activity to be qualified as transitional under Article 10(2) of Taxonomy Regulation, all applicable until 31 December 2025. An additional criterion was defined in point 2 of Section 6.10 for the activity '*sea and coastal freight water transport, vessels for port operations and auxiliary activities'*, specifying that vessels dedicated to the transport of fossil fuels would not be Taxonomy-eligible.

49. With a view to revise the TSC for transitional activities applicable after 2025, the work of the TEG was followed up by the Platform as explained in section 2.2.1.1 of Annex I to the reply.

[64]) https://finance.ec.europa.eu/document/download/9101b639-ebe5-413e-9c86-3e291722899e_en?filename=200309-sustainable-finance-teg-final-report-taxonomy_en.pdf

50. In view of the need for relevant expertise, field experts were invited to join the Platform transport sub-group meetings on an ad-hoc basis to share their expertise, including shipping operators from different shipping segments, shipyards, equipment manufacturers and NGOs, amongst others. The Platform was mandated to make recommendations on the TSC in the transport sector, including the criteria applicable to shipping activities.

51. As explained in section 2.2.1.1 of Annex I to the reply, the work of the Platform was subject to extensive consultation process. For shipping activities, the Platform's November 2022 Report proposed to abandon the EEDI-based TSC focussing on energy efficient design of vessels ([65]) and introduced two TSC based on a Life-Cycle/ Well-to-Wake methodology and the carbon intensity of fuels used onboard.

52. Building on the Platform's November 2022 Report recommendations, and further considering scientific and technical studies underpinning the Impact Assessment of Fit for 55 initiatives, the advice from the EMSA, and the assessment of the Renewable and Low Carbon Industrial Alliance ([66]) (RLCF) regarding availability of renewable and low-carbon fuels for maritime, the Commission decided to keep the methodology used in the TSC laid down in the Climate Delegated Act as adopted on 4 June 2021 (i.e. the EEDI-based criteria for the shipping activities). The Commission has, in this way, departed from the recommendation of the Platform consisting of a TSC strictly based on Well-to-Wake carbon intensity of the fuels used.

53. Following the public consultation of the draft Amended Climate Delegated Act as explained in section 2.2.1.1 of Annex I to the reply, further adaptations to the draft TSC were made in the Amended Climate Delegated Act that increased the level of ambition of the TSC for shipping activities, with EEXI criteria overachievement of 10% introduced in the proposed TSC based on GHG intensity of the energy used onboard, and confirmed the reintroduction of the EEDI-based criteria.

2.2.2.2. Content of TSC

54. For maritime activities for freight water transport, vessels for port operations and auxiliary activities, and sea and coastal passenger water transport, the Climate Delegated Act included the TSC on substantial contribution criteria to climate change mitigation covering:

- vessels with a reduction of direct (tailpipe) emissions, through electrification or introduction of zero-carbon fuels/energy systems, as a transitional activity under Article 10(2) of the Taxonomy Regulation ([67]);

- vessels used to promote modal shift, demonstrating 50% reduction of direct (tailpipe) CO2 emissions, compared to road/heavy duty vehicles (using the EEDI calculation methodology for ships and the methodology under Regulation

([65]) PSC report suggested EEDI (Energy Efficiency Design Index) criteria to be strictly part of Section 3.3 of the Climate Delegated Act (Manufacture of low carbon technologies for transport), abandoning the use of the criteria for Sections 6.10 and 6.11, related to shipping activities.

([66]) For more information, see: https://transport.ec.europa.eu/transport-themes/clean-transport/alternative-fuels-sustainable-mobility-europe/renewable-and-low-carbon-fuels-value-chain-industrial-alliance_en

([67]) Climate Delegated Act, Section 6.10.1(a) and (b) and Section 6.11.1(a) and (b).

2019/1242 ([68])for heavy-duty vehicles), as a transitional activity under Article 10(2) of the Taxonomy Regulation ([69]);

- vessels with Energy Efficiency/EEDI attained 10% below the requirements applicable on 1 April 2022, as a transitional activity under Article 10(2) of the Taxonomy Regulation ([70]).

55. In addition, the TSC cover vessels that are not dedicated to the transport of fossil fuels.

56. The TSC introduced in the Climate Delegated Act recognise the importance of promoting the development of low to zero-carbon energy systems for ships, identifying the zero-emission (direct/tailpipe) as the relevant low-carbon activity falling under Article 10(1) of the Taxonomy Regulation.

57. Notwithstanding this, meeting a zero direct (tailpipe) emission criterion is not achievable at large scale in the near future for the large majority of the shipping sector engaged in deep sea international voyages ([71]). For this reason, the specific TSC mentioned in the second and third bullet point above were introduced to include maritime transport as a transitional activity under Article 10(2) of the Taxonomy Regulation, to capture 'best-in-class' operators, while meeting the commitment referred in Article 10(2) to ensure the adequacy of the TSC with future market and technology development.

58. According to Article 19 of the Taxonomy Regulation, to ensure that economic activities as referred to in Article 10(2) remain on a credible transition pathway consistent with a climate-neutral economy, the Commission is to review the TSC for those activities at least every three years and, where appropriate, amend the delegated act referred to in Article 10(3) in line with scientific and technological developments.

59. In that spirit, the Amended Climate Delegated Act contains new TSC for maritime activities applicable after 2025, which include a revised, more stringent, EEDI-based criterion and an ambitious GHG Well-to-Wake criterion, the latter merged with an energy efficiency (EEXI ([72])) requirement. On the one hand, the TSC promote improved Energy Efficiency of ships and, on the other, introduce a framework to promote the uptake of renewable and low-carbon fuels. As concluded in the context of the impact assessment underpinning the Fit for 55 legislative package ([73]), the substantial contribution from shipping to climate change mitigation requires a combined contribution along two

([68]) Regulation (EU) 2019/1242 of the European Parliament and of the Council of 20 June 2019 setting CO2 emission performance standards for new heavy-duty vehicles and amending Regulations (EC) No 595/2009 and (EU) 2018/956 of the European Parliament and of the Council and Council Directive 96/53/EC (OJ L 198, 25.7.2019, p. 202).

([69]) Climate Delegated Act, Section 6.10.1 (c) and Section 6.11.1(c).

([70]) Climate Delegated Act, Section 6.10.1 (d) and Section 6.11.1(d).

([71]) Zero direct (tailpipe) CO2 emissions can only be achieved through full electrification of the ship energy system or, alternatively, with the use of hydrogen fuel cells. Both have very low energy density and are not technically or economically viable as integral energy systems for ships engaged in long international voyages. Electrification or hydrogen fuel cells are energy systems most applicable to operating profiles based on short-voyages.

([72]) For more information, see: https://www.imo.org/en/MediaCentre/HotTopics/Pages/EEXI-CII-FAQ.aspx

([73]) Commission Staff Working Document Impact Assessment Accompanying the Document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people (SWD/2020/176/final).

important vectors for decarbonisation: (i) using less energy/fuel, and (ii) using cleaner energy/fuel.

60. After revision, the TSC applicable after 31 December 2025 cover the following shipping activities:

- **vessels with zero direct (tailpipe) CO_2 emissions** (as a low-carbon activity), kept from the Climate Delegated Act, relevant to promote the development of advanced zero-emission energy systems for ships, based on direct emission evaluation. This activity promotes electrification, zero (molecular) carbon fuels (such as hydrogen or ammonia) and fuel cells systems ([74]);

- **vessels with Energy Efficiency/EEDI attaining 20 percentage points below the requirements applicable on 1 April 2022**, as a transitional activity under Article 10(2) of the Taxonomy Regulation, including requirements for:
  - ability to plug-in at berth; and
  - for gas-fuelled ships, demonstration of the use of state-of-the-art measures and technologies to mitigate methane slippage emissions ([75]).

61. The EEDI-based TSC were included in the Amended Climate Delegated Act, following extensive debate, EMSA scientific and technical advice and public consultation, with a view to incentivise a shipping transition to a highly energy efficient fleet, measured in grams of CO_2 emissions per tonne-mile.

- vessels that, in addition to an **EEXI 10 percentage points below the requirement applicable on 1 January 2023**, must also demonstrate **yearly average greenhouse gas intensity of the energy used on-board by a ship during a reporting period that does not exceed the following limits ([76])**:
  a. 76,4 g CO_2e/MJ from 1 January 2026 until 31 December 2029;
  b. 61,1 g CO_2e/MJ from 1 January 2030 until 31 December 2034;
  c. 45,8 g CO_2e/MJ from 1 January 2035 until 31 December 2039;
  d. 30,6 g CO_2e/MJ from 1 January 2040 until 31 December 2044;
  e. 15,3 g CO_2e/MJ from 1 January 2045.

62. These TSC are reflecting the latest international and EU GHG regulatory framework for shipping, based on the reduction of GHG intensity of the energy used onboard ships. On EEDI and EEXI, the updated international regulatory framework ([77]) is reflected ([78]), whilst the TSC on GHG intensity of the energy used onboard follow the methodology established by the FuelEU Maritime.

63. Quantitative thresholds were defined based on the Platform's November 2022 Report. The EEXI quantitative threshold of 10% was introduced ([79]) following the internal analysis between Commission services and EMSA advice, with a view to ensure that compliance that is based only on lower Life-Cycle emissions of the energy used is also accompanied

([74]) Amended Climate Delegated Act, Annex-I, Section 6.10.1(a) and (b) and Section 6.11.1(a) and (b)

([75]) Amended Climate Delegated Act, Annex-I, Section 6.10.1(e) and Section 6.11.1(e)

([76]) Amended Climate Delegated Act, Annex-I, Section 6.10.1(f) and Section 6.11.1(f)

([77]) 2021 Revised MARPOL Annex-IV, Chapter 2 and 4 adopted by Resolution MEPC 328(76).

([78]) EEDI Phase3 applies form 2025, having been brough to earlier application in 2022 for some ships. EEXI applies as from 1 January 2023, representing the latest developments in terms of energy efficiency for shipping in the international context.

([79]) Amended Climate Delegated Act, Annex-I, Section 6.10.1(d) and 6.11.1(d).

by a threshold pushing for improved energy efficiency. Such introduction of EEXI threshold, which was not proposed in the Platform's November 2022 Report and represents, de facto, a stricter formulation than the one proposed by the Platform, is justified by the need to ensure that vessels are effectively improved, with optimised energy efficiency performance, and not only decarbonised 'inefficiently' through the use of renewable and low-carbon fuels. It is important that ships can be also better prepared, designed and operated, to ensure that less of such fuels are used for the same transport work. Only in this way it is possible to mitigate high costs due to inefficient use of renewable and low-carbon fuels onboard ships.

64. The TSC set out under the first bullet point above, targeting **vessels with zero direct (tailpipe) CO_2 emissions**, was included with the objective to promote advanced energy systems based on electrification or hydrogen fuel cells, providing for a substantial contribution to climate change mitigation. However, only a very limited number of ships, in particular in deep sea shipping, existing or new, would be able to meet this criterion and hence qualify as a low-carbon activity under Article 10(1) of the Taxonomy Regulation ([80]) ([81]). Therefore, the TSC under second and third bullet points, based on **EEDI** and **GHG intensity of the energy used onboard**, respectively, were included with a view to serve as 'best-in-class' criteria suitable for those ships for which it is not technically or economically feasible to meet the substantial contribution criteria set out under the first bullet point, but which are still to be considered, based on Article 10(2) of the EU Taxonomy, as having an substantial contribution to the climate change mitigation in the context of decarbonisation and energy transition in shipping.

65. This approach was based on an analysis by the Commission of the scope of Article 10(2) of the Taxonomy Regulation, providing a legal framework for developing the TSC for environmentally sustainable economic activities for which at present there is no technologically and economically feasible low-carbon alternative at sufficient scale, and which would be necessary to the transition towards climate neutrality.

66. This analysis considered ongoing debates about the role of alternative low-carbon energy solutions for maritime transport, as important transitional enablers between residual fossil oil-based systems and, more advanced, low/zero-carbon energy solutions for ships. The analysis therefore assumed a realistic and pragmatic approach, acknowledging that different shipping sectors and operating profiles have different energy/power needs, and face very different challenges in their contribution to climate neutrality or making use of renewable or zero (direct) emission solutions. The analysis took also into account the extensive information submitted by stakeholders and Member States, and support from the EMSA on the latest technologies and energy systems for ships, their technical limitations, availability, suitability, and economic feasibility. Based on this analysis, the developed TSC incentivise further investment into state-of-the art low-carbon/energy efficient technologies for ships in a way which could facilitate and accelerate a complete switch to renewables and low-carbon energy systems ([82]). In that light for instance, the role given to the use of natural gas in the TSC as fuel for ships supports the classification of transitional shipping activities, based on the use of methane technology/energy systems. Such systems

([80]) For more information, see: https://www.emsa.europa.eu/sustainable-shipping/alternative-fuels.html#:~:text=Methyl%20and%20ethyl%20alcohol%20fuels,the%20European%20Commission%20Sulphur%20Directive.

([81]) For more information, see: https://futurefuels.imo.org/home/latest-information/fuel-uptake/

([82]) For more information, see: https://www.emsa.europa.eu/sustainable-shipping/alternative-fuels.html#:~:text=Methyl%20and%20ethyl%20alcohol%20fuels,the%20European%20Commission%20Sulphur%20Directive.

are important enablers allowing introduction (blending) of biomethane or synthetic methane, which should gradually replace natural gas, being the only way to comply with the requirements of the FuelEU Maritime, which get increasingly stringent over time.

67. The Commission's assessment outlined above was also based on an analysis underpinning the Fit for 55 legislative framework, which set out that the shipping sector will need contribution from both energy efficiency measures and use of renewable and low-carbon fuels, in the transition to lower emissions. Investment, both public and private, in key transitional technologies such as methane-based energy systems, will thus continue for the time being, for technical and economic reasons, owing largely to the scarcity of low-carbon energy options for deep sea international shipping. Appropriately designed TSC for transitional shipping activities, especially allowing for existing transition lower-carbon technologies to be used as Taxonomy-aligned, will help to guide the necessary investments in renewable and low-carbon fuels essential for the transition. It was assessed that this objective could be achieved through stringent, but realistic criteria, so that investments in low-carbon transitional energy systems could help the EU meet its sustainability goals, boost the green transition, and minimise the risk of locking in harmful reliance on fossil fuels.

68. The table below presents a summary of the content, objective, and EU Taxonomy legal basis for post-2025:

<table>
<tr><th>Technical Screening Criteria</th><th><u>Zero Direct (tailpipe) CO_2 emissions</u></th><th><u>EEDI 20 percentage points below required applicable EEDI requirements</u>
(Including demonstration of methane emission mitigation + ability to plug-in at berth)</th><th><u>GHG Intensity of energy used onboard</u>
(with additional EEXI criteria of 10 percentage points below applicable requirements)</th></tr>
<tr><td>Introduction in the Amended Climate Delegated Act</td><td>Kept from the Climate Delegated Act</td><td>Updated in relation to Climate Delegated Act; with higher level of ambition</td><td>Newly introduced in the Amended Climate Delegated Act</td></tr>
<tr><td>Substantial Contribution under Article 10 of the Taxonomy Regulation</td><td>Article 10(1)(c) - increasing clean mobility</td><td>Article 10(2)</td><td>Article 10(2)</td></tr>
<tr><td>Link with Fit for 55 legislative framework</td><td>EU ETS extension to maritime transport.
Reduction of direct CO_2 emissions – with direct impact on ETS allowances to be surrendered.</td><td>EU ETS extension to maritime transport
Reduction of direct CO_2 emissions – with direct impact on ETS allowances to be surrendered.
FuelEU Maritime – promote the use of methane technology with demonstration of methane slip mitigation + ability to plug in at berth (clean power/ zero emissions at berth)</td><td>FuelEU Maritime application of WtW methodology. TSC defined with more ambitious targets for 5-year steps, in relation to FuelEU Maritime targets.
<table>
<tr><td colspan="4">GHG intensity o Energy used onboard (gCO2e/MJ)</td></tr>
<tr><th>Year</th><th>Climate DA</th><th>FuelEU</th><th>Reduction</th></tr>
<tr><td>2025</td><td>76,40</td><td>89,34</td><td>14%</td></tr>
<tr><td>2030</td><td>61,10</td><td>85,69</td><td>27%</td></tr>
<tr><td>2035</td><td>45,80</td><td>77,94</td><td>35%</td></tr>
<tr><td>2040</td><td>30,60</td><td>62,90</td><td>35%</td></tr>
<tr><td>2045</td><td>15,30</td><td>34,64</td><td>21%</td></tr>
</table>
ETS extension to maritime transport. EEXI requirement</td></tr>
</table>

Technical Screening Criteria	**Zero Direct (tailpipe) CO_2 emissions**	**EEDI 20 percentage points below required applicable EEDI requirements** **(Including demonstration of methane emission mitigation + ability to plug-in at berth)**	**GHG Intensity of energy used onboard** **(with additional EEXI criteria of 10 percentage points below applicable requirements)**
			embedded to promote energy-efficient ships.
Link with IMO Revised GHG Strategy/ Resolution MEPC.377(80) ([83])	Contributing to point 3.3.3 of Resolution MEPC.377(80), with respect to uptake of zero GHG emission technologies.	Contributing to points 3.3.1 and 3.3.2 of Resolution MEPC.377(80), with respect to energy efficiency and reduction of CO_2 emissions per transport work.	Contributing to points 3.3.3 and 3.3.4 of Resolution MEPC.377(80) with respect to uptake and objective for net-zero shipping.
Contribution pathway to the Global Climate Change objective 1.5decC (Paris Agreement)	Zero (direct) CO_2 emissions – **zero-carbon energy conversion technology**. Substantial contribution to promotion of zero-emission technology – electrification and hydrogen fuel cell-based technology – enabler for zero-carbon fuels.	Contribution through **substantial reduction in energy consumed**. Substantial improvement of energy efficiency (in terms of g CO_2/tonne-mile), well beyond IMO EEDI Phase 3 (20 percentage below the EEDI reference value applicable from 1 April 2022) Introduction of safeguard against negative impacts from methane emissions form gas-fuelled vessels.	**WtW GHG (CO_2 equivalent) emissions reduction** + Energy Efficiency Contribution through the application of a Life-Cycle/Well-to-Wake Methodology for assessment of the contribution of shipping to global decarbonization. Promotion of a decarbonisation framework which safeguards against the transfer of GHG emissions from maritime to upstream production of fossil-based low-to-zero carbon fuels.
Perceived risks associated to specific TSC	Transfer of CO_2/GHG emissions to upstream production of low-to-zero carbon fuels/ electricity.	1 - EEDI as an inadequate metric to support TSC for Climate Change Mitigation. 2 - Indirect promotion of LNG fuelled ships, resulting in even higher GHG negative impacts when compared to ships operating with fossil oil fuels. 3 - Risk of not being able to implement safeguard based on demonstration of state-of-the-art methane mitigation technology. Imprecise requirement.	1 - Ships with otherwise traditional energy systems (conventional oil-based installations) could become Taxonomy-aligned through the use of renewable and low-carbon fuels (including biofuels/ biodiesel with potential certification uncertainties, especially outside the EU). 2 - Lack of economic attractiveness of the GHG WtW TSC vis-à-vis EEDI based TSC, where compliance with LNG-fuelled ships may lead to more appealing option for 'green financing'.

([83]) Resolution MEPC.377(80) on 2023 IMO Strategy on Reduction of GHG Emissions from Ships (2023 IMO GHG Strategy).

Technical Screening Criteria	**Zero Direct (tailpipe) CO_2 emissions**	**EEDI 20 percentage points below required applicable EEDI requirements** **(Including demonstration of methane emission mitigation + ability to plug-in at berth)**	**GHG Intensity of energy used onboard** **(with additional EEXI criteria of 10 percentage points below applicable requirements)**
Elements/ safeguards mitigating measures against perceived risks	Ships will operate in a regulatory framework which will assess the WtW GHG intensity of the energy used onboard (Regulation 2023/1085) – applicable to ships in scope (equal or above 5,000GT)	1 - Existing statistics form EEDI reported values in IMO GISIS ([84]) confirm adequacy of EEDI as quantitative metric for TSC. 2 - Requirement for demonstration of methane mitigation state-of-the-art technology will mitigate the risk of perverse incentive of climate Ships will operate in a regulatory framework which will penalise methane emissions from LNG fuelled ships (Regulation 2023/1085) – applicable to ships in scope (equal or above 5,000GT) 3 – Details/examples of methane mitigation measures and procedure for demonstrations to be outlined in future Guidelines for implementation of FuelEU Maritime.	1 - EEXI, also embedded in the TSC, will push for improved energy-efficiency. It would not be sufficient to demonstrate use of renewable and low-carbon fuels. Any concerns with certification of renewable and low-carbon fuels are mitigated by RED certification and FuelEU Guidelines on demonstration of GHG/Sustainability certification of marine bunker fuels. 2 - Potential for monetizing overcompliance with FuelEU Maritime makes the use of GHG WtW TSC an attractive route for demonstration of possible Taxonomy-aligned investment in transitional shipping activities.

2.3. Policy considerations regarding the chosen sustainable economic activities in the Amended Climate Delegated Act

2.3.1 Aviation

69. The Sustainable and Smart Mobility Strategy recognises the role of transport as an enabler of European economic and social life, and free movement of people and goods across the single market, leading to a greater cohesion and a strengthened European identity. It also recognises that while mobility brings many benefits for its users, it also has costs for society, such as GHG emissions and pollution. It recognised that all transport modes are indispensable for our transport system and that they all must become more sustainable. The

([84]) For more information, see database including voluntary reporting of EEDI: https://gisis.imo.org/Public/Default.aspx

Strategy set a plan of actions that included new policy measures on sustainability in air transport.

70. Decarbonising aviation is an integral part of the European Green Deal and the European Climate Law. The impact assessments accompanying the 2030 CTP and underpinning the Fit for 55 package showed how the aviation sector will deliver the necessary contribution to the EU overall targets for 2030 and 2050.

71. Aviation is a hard-to-abate sector whose decarbonisation will be driven by a set of measures. The use of SAF on a modernised fleet supported by carbon pricing under EU ETS ([85]), is expected to provide the most important contribution to decarbonising aviation and to its role in the delivery of the European Green Deal. The development of zero - emission aircraft is firmly launched, through flagships like the Clean Aviation Joint Undertaking ([86]) and the Alliance for Zero Emission Aviation ([87]). Yet, the development, certification, commercialisation and deployment of such technologies for commercial aviation will take decades.

72. Therefore, transitional technologies are also essential for aviation to deliver its planned substantial contribution to climate change mitigation. That is the reason for which those transitional aviation technologies have been factored into the 2030 CTP and the Fit for 55 package that includes new EU legislative initiatives such as the ReFuelEU Aviation that mandated the supply and use of SAF and the application of EU ETS to the aviation sector that will further incentivise SAF uptake through carbon pricing.

73. The impact assessments accompanying the 2030 CTP and Fit for 55 package showed how economy-wide net greenhouse gas emissions reductions of at least 55% will be achieved within the Union by 2030 and how climate neutrality will be achieved by 2050. The transport sector is expected to contribute 90% GHG emissions reductions by 2050 compared to 1990 level. The Fit for 55 package sets the EU on a path to reach its climate targets in a fair, cost-effective and competitive way. With most of its key proposals adopted by the co-legislators, Union policies are now aligned with the updated 2030 target as set in the European Climate Law. The Commission assessment accompanying the State of the Energy Union 2023 Report ([88]) indicates that the implementation of the Fit for 55 package is estimated to result in a net domestic reduction of GHG by 57% compared to 1990 by 2030.

74. The analysis underpinning the modelling of the recently published 2040 CTP reconfirms the contribution from aviation to the climate neutrality goals, and the role of the transitional technologies. The 2040 CTP Impact Assessment report recognises that '*The European aviation sector is projected to undergo a significant transformation over the next decades, driven by policy measures aimed at decarbonising this sector, such as the EU ETS and ReFuelEU Aviation. This transformation is multi-dimensional, mainly driven by significant improvements in energy efficiency and a large uptake of zero- and low-emission fuels (such*

([85]) For more information, see: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

([86]) For more information, see: https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/search-all-eu-institutions-and-bodies/clean-aviation-joint-undertaking_en

([87]) For more information, see: https://defence-industry-space.ec.europa.eu/eu-aeronautics-industry/alliance-zero-emission-aviation_en

([88]) For more information, see p.5 footnote:4 in https://energy.ec.europa.eu/system/files/2023-10/SWD_2023_646_1_EN_autre_document_travail_service_part1_v4.pdf

as liquid biofuels and e-fuels), along with a moderate deployment of battery-electric and fuel-cell-electric aircraft.' ([89])

75. Therefore, enabling and facilitating the financing of all those aviation transformation technologies, by including the corresponding activities in the EU Taxonomy, will support the practical delivery of the European Climate Law which aligns with the 1.5°C temperature goal of the Paris Agreement. The EU Taxonomy for aviation sector will lead to tangible GHG reductions that can be realised still in this decade, without impeding investments into zero-emission technologies towards which the Union is incontestably committed. The TSC include different conditions and safeguards to ensure that the requirements of Articles 3, 10 and 19 of the Taxonomy Regulation are met.

76. Notably, the TSC incentivise the replacement of old, less efficient aircraft with new, much more efficient ones with a safeguard that it does not contribute to fleet expansion until SAF is widely available. In addition, such aircraft are required to be compatible with 100% use of SAF as from 2028, which will avoid lock-in effects. Moreover, the Taxonomy-eligibility for manufacturing of such aircraft is set until 2032.

77. The TSC will also greatly incentivise high ambition for the uptake of SAF by aircraft operators on a global scale, as it covers all flights performed by an aircraft, including those performed outside the EU, and the amounts of required SAF will progressively increase each year. The TSC therefore complements and reinforce the objectives of the recently adopted ReFuelEU Aviation that sets obligations on aviation fuel suppliers for the use of the SAF within the EU market. The condition to annually increase the share of SAF uptake will decouple the growth of the sector from its emissions.

78. In the case of aviation, the TSC covers low carbon activities, classified as green under Article 10(1) of the Taxonomy Regulation, which are zero emissions at tailpipe aircraft and low carbon airport infrastructure and equipment. However, such technologies will play a limited role in reducing the emissions from aviation in the 2050 horizon. As shown in various decarbonisation roadmaps, the adoption of more energy efficient aircraft technologies coupled with the use of SAF, which are considered transitional activities under Article 10(2) of the Taxonomy Regulation, will play a major role in decarbonising aviation. Air transport plays a vital socio-economic role, is a backbone of the internal market, enabler of social cohesion and European integration. Consistently with the EU transport policy, as set out in the Sustainable and Smart Mobility Strategy, each mode of transport is needed. Therefore, financing support to decarbonisation of aviation is necessary.

79. In this context, the EU Taxonomy can further help guide private investment to those activities that are needed to facilitate the transition and reach economy-wide climate neutrality within the Union by 2050.

80. Taking into account scientific advice and current technological progress, the Amended Climate Delegated Act recognises the role for certain aviation activities, but only insofar as they contribute to the transition to economy-wide climate neutrality and subject to the regular reviews to take account of market progress. Ultimately, the EU Taxonomy helps accelerating the transition towards climate and environmental sustainability, and under its framework, only sustainable investments qualify. Therefore, the inclusion of transitional aviation activities comes with strict conditions associated with their use (aircraft replacement, latest generation aircraft, usage of SAF), in line with the EU's climate targets,

([89]) For more information, see the Annex 8, section 1.5.4.7 of the 2040 CTP Impact Assessment.

and with safeguards against significant environmental harm (e.g. specific DNSH requirements).

81. With the Amended Climate Delegated Act, the EU Taxonomy covers the mix of economic activities on which aviation could rely, while contributing to the transition towards the EU's climate and environmental goals.

82. It is important to recall that the EU Taxonomy is a tool to increase transparency in financial markets regarding sustainable investments provided by the private sector. It does not mandate investments and does not prevent any economic sector from receiving investments. The ultimate objective of the EU Taxonomy is to guide the market and help drive the transition towards climate neutrality, so that all Member States and the EU as a whole deliver on the EU's climate goals.

83. However, it is also to be underlined that the Taxonomy Regulation is a dynamic tool, hence the substantial contribution and DNSH technical screening criteria for all economic activities and sectors currently included in the EU Taxonomy are subject to a regular review, as set out in Article 19(5) of the Taxonomy Regulation. More specifically, the SAF are characterised by rapid technological development, therefore, in addition, based on the conditions laid down in Article 10(2) of the Taxonomy Regulation, such review should cover the appropriateness of the periods of time laid down in the TSC of the Amended Climate Delegated Act. Furthermore, Article 26 of the Taxonomy Regulation requires the Commission to assess and publish a report, every three years, whether the Taxonomy Regulation or its underpinning Delegated Acts need to be revised. It is within the competencies of the Commission to decide how that should occur, based on emerging scientific evidence, development of new technologies, and usability of the TSC. All these aspects are put in place to reflect that the EU Taxonomy is subject to evolution and will be regularly updated.

84. In conclusion, the Commission conducted extensive work for the definition of the EU Taxonomy TSC for aviation activities contained in the Amended Climate Delegated Act. The requirements laid down by the Taxonomy Regulation were respected, as well as the overall EU policy and regulatory framework specific to the sectors considered for the Amended Climate Delegated Act.

2.3.2 Maritime

85. Decarbonisation of maritime transport, as a hard-to-decarbonise sector, represents an important challenge and an important commitment in the EU policy for decarbonising the economy. This objective is an integral part of the 2030 CTP and the European Green Deal.

86. Maritime transport is part of the scope of the European Climate Law, and the relevant Fit for 55 measures have been assessed and subject to respective Impact Assessment to deliver on the shipping sector's necessary contribution to the overall targets. The **basket of measures** designed to deliver the contribution of shipping to decarbonisation in the EU include:

- carbon pricing, with a CO_2 cap and trade market-based measure through the application of the ETS system to shipping, thereby incentivising the energy efficiency of the sector;

- GHG Fuel Standard, with FuelEU Maritime designed to promote the deployment of renewable and low-carbon maritime fuels and substitute sources of energy,

proposed with an innovative framework for assessment of the GHG emissions from ships (i.e. GHG Well-to-Wake emissions, counting emissions from the extraction/ production, distribution and use onboard of ships).

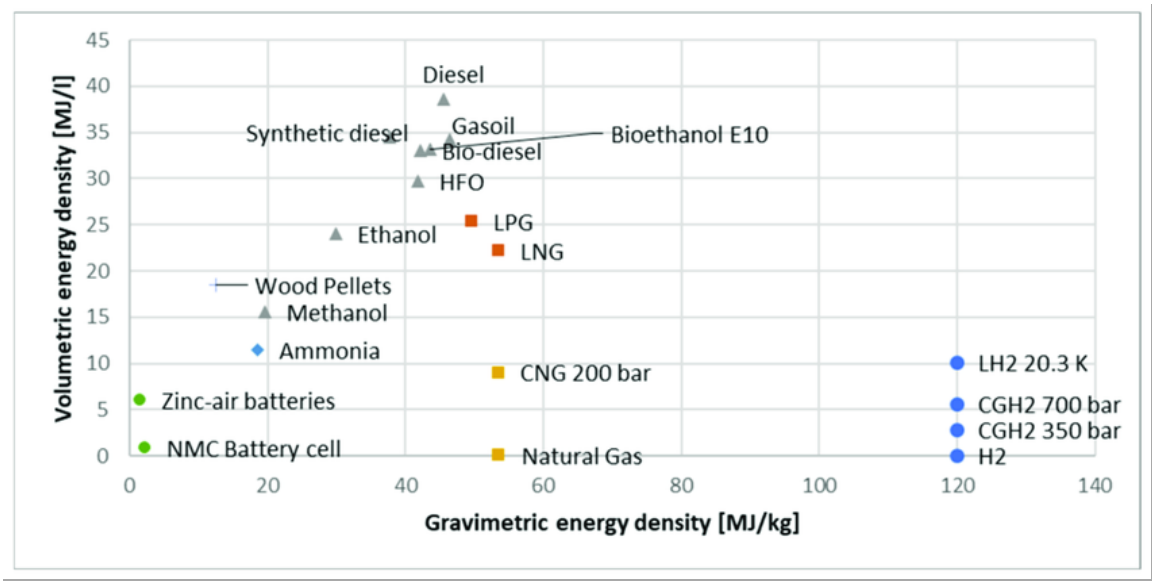
87. The two main pillars of the decarbonisation of shipping under the Fit for 55 package represent the main building blocks for decarbonisation of shipping in the EU. They mainly consist of:

- the establishment of a framework promoting energy efficiency (consuming less fuel);
- the use of renewable and low-carbon fuels (using cleaner fuels).

88. Both are integrated in the EU regulatory framework for decarbonisation of ships, in a coherent and complementary way, supported by a technologically neutral approach, i.e., with no specific prescriptive approach. This represents an important element supporting also the development of the relevant post-2025 TSC introduced in the revision of the Amended Climate Delegated Act.

89. The development of zero-CO2 emission ships is not an easily attainable objective, especially for ships engaged in international deep-sea voyages. This is despite research for ships engaged in short routes, notably with Horizon Europe programs supporting electrification of ships, or those of the Clean Hydrogen – Fuel Cell Joint Undertaking, also focused on the development of hydrogen-based zero-emission shipping.

90. Large volumes of energy required for ships engaged in international deep-sea voyages, and the lack of energy/power density of existing low-to-zero carbon fuels or energy systems for these ships, represent a significant technological barrier for energy transition in shipping ([90]). Figure below illustrates how the energy density of different fuels compares, with oil fuels being the options providing higher amounts of energy per unit volume. This represents a critical aspect for shipping which, associated to the lower prices of fossil oil fuels, has largely dictated this energy option as the primary choice for shipping.



([90]) For more information, see: https://www.emsa.europa.eu/sustainable-shipping/alternative-fuels.html#:~:text=Methyl%20and%20ethyl%20alcohol%20fuels,the%20European%20Commission%20Sulphur%20Directive

(figure – for more information, see: JMSE | Free Full-Text | State-of-the-Art Methods to Improve Energy Efficiency of Ships (mdpi.com))

91. Therefore, transitional technologies, such as methane-based fuel systems using LNG, or hybrid systems able to integrate different technologies, are also essential for maritime shipping to substantially contribute to the trajectory for reduction ([91]) of GHG emissions from shipping, remarkably with respect to the FuelEU GHG intensity reduction targets. That is why also those transitional technologies have been factored into the Climate Target Plan and are reflected in EU policies such as the FuelEU Maritime, and the extension of EU ETS to maritime with the introduction of a carbon price for the first time in shipping sector. The Climate Target Plan implements the ambition of the European Green Deal that sets the overall target for transport of GHG emissions reduction to 90% by 2050 compared to 1990 level. Enabling and facilitating the financing of decarbonisation of maritime transport by including the corresponding investments in the EU Taxonomy will support the practical delivery of the European Green Deal, which aligns with the 1.5°C temperature goal of the Paris Agreement.

92. The shipping is a highly diverse sector, which heavily relies on fossil-based residual oil fuels. To achieve the objective of decarbonisation when no effective low-carbon alternative at scale yet exists, it was important to allow in the transitional phase the combination of:

    - the initial targets for reduction of GHG intensity of the energy used onboard (in FuelEU Maritime), for 2025 and 2030, respectively of 2% and 6% (of 16% and 33% in the respective TSC for GHG intensity of the energy used onboard ([92])); and

    - the possibility for the use of transitional fuels, such as LNG, in energy conversion technologies with added value for the future (i.e. with no potential for 'lock-in' as the use of those transitional fuels, in dedicated energy systems, is compatible with their replacement with renewable fuels over time).

93. This is, for example, the role given to the use of LNG as fuel for ships, which despite its limitations and expressed concerns, can deliver, with adequate energy conversion technology, a substantial reduction of the GHG intensity of the energy used onboard (in g CO_2e/MJ), counting both CO_2 and non- CO_2 GHG emissions.

94. In support of the above approach, technological-neutrality has been a central pillar in the policy formulation for decarbonisation of shipping, allowing for the use of different fuels, energy systems and strategies for the reduction of CO_2 emissions and GHG intensity of the energy used onboard.

95. Furthermore, the Well-to-Wake methodology used for the evaluation of GHG emissions from ships, counting CO_2, and non- CO_2 GHG emissions, from the production, distribution and use of different marine fuels onboard ships, is of particular relevance to the policy of decarbonisation of shipping, mitigating any risks of moving GHG emissions upstream. Only by adoption of WtW methodology it becomes possible to measure comprehensively all relevant emissions form extraction/production of the fuels up to their distribution and use onboard ([93]).

([91]) Trajectory for reduction of GHG intensity of the energy used onboard ships, as defined in Article 4 of the FuelEU Regulation.

([92]) Amended Climate Delegated Act, Annex-I, Section 6.10.1(f) and 6.11.1(e). See also the table below.

([93]) The Well-to-Wake methodological approach is embedded in the TSC based on the GHG intensity of the energy used onboard Amended Climate Delegated Act, Annex-I, Section 6.10.1(f) and 6.11(e).

96. Following the above, the Commission outlines its policy action ensuring that the three main principles of the EU policy for decarbonisation of maritime transport, are in place:

- complementary promotion of the energy efficiency measures and the use of renewable and low-carbon fuels;
- a technologically-neutral framework;
- the application of a Well-to-Wake assessment methodology.

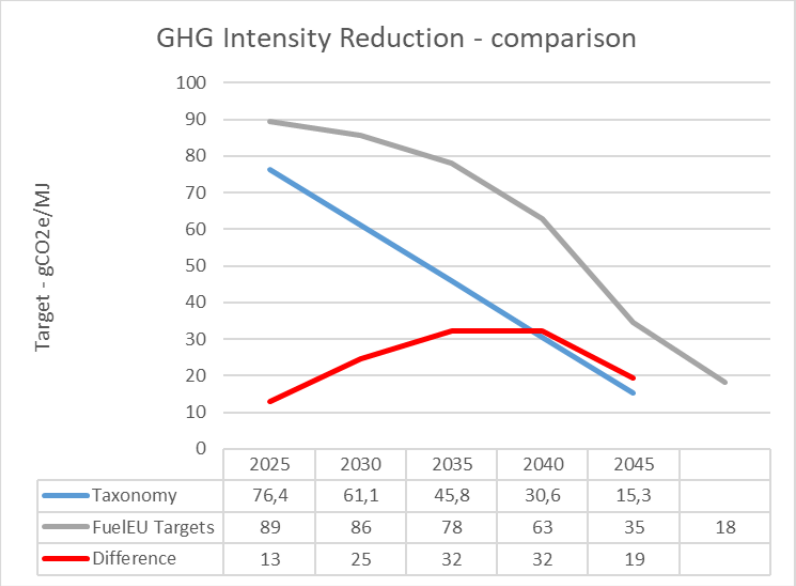
97. The TSC applicable after 2025 are consistent with the above principles, designed to lead to substantial GHG reductions that can be realised still in this decade, without impeding investments into zero-emission technologies which the EU policy is promoting. They do not result in a lock-in effect of high carbon technologies, given that the same energy conversion systems can be used for renewable low carbon fuels with lower well-to-Tank emissions (bio- and e-fuels).

98. The table below illustrates how the ambition of the TSC based on GHG intensity of energy used onboard is aligned with the targets in the FuelEU Maritime.

Year	**FuelEU Maritime GHG intensity reduction target** (% reduction) (GHG intensity limit, gCO_2e/MJ)	**EU Taxonomy** (% reduction) (GHG intensity limit, g CO_2e/MJ)	Evolution of the path to decarbonization of Maritime Transport – **Illustrative relevant technologies to meet the targets of FuelEU Maritime and EU Taxonomy ([94])**	**Example:** Decarbonisation for LNG fuelled ship launched in operation by 2025, with operating life expected of 25 years (up to 2050)
2025	2% (89)	16% (76,4)	Use of transitional low-carbon fuels, including LNG, oil fuel blends, and initial introduction of renewable fuels. Onshore Power Supply (OPS) Wind Assisted Propulsion	Use of LNG as transitional fuel (in medium speed engines (demonstrating state-of-the art methane mitigation technology)
2030	6% (86)	33% (61,1)		
2035	14,5% (78)	50% (45,8)		
2040	31% (63)	66% (30,6)	Substantial introduction of renewable and low-carbon fuels. Gradual increase of relevance of green synthetic fuels (RFNBOs) for deeper decarbonization	Introduction of Biomethane and/or synthetic methane blends for deeper reduction of GHG intensity of the energy used onboard.
2045	62% (35)	83% (15,3)		
2050	80% (18)	Not defined		

99. The figure below illustrates the ambition of the TSC for shipping activities compared to the FuelEU Maritime targets, based on GHG intensity of the energy used onboard.

([94]) The different technologies illustrated in this column give a perspective of what could be the immediate technological options available to operators for compliance.



100. The revision of the TSC on transitional activities for shipping in the Amended Climate Delegated Act has taken into account parallel policy developments, in particular:

a) negotiation and publication of the Fit for 55 instruments, namely FuelEU Maritime, extension of the ETS to maritime and Alternative Fuels Infrastructure Regulation (AFIR) ([95]);
b) IMO MEPC 80 adopted by RESOLUTION MEPC.376(80) the 'Guidelines on Life Cycle GHG Intensity of Marine Fuels' (LCA Guidelines) ([96]), which set out methods for calculating well-to-wake and tank-to-wake GHG emissions for all fuels and other energy carriers (e.g., electricity) used on board a ship;
c) development and finalisation of the 2023 IMO Strategy on GHG Reduction form Ships ([97]);

101. Consistently with those policy developments, the revised TSC designed for shipping activities incentivise the replacement of old, less efficient ships with new, much more efficient ones, allowing for transitional energy options to be deployed together with energy systems.

102. In case of shipping activities, the revised TSC cover low carbon activities under Article 10(1) of the Taxonomy Regulation, which are zero (direct) emission ships. The substantial contribution criterion based on zero- CO_2 (direct) emissions is kept to incentivise the deployment of zero-emission ships where technically and economically feasible. However, such technologies will play a limited role in reducing the emissions from shipping in the 2050-time horizon, in view of limited energy densities of battery or fuel cell systems, or

([95]) Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU (OJ L 234, 22.9.2023, p. 1).

([96]) For more information, see: https://www.imo.org/en/OurWork/Environment/Pages/Lifecycle-GHG---carbon-intensity-guidelines.aspx

([97]) Resolution MEPC.377(80), for more information, see: https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/annex/MEPC%2080/Annex%2015.pdf

economic feasibility systems for primary energy applications ([98]). Indeed, the measures relying on the adoption of new ship energy system technologies coupled with the use of renewable and low-carbon fuels qualified as transitional activities under Article 10(2) of the Taxonomy Regulation will play a major role in the transition of the sector towards climate neutrality. With this approach, the TSC are consistent with the objective of the Taxonomy Regulation, which is to shift the economy from more polluting activities towards climate neutrality.

103. The transition of the maritime transport is also important because it plays a vital socio-economic role: it is a backbone of internal market, a lifeline of EU economy exports/imports, and an enabler of social cohesion and European integration. The costs of transition to cleaner energy and technologies in this sector is high, and the EU Taxonomy can further help guide private investment to those activities that are needed to reach climate neutrality and facilitate the transition.

104. Taking into account scientific advice and current technological progress, the Amended Climate Delegated Act recognises the role for certain shipping activities, but only insofar as they contribute to the transition to climate neutrality and subject to the regular reviews to take account of market progress. Therefore, the inclusion of transitional shipping activities comes with clear conditions associated with their use (improvement on Energy Efficiency and use of renewable and low-carbon marine fuels), in line with the EU's climate targets, and with safeguards against significant environmental harm (e.g. specific DNSH requirements).

105. With the Amended Climate Delegated Act, the EU Taxonomy recognises the mix of measures on which the maritime sector will rely, while contributing to the transition towards the EU's climate and environmental goals. However, it is also to be underlined that the EU Taxonomy is a dynamic tool, hence the TSC for all economic activities, in particular transitional activities, currently included in the EU Taxonomy, are subject to a regular review, as set out in Article 19(5) of the Taxonomy Regulation. More specifically, the maritime and alternative fuels sectors are characterised by rapid technological development, therefore, in addition, based on the conditions laid down in Article 10(2) of the Taxonomy Regulation, such review should cover the appropriateness of the periods of time laid down in the TSC of the Amended Climate Delegated Act. Furthermore, Article 26 of the Taxonomy Regulation requires the Commission to assess and publish a report, every three years, whether the Taxonomy Regulation or its underpinning Delegated Acts need to be reviewed. It is within the competencies of the Commission to decide when that should occur, based on emerging scientific evidence, development of new technologies, and usability of the TSC.

106. In conclusion, the Commission conducted extensive work for the definition of the TSC for shipping activities contained in the Amended Climate Delegated Act. The requirements laid down by the Taxonomy Regulation were respected, and the TSC are consistent with the overall EU policy and regulatory framework specific to the maritime sector.

([98]) For more information, see: https://www.emsa.europa.eu/sustainable-shipping/alternative-fuels.html#:~:text=Methyl%20and%20ethyl%20alcohol%20fuels,the%20European%20Commission%20Sulphur%20Directive

ANNEX II - ASSESSMENT OF THE GROUNDS FOR INTERNAL REVIEW OF COMMISSION DELEGATED REGULATION (EU) 2023/2485

107. The Applicants' claim that the technical screening criteria set out in the Amended Climate Delegated Act as regards aviation and shipping activities do not comply with several provisions of the Taxonomy Regulation and the European Climate Law. The Applicants therefore request an internal review of the Amended Climate Delegated Act in accordance with the Aarhus Regulation.

108. The Commission considers that the Applicants' request is unfounded. This Annex contains the Commission's response to the Applicants' request for internal review of the Amended Climate Delegated Act.

GROUNDS OF REQUEST FOR REVIEW

1. LACK IN APPLICATION OF THE REQUIREMENTS OF ARTICLE 19(1) CONCERNING AVIATION ACTIVITIES

Applicants' claim (§ 137 of its request)

109. The Applicants claim that the Commission failed to take account of several cumulative mandatory requirements laid down in Article 19(1) of the Taxonomy Regulation.

1.1. Failure to base the new TSC on conclusive scientific evidence

Applicants' claim (§§ 138-147 of its request)

110. The Applicants claim that the Commission failed to base the technical screening criteria (TSC) for the aviation activities on conclusive scientific evidence in breach of Article 19(1), point (f) of the Taxonomy Regulation. Namely, the Applicants argue that:

- no '*formal assessment summarising the scientific evidence that would underpin*' the TSC for those activities has been provided;
- '*the Staff Working Document (SWD) describes the approach adopted in a manner that makes clear the wrong test was applied'* in developing the TSC.

111. In particular, the Applicants state that:

- the Taxonomy Regulation does not provide that the TSC should be 'science-based' but that they should be based on 'conclusive scientific evidence;
- the Taxonomy Regulation does not provide that TSC should be based on international agreements as they might not meet the stringent requirement of the Taxonomy Regulation;
- they do not understand how the EU's leadership is a relevant reference point; the TSC could be world-leading and still not comply with the Taxonomy Regulation.

112. The Applicants also point out to the difference between the criteria proposed by the Steer Report and the TSC adopted. In particular, the Applicants state that the Steer Report:

- *'proposed more stringent carbon reduction targets than the Aircraft TSC and the report did not propose any TSCs in relation to SAF target percentages';* and that

- *'simply 'read across' its analysis of current 'latest generation' technology to suggest TSC up until 2027. It does not contain analysis that suggests these targets will enable the aviation sector to be on track to reach net zero'.*

113. The Applicants claim that the Commission should make the TSC based on conclusive scientific evidence or accept that the scientific evidence for the TSC is not conclusive.

Commission's response

a) general observations about the application of point (f) of Article 19(1) of the Taxonomy Regulation

114. Article 19(1), point (f) of the Taxonomy Regulation requires that the TSC be based *inter alia* on 'conclusive scientific evidence'. That provision does not lay down a formal requirement according to which the Commission would have had to produce a 'formal assessment summarising the scientific evidence that underpinned the TSC'. It is not clear whether the objection made by the Applicants in § 139 of their request is an objection of a failure to state reasons or an allegation on substance that the Commission would have failed to base the TSC on conclusive scientific evidence. The objection is therefore to be rejected as inadmissible because of lack of clarity.

115. In any case, the Commission would like to point out that the Applicants' statement that the TSC are 'science-based' instead of being based on 'conclusive scientific evidence' seems to ignore that the SWD, in the context of providing an overview of the level of ambition for the TSC, refers to the fact that the TSC, inter alia, need to be 'science-based' as set out in the Taxonomy Regulation. Hence, it should be clear from the particular context of the SWD on page 40 that the Commission would not ignore the fact that Article 19(1) of the Taxonomy Regulation refers to 'conclusive scientific evidence'. On the contrary, the Commission followed precisely the terms set out in the Taxonomy Regulation when developing the TSC.

116. The Commission would further like to provide its general observations regarding the application of the relevant criteria set out in Article 19(1), point (f) of the Taxonomy Regulation, also in light of the Applicants' statements in paragraph 20 of its request.

117. While the notion of 'conclusive scientific evidence' is not further specified in the Taxonomy Regulation, it has to be interpreted by taking into account not only the wording of the provision in question but also its context and the objective pursued by the rules of which it forms part.

118. In that regard, the ordinary meaning of the term 'conclusive scientific evidence' means scientific evidence that is not inconclusive, or in other words, scientific evidence that allows conclusions to be reached. Other linguistic versions of the provision underline this meaning of the term, see e.g. the French version '*éléments scientifiques concluants'* - as also referred to by the applicants' in several paragraphs of the request -, the German version 'schlüssige wissenschaftliche Erkenntnisse' or the Dutch version 'sluitend wetenschappelijk bewijs'.

119. Moreover, the term has to be seen in the wider context of Article 19 of the Taxonomy Regulation. It has to be put in balance with the other criteria laid down in that provision and, in particular, with the precautionary principle, which presupposes a situation of scientific uncertainty (see e.g. the judgment of the EJC in Case C-499/18 P, Bayer CropScience, points 80-81). According to settled case-law, pursuant to the precautionary principle, the responsibility for determining the level of risk which is deemed unacceptable for society lies with the institutions responsible for the political choice of determining an

appropriate level of protection for society. It is for those institutions to determine the critical probability threshold for adverse effects on public health, safety and the environment and for the degree of those potential effects which, in their judgment, is no longer acceptable for society and above which it is necessary, in the interest of protecting public health, safety and the environment, to take preventive measures in spite of the existing scientific uncertainty (see the judgment of the General Court in Case T-31/07, Du Pont de Nemours, points 145-146). It is also settled case-law that, in applying the precautionary principle, the EU institutions must carry out complex technical and scientific assessments, which imply a broad discretion in exercising their powers relating to the protection of human health and the environment (Case T-31/07, Du Pont de Nemours, point 155). When it comes to the objective pursued by the provision in question, recitals (38) and (40) of the Taxonomy Regulation explain that given *'the fast-changing nature of both science and technology'*, the criteria should be based on *'scientific evidence'* or *'available* scientific evidence'. This shows that the legislator did not intend to restrict the Commission's source of scientific evidence to evidence that is totally undisputed. On the contrary, in recital (40), it is explicitly acknowledged that where 'scientific evaluation does not allow for a risk to be determined with sufficient certainty, the precautionary principle should apply in accordance with Article 19(1) TFEU'.

120. Therefore, the notion of 'conclusive scientific evidence' used in Article 19(1), point (f) of the Taxonomy Regulation cannot be read in isolation from all the other requirements listed in Article 19(1) of the Taxonomy Regulation. The TSC provided therein are subject to a list of requirements that need to be put in balance. In particular, Article 19(1), points (d) and (i) of the Taxonomy Regulation require the TSC to take into account 'any relevant Union legislation' and 'the potential market impact of the transition to a more sustainable economy, including the risk of certain assets to become stranded as a result of such transition, as well as the risk of creating inconsistent incentives for investing sustainably'. Article 19(1), point (k) of the Taxonomy Regulation requires the TSC 'to be easy to use and be set in a manner that facilitates the verification of their compliance'. Relevant Union legislation also incorporates ICAO standards. (99)

121. The simultaneous and cumulative application of all these requirements implies that the Commission is empowered to calibrate the substantial environmental outcome of a given economic activity (resulting from substantial contribution and DNSH requirements) set out in the TSC in the light of inter alia available conclusive scientific evidence, consistency with specific Union legislation, technological and economic feasibility both in terms of compliance and reporting (usability). As explained in the Climate Delegated Act Impact Assessment ([100]), the Commission has adopted a general approach to balance the requirements of the Taxonomy Regulation, notably through the four categories of requirements laid down in Article 19 of the Taxonomy Regulation for TSC (regrouped as *'policy coherence, environmental integrity, level playing field, usability'*) and seven types of approaches to setting the criteria for different economic sectors. This general approach has not changed.

([99]) Article 9(2) of the Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1).

([100]) For more information, see: the sections 4 and 5, pages 11 to 19 of the Climate Delegated Act Impact Assessment, https://op.europa.eu/en/publication-detail/-/publication/c796e1c5-c774-11eb-a925-01aa75ed71a1/language-en)

122. Article 19(5) of the Taxonomy Regulation also underlines that any amendments to the TSC resulting in greater substantial environmental outcome (resulting from substantial contribution and DNSH requirements) should not be determined only by scientific evidence alone (pertaining to the requirement referred to in Article 19(1), point (f) of the Taxonomy Regulation), but also by considerations related to their application by financial market participants and their impact on capital markets (mirroring in particular the requirements referred to in Article 19(1), points (i) and (k) of the Taxonomy Regulation).

123. Finally, any interpretation of Article 19(1) of the Taxonomy Regulation that would be based on a too restrictive interpretation of its Article 19(1), point (f) would unduly narrow down the scope of the Taxonomy Regulation to a limited number of activities by jeopardising the overall objective of the Taxonomy Regulation as a useful tool to channel the financial flows towards the transition of the entire EU economy towards sustainability. In addition, if that were the case, the provisions concerning the update and review of the technical screening criteria (i.e. Article 19(5) of the Taxonomy Regulation) and their dynamic and incremental development would be meaningless.

124. Based on the considerations set out above, the standard for establishing the TSC should be whether the substantial environmental outcome of a given economic activity (resulting from substantial contribution and DNSH requirements) set out in the TSC is well calibrated, in view of all the requirements listed in Article 19(1) of the Taxonomy Regulation, notably the available scientific evidence, the precautionary principle, consistency with existing Union legislation and market and technological neutrality and usability.

b) application of point (f) of Article 19(1) of the Taxonomy Regulation to the TSC on aviation activities

125. One of the inputs supporting the preparatory work of the Platform and the Commission on aviation in the EU Taxonomy was a dedicated analysis carried out in the Steer Study ([101]), a study commissioned by the Commission and published in February 2021. The Steer Study among others reviewed the existing literature as concerns the scenarios and measures for aviation emissions reductions and pathways to net zero consistent with the Paris Agreement temperature goals of 1.5°C degree, taking account of their technical availability and feasibility. Those are summarised in section 5.21 of the Steer Study and referenced throughout the Steer Study.

126. The transition of aviation to the net-zero pathway is set out in a number of sectoral roadmaps and environmental reports developed by the subject experts and scientists, with several of those published after the Steer study was concluded. Those reports underpinned the work of the Commission in developing the TSC for aviation. Those include Waypoint 2050 by Air Transport Action Group (ATAG) ([102]), Destination 2050: A route to Net Zero European Aviation ([103]), the ICAO Committee on Aviation Environmental Protection (CAEP) Report on the feasibility of a long-term aspirational goal (LTAG) for international

(101) For more information, see: European Commission, Directorate-General for Mobility and Transport, Wiener, P., Scott, M., Toro, A. et al., Sustainable finance taxonomy for the aviation sector, Publications Office, 2021, https://op.europa.eu/en/publication-detail/-/publication/ade730be-8541-11eb-af5d-01aa75ed71a1/language-en, refer to section 5.21 of the final report.

([102]) For more information, see: https://aviationbenefits.org/media/167417/w2050_v2021_27sept_full.pdf, September 2021, refer to page 100 on the methodology and models applied

([103]) For more information, see: https://www.destination2050.eu/wp-content/uploads/2021/03/Destination2050_Report.pdf, February 2021, with scientific input from Netherlands Aerospace Centre (NLR) and SEO Amsterdam Economics

civil aviation CO_2 emission reductions ([104]), the Strategic Research and Innovation Agenda of Clean Aviation Joint Undertaking ([105]), European Aviation Environmental Reports ([106]), ICAO Environmental Reports ([107]), Objective Skygreen 2022-2030 by EUROCONTROL ([108]), Net Zero Emissions by 2050: A Roadmap for the Global Energy Sector by International Energy Agency (109), Energy Transition Outlook by DNV (110), Decarbonising Air Transport: Acting Now for the Future by International Transport Forum (111) and Vision 2050: Aligning aviation with the Paris Agreement by International Council on Clean Transportation (112). The sectoral decarbonisation roadmaps recognise that aviation is a hard to abate sector that will rely on a mix of measures combining energy efficiency improvements, switch to renewable and low carbon energy, operational improvement and market-based measures (113). The role of individual measure in reaching the net zero targets varies in function of the scenario assumed. The assessment in the industrial roadmaps was carried out by experts from across the sector, based on review of existing publications and research, underpinned by economic modelling and forecasting.

127. For instance, the LTAG Report, which was unanimously approved at the CAEP/12 meeting in February 2022, consolidates the cumulative efforts of over 280 experts over nearly 2 years of intensive work. The LTAG Report includes scenarios that highlight the potential for substantial CO_2 reductions from innovative aircraft technologies, operations, and fuels, with the assessment of required costs and investments. It also placed the results in the context of global carbon budgets for limiting global warming to 1.5°C and 2°C, using data from the Intergovernmental Panel on Climate Change (IPCC). The Commission and EASA has participated in, and contributed to, this work as nominated EU experts.

128. The important socio-economic role of air transport and the necessity to rely on a mix of measures necessary to decarbonise aviation is recognised in the Sustainable and Smart Mobility Strategy (the "Strategy") and accompanying Staff Working Document ([114]). The Strategy recognises that transitional technologies, notably fleet renewal with fuel efficient

([104]) For more information, see: https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx, March 2022, refer to the executive summary and technical annexes.

([105]) For more information, see: https://clean-aviation.eu/sites/default/files/2022-01/CAJU-GB-2021-12-16-SRIA_en.pdf, December 2021

([106]) For more information, see: https://www.easa.europa.eu/eco/eaer/downloads#download-report-2022, refer to 2019 and 2022 editions

([107])For more information, see: https://www.icao.int/environmental-protection/Pages/envrep2022.aspx

([108]) For more information, see: https://www.eurocontrol.int/sites/default/files/2022-05/eurocontrol objective-skygreen-2022-2030-report-20220523.pdf, May 2022

([109]) For more information, see: https://www.iea.org/reports/net-zero-by-2050, May 2021

([110]) For more information, see:

https://www.connaissancedesenergies.org/sites/connaissancedesenergies.org/files/pdf-actualites/DNV_Energy_Transition_Outlook_2022_main_report.pdf, October 2021

([111]) For more information, see: https://www.itf-oecd.org/decarbonising-air-transport, July 2021

([112]) For more information, see: https://theicct.org/publication/global-aviation-vision-2050-align-aviation-paris-jun22/, June 2022

([113])For more information, see ICAO 'basket of measures' approach: https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg111-115.pdf

([114]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12438-Sustainable-and-Smart-Mobility-Strategy_en

aircraft powered by SAF, are essential for aviation to deliver its planned contribution. That is why also those transitional technologies have been factored into the 2030 CTP, and supported by EU policies such as the ReFuelEU Aviation and EU ETS as part of 'Fit for 55' package. The TSC for aviation were developed building on the extensive sectoral expertise (notably including but not limited to those referred above), existing EU and international policies, and stakeholders consultations, taking account of technical limitations and availability of various decarbonisation measures. Consequently, the TSC incorporate zero -emission aircraft along with fleet renewal with latest generation aircraft and uptake of SAF, as explained in sections 2.2.1.2 and 2.3.1 of Annex I to this reply.

129. Enabling and facilitating the financing of all those transformations, by including the corresponding investments in the EU Taxonomy, will support the practical delivery of the European Climate Law which aligns with the 1.5°C temperature goal of the Paris Agreement.

130. The TSC rely on the latest generation aircraft and sustainable fuels technologies that are technologically and economically available to the sector.

131. With reference to the Applicants' claim in § 139.1 on the contribution of aircraft efficiency, the approach in the EU Taxonomy is based on a fleet renewal, to deliver significant GHG savings with best available technologies by replacing aircraft of previous generation. The evidence shows that fuel efficiency improvement potentials by comparison with legacy aircraft range typically around 20-25% (115). The methodology for the development of the energy efficiency levels for aircraft was explained in the Steer Study. The margins set to identify 'best-in-class' aircraft exceed the thresholds set in the international standards for aircraft CO2 emissions for aircraft in production which will apply as from 2028 only. The thresholds also take account of the expected upfront savings stemming from fleet renewal with more fuel efficient aircraft. This is approach is also further explained in the sections 2.2.1.2 and 2.3.1 of Annex I to this reply.

132. With reference to the Applicants' claims in § 139.1, the methodology for the definition of the minimum thresholds for SAF was based on several principles:

- the TSC require high-level of SAF GHG emissions reductions consistent with EU laws, higher than those required by the international standards and in other jurisdictions;
- the TSC reflect that the SAF market at the time of adopting the TSC was not yet established and that SAF technologies still need to mature both technologically and economically, while at the same time taking account of the ambition levels in the ReFuelEU Aviation proposal ([116]);
- the TSC recognise the need for a regular review of those thresholds in view of uncertainties on the SAF market; and
- the TSC require SAF uptake corresponding to all flights performed by an aircraft, including those outside the EU (where different sustainability rules on SAF apply).

([115]) For more information, see: https://www.destination2050.eu/wp-content/uploads/2021/03/Destination2050_Report.pdf, the Table 5 of the Destination 2050 Report.

([116]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12303-Sustainable-aviation-fuels-ReFuelEU-Aviation_en, Article 4 and Annex I

133. The Commission's impact assessment accompanying ReFuelEU Aviation published in 2021 (117) recognised the scarcity of SAF in the EU aviation market corresponding to less than 0.05% of total jet fuel consumption in 2020. Challenges related to the SAF development are analysed in the ReFuelEU Aviation impact assessment and outlined in sections 2.4 and 2.7 of Annex II of the reply.

134. As concerns the dates of applicability of individual requirements in the TSC for aviation, raised by the Applicant in § 139.3, those were defined by advancing the expected market and technological developments, while keeping those requirements realistic and technically feasible to preserve the incentive to invest in the latest generation aircraft, as well as to take account of the uncertainty about future long-term market developments. However, as those TSC pertain to transitional activities, the Commission will regularly review the TSC in view of market developments and adapt accordingly.

135. With reference to the Applicants' claim in § 139.4 on the effectiveness of the replacement ratio, its purpose and application is explained in the sections 2.2.1.2 of Annex I and 1.2 of Annex II of the reply, and its design and corresponding impacts have been considered and recommended by the Platform.

136. With reference to the Applicants' claim in § 139.5 on inclusion of non-CO2 effects, first, the Commission notes that there are significant scientific uncertainties remaining in quantifying aviation's non-CO2 impacts on climate. Second, the TSC for aviation are based on energy efficiency improvements – the more fuel efficient engines are, the less fuel aircraft will consume and the less CO2 and in general less non-CO2 emissions aircraft will emit. Third, the TSC encourage the uptake of SAF, that typically have lower aromatics and sulphur content, and could also contribute to reducing non-CO2 climate impacts (118).

137. The Applicant refers in § 145 to deviations from the Steer Study in the final TSC adopted by the Commission. It should be noted that the Steer Study was one of the first technical input produced in the development of the TSC for aviation. As explained in section 2.2.1.1 of Annex I to this reply, the technical work further progressed within the Platform's and Commission's work, taking account of the expertise provided by the Platform members and ad-hoc experts, extensive public consultations with stakeholders, new technical publications and knowledge, and market and regulatory developments as explained above.

138. Specifically, as concerns the definition of the latest generation of aircraft, the Steer Study recommended to rely on the already established metric by the ICAO CO_2 emissions standard. The definition of the margins to the CO_2 standard aim to differentiate between latest generation aircraft that are more fuel efficient than the previous aircraft generation. Although the margins were slightly revised, the underlying methodological approach and objective remained unchanged. The adaptations were needed to take account of expert inputs and EASA experience from the first CO_2 emissions certification of aircraft completed in May 2021 ([119]). The methodology applied ensures that certain models types and variants of latest generation aircraft (which would have comparable performance), are not excluded in a biased manner that could lead to market distortion between aircraft operators depending on their business models or between aircraft producers. The

([117]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12303-Sustainable-aviation-fuels-ReFuelEU-Aviation_en

([118]) For more information, see: https://climate.ec.europa.eu/news-your-voice/news/updated-analysis-non-co2-effects-aviation-2020-11-24_en

([119]) For more information, see: https://www.easa.europa.eu/en/newsroom-and-events/press-releases/easa-completes-first-co2-emissions-certification-airbus-a330-900

Commission also followed the Platform recommendations that the margins for aircraft production should be stable and defined until 2032, instead of their revision already in 2027 and in 2037. This is justified in order to provide economic operators with a longer market certainty in view of the very long investment cycles for aircraft. At the same time, this timeline takes account of uncertainties related to the future market development and availability of zero -emission and new 'conventional' fuel efficient aircraft, including developments stemming from Clean Aviation Joint Undertaking, which is set to end by the end of 2031. Moreover, as a result of the future consultation and work of the Platform, further requirements were introduced to the TSC that increase the level of ambition, such as the requirement of manufactured aircraft to be 100% SAF compatible and the application of replacement ratio.

139. The ReFuelEU Aviation impact assessment, adopted by the Commission and published after the Steer Study, quantifies the aviation contribution to reducing climate impacts from the use of SAF. As explained above, the TSC for aviation were designed to take into account various pertinent parameters to achieve substantial GHG emission reduction and the economic and technological availability of sustainable alternatives, including the expected development of SAF market as a result of ReFuelEU Aviation.

140. All in all, the evidence highlighted above, including the scientific evidence, was conclusive for the purposes of developing and adopting the TSC challenged by the Applicants.

1.2. Failure to provide measurable threshold for the replacement ratio

<u>Applicants' claim</u> (§§ 148-153 of its request)

141. The Applicants state in particular that '*The Commission has not published a replacement ratio, although the Staff Working Document (SWD) had noted that it might do so to* 'facilitate *disclosures' and to* '*ensure consistency and comparability of data'*. The Applicants then conclude that *'It is therefore for individual entities to calculate the replacement ratio. However, the TSC do not specify the methodology of calculation, nor what organisation will* undertake such calculations. Such a ratio will also be difficult to calculate given the scope'.

142. The Applicants state that 'the SWD suggested that each entity's calculations 'should be supported by the explanation of the methodology applied and the data source'. This is 'seemingly a recognition of the potential for inconsistency and inaccuracy'.

143. The Applicants claim therefore that the TSC related to the replacement ratio are in breach of Articles 19(1), points (c) and (k) of the Taxonomy Regulation given that the replacement ratio fails to provide a quantitative threshold, is not '*easy to use'*, and is *'not set in a manner that facilitates verification of compliance.*'

<u>Commission's response</u>

a) general observations about the application of points (c) and (k) of Article 19(1) of the Taxonomy Regulation

144. The Applicants argue that the replacement ratio fails to provide a quantitative threshold, is not easy to use, and is not set in a manner that facilitates verification of compliance. Therefore, the TSC related to the replacement ratio is in breach of Article 19(1), points (c) and (k) of the Taxonomy Regulation.

145. The Commission would like to point out that the Applicants misunderstood Article 19(1), point (c) of the Taxonomy Regulation. That provision does not provide that the TSC must set out 'quantitative thresholds', but that the TSC are to be quantitative and contain thresholds to the extent possible, and otherwise be qualitative. The Applicants obviously misread the provision as requiring the Commission to lay down exclusively fixed absolute quantitative thresholds, which is not what the Taxonomy Regulation requires.

146. The Amended Climate Delegated Act provides a threshold, namely a threshold based on calculations to be carried out by the relevant provider due to it evolving on a yearly basis ('replacement *ratio*'). To be able to reflect the evolution, the setting of a fixed quantitative threshold would not have been appropriate. Furthermore, the argument that a requirement is hard to verify due to the threshold being calculated by the activity provider cannot be followed. For example, there are data providers on new aircraft deliveries and retirements and the data can be easily obtained from these providers. Hence the calculations undertaken by the relevant activity provider could also be verified accordingly.

b) application of points (c) and (k) of Article 19(1) of the Taxonomy Regulation to the TSC on aviation activities

147. Zero-emission commercial air transport with zero direct CO_2 emissions or 'conventional' aircraft operated entirely on sustainable aviation fuels (SAF) are not yet technologically available ([120]). For this reason, air transport also qualifies as a transitional activity, with the TSC based on best available technologies for aircraft, and on the potential to reduce substantially greenhouse gas emissions over the life cycle of aircraft through the progressive uptake of SAF.

148. To facilitate financing of more efficient and environmentally sustainable latest generation aircraft, while avoiding lock-in effects of more carbon intensive assets and not hampering the development of zero -emission commercial air transport, the Commission developed the TSC covering fleet renewal. The fleet renewal requirement is implemented through the 'one-in, one-out' principle, meaning that an incoming aircraft in the fleet replaces an outcoming aircraft. This is reflected in the TSC for aircraft operators and lessors that permanently withdraw their aircraft from use. However, when this is not practically feasible, this principle is implemented through the application of so called *'replacement ratio'*. Such a replacement ratio reflects the portion of the global fleet that is used to replace even older aircraft from the market. Consequently, the replacement ratio is applied in a few specific cases under the TSC for aviation activities. In particular, it applies in Annex I to the Climate Delegated Act:

- to aircraft manufacturing, section 3.21 (b) and (c), in view of the fact that it is not the aircraft manufacturer, but the aircraft operator that has the ownership and control over the withdrawal of the older non-compliant aircraft in accordance with the conditions set out in the TSC;
- to aircraft leasing, section 6.18 (b), and passenger and freight air transport, section 6.19 (b), in case of latest generation aircraft purchased before the TSC enter into application, so that the first adopters of the new aircraft technologies are not penalised;

([120]) For more information, see the chapter 4 on sustainability challenges in the SWD of the Sustainable and Smart Mobility Strategy: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0331

- to aircraft leasing, section 6.18 (c), and passenger and freight air transport, section 6.19 (c) and (d), in case when the aircraft that does not comply with the TSC is permanently withdrawn from the fleet (i.e. sold or otherwise permanently transferred to another economically independent entity). The replacement ratio would reflect that the old aircraft would replace and remove from use an even older aircraft (notably, in freight or in less developed economies) with an aim not to provide a wrong incentive to prematurely scrap aircraft.

149. The calculation formula for the replacement ratio is defined in the TSC, that requires that the ratio is calculated based on the proportion of aircraft permanently withdrawn from use to aircraft delivered at the global level averaged over the preceding 10 years as evidenced by verified data available from independent data providers. The ratio puts a limit on the EU Taxonomy compliance of eligible aircraft. The replacement ratio represents the proportion of aircraft permanently withdrawn from use (such as through decommissioning or other measures that guarantee that the withdrawn aircraft is not returned to the use anywhere worldwide) to aircraft delivered at a global level. The ratio is averaged over the preceding 10 years to provide a long-term stable indicator, minimising yearly variations and short-term market volatility. The ratio is then applied to the Taxonomy-eligible aircraft produced by the manufacturer to identify the percentage of its aircraft fleet that does not increase the global fleet. The global fleet approach reflects the global nature of sector operations and global tradability of aircraft.

150. The Applicants refer in § 151 to the Commission intervention in the European Parliament which explains the calculation of the ratio consistently with the TSC. As reflected in the recommendations of the Platform and the Commission intervention, one of the data source is Cirium that is widely known and use in the industry. The data on new aircraft deliveries and retirements at the global level that are necessary for the calculations can be easily obtained from that data provider. The Commission did not refer directly to this source in the Amended Climate Delegated Act so as to not to favour a particular private data provider. The ratio value was not published as part of the TSC as its value will evolve on a yearly basis. The Commission services intend to regularly publish in the future the replacement ratio to further facilitate the implementation and verification as acknowledged in recital (11) of the Taxonomy Regulation.

151. This approach is fully in line with Article 19 of the Taxonomy Regulation which requires the Commission, in designing TSC, to balance environmental integrity and ambition, with usability, technological readiness, avoidance of market distortions and coherence with EU law. In particular, this approach is in line with Article 19(1)(c) of the Taxonomy Regulation as this provision requires the TSC to be quantitative and contain thresholds *'to the extent possible'*, and otherwise be qualitative. The replacement is also 'easy to use' in view of the data available on the market and verification of its application is feasible in line with Article 19(1)(k) of the Taxonomy Regulation.

1.3. Failure to address life cycle

<u>Applicants' claim</u> (§§ 154-156 of its request)

152. The Applicants submit that Article 19(1), point (g) of the Taxonomy Regulation provides that any TSC shall *''take into account the life cycle, including evidence from existing life-cycle assessments, by considering both the environmental activity itself and the environ*mental impact of the products and services provided by that economic activity, in

particular by considering the production, use and end of life of those products and services'',

153. The Applicants state that they are not aware of any evidence that the Commission took into account this mandatory criterion when designing the TSC for aviation activities. The Applicants state that they consider that the life cycle of the airplanes (of the aircraft manufactured and leased) and the impacts of non-sustainable biofuels should have been taken into account.

Commission's response

154. The Applicants' claim made in §§ 154 to 156 is to be dismissed as inadmissible since it is a mere unsupported conjecture. It therefore does not fulfil the requirement that a party requesting the internal review is required to put forward any facts or legal arguments raising serious doubts about the assessment made in that act by the EU institution. (121)

155. In any case, in accordance with Article 19(1), point (g) of the Taxonomy Regulation, the Commission is to take into account the life cycle. This requirement entails a certain discretion for the Commission. In particular, it does not require the Commission to integrate a full LCA as part of the TSC and to provide specific conditions regarding the manufacturing and leasing of aircraft in the TSC.

156. Furthermore, the Applicants' claim in § 155 that LCA of the aviation TSC was not addressed is incorrect.

157. In case of air transport, on the basis of LCA evidence, it was found that the primary source of GHG emissions stems from the operation of aircraft and associated fuel production as opposed to the manufacturing and decommissioning of aircraft ([122]). The focus of the TSC is therefore on reducing the GHG emissions from that phase through energy efficient aircraft and the use of SAF, while DNSH criteria introduce safeguards for some other aspects along the life cycle of aircraft. Furthermore, as explained in the sections 2.2.1.2 of Annex I and 2.3 of Annex II to the reply, the design of the fleet renewal requirements through the replacement ratio and conditions for the permanent removal of aircraft from the use also considered avoiding wrong incentives to prematurely withdraw EU Taxonomy-eligible aircraft.

158. The TSC requiring uptake of SAF referred to in sections 6.18 (b) and (c), and 6.19 (b), (c), (d) and (e) of Annex I to the Climate Delegated Act rely on the SAF definition established under Article 3 of ReFuelEU Aviation Regulation 2023/2405 ([123]) which requires compliance with the sustainability frameworks and GHG calculations established under Articles 29 and 29a of Renewable Energy Directive ([124]). Consequently, the TSC for aviation are based on a calculation of life-cycle emissions of fuels, from raw materials extraction or cultivation, processing, transport and distribution, until the use, consistently with the methodologies established by that Directive.

([121]) Court of Justice, Case C-82/17P, TestBio Tech, points 65 to 69.

([122]) For more information, see the CountEmissions EU Impact Assessment, Figure 12 and related analysis: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023SC0441

([123]) Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on ensuring a level playing field for sustainable air transport (OJ L, 2023/2405, 31.10.2023).

([124]) Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328 21.12.2018, p. 82).

159. Moreover, life-cycle considerations have been taken into account in the TSC on DNSH to other environmental objectives.

160. The TSC on DNSH under the circular economy objective referred to in point (4) of sections 3.21, 6.18 and 6.19 of Annex I to the Climate Delegated Act require adequate actions to be taken for the end-of-life products in line with the waste hierarchy, EU Waste Regulation principles and applicable regulations.

161. The TSC on DNSH to pollution prevention and control referred to in point 5 of sections 3.21, 6.18 and 6.19 of Annex I to the Climate Delegated Act contain noise and air pollutant emissions requirements. Noise and engine emissions have been assessed to be the most significant issues. The most significant impact risks occur during the use phase compared to production or end-of-life. The DNSH criteria have been formulated to that effect.

162. To conclude, the Commission did take account of the life cycle, as required by Article 19(1), point (g) of the Taxonomy Regulation.

1.4. Failure to take into account the potential market impact of the transition to a more sustainable economy, including the risk of stranded assets

Applicants' claim (§§ 157-160 of its request)

163. The Applicants claim that given that the investment cycle in aircraft is unusually long (around 30 years), and that zero emissions aircraft are expected to enter the market within a decade, the TSC are not aligned with the requirements laid down in Article 19(1), point (i) and Article 10(2) of the Taxonomy Regulation, in particular because the TSC:

- do not '*take into account the potential market impact of the transition to a more sustainable economy, including the risk of certain assets becoming stranded as a result of such a transition…'*;
- '*hamper the development and deployment of low-carbon alternatives*';
- *'or lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets'.*

Commission's response

164. The Applicants' claim made in §§ 157 to 160 is to be dismissed as inadmissible since it is a mere unsupported conjecture. It therefore does not fulfil the requirement that a party requesting the internal review is required to put forward any facts or legal arguments raising serious doubts about the assessment made in that act by the EU institution. ([125]) In any case, the claim that the TSC give raise to stranded assets is incorrect.

165. The TSC concerning the manufacturing of the latest generation aircraft will mostly apply to passenger aircraft ([126]). The average end of-life age of a passenger aircraft is around 25-30 years, while the life of freighter aircraft is longer, on average around 30-40 years ([127]),

([125]) Court of Justice, Case C-82/17P, TestBio Tech, points 65 to 69.

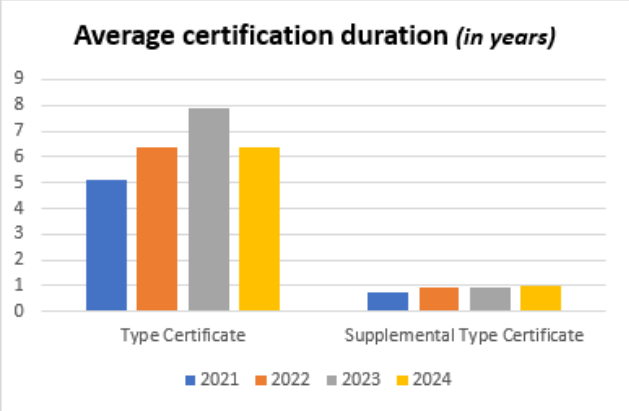
([126]) Nearly all commercial cargo aircraft presently in the fleet are derivatives or transformations of passenger aircraft, and only two freighter aircraft are expected to meet the New Type CO_2 emissions standard.

([127]) For more information, see: https://www.easa.europa.eu/en/light/topics/sustainability-end-life-phase-aircraft

with the recent trends and data showing that this cycle has been shortening ([128]). However, all the decarbonisation roadmaps ([129]) foresee that 'conventional' aircraft operated on SAF will be part of the solution for net-zero aviation by 2050. For that purpose, the TSC require that eligible aircraft should be compatible with 100% SAF use as from 2028. This approach is consistent with the EU legislation, ReFuelEU Aviation Regulation, that aims to ensure large scale deployment of SAF in the EU compatible with the existing type of technologies with a time horizon of 2050.

166. The investment cycles for aircraft are long: the period from design, development, certification, production and delivery to aircraft operator can take several years to decades. Besides, with over 20 thousand commercial aircraft in service worldwide, aircraft annual production is limited to hundreds of units per year. Thus once the new zero emission aircrafts will reach the market it will take decades before the worldwide fleet can be replaced. For the above reasons, the time horizon of the TSC for the latest generation has to consider the uncertainty on the deployment of the future generation of aircraft technologies. Consequently, the TSC related to the manufacturing of latest generation aircraft is defined until 2032, with a possibility to prolong it if need be as a result of a regular review.

167. In accordance with the decarbonisation roadmaps (130) and the modelling undertaken by the Commission under the 2030 CTP, the contribution of aviation to climate neutrality will mostly rely on the SAF. While the EU actively engages and supports industry in private-public partnerships to develop zero CO2 tailpipe emissions aircraft, it will take considerable time to develop, certify ([131]), produce and deploy at a large scale such aircraft. For instance, the graph below illustrates the average duration of certification of projects across various domains on an annual basis. ([132])



([128]) The recent data shows an average retirement age of passenger aircraft of around 22-23 years, for more information, see the IATA aircraft decommissioning study: https://www.sgiaviation.com/wp-content/uploads/2020/03/IATA_Aircraft_Decommissioning_Study_May-2018.pdf.

([129]) For more information, see the IATA study that compares various decarbonisation roadmaps: https://www.iata.org/contentassets/8d19e716636a47c184e7221c77563c93/nz-roadmaps.pdf

([130]) For more information, see the IATA study that compares various decarbonisation roadmaps: https://www.iata.org/contentassets/8d19e716636a47c184e7221c77563c93/nz-roadmaps.pdf

([131]) The aircraft design and development process by the manufacturer could take up to 10 years, while the certification process by itself could take on average between 5-8 years as illustrated in the graph.

([132]) The duration measures the time span from the receipt of the application by EASA to the initial issuance of the certificate. The year referenced corresponds to the certificate issuance date, marking the completion of the process and the certification of the aircraft type for operational use.

168. Such aircraft will also have to rely on deployment and availability of new type of airport infrastructure. This means that both systems (i.e. based on 'conventional' and zero emission aircraft) will have to co-exist for many decades. This is essential to preserve the socio-economic cohesion and connectivity of all regions within the EU and globally provided by air transport. Given the EU climate agenda to deploy SAF across the EU by 2050, more energy efficient aircraft powered by SAF will not become stranded assets and will continue to operate with lower environmental footprint. Recital (8) of ReFuelEU Aviation recognises that 'the deployment of more energy efficient engines contributes to decreasing the environmental footprint of flights and also more resource efficient use of SAF.'

169. It can also be noted that certain future zero emission aircraft are being developed that could rely on retrofitting 'conventional' aircraft technologies (133).

170. As explained in section 2.1 of Annex II to the reply, the TSC do not hamper the development of zero emission aviation. Manufacturing of such aircraft has preferential treatment in the EU Taxonomy compared to existing aircraft technologies, since zero emission aviation is not constrained by the fleet renewal requirement referred to in sections 3.21 (b) and (c) of Annex I to the Climate Delegated Act. EU policies are leading in the support for development of and investments into such technologies through flagships such as the Clean Aviation Joint Undertaking (CAJU) as well as Alliance on Zero Emissions Aviation. The Strategic Research and Innovation Agenda (SRIA) of CAJU (134) sets the objectives and technologies to be supported, where hybrid-electric and hydrogen/fuel cell aircraft technologies along with more energy efficient airframes powered by SAF are supported in commercial aviation.

171. The first zero-emission aircraft concepts are emerging on the market for small battery electric aircraft, though they are in a development and demonstration stage. Nevertheless, so far only one zero emission aircraft was certified, which is a fully electric 2-seat aircraft certified in 2020 (135). Hybrid-electric and hydrogen/fuel cell-based solutions have been announced by industry for entry into service in a time horizon towards the end of 2020s. Moreover, those developments remain limited to aircraft with very low passenger and cargo capacity, not comparable to aircraft used in scheduled commercial aviation today. Those low passenger and cargo capacity aircraft represent only a small fraction of current GHG emission in the aviation industry. Commercial claims with ambitious timelines for larger sized aircraft still need to be monitored to assess real technological development progress and real chances that the certification materialises into actual large-scale production.

172. As explained above, in rebuttal of the Applicants' conjecture, it cannot be assumed that for the aircraft category with a maximum take-off mass greater than 5,7 tons, zero emission aircraft will be the sole reliable solution as of the next decade. Taking this into account and in view of the developing SAF industry, which is currently in its infancy, TSC ensure that manufacture and operation of latest generation aircraft with a maximum take-off mass greater than 5,7 tons are classified as transitional activities under Article 10(2) of the Taxonomy Regulation.

(133) For more information, see the ICCT study on fuel cell aircraft retrofit: https://theicct.org/wp-content/uploads/2023/08/Aircraft-retrofit-white-paper-A4-v3.pdf

(134) For more information, see the Strategic Research and Innovation Agenda (SRIA) of CAJU, refer to Tables 2.1 and 2.2 on page 21: https://www.clean-aviation.eu/sites/default/files/2022-01/CAJU-GB-2021-12-16-SRIA_en.pdf

(135) For more information, see: https://www.easa.europa.eu/en/newsroom-and-events/press-releases/easa-certifies-electric-aircraft-first-type-certification-fully, maximum take-off mass of 0.45-0.55 tons.

173. Aircraft produced below that threshold would be only eligible if they have zero direct (tailpipe) CO_2 emissions. All transitional activities will be regularly reviewed by the Commission, which will allow actual market and technological progress to be taken into account.

2. MANIFEST ERRORS OF ASSESSMENT OF AVIATION ACTIVITIES

2.1. Diversion of investments and lock-in of carbon intensive assets

Applicants' claim (§§ 161-166 of its request)

174. According to Article 10(2) of the Taxonomy Regulation, '*an activity can only qualify as a transitional activity where, amongst other things, it does not hamper the development and deployment of low*-carbon *alternatives and does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets*'. The Applicants claim that the Commission failed to follow those requirements and submit that the TSC for aviation activities will divert investment from the technologies necessary to reach net zero and instead concentrate those investments towards carbon-intensive aircraft that will then be locked-in for decades to come. Here, the Applicants point out the conclusions of the March 2023 SEO Report ([136]) and the Steer Report. In particular, the Applicants state that:

- according to the March 2023 SEO Report, more investments are needed for alternative fuel, research and development for future aircraft and for fleet renewal, and
- according to the Steer Report both zero -emission and SAF technologies are critical in the transition to net zero.

Commission's response

175. As concerns the Applicants' claim in §§ 161-166 that the TSC for aircraft result in a lock-in of carbon-intensive assets, the Commission refers to the explanations provided in the section 1.4 of Annex II to this reply with relation to the claimed risk of stranded assets. As explained earlier, the approach taken in the TSC for aviation reflect the mix of measures on which the aviation sector will rely in decarbonisation. Taking no action at all in support of fuel -efficient aircraft powered by SAF, and wait until zero emission aircraft are technically and economically feasible at a large scale would delay the contribution of aviation to CO_2 emission reductions and result in aviation not delivering on its net-zero commitments. It is worth noting that this "large scale" concept shall cover at least three parameters: (i) certified aircraft with similar seat capacity and range compared to current conventional aircraft; (ii) sufficient production of these aircraft allowing for the replacement of the existing conventional fleet; and (iii) a sufficiently large number of airports equipped with the necessary new infrastructure to safely operate these aircraft. Waiting until all these conditions are met would also not be consistent with EU legislation, notably with the objectives and measures proposed under the 2030 CTP and 2040 CTP ([137]), which rely on the substantial contribution of SAF to the decarbonisation of aviation and overall contribution to the EU climate neutrality targets. This would constitute a breach of Article 19(1), point (d) of the Taxonomy Regulation. The Applicants' arguments in §§

([136]) For more information, see the Price of Net Zero: Aviation Investments Towards Destination 2050: https://www.seo.nl/wp-content/uploads/2023/03/2023-17-The-price-of-net-zero.pdf

([137]) Refer to Part 3 of the impact assessment report of 2040 CTP, section 1.5.4.7 and Figure 75, pp. 95-97

164.1 and 166.2 also do not take into account the impacts of ReFuelEU Aviation adopted in 2023 that will progressively replace conventional fossil fuels with SAF. Both fuel efficient aircraft powered by SAF and zero -emission aircraft technologies powered by renewable hydrogen can provide low carbon alternatives to fossil fuels in a technologically neutral manner.

176. These conclusions also apply to the Applicants' claim raised in § 164 on the risk of lock-in effect due to the absence of a phase out date for operations of a 'conventional' aircraft powered by SAF. Being a transitional activity, those criteria will be regularly reassessed and would take account of possible changes to the TSC related to aircraft production. The TSC incorporating increasing requirements on the use of SAF aim to further support the scaling up the SAF market. The long-term horizon of the TSC provides investment predictability and incentives for long-term offtake agreements between aircraft operators and SAF producers and suppliers, which are needed to de-risk the SAF investments. Those aircraft are also subject to DNSH criteria that require the maximum noise level for passenger aircraft to improve in relation the latest edition of the ICAO noise standard, and for freight aircraft to meet that standard, which would remove eligibility of all aircraft currently allowed to operate that comply with lower limits under the previous editions of the ICAO noise standard.

177. As explained in section 2.3 of Annex II to the reply, the TSC referred to in sections 3.21 (b) and (c), 6.18 (b) and (c), and 6.19 (b), (c) and (d) of Annex I to the Climate Delegated Act focus on incentivising the manufacturing and uptake of the latest generation aircraft (exceeding international standards), that are to replace older models, thus incentivising fleet renewal. The TSC also incentivise the increased use of SAF in line with ReFuelEU Aviation, EU ETS, Net Zero Industry Act (138) and SAF Flagship under Global Gateway (139). The adopted TSC can deliver a substantial contribution to mitigating aviation GHG emissions, before transformative low-carbon technologies become market-ready at scale and constitute technically and economically viable alternatives.

178. The Commission considers that the inclusion of aviation in the TSC does not hamper the development and deployment of low-carbon alternatives, as raised by the Applicants in § 166.3. The EU has been committed through political and financial support to development of such technologies in its policies such as Sustainable and Smart Mobility Strategy and programmes and initiatives outlined in below. As recognised by the Applicants, there are many industrial developments on zero emission aircraft currently in demonstration and flight testing, mostly for small aircraft with up to 19 seats, and the Commission has been collaborating with European industry to develop breakthrough low carbon technologies.

179. Moreover, the TSC provide a better treatment of zero emission aircraft compared to the latest generation aircraft, as the former are not constrained by the replacement ratio/fleet renewal requirement referred to in sections 3.21 (b) and (c), 6.18 (b) and (c), and 6.19 (b), (c) and (d) of Annex I to the Climate Delegated Act, are not classified as transitional activities that would require regular review and do not have an end date for their applicability.

(138) For more information, see: https://data.consilium.europa.eu/doc/document/ST-6269-2024-INIT/en/pdf, Article 3(1)(bc)

(139) For more information, see: https://international-partnerships.ec.europa.eu/publications/global-gateway-flagship-projects-infographics_en, files on EU-Africa flagship projects, EU-Asia and the Pacific flagship projects, EU-Latin America and the Caribbean flagship projects

180. The Applicants' claim in §§ 163 and 166.1 on aircraft capability to operate with 100% SAF today is incorrect and the reasons for that are explained in section 2.2 of Annex II to the reply.

On CAJU and AZEA and the Commission's supporting measures for the development of zero CO_2 emission aviation:

181. Research and innovation into sustainable aircraft impacting larger market segments and transport volumes is funded from the Horizon Europe Programme (2021-2027), in particular through the CAJU ([140]) with a total budget of € 4.1 billion, of which € 1.7 billion is from the EU budget and € 2.4 billion is contributed by aviation industry. The partnership focusses on R&D regarding regional aircraft with a passenger count above 50 passengers, and the market for small/medium range aircraft (SMR) with a minimum of 100 passengers. R&D regarding aircraft developed under this partnership aim at achieving technology readiness by 2030 and entry into service in by 2035. Those are however aspirational targets for R&D activities that will need to translate into market reality to provide an economically and technologically feasible alternative to existing technologies. To this end, EASA is involved at a research level to ensure early knowledge exchange with regards to safety aspects, certification and standard setting, with the aim to reduce as much as possible the time added by certification to market of these new technologies. Impact of technology developed by CAJU aims at a minimum GHG emission reduction of 30% compared to state of the art aircraft in 2020, with the aim of replacing of the 75% of the aircraft small/medium range fleet by 2050. As such, this partnership represents a crucial contribution to market entry of zero emission short and medium range aircraft capable of making a substantial contribution to GHG emission reduction, for which the aviation industry estimates a minimum investment need of € 12 billion. Related research is funded under the Clean Hydrogen Joint Undertaking (e.g. hydrogen tanks on-board aircraft), Horizon Europe collaborative research, and national and regional research programmes.

182. To support deployment of future aircraft technologies, important investments will also have to be made in airport and fuel infrastructure, production and availability of sustainable fuels, green hydrogen and electric charging facilities. Through the AZEA, the Commission provides a platform for the aviation industry and public stakeholders to prepare for the transition to electric and hydrogen powered aviation and prepare for their market entry. The Alliance focuses on a potential roll-out scenario (taking into consideration expectations on fleet renewal, production capacity, infrastructure needs, availability of green energy sources etc.), preparing airport infrastructure, production of sustainable energy, adaptation of the regulatory environment (certification, standard setting, safe operations), etc. for the entry into service of zero emission aircraft.

2.2. Manifest error as regards whether there are technologically and economically feasible low carbon alternatives to activities included in the TSC

<u>Applicants' claim</u> (§§ 167-174 of its request)

183. The Applicants recall that '*the Platform's 2023 Response advised the Commission to consider separate / more ambitious thresholds for short-haul flights, which compete with* environmentally less damaging ground transport alternatives'.

([140]) For more information, see: https://www.clean-aviation.eu/

184. First, the Applicants claim that 'some short haul aircraft cannot be classed as transitional activities under Article 10(2) of the Taxonomy Regulation, because there is already a technologically and economically feasible alternative, that makes a considerably greater contribution to climate change mitigation, namely high speed rail'.

185. Second, the Applicants submit that the consideration that 100% SAF are not economically feasible now, is not correct, and claim that there should be included only those activities where there is conclusive scientific evidence to support that inclusion and that it is consistent with the precautionary principle.

Commission's response

186. Contrary to the allegations of the Applicants, the TSC set out for the aviation activities are meant to ensure that the substantive conditions of Article 10(2) of the Taxonomy Regulation are met, namely that the relevant activities support the transition to a climate-neutral economy as also emphasised in recital (41) of the Taxonomy Regulation.

187. The reasoning why the economic activities referred to in those TSC are within the scope of Article 10(2) of the Taxonomy Regulation, i.e. as economic activities for which there is no technologically and economically feasible low-carbon alternative, are given in the recital (11) of the Amended Climate Delegated Act.

188. The Commission assessment at the time of adopting the Amended Climate Delegated Act indicated that:

- for aviation activities, the low carbon alternatives were not considered available at sufficient and adequate scale as a replacement to other possibilities of transportation across Member States, and
- the need to quickly reduce the GHG in the aviation activities to meet the EU climate targets cannot be covered only based on low carbon alternatives, without additional transitional solutions.

189. A similar approach and interpretation was already used for transport activities in the Climate Delegated Act, where the threshold for low carbon vehicles covers, for a limited time period, both zero CO_2-tailpipe emission and hybrid vehicles, and identifies the latter as a transitional activity, along with the existence of zero-emissions vehicles recognised as low carbon. Similarly, for buildings, the Climate Delegated Act covers buildings with very high energy performance (at least 10% lower than the threshold for Net Zero Energy Building (NZEB), Energy Performance Certificate (EPC) class A, top 15% of the buildings stock), but also renovation of buildings, as a transitional activity (i.e. major renovations and renovations leading to at least 30% reduction of the primary energy demand).

190. The rationale of the TSC in all these sectors is similar: these are sectors responsible for a relatively large share of the GHG emissions, where it is important to quickly reduce the GHG emissions. Beyond low carbon alternatives, several transitional activities have been recognised in the Climate Delegated Act, which would allow to significantly reduce GHG emissions across these sectors. These are activities that cannot yet operate through or be fully replaced in an economically viable way by low-carbon alternatives but represent the best performance on the market for that activity, therefore contributing substantially to climate change mitigation, supporting the transition to a climate-neutral economy, and accelerating the phasing out of GHG emissions.

191. The Applicants' claims in §§ 168 and 172 on feasibility and hampering of development and deployment of low carbon alternative to short-haul flights is unfounded.

192. First, the Applicant's claim that the Commission committed a manifest error in its assessment on the grounds that some short-haul aircraft cannot be classed as transitional activities under Article 10(2) of the Taxonomy Regulation as there are arguably technological alternatives is incorrect. It needs to be recalled, as stated in sections 2.3.1 of Annex I, and 1.4 and 2.1 of Annex II to the reply , that currently there are no alternatives to 'conventional' aircraft on the market for commercial aviation. The zero emission solutions are only at design or experimental phase for small commercial aircraft. Hybrid-electric and hydrogen/fuel cell aircraft able to replace commuter and small regional aircraft with at least 20 seats could be expected to start entering service towards the end of 2020s on a very limited number of routes. This relates not only to aircraft technology operational constrains but also to development and availability of the necessary infrastructure. The Commission has been and is committed to support such technologies under CAJU as part of the EU R&I programme (141) and AZEA (142).

193. Zero emission aircraft, once developed and deployed, are expected to serve short-haul routes in the first phase. The EU Taxonomy provides a preferential treatment to such technologies, as there is no replacement ratio/fleet renewal requirement and no end date of the criteria. Moreover, for the operations on such (and any other) routes served by 'conventional' aircraft, there is a requirement of an increased uptake of SAF that will progressively decrease the GHG emissions with increased ambition each year. The TSC for aviation therefore incentivise the transition to more sustainable solutions in function of their technological availability.

194. Second, the Applicant's claim that the Commission committed a manifest error in its assessment by not recognising that there are economically feasible alternatives to short-haul flights, namely high-speed rail, and that it allegedly ignored the Platform's 2023 Response advising the Commission to consider more ambitious thresholds for short-haul flights which compete with environmentally less damaging ground transport alternatives is incorrect. The Commission would like to recall that the development of high-speed rail has been a priority for the EU, with actions and measures outlined in the Sustainable and Smart Mobility Strategy and its accompanying Staff Working Document that identifies the challenges that needs to be overcome. The Strategy stressed that all transport modes are indispensable for the European transport system and that is why they all need to become more sustainable. Furthermore, it notes that where suitable alternatives are in place at competitive prices, frequencies and comfort levels, in practice, users choose the more sustainable mode. ([143]) Significant regional disparities within the EU exist when it comes to the availability of high speed rail infrastructure and high speed rail services. There are certain Member States and regions where high speed rail connections will not be possible due to geographical limitations. High speed rail requires heavy investments on infrastructure that take many years to develop, in many cases several decades. In many cases the development of such a rail infrastructure is not feasible for its impact on the environment or its disproportionate costs - both environmental and economic - compared with the small populations that could use it. The emissions linked to the development of the necessary rail infrastructure must be carefully counted against the share of population that may benefit from such land connectivity. In these cases short-haul air connectivity is the only viable transport option to ensure the EU social and territorial cohesion to all

([141])For more information, see: https://www.clean-aviation.eu/

([142])For more information, see: https://defence-industry-space.ec.europa.eu/eu-aeronautics-industry/alliance-zero-emission-aviation_en

([143]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12438-Sustainable-and-Smart-Mobility-Strategy_en, points 12 and 29.

European citizens. The reality today is that high-speed rail is an alternative only for a limited number of short routes in a handful of Member States, and this reality is expected to persist by the time zero emission aircraft are expected to enter the market. It is unrealistic to claim and expect that high-speed rail currently is truly the technological alternative for short haul air connectivity everywhere in the EU and that it can solve today the connectivity needs of the whole European population across the EU territory from a technological, a physical and an economic perspective.

195. Furthermore, with regard to the substitutability (i.e. economic alternative) between short-haul flights and rail, the Commission included in its Implementing Decision (EU) 2022/2358 of 1 December 2022 (the "Implementing Decision") (144) in the case of French short-haul flights regarding a set of indicative criteria that can help to identify on a case by case basis when high speed rail may be an economically feasible substitute for air connectivity which would allow Member States to assess whether it could be possible to stop some air routes in line with the principle of proportionality. With regard to substitutability between rail and short-haul flights, Recital (40) of the Implementing Decision, by reference to the notified French Decree (145), points out that rail connections can only be considered feasible alternatives to short-haul flights provided that the journey time is of less than two and a half hours between train stations serving the same cities as the airports concerned with the train station also serving the airport; provided that there are no changes along the rail journey; provided that rail connections are offered several times a day with sufficient frequencies and satisfactory timetables; and provided that they allow more than eight hours of presence on the spot during the day. In its assessment, the Commission stressed the need for an ex antre dynamic approach to substitutability between rail and short-haul bans depending on the development and quality of rail connections. The Commission Implementing Decision notes the evidence provided in the notified French Decree whereby the modal shift from air to rail, and thereby the claimed environmental benefit, can be expected provided that all of the above conditions of substitutability are satisfied. If the conditions of substitutability are not met, as was the case even in France despite its excellent high-speed rail network, the environmental benefits will not occur or could even decrease if passengers switch to combustion cars instead of rail. According to EUROCONTROL, all flights under 500 km account for around 4% of total CO2 emissions from all flights departing from European airports (146), and only a fraction of those would be served by high speed train. Furthermore, as the new high speed rail lines take between 18 and 26 years to build, the Applicants' claim seems to lack adequate consideration that the introduction of zero emission aircraft and SAF operated flight on short-haul routes could in this timeframe provide a low carbon solution at par with the development of new high speed rail infrastructure in terms of GHG emission's reductions on a lifecycle basis (such as GHG emissions from the construction phase). Furthermore, even where high-speed connections exist, it would need to be assessed on a case-by-case basis whether the existing rail capacity is capable of accepting a shift from short-haul connections.

196. Currently, the number of high speed rail routes covered by air connection is limited as illustrated in Figure 4 of the Eurocontrol paper Plane and train: Getting the Balance Right

(144) For more information, see: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022D2358

(145) Draft decree notified to the Commission is not publicly available, for the final decree 2023-385 of 22 May 2022, see: https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000047571222

(146) For more information, see: https://www.eurocontrol.int/sites/default/files/2021-02/eurocontrol-data-snapshot-co2-by-distance.pdf

(147) and in Figures 32 and 33 respectively of Staff Working Document accompanying the Sustainable and Smart Mobility Strategy that maps air routes between metropolitan regions where rail travel times are below 2.5 (two and half) and below 4 (four) hours by train.

197. In addition to those quantitative limitations, the rail connection must meet various qualitative variables in order to constitute a viable alternative, such as reliability, frequency, duration, availability of onward connections as well as journey comfort, competitive pricing, integrated ticketing and ease of access to infrastructure. For example, a passenger may take a short-haul flight and transfer at an intermediate hub airport to a long haul flight to reach his or her final destination. Should the short-haul leg of the journey be replaced with rail, the distance between the railway station and the departure airport for the second, long haul leg of the journey needs to be carefully considered together with the existence of the luggage check-in facilities at the start of the journey. Furthermore, the alignment of schedules and reliability of the connections to ensure seamless travel and adequate passenger protection in case one leg of travel is delayed or cancelled would also need to be considered in such an analysis.

198. A detailed and case-by-case analysis (reviewed at regular intervals to take account of the changes in the provision of services) would be required for each rail connection to ascertain whether it constitutes a viable alternative to air connections. Without guaranteeing adequate availability and quality of rail alternatives, there is a risk that passengers will substitute the air travel with other non-low carbon transport mean, such as their private (non-zero emissions) car for instance, which could be a feasible option in case of shorter distances. Such a consideration would also have to be factored into the analysis.

199. Air transport needs to be seen as a dynamic network of connections. A journey from one point to another can be performed through various combinations (direct flight or connecting flights) and a given flight can carry passengers that end their journey or will connect to another flight. Therefore, excluding flights on certain routes can simply result in the passengers' shift of the hub airports where the connection takes place from the nearest to a more distant one or outside the EU. That shift may end up in the best scenario keeping the overall total emissions of the entire journey (from the start to the end point) unchanged, and in the most likely scenario, having those emissions increased due to unnecessary long distance or carbon leakage to less climate ambitious third countries. In such case, the intended measure is not achieving any emissions reductions and may even worsen them.

200. An additional element of consideration for the operation of air routes, in contrast to high speed rail, is the use of aircraft belly for the transport of specific kind of freight, like short time life span freight (e.g. medicines and medical devices, human organs for transplants, fish etc), which may account for up to half of all air freight capacity globally. Considering these variables aircraft operators establish air routes and create air network based on the holistic view of passenger and cargo demand on the network level (and not the level of individual routes), as well as based on various operational and technical considerations (e.g. availability of personnel, maintenance facilities, availability of slots at constrained airports, aircraft types operated, etc). Again, high speed rail is not today an alternative for the access to those specific kinds of freight point to point at the speed air connectivity allows, and it will not be for outermost regions, remote regions and regions of difficult access either for physical or weather-related constraints.

(147) For more information, see: https://www.eurocontrol.int/publication/eurocontrol-think-paper-11-plane-and-train-getting-balance-right

201. The affirmation of the Applicants' in § 171 that the Commission has failed to assess whether the proposed TSC would hamper deployment of high-speed rail, by diverting investments to fossil-fuelled aircraft for short-haul flights is unfounded and incorrect. It is well known that air and airport services have been fully liberalised in the EU for more than 30 years now, which has resulted in high competition and cost-efficiency (also with regard to the investment cost and its effectiveness). The TSC incentives are therefore tailored in a way that ensures that investment is targeted by foremost to the development of zero-emission technologies and, given the state of technological development, also to transitional technologies subject to strict climate-driven conditions. The cost of decarbonisation (both for airlines and airports) is predominantly funded through private finance (debt and equity). On the other hand, the deployment of high-speed rail, given its very high capital expenditure, requires public funding – for instance, the implementation of the Rail Baltica project linking the three Baltic States is financed by Member States and benefits from co-funding from the European Union up to 85% of the total eligible cost, in particular in the framework of the Connecting Europe Facility (CEF). Given the extent of cost and public involvement in the deployment and maintenance of rail infrastructure, the inclusion of aviation activities in the proposed TSC would not hamper deployment of high-speed rail. Their investments come from the private sector that has discretion how it intends to spend its investments and do not "compete" with the public investment in rail infrastructure.

202. Finally, attention needs to be also paid to the fact that exclusion of short-haul flights, or providing separate criteria would distort competition between different business models of aircraft operators such as those that operate hub-and-spoke vs point-to-point networks in offering connectivity for the entire journey (from the start to the end point).

203. In summary, due to the constraints for the availability and construction of a dense high-speed rail network, the necessity to meet qualitative requirements of high-speed rail to be considered a viable alternative to short-haul flights, as well as the specificity of airline operations as a networks rail cannot as a matter of principle be seen as an economically feasible low-carbon alternative, as referred to in Article 10(2) of the Taxonomy Regulation.

Furthermore, the analysis of all various considerations would have to be performed based on a detailed and case-by-case basis, which would be a complex exercise to the detriment of the requirement of Article 19(1), point (k) of the Taxonomy Regulation that the TSC should be 'easy to use' and verifiable, while at the same time creating uncertainty in terms of realisation of actual GHG emissions savings.

204. The Applicants' claim in § 172 (also raised in § 163) on aircraft capability to operate with 100% SAF today is unsubstantiated and in any case incorrect. The use of 100% SAF on a commercial flight is not (yet) allowed on safety grounds, as actually there is no jet fuel quality standard for 100% SAF. However, several aircraft original equipment manufacturers (OEMs) have pledged to make their aircraft 100% SAF compatible by 2030. Two ASTM task forces are active, one to extend the existing jet fuel quality standard ASTM D7566 *Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons* ([148]) to allow 100% Drop-In SAF, the other one to examine the possibility of a completely new jet fuel standard for zero or low aromatic 100% SAF. OEMs are performing the needed activities research and test flights to evaluate the effects of 100% SAF on operability and emissions of different types of aircraft ([149]). OEMs need to ensure

([148]) For more information, see: https://www.astm.org/d7566-22.html

([149]) For more information, see: https://www.easa.europa.eu/eco/eaer/topics/sustainable-aviation-fuels/what-are-sustainable-aviation-fuels, the box on "Achieving 100% SAF"

that the airframe and jet engine are fully compatible with future 100% SAF technical fuel specifications in order for 100% SAF flight to safely operate worldwide. Ensuring safety is of paramount importance in the aviation sector in any technological advancement, given the life of passengers and crew is at stake. This work depends on the progress of the ongoing work on the 100% SAF technical specification under ASTM International ([150]). The aviation TSC advanced the industry baseline of 2030 to 2028, to encourage progress in this area. At present, the sustainable blend component (SAF) can be blended with conventional jet fuel with a maximum of 50% for most pathways as per the jet fuel quality standards (ASTM D7566).

205. In line with Article 19 of the Taxonomy Regulation, the Commission balanced environmental integrity and ambition, with usability, technological readiness, avoidance of market distortions and coherence with EU law in designing the aviation TSC.

206. The Commission will regularly monitor and evaluate the implementation of the technical screening criteria. Regular updates are foreseen in view of market developments, balancing the need to reflect the contribution of the latest market-ready technologies and the cost of adapting relevant systems to the changes in the criteria.

207. For the reasons outlined above, the Applicants' claims are unfounded.

2.3. Carbon reduction targets in section 3.21(b) and (c)

<u>Applicants' claim</u> (§§ 175-194 of its request)

208. The Applicants submit that, in accordance with Article 19(1)(f) of the Taxonomy Regulation, the TSC must be based on a conclusive scientific evidence that the standards set out will make a significant contribution to climate change mitigation. *'Furthermore, to meet the* requirement *for a transitional activity in Article 10(2) of the Taxonomy Regulation, the activity must be consistent with a pathway to limiting temperature increases to 1.5°C above pre-industrial levels. The IEA's analysis is that to reach that temperature goal, aviation emissions will have to peak in 2025 and reduce by 80% by 2050.'*

209. The Applicant submit that '*there is no conclusive scientific evidence to support the* conclusion *that the marginal reductions from the ICAO standard will make a significant contribution to climate change emissions or be consistent with a 1.5°C pathway*'.

210. The Applicants argue that:

- the TSC are less demanding than Steer's recommendations for the TSC, which are themselves simply a read across from the current performance of latest generation aircraft rather than being based on any credible net zero pathway modelling;
- the ICAO standards, which the TSC use as a reference point, are not themselves particularly stringent, and that the reductions set out in sections 3.21(b) and (c) of the Amended Climate Delegated Act are minor and they are discounted from an already undemanding starting point;
- there is conclusive scientific evidence that the thresholds set out in sections 3.21(b) and (c) of the Amended Climate Delegated Act will not make a substantial contribution to climate change mitigation since they will be reached before 2032. This will cause locking in carbon-intensive assets well beyond 2035;

([150]) For more information, see: https://www.astm.org/

- the replacement ratio included in the TSC does not perform the required role of preventing growth in the sector from outpacing marginal efficiency improvements and will not prevent the global fleet from expanding and causing additional emissions;
- the replacement ratio is not restricting the number of aircraft that will be labelled Taxonomy-compliant, in particular, because the Commission has no oversight or control over sales and purchases that take place outside the Union, and there is no clear understanding of the enforcement of the requirements for the commitment to replace non-compliant aircraft by new ones;
- the Platform's March 2022 Report states that the replacement ratio only applies to revenues generated by compliant aircraft, not to the capital expenditure of buying 'best-in-class' aircraft. Whilst the Amended Climate Delegated Act does not explicitly treat capital expenditure and revenues from operations differently, the Platform's interpretation of the replacement ratio could take place in practice as airlines already report the Taxonomy-compliance of their CapEx and OpEx.

Commission's response

211. As regards the application of the notion *'conclusive scientific evidence'*, the Commission would like to refer to section 1.1 of Annex II to the reply, in which it explains that the standard to be applied by the Commission when developing the relevant TSC, is that the scientific evidence must not be inconclusive and that it has to be seen in the wider context of Article 19(1) of the Taxonomy Regulation.

212. The Amended Climate Delegated Act is in particular based on Articles 10(3) and 11(3) of the Taxonomy Regulation and, as will be set out below, complies with the conditions set out therein, as well as with the specific requirements of Articles 19 and 23 of the Taxonomy Regulation thereof. Recital (3) of the Taxonomy Regulation refers to the Paris Agreement adopted under the United Nations Framework Convention on Climate Change (UNFCCC). That recital states that 'in that context, on 12 December 2019, the European Council adopted conclusions on climate change. In light thereof, this Regulation represents a key step towards the objective of achieving a climate-neutral Union by 2050'.

213. Within the framework of the Taxonomy Regulation, the Commission did therefore assess the consistency of the draft Amended Climate Delegated Act with the climate-neutrality objective, when assessing the compliance of the Delegated Act with the requirements of Article 10(2) of the Taxonomy Regulation, which are further explained in recital (41) of that Regulation. Article 10(2) of the Taxonomy Regulation requires the activities to *'support the transition to a climate-neutral economy consistent with a pathway to limit the temperature increase to 1.5 °C above pre-industrial levels'***.** It is the overarching objective of the Taxonomy Regulation, which is the legal basis for the adoption of the Amended Climate Delegated Act, to capture economic activities which support achieving climate-neutrality. Only after having assessed the compliance of the TSC, consistently with consultation process and analysis of various studies and publications referred to in the previous sections, with the requirements of Article 10(2) of the Taxonomy Regulation did the Commission include certain aviation related activities in the Amended Climate Delegated Act as transitional activities pursuant to Article 10(2) of the Taxonomy Regulation.

214. The assessments underpinning the Commission's decision to include aviation related activities as transitional activities in accordance with Article 10(2) of the Taxonomy Regulation are explained in the Explanatory Memorandum accompanying the Amended Climate Delegated Act, which has been published as document C(2023)3850 both on

Eurlex and on the transparency site of the Commission ([151]) before the adoption of the Amended Climate Delegated Act.

215. As explained in section 2.3.1 of Annex I of the reply, the approach taken in the EU Taxonomy criteria for aviation activities reflects the mix of measures on which the aviation sector will rely for decarbonisation.

216. The European Climate Law sets out a binding objective of climate neutrality in the Union by 2050, consistent with the 1.5°C goal of the Paris Agreement. It also sets out a binding Union target of a net domestic reduction in GHG emissions for 2030 of at least 55%, which is expected to be exceeded based on recently adopted legislation.

217. The impact assessment accompanying the 2030 CTP showed how the 2030 EU economy-wide net GHG emissions reduction target and the 2050 climate neutrality objective can be achieved. It defined cost-effective pathways to deliver the targets, assessing the various combinations of instruments and sectoral contributions. It showed that all sectors and all transport modes need to contribute, while deploying a broad mix of policy instruments. It further showed that this implies 90% GHG reductions from the transport sector overall (covering all modes but not necessarily at same rate) by 2050 compared to 1990 level. Considering different stages of technological availability of decarbonisation measures in each mode and different shares in the overall transport GHG emissions, the contribution from each mode of transport to the overall transport climate neutrality target will vary between the modes and over the time (152).

218. The impact assessments accompanying the 'Fit for 55' package started from the 2030 CTP, ensuring that the proposals 'add up' to the at least 55% GHG emissions reductions target and that all sectors contribute to the effort cost-effectively. Thus, a two-step approach was followed: the 2030 CTP provided the key elements of the policy architecture that were spelled out in the 'Fit for 55' package.

219. Several legislative proposals that are part of the 'Fit for 55' package are relevant to air transport, such as ReFuelEU Aviation Regulation, EU Emissions Trading System Directive (EU ETS) ([153]), Energy Taxation Directive (ETD) ([154]), Alternative Fuels Infrastructure Regulation (AFIR) (155), Renewable Energy Directive (RED) (156), Energy Efficiency

([151]) For more information, see: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=PI_COM:C(2023)3850

([152]) For more information, see the Figure 59 on CO_2 emissions from transport in 2030 and 2050 of the SWD accompanying Sustainable and Smart Mobility Strategy, based on the modelling for the 2030 CTP: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12438-Sustainable-and-Smart-Mobility-Strategy_en

([153]) Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC (OJ L 275, 25.10.2003, p. 32).

([154]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12227-EU-Green-Deal-Revision-of-the-Energy-Taxation-Directive_en

([155]) Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU (OJ L 234, 22.9.2023, p. 1).

([156]) Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82).

Directive (EED) (157) and Carbon Border Adjustment Mechanism Regulation (CBAM) (158). In addition to the 'Fit for 55' package, the Commission tabled other legislative proposals that will also contribute to the EU climate objectives such as the reform of Single European Sky (159).

220. The Commission recalls its observations in section 2.3.1 of Annex I to the reply on the analysis underpinning the modelling of the recently published 2040 CTP. This analysis reconfirms the contribution from aviation to the climate neutrality goals, and the role of the transitional technologies. The 2040 CTP Impact Assessment report recognises that 'The European aviation sector is projected to undergo a significant transformation over the next decades, driven by policy *measures aimed at decarbonising this sector, such as the EU ETS and ReFuelEU Aviation. This transformation is multi-dimensional, mainly driven by significant improvements in energy efficiency and a large uptake of zero- and low-emission fuels (such as liquid biofuels and e-fuels), along with a moderate deployment of battery-electric and fuel-cell-electric aircraft.'* ([160]) The TSC for the activity listed in section 3.21. (b) and (c) for energy efficiency are more ambitious than those reflected in the 2040 CTP, because the eligibility is limited to fleet renewal with the margins beyond the ICAO CO_2 standards (while the 2040 CTP does not cap the growth of the air transport activity, covering all aircraft in circulation). Likewise, the same arguments would apply to the ICAO LTAG report, which does not exclude aircraft operations linked to the growth in the activity. The TSC for aircraft manufacturing in the Section 3.21. (b) and (c) of Annex I to the Climate Delegated Act set several cumulative requirements, where the margins to the ICAO New Type (NT) aircraft CO_2 emissions standard (ICAO CO_2 standard) is merely one element of the set of requirements. The other elements introduced by the TSC further increase the level of ambition, which include requirements for an aircraft to be 100% SAF compatible as from 1 January 2028, application of the replacement ratio, and phase out of the criteria after 31 December 2032 (with a possibility for of a review for extension based on a new assessment) and before that, the criteria will be regularly reviewed as the activity is classified as a transitional one.

221. On the ICAO CO_2 standard and the related margins: As explained in sections2.2.1.2 of Annex I, and 1.1 and 2.6 of Annex II to the reply, the margins were defined with a purpose to identify the latest generation aircraft in a technologically neutral manner, based on an accepted international standard with an official metric, consistently with the requirements of Article 19(1), point (d) of the Taxonomy Regulation. The aircraft CO2 emissions standard was adopted in 2017 by the ICAO Council to reduce the impact of aviation GHG on the global climate. It is contained in Volume III to Annex 16 of the Chicago Convention (Environmental Protection) (161). It represents the world's first global design certification standard governing CO2 emissions for any industry sector. The standards set two types of thresholds for aeroplane fuel efficiency: production of aircraft (InP) and for the new type

([157]) Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (OJ L 231, 20.9.2023, p. 1).

([158]) Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism (OJ L 130, 16.5.2023, p. 52).

([159]) Proposal for a Regulation of the European Parliament and of the amending Regulation (EU) 2018/1139 as regards the capacity of the European Union Aviation Safety Agency to act as Performance Review Body of the Single European Sky (COM/2020/577 final), and Amended proposal for a Regulation of the European Parliament and of the Council on the implementation of the Single European Sky (COM/2020/579 final).

([160]) For more information, see the Annex 8, section 1.5.4.7 of the 2040 CTP Impact Assessment.

([161])For more information, see: https://store.icao.int/en/annex-16-environmental-protection-volume-iii-aeroplane-co2-emissions

designs (NT) (162). The thresholds of the InP standard are less ambitious than the thresholds for the NT standard on which the TSC are based. According to ICAO Annex 16 Volume III, in-production aircraft will have to meet the InP standard as of 2028. As already explained in previous sections, aircraft are characterised by very long investment cycles from design, development, certification, production and delivery, that can take decades. These long investment cycles are reflected in the average age of end-of-life aircraft of around 25-30 years for passenger aircraft. The ICAO standard takes account of the time needed to carry out the imperative proofing in relation to the operational safety of new technologies, which is of paramount importance in this sector where the life of passengers and crew is at stake and aircraft operates in extreme conditions. The main goal of the ICAO standard is therefore to ensure new aircraft incorporate the best technology available. The standard defines the environmental performance for aircraft production and for designing new types of aircraft. There is however no international or EU standard that would require to phase out old aircraft in circulation, which is however achieved via the TSC.

222. The Applicants' claims in §§ 177-179 are unfounded and incorrect. The Commission explained in section 2.6 of Annex II to the reply that those technologies represent the best available technologies on the market that offer significantly improved performance and GHG emissions reductions compared to the previous generation of the technologies in circulation. Notably, the replacement of the previous generation aircraft with the best available (new generation) aircraft in the same aircraft type provides substantially lower GHG emissions of around 20-25% of GHG emission reductions per flight ([163]). Since those aircraft belong to the transitional activity category, the TSC will be reassessed for the market and technology developments as well as their appropriateness of the approach after 2032 will be assessed. Furthermore, the energy efficiency is part of the basket of measures to contribute to the aviation decarbonisation.

223. The Applicants' claim in § 178 that the TSC on aviation are less demanding than the recommendations of the Steer Study is unfounded and inaccurate. In its recommendations in sections 7.2-7.4 of the Platform's March 2022 Report, the Platform decided to deviate from the Steer Study as regards defining the exact level of margins and time limits, based on the further analysis of data, including the results of the first certification that became available ([164]) only after Steer Study was concluded. The data constrains of the Steer Study need to be noted (e.g. some aircraft types not covered by the datasets, based on estimates that may differ slightly from the certified data for instance). In fact the Platform increased the level of ambition by imposing the replacement ratio and setting the phase out date. Moreover, as explained in section 2.6 of Annex II to the reply, applying additional margin to the ICAO CO_2 new-type limit, in order to align with the levels proposed in the Steer Study after 2027, would result in a substantial share of the best available aircraft technology becoming ineligible (in view that new more efficient aircraft technologies would not be available to replace those). Furthermore, the criteria would become ineffective if aircraft manufacturers could benefit from them basically in the short period of four reporting years between 2024 to 2027, considering the relatively long time period required for production and delivery. Aircraft operators and lessors typically wait several years after an order for

([162]) The CO_2 standard applies to new aircraft type designs from 2020, and to aircraft type designs already in-production as of 2023. Those in-production aircraft which by 2028 do not meet the standard will no longer be able to be produced.

([163]) For more information, see: https://www.destination2050.eu/wp-content/uploads/2021/03/Destination2050_Report.pdf, the Table 5 of the Destination 2050 Report.

([164]) For more information, see: https://www.easa.europa.eu/en/newsroom-and-events/press-releases/easa-completes-first-co2-emissions-certification-airbus-a330-900

new aircraft is placed with the aircraft manufacturer (waiting time of at least 2 years if no delays (165)).

224. The Applicants' claim in §§ 180-184 on insufficient stringency of the ICAO standard is raised in the Applicants' claim in §§ 209-214 and found as incorrect as explained in section 2.6 of Annex II to the reply.

225. With regards to the Applicants' claim in § 183 concerning the increase in air transport activity and GHG emissions, the data used by the Applicants is neither relevant nor representative or aligned with the latest available forecasts. With regards to § 183.1 on the past CO2 increase, it does not reflect the actions put in place to reach climate neutrality as part of the 2030 CTP and the contribution of ReFuelEU Aviation and EU ETS in the reduction of the GHG emissions from aviation. With regards to § 183.2, in the period 2025-2029, flight growth is expected to average 1,6% per year in the EUROCONTROL base (most-likely) scenario forecast (166) and in the period 2029-2050, EUROCONTROL expects the annual growth of 1,2% in its base (most likely) scenario to lead overall to growth of 44% in that period ([167]). During the COVID-19 pandemic, flight levels plummeted in 2020 due to governmental lock-down measures, and have been slowly recovering, projected to recover to 2019 level in 2025. Therefore, comparisons based on this period are not representative for the sector as used by the Applicants.

226. The air transport accounts for around 3% of total EU GHG emissions ([168]) and for around 2% of total global GHG emissions ([169]). In view of the projected aviation market growth worldwide and the global operations of the sector, the TSC for aircraft manufacturing are based on a global fleet renewal approach, which is a conservative and prudent approach. With the adoption of ReFuelEU Aviation Regulation in 2023, the SAF will have to be gradually deployed at large scale, which will allow aviation to sustainably grow by decoupling the activity growth from the GHG emissions. In fact, the 2030 CTP shows growth in activity for all transport modes, including air transport, without impeding reaching the climate neutrality objectives for the EU economy, due to the new regulatory measures. In case of air transport such new regulatory measures notably concern strengthened carbon price under EU ETS and the progressively increased supply and uptake of the SAF under ReFuelEU Aviation, as reflected in the modelling underpinning the 2030 CTP and 'Fit for 55'package, as the air transport contribution to the climate neutrality goals. This aviation contribution to the climate objectives is also reflected in the various sectoral decarbonisation roadmaps, outlined in section 1.1 of Annex II to the reply.

227. With regards to the Applicants' claim in § 185 on the EU Taxonomy to prevent the over fleet from growth is irrelevant. It is not the role of the EU Taxonomy to regulate whether an economic activity should be allowed or not. The EU Taxonomy is to provide market transparency for sustainable investments, thereby facilitating a sector's transition towards climate neutrality, and not to regulate the economy-wide operations. The EU environmental

([165]) For example, see the explanation of the process: https://simpleflying.com/aircraft-delivery-entry-into-service-steps-guide/

([166]) For more information, see: https://www.eurocontrol.int/publication/eurocontrol-forecast-update-2023-2029-autumn-2023

([167]) For more information, see: https://www.eurocontrol.int/publication/eurocontrol-aviation-outlook-2050

([168]) Eurostat based on European Environmental Agency (2022), for more information, see: https://ec.europa.eu/eurostat/databrowser/view/env_air_gge__custom_11695891/bookmark/table?lang=en&bookmarkId=967cce5f-b34c-4122-84f8-8a2addfc0dc8.

([169]) For more information, see: https://www.iea.org/energy-system/transport/aviation#tracking

policies and laws in place impact the pace of growth of the sector due to increased compliance costs stemming, in particular, from a strengthened carbon price under the revision of the EU ETS and the introduction of SAF supply mandates under ReFuelEU Aviation. Those impacts are reflected in the modelling underpinning the 2030 CTP and 'Fit for 55' package. ReFuelEU Aviation will transition from fossil kerosene to SAF, which will allow the sector to grow in a sustainable manner and consistently with the Commission target for climate neutral transport. The claim of the Applicants fails to recognise this in the context of the broader reflections of EU aviation activities.

228. The Applicants' claims in §§ 185-192 that the replacement ratio application would be ineffective are not founded and incorrect. In fact, the design and application of the replacement ratio referred to in 3.21. (b) and (c), 6.18. (b) and (c), and 6.19. (b), (c) and (d) of Annex I to the Climate Delegated Act was extensively discussed, supported by simulations, by the Platform experts to avoid providing wrong incentives to aircraft operators and lessors that would delay replacement and/or grow the fleet. The conclusion of the simulations performed by the Platform's experts was that by introducing an incentive or requirement to permanently withdraw aircraft from the use (e.g. by scrapping) one may risk no improvement on what is already a competitive, and hence, a priori, efficient market, and leaves emissions unchanged.

229. In other words, if aircraft operators were obliged to permanently withdraw their older aircraft from use without a possibility to sell them, that would in many instances incentivise them to use these aircraft longer. This would in turn, also prevent the cascading effect where these aircraft are bought by cargo or other operators flying older fleets than the global average and wishing to renew their fleet. By allowing the sale of an aircraft, the TSC incentivises aircraft operators to buy state of the art technology, while enabling other carriers to renew their fleet with better performing aircraft than those they currently operate.

230. For the above reasons, the TSC allow aircraft operators and lessors a choice whether to withdraw an old aircraft from its fleet or completely from the use (i.e. scrap). In providing the choice however, the principle for that TSC that the aircraft renewal is not contributing to the fleet expansion is preserved by applying a replacement ratio (in case that an aircraft is withdrawn from the air operator fleet but continues to be used by another operators). It is also important to recognise that the taxonomy eligibility of an aircraft is not transferrable with a sale of an aircraft as implied in the Applicants' claim in § 188. As concerns the TSC in the section 6.19. (e) of Annex I to the Climate Delegated Act, the purchase of any aircraft is insufficient as it would have to meet ambitious requirements in that TSC, notably in terms of SAF uptake and compliance with the latest editions of noise and air pollution standards, as explained in section 2.5 of Annex II to this reply. Furthermore, the TSC set the limits on which activities are eligible for the EU Taxonomy, however, the TSC cannot set the overall restrictions at the corporate level, as this would not be consistent with the EU Taxonomy approach that should be activity specific. Moreover, such an approach is not applied for other activities covered by the EU taxonomy. With regards to the Applicants' affirmations in § 189, it should be noted that it is an incorrect understanding of the replacement ratio. In case of an aircraft operator or lessor selling its old generation aircraft to another operator, that aircraft operator or lessor do not have control how the buyer will use the aircraft in each individual case. However, the role of the replacement ratio is to capture the situation at the global level so to exclude the share of new aircraft acquired for expansion instead of for fleet renewal from the Taxonomy eligibility. This is a pragmatic approach to ensure usability of the criteria while at the same time provide right incentives to the operators to transition to best available technologies.

231. The Applicants' claims in §§ 191-192 of the replacement ratio's ineffectiveness is unfounded. The replacement ratio referred to in 3.21. (b) and (c), 6.18. (b) and (c), and 6.19. (b), (c) and (d) of Annex I to the Climate Delegated Act is set at global level to reflect that aircrafts operate globally. This is also reflected in the design of the TSC for aircraft operated with SAF, where the SAF requirements are calculated in relation to all flights performed (beyond EU territory). If the EU scraps relatively efficient old aircraft, it will limit access to such aircraft that are relied on by other segments of aviation, such as cargo operators or other operators flying older fleets than the global average. This would create opposite effects, as those aircraft operators would hold for even longer much older aircraft technologies. The accelerated access to newer technologies will accelerate replacement cycles worldwide, as better technology will cascade down and be more widely available, which is also reflected in the trends expecting shortening of the end-of-life age of an aircraft and would be captured in the replacement ratio. The lack of control by the Commission of the sales and purchase of aircraft, as argued by the Applicants in § 191.1, is an irrelevant consideration. As concerns, 'one in, one out' principle for aircraft replacement referred to in 6.18. (c), and 6.19. (c) and (d), and the Applicants' claim in § 191.2, the removal of an aircraft from the use and from the fleet would be reflected in the contractual agreements and associated conditions signed with the economic operators that acquired the aircraft being removed (i.e. an aircraft operator or a decommissioning specialist).

232. All these elements show, as already demonstrated in previous sections, that the Applicants' claim that the TSC are unfounded.

233. As concerns the Applicants' claim in § 193 on the margins to the ICAO CO2 standard, those are incorrect as explained in section 2.6 of Annex II to this reply.

234. With regards to the Applicants' arguments made in § 194, it should be noted that the adopted TSC do not differentiate the requirements on the application of the replacement ratio to revenues, Capex and Opex.

2.4. SAF percentage targets

<u>Applicants' claim</u> (§§ 195-203 of its request)

235. The Applicants claim that the thresholds for SAF uptake set out in the criteria under Sections 6.19(d) and 6.18(c) of Annex I to the Climate Delegated Act for aircraft are inadequate, and are not consistent with conclusive scientific evidence, in breach of Article 19(1)(f) of the Taxonomy Regulation, for three reasons:

- '*there is no basis for concluding that there will be no technologically and economically feasible low-carbon alternatives, that go beyond the undemanding 15% SAF threshold by 2030 (aircraft capable of using greater than 15% SAF are already available on the market)*';
- '*there is no conclusive scientific evidence to support the conclusion that a 15% SAF requirement will make a substantial contribution to mitigating climate change, and no conclusive evidence that they would be consistent with a pathway to limiting temperature increases to 1.5°C above pre-industrial levels as required by Article 10(2)*' of the Taxonomy Regulation;
- *'there is evidence that the SAF 15% thresholds should be considerably higher from 2030, and that the existing thresholds will not support the transition to a low-carbon economy.'* Here the Applicants point to the conclusions of the ICCT Report, the 2023 Platform's Response and the IEA's Net Zero roadmap where both require

an even greater share of SAF in 2030. The Applicants claim as well that the SAF ratio should be calculated based on the total amount of SAF used compared to the total fuel used by the airline's fleet and not – as currently the case – on the basis of a presumption that all SAF used is attributed to the compliant aircraft. According to the Applicant this artificially inflates the compliance ratio.

Commission's response

236. Regarding the application of Article 19(1), point (f) of the Taxonomy Regulation concerning the TSC to be based on *'conclusive scientific evidence'*, as explained in section 1.1 of Annex II to the reply, the Commission applied the standard that such evidence must not be inconclusive and should be applied in the context of all conditions of Article 19 of the Taxonomy Regulation.

237. At the same time, when developing the TSC, the Commission aimed to ensure that the substantive conditions of Article 10(2) of the Taxonomy Regulation are met, namely that the relevant activities support the transition to a climate-neutral economy as also emphasised in recital (41) of the Taxonomy Regulation (see above section 2.3 of Annex II to the reply).

238. Therefore, the criteria for the manufacturing of the latest generation aircraft were defined until 31 December 2032 in order to ensure that the technological progress is reflected in the EU Taxonomy. Beyond this timeframe, as explained in recital (11) of the Amended Climate Delegated Act, the criteria for aircraft manufacturing, and in particular the margins to the ICAO CO_2 standard, will be reviewed. This may also impact the validity of the criteria for aircraft leasing and passenger and freight air transport concerning the latest generation aircraft, which apply beyond this timeframe, subject to regular review. However, lessors and aircraft operators are obliged to progressively take up increasing shares of SAF as from 2030 to maintain the Taxonomy-alignment of such aircraft. The level of the use or blending of SAFs represented in the TSC should be reviewed every three years to take account of the emerging SAF technologies and the current and expected future availability of SAF in the market.

239. The TSC on SAF uptake are ambitious. First, the SAF market is not developed yet anywhere in the world. The ReFuelEU Aviation was adopted in October 2023 only and its very aim is to create the SAF market in the EU and by setting the standard, incentivising the development of a SAF market worldwide. As identified in the supporting Impact Assessment published in July 2021([170]), the production of SAF is very scarce, representing less than 0,05% of aviation fuel consumption. IATA estimates SAF market size in 2022 for around 240-380 thousand tonnes at global level ([171]), which would represent around 0,5-0,8% of EU jet fuel consumption. Furthermore, it should be noted that this share would include a portion of SAF that would not meet definition of SAF required by the TSC in sections 6.18 (b)-(c) and 6.19 (b)-(e) of Annex I to the Climate Delegated Act. Only one SAF production pathway is commercially mature (i.e. HEFA – synthesized paraffinic kerosene from hydroprocessed esters and fatty acids), which is not scalable to meet by itself the long-term air transport decarbonisation needs. SAF are estimated to cost between 1,5 to up 6 times the cost of fossil kerosene depending on the SAF production pathways and

([170]) For more information, see: https://ec.europa.eu/info/law/better-regulation/have-your say/initiatives/12303-Sustainable-aviation-fuels-ReFuelEU-Aviation_en

([171]) For more information, see: https://www.iata.org/contentassets/d13875e9ed784f75bac90f000760e998/saf-policy-2023.pdf

feedstock used. Given the nascent developments for SAF, SAF supply chains and distribution channels need yet to be established.

240. The ReFuelEU Aviation Regulation introduced mandatory blending mandates on aviation fuel suppliers that guarantee a minimum amount of SAF across EU airports under the scope of the Regulation. The level of SAF mandates agreed by the co-legislators amounts to 2% in 2025 and 6% in 2030, which maintained the 2025 mandate of 2% unchanged and increased the 2030 mandates from 5% compared to the Commission proposal (172). This Regulation is therefore expected to scale up SAF availability in the EU over time. With technological progress and increased SAF quantities, and once the transitional period under ReFuelEU Aviation is finished by the end of 2034, aircraft operators may expect SAF to be available across airports covered by ReFuelEU Aviation. Until then and from a demand side perspective, aircraft operators may access SAF in the market only in some airports and not for all the connections they operate. While the technical work by the international community is ongoing to make the 100% SAF use technically feasible, substantial investments and progress is still required to technologically and economically develop mature SAF production technologies and scale up the SAF market in the EU and worldwide.

241. Second, from a supply perspective, SAF will not be physically available in all airports across the short- and medium-term. ReFuelEU Aviation SAF mandates apply to aviation fuel suppliers and not to aircraft operators. Until the end of 2034, aviation fuel suppliers will have flexibility in deciding to which EU airports to supply SAF. Besides, aviation fuel suppliers will still decide – after the end of the transitional period – how much SAF and of which quality may be available at each Union airport they supply above the minimum obligatory blended quantities under ReFuelEU Aviation. This means that the SAF uptake will vary between aircraft operators depending on their ambition for SAF uptake, offtake agreements signed with aviation fuel suppliers and availability of SAF at particular EU airports. Moreover, in line with the proportionality principle, SAF supply obligation applies only to EU airports above certain activity thresholds, which would capture the overwhelming majority of air traffic (and hence GHG emissions, see table below), but account merely for around 40% of all commercial airports in the EU (and less than 20% if non-commercial airports are included). The below table covers commercial airports based on statistical data reported by Eurostat including airports in outermost regions. If non-commercial airports were to be included in the scope, the total number of all airports would increase to more than 850.

Airports threshold	Nb airports	Pax coverage	Cargo coverage
All EU27 commercial airports	389	100%	100%
ReFuelEU Aviation scope (based on 2022 data)	155	97%	98%

242. Third, the geographical scope of SAF criteria in the EU Taxonomy is a global, and hence goes far beyond ReFuelEU Aviation scope. The required quantities of SAF uptake are calculated with respect to all flights performed by a given aircraft, including flights performed outside the EU, departures from and arrivals to the EU. ReFuelEU Aviation scope is limited to flights departing from EU airports and only to those airports falling into

(172) COM(2021) 561 final.

the scope of the Regulation (as explained in the point above). Access to SAF outside the EU will face even greater challenges both in terms of obtaining necessary quantities and quality of SAF. At the time of the adoption of the EU Taxonomy for aviation, the EU along with US are the leading regions with policies and prospects for SAF market development in the medium-term. The access to SAF outside the EU will also depend on the availability of such fuels meeting the high GHG emissions reductions required by the EU law in non-EU airports. The minimum GHG emissions reductions thresholds for SAF are much stricter under ReFuelEU Aviation, which relies on the Renewable Energy Directive, than those applied globally under the CORSIA framework or other jurisdictions (i.e. 65% for aviation biofuels and 70% for synthetic aviation fuels in the EU, compared to 10% as the minimum required under CORSIA, 50% as the minimum required in US under the Inflation Reduction Act). Furthermore, conversely to other regulatory frameworks, ReFuelEU Aviation excludes biofuels produced from food and feed-based feedstock that are typically associated with the risk of indirect land use change. The difference in GHG reduction requirements and in eligible feedstock will further increase the challenge of sourcing SAF for aircraft departing from non-EU airports.

243. Lastly, these TSC will be regularly reviewed to take account of SAF market development and the expectations for the SAF market to scale up as a result of regulatory measures, as recognised in the recital of the Amended Climate Delegated Act. Since the related TSC are classified as transitional activity, the EU Taxonomy criteria will have to be reviewed in accordance with the Taxonomy Regulation.

244. With respect to the Applicants' claims in §§ 198-201 on the adequacy of SAF use thresholds set out in the TSC, as explained in the sections 1.1 and 2.7 of Annex II of the reply, the level of SAF thresholds were developed on the basis of Article 4 and Annex I of ReFuelEU Aviation, taking into account the above explained four considerations on technological and economical limitations on SAF. The ReFuelEU Aviation Regulation is among the key elements enabling the EU to reduce its net GHG emissions by at least 55% by 2030 compared to 1990 levels and to achieve climate neutrality in 2050.

245. Furthermore, with respect to various publications referred in the Applicants' claim in § 201 that higher level of SAF use as from 2030 should be used to reach climate neutrality, the Commission recall the explanations in the section 2.3.1 of Annex I to the reply on the contribution of aviation to the 2030 CTP. The Commission also notes that those publications referred to by the Applicants apply their own assumptions, such as the definition of SAF, carbon price, pace of growth, geographical scope, the type and role of other measures in the 'basket of measures' for decarbonisation, which makes the comparison of various roadmaps difficult without an in-depth analysis of the underlying assumptions. For instance, the level of carbon price will impact the growth of the sector and would vary depending if the scope is European or global. Some roadmaps may assume a higher role in decarbonisation of the increased fleet renewal with more fuel efficient aircraft over the uptake of SAF, while others may on the contrary rely more on the uptake of SAF and less on the increase in fleet renewal with fuel efficient aircraft. Those roadmaps may not necessarily converge with the scope and assumptions underpinning the 2030 CTP (including modelling in the ReFuelEU Aviation impact assessment) and may not take an economy-wide assessment as the 2030 CTP did, so direct comparisons on SAF ambition level are misleading. This is a relevant consideration because the climate neutrality is an economy wide objective, and the GHG reduction over time depends on the cost-effective options available for decarbonisation in various sectors. The transitional technologies have been factored into the 2030 CTP, and supported by EU policies such as the ReFuelEU Aviation and the revised EU ETS as part of 'Fit for 55'package. The impact assessment accompanying the 2030 CTP showed how economy-wide net GHG reductions of 55% will

be achieved within the Union by 2030 and how climate neutrality will be achieved by 2050. It also showed that this implies 90% greenhouse gas emissions reductions from the transport sector by 2050 compared to 1990 level.

246. Concerning the Applicants' claim in § 201.2, which refer to the Platform's recommendations to increase SAF use targets, the Commission increased the target to take account of feedback of the public consultation from 10% to 15% in 2030. However, the Commission did not view it as appropriate to take account of Swedish SAF supply mandates in 2030. First, ReFuelEU Aviation replaces national SAF targets with a uniform EU target. Second, the consumption of aviation fuels in Sweden represents around 2% of the EU market, and Swedish national SAF target for 2030 would translate to less than 1%, at the EU scale in terms of SAF volumes. In other words, following Swedish national target at EU level would have decreased the level of ambition of the Commission, not increased it. Moreover, the Commission recalls that the TSC cover global SAF usage – around two-thirds of fuel consumption relates to extra-EU departing flights, and the TSC would also cover the flights arriving within the EU from outside of the EU.

247. In § 201.3, the Applicants refer to the publication of the International Energy Agency of May 2021 that sets out a net zero roadmap for the global energy sector. The Commission notes however, that the Applicants did not refer to the September 2023 update that presents a revised scenario for the SAF contribution, which is 10% of biofuels and 1% of synthetic fuels in the final energy consumption in 2030 ([173]). Even if one were to disregard the overall challenges of comparing both figures due to the difference in assumptions, those SAF percentages are lower than those in the TSC of sections 6.18. and 6.19 of Annex I to the Climate Delegated Act. The Applicant also refers to the reduction in emissions due to the behavioural change in air travel growth in this report. The Commission notes that intra-EU flights in the EU are subject to EU ETS and extra-EU flight are subject to CORSIA, and that such market-based measures impact air traffic growth as it was reflected in the 2030 CTP. Therefore, the activities in sections 6.18 and 6.19 would be impacted by such market-based measures. In § 201.1, the Applicants refer to the ICCT Report, the "Breakthrough" scenario that proposes 17% of SAF in 2020. This publication however also presents alternative scenarios of "Action" with 3% of SAF use in 2030 and "Transformation" with 8% of SAF use in 2030. All those scenarios are set to reduce CO_2 emissions from aviation compared to the baseline and in the trajectory of the Paris Agreement temperature goals. However, whether a specific scenario for a given sector is aligned with 1.5°C scenario can only be assessed in combination with all other sectors, and not in isolation as such, since the objective is set at the economy-wide level and the contribution of each sector depends on the cost-effectiveness of various decarbonisation options. Finally, keeping in mind the above considerations on the complexity of comparing various roadmaps, the TSC for SAF use are consistent with the ambition of various aviation decarbonisation roadmaps that were compared in the recent IATA publication ([174]) and summarised in the table below. When comparing the SAF shares (expressed in volumes), attention needs to be paid, however, to the fact that the minimum thresholds of GHG emission reduction required for SAF varies across jurisdictions. Consequently, one unit of SAF in terms of volume can have different GHG emissions reductions savings.

([173]) Refer to page 94 of IEA Net Zero Roadmap: https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach

([174]) For more information see, the IATA's comparative review of aviation net-zero CO2 transition pathways: https://www.iata.org/contentassets/8d19e716636a47c184e7221c77563c93/nz-roadmaps.pdf

	Net-zero roadmaps and scenarios	Organisation name and publication year	SAF share by 2030
1	Net-Zero Roadmap S2	International Air Transport Association (IATA) 2023	6%
2	Net-Zero 2050 Roadmap (2023 update)	International Energy Agency (IEA) 2023	11%
3	Long-Term Aspirational Goal (LTAG) Integrated S2: Increased/further ambition scenario, medium traffic growth	International Civil Aviation Organization (ICAO) 2022	13%
4	Long-Term Aspirational Goal (LTAG) Integrated S3: Aggressive/speculative scenario, medium traffic growth	International Civil Aviation Organization (ICAO) 2022	21%
5	Vision 2050 Breakthrough Scenario	International Council on Clean Transportation (ICCT) 2022	17%
6	Prudent (PRU) Scenario	Mission Possible Partnership (MPP) 2022	13%
7	Optimistic Renewable Electricity (ORE) Scenario	Mission Possible Partnership (MPP) 2022	15%
8	Biofuel + PtL scenario, middle demand scenario	Dray et al. (2022) published in Nature Climate Change 2022	13%
9	Biofuel + Hydrogen scenario, middle demand scenario	Dray et al. (2022) published in Nature Climate Change 2022	10%
10	DESTINATION 2050 net zero scenario for European aviation	Royal Netherlands Aerospace Centre (NLR) and SEO Amsterdam Economics (SEO) 2021	6%
11	The US Aviation Climate Action Plan scenario	The United States Federal Aviation Administration (FAA) 2021	10%
12	2030 CTP: ReFuelEU Aviation	European Union, 2023	6%

248. With reference to the Applicants' claim in § 203 on the SAF use requirement compliance calculation, aircraft operators can prove compliance with the required minimum percentage of SAF use based on SAF quantities purchased at the level of its fleet. This calculation method fulfils the purpose of increased necessity of the EU Taxonomy criteria to be usable, while it preserves the intended level of environmental ambition, and overcomes the challenges stemming from low SAF availability and supply constraints across Europe and globally. This means that the eligible aircraft do not necessarily have to physically uplift SAF as long as that SAF is physically uplifted by any aircraft in the fleet of the aircraft operator in adequate quantities. Such an approach will avoid incentivising excessive fuel tankering or transport of small quantities of SAF to remote airports, notably during the transitional period under ReFuelEU Aviation, which in itself may generate extra GHG emissions, further increase the cost of already expensive SAF, add complexity to the operations and logistics, and disproportionately impact operators located in more remote regions or less developed EU countries. In practical terms, the SAF requirement can be fulfilled by attributing an adequate quantity of SAF, purchased at the fleet level during the given year, to the eligible aircraft. This adequate quantity of SAF is defined in relation to the minimum percentage of SAF required by the criteria in a given year and the eligible

aircraft's total aviation fuel used in that year. To demonstrate the compliance with this criterion, a given batch of SAF must not be attributed more than once to eligible aircraft in the fleet. The verification of such data will be supported by the monitoring, reporting and verification requirements established under ReFuelEU Aviation and the EU ETS. The proposed SAF threshold takes account of the SAF market and regulatory developments under ReFuelEU Aviation. The Applicants' proposal in § 203 to require the minimum amounts of SAF at entire fleet level is very strict and not practicable. Such a requirement at the company level is not set in any other EU Taxonomy criteria for any other economic sector, as it would violate Article 19(1), point (k) of the Taxonomy Regulation.

249. In conclusion, the TSC with regards to SAF are fully in line with Article 19(1) of the Taxonomy Regulation, including its point (f), which requires the Commission, in designing the TSC, to balance environmental integrity and ambition, with usability, technological readiness, market and technological neutrality and coherence with EU law. Furthermore, based on the explanations above, the Commission considers that the activities in sections 6.18 (d) and 6.19 (c) of Annex I to the Climate Delegated Act *'support the transition to a climate-neutral economy consistent with a pathway to limit the temperature increase to 1.5 °C above pre-industrial levels'* and are compliant with Article 10(2) of the Taxonomy Regulation.

2.5. Aircraft operators can avoid the carbon reduction targets by relying on section 6.19(e)

<u>Applicants' claim</u> (§§ 204-208 of its request)

250. The Applicants claim that Section 6.19., sub-paragraph (e) of Annex I to the Climate Delegated Act provides that the purchase, financing and operation of aircraft may be Taxonomy-aligned when, notwithstanding the fact that it has not met the emissions' reduction requirements in Section 3.21. (b), the aircraft operates with 5% SAF in 2022, with the percentage of SAF increasing by 2 percentage points annually thereafter. They assert that the effect of sub-paragraph (e) is to relieve operators from any obligations as regards emissions, if they operate with a very low threshold of SAF, increasing over time. In particular, the Applicants state that this provision:

- *'does not describe a transitional activity, for the purposes of Article 10(2) of the Taxonomy Regulation. There are technologically and economically feasible low carbon alternatives now, in the form of aircraft that are able to operate on considerably higher percentages of SAF';*
- *'is not consistent with conclusive scientific evidence'* as required by the Taxonomy Regulation. The Applicants point out to the conclusions of the Platform's 2022 March Report, the Steer Study and the Energy Transitions Committee;
- *'the Platform's 2023 Response recommended increasing the starting point from 5% to 32%'* as there are planes that are already in operation. There is no need to require scrapping of existing planes and maintaining the increment of 2% going forward.

<u>Commission's response</u>

251. The Applicants' claim in § 207 that the criteria under section 6.19. (e) of Annex I to the Climate Delegated Act are less demanding and in the heading on manifest error 5 that avoid carbon reduction targets are incorrect.

252. First, it should be recognised that the criteria in section 6.19. (e) follow the recommendations on the level of SAF ambition of the Platform's March 2022 Report, to which the Applicants refer to substantiate their arguments. Moreover, the adopted TSC in fact increased the level of ambition compared to those Platform's recommendations by increasing the level of stringency for the noise compliance for passenger aircraft in the DNSH, point 5 of the section 6.19. The Applicant also refers to the Steer Study to support its argument. However, the Steer Study did not state that both energy efficiency and use cumulatively should be incorporated in the same criteria. The references to extracts of those two publications by the Applicants are applied selectively and omitting pertinent elements necessary to reached substantiated conclusions.

253. Second, the criteria in section 6.19. (e) include an element of energy efficiency through the DNSH requirements in addition to the ambitious level of SAF uptake. The DNSH criteria referred to in point 5 of section 6.19. set high requirements in terms of compliance with the thresholds set in the latest edition of the ICAO standard for noise (for freighter aircraft) or exceeding them (for passenger aircraft) (i.e. Chapter 14) and the latest edition of the ICAO standard for air pollution (i.e. Chapter 2 on gaseous emissions, including NOx, and Chapter 4 on particular matter emissions). This will overall result in the ineligibility under the EU Taxonomy of older, less fuel -efficient aircraft currently in operation that are performing according to the requirements under the previous, less ambitious editions of the standard (e.g. Chapter 3 or 4 for noise), as illustrated in the European Aviation Environmental Report 2022 ([175]).

254. Third, the high level of ambition is maintained through the requirement for the early uptake of SAF (5% in 2022) and its progressive increase (of 2 percentage points annually), despite the technological and economic limitations related to the SAF availability considering that the SAF market is yet to be created, as explained in particular the sections 2.4 and 2.7 of Annex II to this reply. Importantly, as recognised in the recital 11 of the Amended Climate Delegated Act, the level of SAF uptake required in the TSC is set to be regularly reviewed to take account of the progress of market developments in the production of SAF. In particular, this review will take account of the impacts on the emergence of SAF market due to the ReFuelEU Aviation, which was adopted by the co-legislators only after the technical work on the criteria in the sections 3.21., 6.18. and 6.19 of Annex I to the Climate Delegated Act. The Applicants' claim in § 206 that technologically and economically feasible low-carbon alternatives exist in form of aircraft that are able to operate on considerably higher percentage of SAF. This claim fails to recognise that aircraft eligible in the activity in section 6.19 (e) exactly belong to this category. The current aviation turbine fuel quality specifications allow a maximum blend of SAF with fossil aviation turbine fuels up to 50% ([176]), which will apply to the aircraft covered by the Taxonomy criteria section 6.19 (e). Aircraft that are powered by fuel type that cannot be blended with SAF (such as avgas and Jet B) will not be eligible under this TSC.

([175]) For more information, see the Figure 3.2, passenger aircraft with a maximum noise level of at least 22 EPNdB would qualify under this TSC (while freighter aircraft should perform with a maximum noise level corresponding at least to Chapter 14 level) and Figure 3.4 for the turbojet and turbofan engine NOx emissions performance: easa.europa.eu/eco/sites/default/files/2023-02/230217_EASA EAER 2022.pdf

([176]) ASTM D7566 Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons; also refer to ICAO website on an overview of the blending limits for various production pathways: https://www.icao.int/environmental-protection/GFAAF/Pages/Conversion-processes.aspx

255. The Applicants' request in § 208 to increase the level of ambition on SAF take into account the Swedish national SAF mandates by increasing SAF from 5% to 32% in 2022. As explained in the sections 2.4 and 2.7 of Annex II to this reply, the key challenge is the technological and economic limitations associated with the availability of SAF underpinned by the impact assessment on ReFuelEU Aviation. SAF is a scarce fuel, with nearly non-existent volumes (at the time of the development and adoption of the TSC) and at very high prices. The IATA publication shows that SAF volumes were 0.24 Mt out of 254 Mt, which is less than 0,1% of global aviation fuel consumption ([177]). Moreover, as explained in the section 2.4 of Annex II to the reply, ReFuelEU Aviation replaces national SAF targets with a uniform EU target. As explained in section 2.4 of Annex II to this reply, the consumption of aviation fuels in Sweden represents around 2% of the EU market, and Swedish national SAF target of 27% of GHG emissions reductions in 2030 would translate to less than 1%, at the EU scale in terms of SAF volume. Furthermore, this request mixes the levels of ambition envisaged for 2030 with the TSC to be applied in 2022 already, without recognising the lack of SAF market maturity. The Applicants' claims to increase the starting SAF levels in 2022 are not based on scientific evidence and technological and economic feasibility.

2.6. Emissions reduction targets in 3.21(b) do not correspond to the best performance in the sector or industry

Applicants' claim (§§ 209-214 of its request)

256. The Applicants submit that reduction targets in Section 3.21(b) of Annex I to the Climate Delegated Act are breaching the requirement in Article 10(2), point (a) of the Taxonomy Regulation whereby transitional activities should only be included if they reach the standard of *'best performance'* in the sector. This implies that their emissions are substantially lower than the sector average. Research and calculations based on the most recent market development show that the most advanced new aircraft are already ahead of the ICAO standards by 10 to 20%, suggesting the ICAO standards lag behind the newest technologies.

Commission's response

257. Contrary to the interpretation put forward by the Applicants, the best performance requirement cannot be interpreted in such a way that transitional activities within the meaning of Article 10(2) of the Taxonomy Regulation would only be permissible if they corresponded to the emission levels of the lowest-emission technology. Such an interpretation would render Article 10(2) of the Taxonomy Regulation meaningless, which is incompatible with the general principles of interpretation of EU law. Based on the interpretation suggested by the Applicants, the scope of Article 10(2) of the Taxonomy Regulation would be even more exclusive than that of Article 10(1) thereof and only the 'best in class' – already qualified under Article 10(1) – could qualify as a transitional activity. This would leave no room for other economic activities, despite that being precisely the meaning and purpose of Article 10(2) Taxonomy Regulation ([178]). Furthermore, such an interpretation would contradict the objective set out in recital (10) of

([177]) Refer to IATA publication of 2023 on the global SAF volumes and prices: https://www.iata.org/en/iata-repository/publications/economic-reports/sustainable-aviation-fuel-output-increases-but-volumes-still-low/

([178]) For more information, see the explanatory memorandum C(2023)3850, p. 3, explaining that the assumption that only the TSC that ensure the most substantial contribution to the climate change mitigation objective could be included in the delegated act is contrary to the purpose of Article 10(2) Taxonomy Regulation.

the Taxonomy Regulation that, in view of the scale of the challenge, sustainable finance must 'become mainstream'. Therefore, the requirement laid down in Article 10(2), point (a) of the Taxonomy Regulation must be interpreted in accordance with what is set out in recital 41 thereof, namely that GHG emissions must be 'substantially lower than the sector or industry average'.

258. Accordingly, corresponding to the best performance in the sector or industry does not mean that only the technology with the very best values in a sector can qualify. Rather, it is sufficient for the TSC to ensure that this technology belongs to the leading group – in other words to the group whose GHG emissions are substantially lower than the sector or industry average. A similar approach and interpretation has already been used for transport in the Climate Delegated Act, where 'best-in-class' transport hybrid vehicles qualify as a transitional activity under Article 10(2) of the Taxonomy Regulation, despite the existence of zero-emissions vehicles recognised as low carbon. In this regard, the Commission refers to the arguments provided above in section 2.2 of Annex II to the reply.

259. The Applicants' claims in § 214 that Taxonomy eligible aircraft are only slightly more efficient than the majority of today's aircraft and in the headline of the manifest error 6 that emission reduction targets do not correspond to the best performance in the sector are incorrect. In fact, the TSC in section 3.21. (b) and (c) of Annex I to the Climate Delegated Act refer to the margins to the ICAO standard that are used to identify the pool of the latest generation aircraft, which represent best available aircraft technologies. These margins are designed in a way to ensure non-discrimination of aircraft technologies that provide a significantly better performance improvements in terms of GHG emissions compared to the previous generation of aircraft that are in service.

260. The best available aircraft technologies are identified by reference to their fuel efficiency and associated GHG performance in relation to the margins to the ICAO new type (NT) CO_2 standard and are grouped into three aircraft classes according to their maximum take-off mass. The aircraft not meeting these margins represent the previous generation(s) aircraft in service that are significantly less fuel efficient and do not represent the best available performance. The replacement of the previous generation aircraft with the best available (new generation) aircraft of the same aircraft category provides substantially lower GHG emissions of around 20-25% of GHG emission reductions per flight ([179]). At the time of the development of the EU Taxonomy for aircraft, the previous generation(s) of aircraft accounted for around 87% of all aircraft in circulation in 2019. With the accelerated rate of aircraft decommissioning as a result of the COVID-19 pandemic impact on the aviation market (leading to grounded aircraft for a prolonged period), the share of previous generation aircraft has decreased to around 80% of all in-service aircraft. In conclusion, the overwhelming majority of aircraft in operation are previous generation(s) aircraft that are not eligible under the EU Taxonomy.

261. An application of additional margin relative to the ICAO CO_2 new-type limit, as suggested by the Applicants in § 212, would not represent a technologically robust approach to identify those aeroplane types with the best available technologies. The ICAO CO_2 metrics and limits are purpose-built for aeroplane certification, and deliberately designed such that the highest MTOM version of each aeroplane type has the smallest margin to the limit. This way, aeroplane type certification is simplified in that only the highest MTOM version needs to demonstrate compliance to the CO_2 standard (as its compliance demonstration would automatically cover lower weight versions of the same

([179]) For more information, see: https://www.destination2050.eu/wp-content/uploads/2021/03/Destination2050_Report.pdf, the Table 5 of the Destination 2050 Report.

type). Considering these specifics of ICAO's CO_2 metric system and its MTOM-dependent limits, any additional margins relative to the ICAO CO_2 new-type limit should not cut across different aeroplanes of the same type or family that typically use the same set of technologies. In practice, increasing the margin to the CO_2 limit further at this stage would impact the highest weight versions first, which in terms of fuel consumption per passenger-kilometre often represent the most fuel efficient aeroplanes in actual operations.

262. In the regional aircraft class several aircraft producers exist on the market, while in the narrowbody and widebody class there is basically a duopoly of European-based Airbus and US-based Boeing (with China-based Comac as a new market entrant). The very long and costly aircraft development and production cycles have resulted in the aircraft producers discontinuing the production of an older generation aircraft and switching to the production of the new generations once those are certified. In other words, aircraft manufacturers would typically not produce at the same time an old and a new generation of aircraft in the same aircraft category for economic reasons (for instance, the aircraft A320neo that entered into service in 2016 would replace the production of the previous generation aircraft A320 that entered into service in 1988). Nevertheless, an aircraft operator can decide to either (i) keep operating its previous generation, less-fuel efficient aircraft given the potentially long operational life of an aircraft, or (ii) purchasing or lease a previous generation (not best available) aircraft technology already in the market (180). Therefore, the TSC were designed with a requirement of a fleet renewal with best available technology of the previous generation technology.

263. The Applicant's claims in § 213 that airlines would invest into new technologies without Taxonomy is not a valid argument to justify the exclusion of best available technologies from Taxonomy. First, airlines may focus their investment on buying latest generation aircraft for the expansion of their fleet – which is excluded from Taxonomy – while continuing to fly their old technology aircraft as long as they can in the absence of any incentive to replace them with the latest generation ones. Furthermore, the Applicants fail to recognise that the cost linked to best available technologies is higher than previous generation, older aircraft, which also impacts the investment decision of an airline.

264. Moreover, the requirements concerning fleet renewal are an innovative and stringent approach introduced in the TSC. The TSC in the manufacturing activities promote energy efficiency improvements with best available technologies irrespective of the projected growth of the activity. The TSC for latest generation aircraft with fleet renewal take into consideration the specific particularities related to aircraft manufacturing (e.g. long development cycles, strict safety requirements, production per aircraft generations with limited producers and availability of aircraft in a given group of aircraft size). Furthermore, the legally binding requirements on SAF deployment in the EU will greatly contribute to decouple growth in the air transport activity from emissions.

265. It is important to note the other requirements in the TSC referred to in section 3.21 (b) and (c) of Annex I to the Climate Delegated Act related to the latest generation aircraft. The manufacturers of aircraft will be able to claim Taxonomy-alignment for the produced aircraft only based on the application of the replacement ratio (i.e. only the aircraft corresponding to fleet replacement could be Taxonomy-eligible and -aligned if they fulfil all the TSC). Moreover, aircraft manufacturers would also have to certify the aircraft against the ICAO CO_2 standard by 11 December 2026 (more than 12 months ahead of the

(180) It should be noted that more than half of the global fleet in operation today do not belong to aircraft operators but is on the lease.

legal deadline (181)) and ensure aircraft compatibility with 100% SAF by 2028 (two years ahead of industry commitment and expectations at the time of the development of the TSC). These are demanding requirements in view of the longer processes due to very strict safety standards in the sector. Moreover, the TSC for aircraft manufacturing of the latest generation aircraft were defined only until 31 December 2032 in order to ensure that the subsequent technological developments of the latest generation aircraft are reflected in the EU Taxonomy. Beyond this timeframe, the criteria for aircraft manufacturing, and in particular the margins to the ICAO CO2 standard, will be appropriately reviewed.

266. It could be noted that the contribution of the latest generation aircraft operated on SAF was recognised by the Science Based Targets initiative (SBTi), which is an independent organisation that helps companies to define and promote best practices in GHG emissions reductions and targets in line with climate science (182).

267. In the Commission's assessment explained above, the adopted TSC for aviation comply with the requirement (a) of Article 10(2) of the Taxonomy Regulation. The criteria are also in line with Article 19 of the Taxonomy Regulation which requires the Commission, in designing the TSC, to balance environmental integrity and ambition, with usability, technological readiness, avoidance of market distortions and coherence with EU law.

2.7. Failure to differentiate between sustainable and non-sustainable SAF

Applicants' claim (§§ 215-220 of its request)

268. The Applicants agree that the scale up of the use of SAF over time is required. However, they argue that SAF is an umbrella term which comprises a range of different alternative fuel types with different sustainability profiles, some of which are not sustainable.

269. In the Applicants' view, the scientific evidence is clear that many biofuels are associated with harmful environmental implications, including land use changes resulting in increased GHG emissions, fraud, deforestation, and increase of animal waste. The TSC fail to differentiate between the types of SAF and, hence, the requirements related to the SAF are not based on conclusive scientific evidence or the precautionary principle, in conflict with Article 19 of the Taxonomy Regulation.

Commission's response

270. As regards the application of the notion of 'conclusive scientific evidence', the Commission would like to recall the standard to be applied by the Commission when developing the relevant TSC referred in section 1.1 of Annex II to this reply, that is that the scientific evidence must not be inconclusive and that it has to be seen in the wider context of Article 19(1) of the Taxonomy Regulation. This also applies to the notion of the 'precautionary principle' in the context of Article 19 of the Taxonomy Regulation as explained in section 1.1 of Annex II to this reply.

(181) Volume 3 (CO_2 emissions) of the environmental protection standard of the International Civil Aviation Organization (ICAO) contained in Annex 16 to the Chicago Convention, first edition; for more information, see: https://www.icao.int/environmental-protection/Pages/ClimateChange_TechnologyStandards.aspx#:~:text=This%20is%20subsequently%20followed%20up,to%20comply%20with%20the%20Standard.

(182) For more information, see: https://www.airbus.com/en/newsroom/stories/2023-02-airbus-receives-sbti-validation-for-its-near-term-greenhouse-gas-emission

271. The TSC for aviation requiring the use of SAF rely on the definitions and requirements for SAF under Article 3 of ReFuelEU Aviation. Those definitions and requirements rely on the sustainability framework and definitions developed under the RED, with additional stringency which excludes biofuels produced from food and feed-based crops from the SAF definition, as these are fuels associated with higher risks of indirect land use change and biodiversity loss. Consequently, biofuels associated with harmful environmental implications are not covered by the TSC. Furthermore, in accordance with the RED Articles 29(9) and 29a(1) respectively, biofuels would have to meet at least 65% GHG emissions reduction, while synthetic aviation fuels at least 70% GHG emissions reduction. This guarantees that an uptake of each ton of SAF that replace a ton of fossil kerosene will provide a substantial contribution to climate. In fact, the ReFuelEU Aviation and RED are among the key legislative instruments enabling the EU to reduce its net GHG emissions by at least 55% by 2030 compared to 1990 levels and to achieve climate neutrality by 2050.

272. Article 4 and Annex I of ReFuelEU Aviation Regulation introduced a sub-target on synthetic aviation fuels as a policy decision to stimulate the technical and economic maturity of such fuels, given their high sustainability, innovation and scalability potential. To date, such fuels are not yet commercially mature and development activities are ongoing. The section 2 on problem definition of the impact assessment supporting the ReFuelEU Aviation Regulation identified the problem of highly limited production and supply of SAF at reasonable costs and low demand. It estimated the availability of SAF to less than 0.05% of total consumption, and the production costs of SAF are between 1.5 to 6 times higher than those for conventional fossil jet fuel depending on the production pathway used. Decarbonisation of aviation will rely on various types of SAF production pathways, and only one SAF production pathway was identified as fully technologically mature (i.e. HEFA – synthesized paraffinic kerosene from hydroprocessed esters and fatty acids, produced from vegetable and animal lipids). While such mature production pathways will play a role in the first years of ReFuelEU Aviation mandates, the increasing level of mandates combined with the sub-mandate will necessitate parallel development of other production pathways to reach the overall ambition. Eliminating the eligibility of vegetable and animal lipids feedstocks for SAF production, as raised in the Applicants' claim §219, would result in unjustified elimination of the only mature SAF production pathway available to aviation in short to medium-term. The impact assessment accompanying ReFuelEU Aviation assessed the risk of possible displacement of biofuels from road to aviation as low and recognised the electrification of road sector that will reduce demand for such feedstock. (183) The analysis was based on scientific evidence and broad stakeholders' consultations undertaken for the development of the Commission proposal for ReFuelEU Aviation, and incorporated to the overall modelling of the 2030 CTP that ensures that the EU and all economic sectors contribute to the delivery of the EU climate objectives in a coherent manner.

273. The approach concerning the use of SAF in the TSC is therefore consistent with the EU legislation and will bring a substantial contribution to climate change mitigation.

274. Articles 29 and 29a of RED defines a series of sustainability and GHG emission criteria that fuels used in transport must comply with to be counted towards the overall transport target under Article 25 of RED and to be eligible for financial support by public authorities. This includes sustainability for forestry feedstocks as well as GHG criteria for solid and gaseous biomass fuels.

(183) For more information, see the section 6.1.2 of the ReFuelEU Aviation Impact Assessment.

275. Default GHG emission values and calculation rules are provided in Annex V (for liquid biofuels) and Annex VI (for solid and gaseous biomass for power and heat production) to RED. The Commission can revise and update the default values of GHG emissions when technological developments make it necessary. Economic operators have the option to either use default GHG intensity values provided in RED or to calculate actual values for their pathway.

276. GHG emissions savings thresholds in RED are:

Plant operation start date	Transport biofuels	Transport renewable fuels of non-biological origin
Before October 2015	50%	-
After October 2015	60%	-
After January 2021	65%	70%
After January 2026	65%	70%

3. EXCESS OF POWERS/LACK OF COMPETENCE CONCERNING THE SHIPPING ACTIVITIES

Applicants' claim (§§ 221-223 of its request)

277. The Applicants state that the Commission, when adopting the TSC, failed to respect some of the criteria set out in Article 19(1) of the Taxonomy Regulation, and therefore acted in excess of the power conferred upon it by the Taxonomy Regulation. In particular, the Commission breached the requirements for the TSC:

- *'to be based on conclusive scientific evidence and the precautionary principle* (Article 19(1)(f) of the Taxonomy Regulation);
- to take into account life cycle assessment (Article 19(1), point (g) of the Taxonomy Regulation);
- *'to take into account whether the economic activity is a transitional activity'* (Articles 19(1)(h)(ii) and 10(2) of the Taxonomy Regulation);
- *'to take into account the potential market impact of the transition to a more sustainable economy'* (Article 19(1), point (i) of the Taxonomy Regulation)

278. Furthermore, the Applicants set out that the Commission failed to take into account the requirements for transitional activities laid down in Article 10(2) of the Taxonomy Regulation.

Commission's response

279. §§ 221 to 223 of the request constitute simply an unsubstantiated overview of allegations. To the extent that the Applicants substantiate them in the ensuing sections of the request, the Commission will deal with the specific arguments in reply to those arguments.

280. In any case, the TSC introduced in the Amended Climate Delegated Act comply with Articles 19(1) and 10(2) of the Taxonomy Regulation. For the sake of giving a general overview, the two tables below highlight, for each TSC on substantial contribution its rationale and the justification of conformity with the requirements of the Taxonomy Regulation.

	Technical Screening Criteria – Shipping Activities – Sections 6.10 and 6.11 of Annex I to the Climate Delegated Act **Assessment of compliance with the requirements of Article 19(1) of the Taxonomy Regulation**		
Technical Screening Criteria	**Zero Direct (tailpipe) CO_2 emissions**	**EEDI 20 percentage points below required by applicable EEDI regulation** **(Including demonstration of methane emission mitigation + ability to plug-in at berth)**	**GHG Intensity of energy used onboard** **(with additional EEXI criteria of 10 percentage points below applicable requirements)**
to be based on conclusive scientific evidence and the precautionary principle (Article 19(1)(f)' of the Taxonomy Regulation);	Several peer-reviewed studies, assessed as part of the studies underpinning the Impact Assessment of FuelEU, highlight the important role of electrification and zero-carbon fuels for enabling technologies for decarbonisation.	Statistics available in IMO GISIS ([184]), as available on 11 March 2024, confirm the adequacy of the EEDI metric as a TSC in the identification of 'best-in-class' ships. With methane-emission mitigation measures in place, applicable to gas-fuelled ships, there is sufficient scientific evidence that improvement in Energy Efficiency Design Index, is directly related with substantial reduction of GHG emissions form ships.	Scientific evidence supporting the relevance of applying a Well-to-Wake methodology for assessment of life-cycle GHG emissions form ships is substantiated in studies underpinning the Impact Assessment for FuelEU Maritime.
to take into account life cycle assessment (Article 19(1)(g) of the Taxonomy Regulation);	Life Cycle (Well-to-Wake) methodology applied in Regulation 2023/1805 (FuelEU Maritime) – TSC for zero (direct) CO_2 emissions represents a key enabler to deployment of low-to-zero carbon fuels or use of green electricity in shipping, favouring in this way the fulfilment of the objective for zero life-cycle GHG emissions.	Life Cycle (Well-to-Wake) methodology applied in Regulation 2023/1805 (FuelEU Maritime). TSC for EEDI – 20 pct points below required – will enable the deployment of energy efficient technology and reduction in energy consumption. Promotion of energy efficient technologies contribute to reducing emissions from a life cycle perspective. In addition, possible low-carbon energy systems (such as methane-based systems) have strong potential for progressive life-cycle WtW GHG emission C	Life Cycle (Well-to-Wake) methodology applied in the design of the GHG Intensity TSC. FuelEU WtW methodology for assessment of GHG emissions form ships is applied.

([184])For more information, see https://gisis.imo.org/Public/Default.aspx

	Technical Screening Criteria – Shipping Activities – Sections 6.10 and 6.11 of Annex I to the Climate Delegated Act **Assessment of compliance with the requirements of Article 19(1) of the Taxonomy Regulation**		
Technical Screening Criteria	**Zero Direct (tailpipe) CO_2 emissions**	**EEDI 20 percentage points below required by applicable EEDI regulation** **(Including demonstration of methane emission mitigation + ability to plug-in at berth)**	**GHG Intensity of energy used onboard** **(with additional EEXI criteria of 10 percentage points below applicable requirements)**
to take into account the potential market impact of the transition to a more sustainable economy'	The market impact of the criterion for substantial contribution, based on zero (direct) CO_2 emissions, is assessed as high, especially in the sector of short-sea shipping, canal crossing passenger ferries and in smaller ship segments. Future applications of hydrogen/ammonia systems and Onboard Carbon Capture and Storage are also part of market solutions which may take leverage on this criterion.	Market impact assessed with expected uptake of improved energy efficient ships. Where methane-fuelled ships may use EEDI criteria, market impact was assessed as positive, given the need to demonstrate the use of state-of-the-art measures and technologies to mitigate methane slippage emissions and the high potential of methane-based energy systems for the blending in of high decarbonisation potential through LNG replacement fuels such as biomethane and synthetic methane.	Market impact expected in the production of renewable and low-carbon fuels. TSC based on GHG intensity of the energy used onboard will support to drive the uptake of renewable and low-carbon fuels. Additional attractiveness of this TSC comes from possible monetising of overachievement of FuelEU Maritime, through selling of 'pooling compliance', in application of provisions in Article 21 of Regulation 2023/1805.

281. The TSC for transitional shipping activities are compliant with the requirements of Article 10(2) of the Taxonomy Regulation. Shipping activities for which there is no technologically and economically feasible low-carbon alternative are subject to appropriate TSC for providing substantial contribution to climate change mitigation. The table below explains how the TSC of shipping activities comply with requirements of Article 10(2) of the Taxonomy Regulation concerning transitional activities.

Technical Screening Criteria	**EEDI 20 percentage points below required** **(Including demonstration of methane emission mitigation + ability to plug-in at berth)**	**GHG Intensity of energy used onboard** **(In addition to EEXI 10 percentage points)**
EU Taxonomy 10(2)(a) ***Activity has greenhouse gas emission levels that correspond***	It is possible to define best performance in terms of CO2 GHG emissions per transport work from ships, based on the application of a quantitative threshold based on EEDI.	The use of renewable and low-carbon fuels in maritime introduce strong potential for decarbonisation in a Well-to-Wake GHG assessment framework.

Technical Screening Criteria	**EEDI 20 percentage points below required** **(Including demonstration of methane emission mitigation + ability to plug-in at berth)**	**GHG Intensity of energy used onboard** **(In addition to EEXI 10 percentage points)**
to the best performance in the sector or industry;	Included safeguard requiring state-of-the-art methane abatement measures and technologies for ships using LNG as fuel.	Activities meeting quantitative thresholds for GHG intensity of the energy used onboard (established in 5-year steps, going beyond the FuelEU Maritime targets) will be able to demonstrate best performance.
EU Taxonomy 10(2)(b) ***does not hamper the development and deployment of low-carbon alternatives; and***	Increased Energy Efficiency inherently promotes all types of low—carbon solutions. Where LNG-fuelled ships are subject to assessment, it is important to note that methane-based energy systems are enablers for the introduction of biomethane and green synthetic methane (RFNBO) and, therefore does not hamper the development and deployment of low-carbon alternatives	The TSC based on GHG intensity of energy used onboard promotes, in a technology-neutral way, the development of different low-carbon alternatives. Several technologies can contribute
EU Taxonomy 10(2)(c) ***does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets.***	No lock-in Increased energy efficiency promotes the possible adoption of different low-carbon solutions. Use of LNG fuel-based systems also does not constitute lock-in of carbon-intensive assets, given that introduction of advanced biofuels (biomethane) and RFNBOs (green synthetic methane) is possible	No lock-in Technology-neutrality is the basis of the TSC on GHG Intensity of energy used onboard.

3.1. Failure to base the TSC on conclusive scientific evidence (Article 19(1)(f))

Applicants' claim (§§ 224-236 of its request)

282. According to the Applicants, the TSC provided in Sections 6.10. (e), 6.10. (f), 6.11. (d) and 6.11(e) of Annex I to the Climate Delegated Act are not based on *'conclusive scientific evidence'* in breach of Article 19(1), point (f) of the Taxonomy Regulation. In particular, the Commission has not presented any formal assessment of:

- the validity of the EEDI when measuring contribution to climate change mitigation;
- the adequacy of the threshold of 20 percentage points above the IMO's EEDI requirements;
- the environmental benefits/harms of LNG-powered vessels more generally.

283. According to the Applicants, the impact assessment for the Climate Delegated Act does not refer to any specific scientific evidence that was relied upon nor does it itself, according to the Applicants, constitute *'conclusive scientific evidence'.* Since the Commission was aware of critical issues regarding life-cycle emissions, the potential for stricter criteria and the importance of considering emissions impacts beyond CO2 (methane), the Applicants claim that it could not lawfully ignore the impact of lifecycle emissions and wider GHG emissions from the TSC for shipping activities.

284. In particular, the validity of referring to the EEDI when measuring the contribution to climate change mitigation does not satisfy, according to the Applicants, the requirement to base the TSC on *'conclusive scientific evidence'*. This is because the EEDI itself, although it existed at the time of the adoption of the Amended Climate Delegated Act, does not represent a standard, which would be based on *'conclusive scientific evidence'*. In addition, the Applicants claim that the new IMO GHG strategy is not aligned with the Paris Agreement's goal of 1.5°C.

285. The use of EEDI is further questioned by the Applicants given that:

- it is '*unable to accurately capture the real lifetime carbon emissions of a vessel* and it *'promotes plants with lower installed power rather than technologies that reduce the carbon emissions.'*;
- *it 'solely focused on calculating emissions produced from on-board combustion* and is it is *'technically ignorant [of] emissions generated from other life cycled processes of marine fuels.'';*
- *'underestimate [e] the actual lifetime CO_2 emissions in all… cases [investigated by Trivyza et al (2020)]'.*

286. The Applicants also refer to feedback from the MSEG on the Commission's draft Amended Climate Delegated Act and set out that in relation to waterborne transport criteria some Member States noted that *'specific criteria for maritime risked creating a loophole for ships to simply switch from diesel to LNG, the upstream emissions of which would cancel out any* benefit.' Therefore, the Applicants argue the Commission has been aware of the TSC for maritime freight and passenger transport creating a loophole for LNG-powered vessels.

287. Further, the Applicants argue that the SWD set out some feedback from the NGOs and the waterborne transport industry on the proposed TSC. Regarding the waterborne, transport industry:

- *' signalled criticisms of reliance on EEDI/EEXI reference values in terms of direct emissions';*
- *'(some) pointed to concerns linked to safety in striving for the margins over EEDI/EEXI reference values'.*

288. According to the SWD the NGOs claimed that:

- *'specific criteria for maritime risked creating a loophole for ships to simply switch from diesel to LNG, the upstream emissions of which would cancel out any benefit';*
- *'the option above for maritime activities should be scrapped, or that the EEDI - 20% reference should be raised to 35%, and combined with declining lifecycle GHG emissions criteria'.*

'The criticism about the possibility of ships switching to LNG was also picked up in some comments from the Platform and in the feedback of some Member States and MEPs.'

289. In the Applicants' view the Commission's reaction to these concerns '*was to add a provision that gas-fuelled vessels, that overachieve the IMO Phase 3 EEDI targets by 20 percentage points, must also 'demonstrate the use of state-of-the-art measures and technologies to* mitigate *methane slippage emissions.'* was not based on conclusive scientific evidence, which is illustrated by the fact that the additional provision only addresses methane slippage at the point of combustion.

Commission's response

a) assessments in the Staff Working Document

290. The Commission presented a proportionate impact assessment accompanying the Climate Delegated Act in 2021. The document explained that the establishment of the TSC for the climate objectives was necessary to address the lack of clarity and uncertainty that investors face given the fragmentation of definitions concerning environmentally sustainable economic activities and investments. This absence of clear information leads to a sub-optimal capital allocation with regards to their environmental impact.

291. The Environmental Delegated Act and the targeted amendments made to the Climate Delegated Act are accompanied by a SWD. This SWD follows the arguments presented in the impact assessment of 2021 in that the Delegated Act is a precondition for the establishment of the EU Taxonomy as a classification system for environmentally sustainable economic activities.

292. In this context, the Commission also assessed in particular the consistency of the Environmental Delegated Act and Amended Climate Delegated Act with the climate-neutrality objective set out in Article 2(1) of the European Climate Law and with ensuring progress on adaptation as referred to in Article 5 of that Law.

293. In accordance with the requirements set out in Article 17 of the Taxonomy Regulation, the Commission calibrated the TSC to ensure that economic activities that contribute substantially to one of the environmental objectives, *'do no significant harm'* to climate change mitigation so as to ensure that no activity that leads to significant GHG emissions can be considered as environmentally sustainable. The potential of leading to high GHG emissions and thus significantly harming the climate change mitigation objective has been considered for each economic activity. For activities which present such potential, the TSC on DNSH to climate change mitigation were developed. For activities which present a low risk of high GHG emissions, no criteria were proposed. Wherever possible and appropriate, these TSC on DNSH to climate change mitigation make reference to compliance with minimum requirements set out in EU legislation. Where EU legislation does not prescribe specific minimum performance related to the environmental ambition, the quantitative metrics in the legislation were used, such as EU ETS installations data. The criteria can be both quantitative, such as GHG emissions, and qualitative, such as a requirement to have a methane leakage monitoring plan.

294. Similarly, the Commission calibrated the TSC to ensure that economic activities that contribute substantially to one of the environmental objectives do not cause significant harm to climate change adaptation so as to ensure that no activity that leads to an increased adverse impact of the current climate and the expected future climate, on the activity itself or on people, nature or assets can be considered as environmentally sustainable.

295. The approach taken to set out DNSH to adaptation reflects the idea that all economic sectors need to be adapted. DNSH to adaptation is based on whether the activity is climate-proof, i.e. whether any existing and future impacts that are material to the activity are identified and solutions are found to minimise or avoid possible losses or impacts on business continuity. DNSH criteria set out a process-based requirement that is the same across all economic activities. This process-based criterion is proposed for all activities following the approach that climate change will affect the whole economy.

296. A similar consideration was made with respect to the amendments to the Climate Delegated Act to cover additional activities making substantial contribution to climate

change mitigation and climate change adaptation. The overarching objective of the Taxonomy Regulation, which provides the legal basis for setting the TSC for activities making substantial contribution to climate change mitigation and climate change adaptation, is to support achieving climate-neutrality and climate resilience. Hence, within the framework of the Taxonomy Regulation, the consistency of the TSC with the climate-neutrality and resilience objectives was assessed.

b) response on substance to the claim

297. The introduction of the EEDI-based TSC in the Amended Climate Delegated Act is in line with one of the two pillars for decarbonisation of shipping present in the EU 'Fit for 55' ([185]), as presented above in Section 2.3.2 of Annex I to the reply, addressing the increase of energy efficiency as a substantial contribution to reduction of GHG emissions form shipping.

298. The claim that EEDI was no longer fit-for-purpose as a criterion for assessing the decarbonisation of shipping, in particular in the Amended Climate Delegated Act, was first expressed in the context of the Platform meetings. The Commission, supported by EMSA data and presentations, has indicated that, without a TSC based on an Energy efficiency metric, the EU Taxonomy would lack the ability to identify a substantial contribution to climate change mitigation evidenced by the reduction of energy consumption/fuel use.

299. The table below addresses the relevant claims regarding the adequacy and relevance of the EEDI-based TSC included in the Amended Climate Delegated Act.

Applicants' Claim – Specific complaint against application of EEDI criteria – specific claims	**Arguments in support of EEDI-based TSC introduced in the Amended Climate Delegated Act**
Validity of the EEDI when measuring contribution to climate change mitigation	EEDI is an important internationally recognised metric for assessing the energy efficiency and technical carbon intensity of new ships . Its scope is well-defined and was found to still be relevant in the context of the revision of the Climate Delegated Act. The EEDI requires a minimum energy efficiency level per capacity mile (e.g. tonne mile) for different ship type and size segments. The introduction of the EEDI-based TSC in the context of the revision follows a logic of continuity with the Climate Delegated Act, but with an increased level of ambition/stringency of the quantitative threshold. The metric used in the EEDI formulation is grams of CO_2 emitted, per tonne-nautical mile (gCO_2/tonne-mile), consisting of a measure of transport work suitable to differentiate those ships contributing to less impact, and is still the best international standard for rating of new ship designs. For that reason, based in existing statistics available and based on data present in IMO GISIS, assessed and processed by EMSA, the Commission has decided to keep it in the Amended Climate Delegated Act. The inability of the EEDI formulation to capture non-CO_2 GHG emissions, notably methane, is inevitably linked to the nature of the EEDI concept, designed to identify 'fuel consumption efficient' designs, using the specific fuel consumption and CO_2 combustion emission factor.

([185]) Complementary promotion of the energy efficiency measures and the use of renewable and low-carbon fuels; a technologically-neutral framework; the application of a Well-to-Wake assessment methodology.

<table>
<tr><th>Applicants' Claim – Specific complaint against application of EEDI criteria – specific claims</th><th>Arguments in support of EEDI-based TSC introduced in the Amended Climate Delegated Act</th></tr>
<tr><td></td><td>The fact that EEDI does not factor-in tank-to-wake emissions is not considered a limitation for its application as a metric for substantial contribution to climate change mitigation due to the following:
1. The TSC based on EEDI will be used to direct green investment in support of further development of energy efficient and decarbonised shipping. EEDI provides a benchmark that identifies, ships designed to consume less fuel (and emit less direct tailpipe CO2 emissions) per unit of transport work. Improving the energy efficiency of ships is key to support the decarbonisation of the sector.
2. Ships operating on gaseous fuels, prone to have possible non-combustion/ slippage emissions of non- CO_2 GHG emissions, namely LNG-fuelled ships will:
a. be covered by an applicable EU regulatory framework which will penalise such GHG emissions. This will be the case of FuelEU Maritime, from 1 January 2025, and extension of ETS to maritime, as from 2026, with relevant provisions and requirements applicable on a CO_2-equivalent basis, covering not only CO_2 but also non- CO_2 GHG emissions;
b. be required to demonstrate state-of-the art methane slippage mitigation measures and technologies.</td></tr>
<tr><td>Adequacy of the threshold of 20 percentage points below the IMO's EEDI requirements (Phase 3) applicable as of 1 April 2022 ([186]).</td><td>The threshold of 20 percentage points was designed in close observation of the relevant EEDI statistics, based on available information from EEDI data reported in IMO GISIS.
The table below shows the different ship types covered under EEDI with a view to demonstrate the number of vessels with a reported EEDI value that, as of today, meet the EEDI-based TSC in Sections 6.10.1(f). and 6.11 (e) of Annex I to the Climate Delegated Act.
<table>
<tr><th>Ship Type</th><th>Number Reported EEDI Ships</th><th>Number Taxonomy-compliant Ships</th><th>Number LNG Fuel - ready ships</th><th>% Ships already meting EEDI TSC</th></tr>
<tr><td>Bulkers</td><td>3619</td><td>21</td><td>8</td><td>0,6%</td></tr>
<tr><td>Cruise Liners</td><td>38</td><td>2</td><td>1</td><td>5,3%</td></tr>
<tr><td>Gas Carriers</td><td>439</td><td>10</td><td>0</td><td>2,3%</td></tr>
<tr><td>Tankers</td><td>2381</td><td>51</td><td>9</td><td>2,1%</td></tr>
<tr><td>General Cargo</td><td>404</td><td>113</td><td>0</td><td>28,0%</td></tr>
<tr><td>Refrigerated Cargo Carriers</td><td>37</td><td>16</td><td>0</td><td>43,2%</td></tr>
<tr><td>Combination Carriers</td><td>5</td><td>0</td><td>0</td><td>0,0%</td></tr>
<tr><td>Ro-Ro Cargo (Vehicle Carriers)</td><td>37</td><td>7</td><td>4</td><td>18,9%</td></tr>
<tr><td>Ro-Ro Cargo</td><td>38</td><td>9</td><td>0</td><td>23,7%</td></tr>
<tr><td>Ro-Pax</td><td>27</td><td>3</td><td>2</td><td>11,1%</td></tr>
<tr><td>LNG Carriers</td><td>130</td><td>80</td><td>16</td><td>61,5%</td></tr>
</table></td></tr>
</table>

([186]) EEDI requirements as agreed by the Marine Environment Protection Committee of the International Maritime Organization on its seventy-fifth session. Vessels that fall into the ship types set out in MARPOL Annex VI Regulation 2, but are not considered as new ship under that regulation may provide attained EEDI value calculated on a voluntary basis in line with MARPOL Annex VI Chapter 4 and have those calculations verified in line with MARPOL Annex VI, Chapter 2.

Applicants' Claim – Specific complaint against application of EEDI criteria – specific claims	Arguments in support of EEDI-based TSC introduced in the Amended Climate Delegated Act

Containerships	1232	18	14	1,5%
Totals	**8387**	**330**	**54**	**3,9%**

The above values totalled 8387 EEDI reported ships, corresponding approximately to a 4% Fleet average Taxonomy compliance rate. This allows it to be concluded that, considering the fleet under analysis, considered representative for this analysis, **the 20 percentage points is adequate** as a quantitative threshold defined in relation to the applicable EEDI required value as from 1 April 2022 (EEDI Phase 3). It should be noted that this analysis does not take into account the additional criteria added on top of the EEDI minimum threshold, namely, the ability of ships to plug-in at berth, and for gas-fuelled ships, the need to demonstrate the use of state-of-the-art measures and technologies to mitigate methane slippage emissions.

It should be noted that the EEDI framework has been subject to several revisions/amendments since 2012 and it is based on the over-compliance with the EEDI reported rate values, led to an agreed differentiated approach to application dates and reduction rates per ship type and size. Consequently, differentiated overcompliance rates have therefore been observed as soon as the EEDI database became more populated. Ship types such as the General Cargo, LNG Carriers, Refrigerated Cargo Carriers, Ro-Ro Cargo & Ro-Pax, are amongst those benefiting from a less stringent EEDI reference line and reduction rate criteria; apart from the General Cargo ships which had solely their Phase 3 application date advanced (from 2025 to 2022), none of the referred ship types were subject to the aforementioned amendments due to the lack of data observed during the IMO EEDI Review Periods. We can conclude that the latest MARPOL Annex VI amendments regarding the EEDI makes the selected quantitative threshold of 20 percentage points below EEDI a relevant requirement in the context of the EU Taxonomy. A possible future solution for this in the EU Taxonomy may consider, as a TSC refinement, the development of ship –type-specific quantitative thresholds, following the different ship types under EEDI scope.

There is no formal assessment regarding environmental benefits/ harms of LNG-powered vessels more generally	The environmental and climate benefits/risk of LNG fuelled ships are well described in different peer-reviewed specialised literature. The available references by the time of the studies underpinning the Impact Assessment for FuelEU included the IMO 4th GHG Study, EMSA literature review, expert advice, and support from the European Sustainable Shipping Forum subgroup on Sustainable Alternative Power for Ships (ESSF-SAPS). The latter was responsible for the development of a web-based dataset Also, as part of the ESSF-SAPS work, a webpage/tool has been developed by MARIN (www.marin.nl) which includes several references in a continuously updated table with references to different WtT values for different marine fuels, including LNG: Sustainable Power @ MARIN ([187]) Looking in particular to the possibility of non- CO_2 GHG emissions, such as those derived from methane-slip emissions from dual-fuel gas engines, negating the benefits of inherent lower CO_2 emissions from the use of LNG, the Commission is well aware of this risk which is directly related to the different energy conversion technology used (dual-fuel engine, medium/low, 4-stroke/2-stroke/otto/diesel cycle). Important mitigation measures are however in place today that allow to consider this risk as tolerable:

([187]) For more information, see: https://sustainablepower.application.marin.nl/table

Applicants' Claim – Specific complaint against application of EEDI criteria – specific claims	Arguments in support of EEDI-based TSC introduced in the Amended Climate Delegated Act
	1. LNG fuelled ships granted EU Taxonomy green investment on the basis of the EEDI TSC will be subject to an applicable EU regulatory framework which will penalise methane emissions. This will be the case of FuelEU Maritime, from 1 January 2025, and ETS extension to maritime, as from 2026, with relevant provisions and requirements applicable on a CO_2-equivalent basis, covering not only CO_2 but also non- CO_2 GHG emissions. 2. The TSC based on EEDI include, for gaseous-fuelled ships, the requirement to demonstrate application of state-of-the art methane slippage mitigation measures and technologies. In addition to the above LNG-fuelled ships have the ability to deploy low-carbon methane-based energy systems. With the replacement of natural gas with biomethane and green synthetic methane it will be possible to establish a viable cost-efficient path to decarbonisation of methane-fuelled ships.
EEDI is 'unable to accurately capture the real lifetime carbon emissions of a vessel and 'promotes plants with lower installed power rather than technologies that reduce the carbon emissions.'	EEDI is an important international recognised metric for assessing the energy efficiency and technical CO2 intensity of new ships. The scope is well-defined and was found to still be relevant in the context of the revision of the Climate Delegated Act. The metric used in EEDI formulation is the grams of CO_2 emitted, per tonne-nautical mile (g CO_2/tonne-mile), consisting of a measure of transport work suitable to differentiate those ships contributing to less impact, is still the best international standard for the rating of new ship designs. EEDI promotes low- CO_2 emitting energy systems which can be considered as a direct proxy criterion for identifying lowest fuel consumption/energy intensive designs. Identifying ships which can consume less for the same transport work is of central relevance for decarbonisation of shipping. This is important first and foremost because of the cost of renewable and low-carbon fuels, expected to be several times higher than equivalent fossil fuels. Energy Efficiency is an essential enabler for the Energy Transition in Shipping. It is not possible or viable to rely solely on the introduction of renewable and low-carbon fuels in otherwise inefficient ships. EEDI best-performant ships are best placed to incorporate renewable and low-carbon fuels in an optimized cost-efficient manner.
EEDI is 'solely focused on calculating emissions produced from on-board combustion and is 'technically ignorant [of] emissions generated from other life cycled processes of marine fuels.	The fact that EEDI does not factor-in tank-to-wake emissions is not considered a limitation for its application as a metric for substantial contribution to climate change mitigation due to the following: 1. the TSC based on EEDI will be used to direct green investment in support of further development of energy efficient and decarbonised shipping. EEDI allows a benchmark that identifies, *de facto*, ships emitting less direct tailpipe CO2 emissions per unit of transport work. 2. ships operating on gaseous fuels, prone to have possible non-combustion/slippage emissions of non-CO_2 GHG emissions, namely LNG-fuelled ships will: a. be covered by applicable EU regulatory framework which will penalise such GHG emissions. This will be the case of FuelEU Maritime, from 1 January 2025, and ETS extension to maritime, as from 2026, with relevant provisions and requirements applicable on a CO_2-equivalent basis, covering not only CO_2 but also non-CO_2 GHG emissions;

<table>
<tr><th>Applicants' Claim – Specific complaint against application of EEDI criteria – specific claims</th><th>Arguments in support of EEDI-based TSC introduced in the Amended Climate Delegated Act</th></tr>
<tr><td></td><td>b. be required to demonstrate state-of-the art methane slippage mitigationmeasures and technologies.

In addition to the above, LNG-fuelled ships have the ability to deploy low-carbon methane-based energy systems. With the replacement of natural gas with biomethane and green synthetic methane it will be possible to establish a viable cost-efficient path to decarbonisation of methane-fuelled ships.</td></tr>
<tr><td>EEDI ''underestimate[e] the actual lifetime CO_2 emissions in all… cases [investigated by Trivyza et al (2020)].'

EEDI-specific criteria for maritime risked creating a loophole for ships to simply switch from diesel to LNG, the upstream emissions of which would cancel out any benefit</td><td>The use of the EEDI TSC was informed by existing literature, Commission own analysis, advice form the EMSA and Stakeholder consultation.

Following the Applicants' claim that LNG-fuelled ships could be granted green financing and, in fact, be even as bad as 'fossil-oil fuel' based ships, owing to non-CO_2 GHG emissions associated to slippage, the Commission reiterates that a sufficiently robust safeguard is included in the TSC, requiring gas-fuelled ships to demonstrate state-of-the-art application of methane mitigation measures and technologies. Furthermore, also the regulatory framework itself includes relevant control measure against GHG impact from methane slippage emissions. FuelEU Maritime will include important default slippage emission factors which will be able, alone, to differentiate the climate impact of different energy conversion technologies. CH4 emissions will also be accounted for in the ETS as from 2026.

The table below lists the different technologies included in FuelEU Maritime and corresponding default slippage factors for methane emissions:

<table>
<tr><th>Engine Technology</th><th>Cslip as % of the mass of the fuel used by the engine</th></tr>
<tr><td>LNG Otto (dual fuel medium speed)</td><td>3,1</td></tr>
<tr><td>LNG Otto (dual fuel slow speed)</td><td>1,7</td></tr>
<tr><td>LNG Diesel (dual fuels)</td><td>0,2</td></tr>
<tr><td>LBSI (Lean Burn Spark Ignited)</td><td>2,6</td></tr>
</table>
References/sources for Cslip in Annex-II of FuelEU Maritime: 1) IMO 4th GHG Study ([188]) and 2) Advice from the European Sustainable Shipping Forum (ESSF) subgroup on Alternative Power for Shipping (SAPS).

In addition, also the update of the ETS extension to maritime, which will become CO_2-equivalent, and covering non-CO_2 GHG emissions, will introduce a price on CO_2-equivalent basis and penalise all ships that do not demonstrate actual mitigation of methane emissions.

In view of the above, the risk of using the EU Taxonomy to get financing for LNG-fuelled ships with low EEDI, but with high methane slip, can be perceived as minimal resulting from the combination of regulations that cover methane emissions and quantification and pricing on negative externalities associated with methane slip.</td></tr>
<tr><td>the option above for maritime activities should be scrapped, or that the EEDI -20% reference</td><td>As already explained above in this table, the 20 percentage points (not 20%) quantitative threshold was defined on the basis of existing statistics related to EEDI reported into the IMO GISIS database. Only 4% of the vessels reporting EEDI into GISIS are, as of today, meeting already the</td></tr>
</table>

([188]) For more information, see: https://www.imo.org/en/OurWork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx

Applicants' Claim – Specific complaint against application of EEDI criteria – specific claims	Arguments in support of EEDI-based TSC introduced in the Amended Climate Delegated Act
should be raised to 35% and combined with declining lifecycle GHG emissions criteria'.	EEDI based TSC in Annex I to the Amended Climate Delegated Act,, leading to the conclusion that, those ships form a 'best-in-class' in the context of the defined transitional activity. A possible higher value than 20 percentage points was assessed. Given that the ambition of the criteria varies in accordance with the ship types covered by EEDI framework such a level of ambition would deem the TSC unattainable for some ship types. Such an approach would therefore not be able to incentivise transition in the short/medium term.
Commission response to criticism of possible loophole on EEDI TSC was to add a provision that gas-fuelled vessels, that overachieve the IMO Phase 3 EEDI targets by 20 percentage points, must also 'demonstrate the use of state-of-the-art measures and technologies to mitigate methane slippage emissions.' was not based on conclusive scientific evidence, which is illustrated by the fact that the additional provision only addresses methane slippage at the point of combustion	The introduction of a specific safeguard in the TSC based on EEDI, requiring gas-fuelled ships, to ***'demonstrate the use of state-of-the-art measures and technologies to mitigate methane slippage emissions'*** was an important addition that resulted from stakeholder/public consultation. In the context of implementation of FuelEU maritime, Guidance is under development that will identify state-of-the-art technologies for methane slippage emission mitigation. This will be assisting implementation of the provisions in Article 10(6) of FuelEU. Technical work on demonstration of actual Tank-to-Wake Methane, Nitrous Oxide and Slippage emissions. Work under development by the Sustainable Power for Ships subgroup of the European Sustainable Shipping Forum (ESSF-SAPS) that will support the development of a future framework evaluation and demonstration of actual emission factors diverging from those defined in Annex-II of FuelEU Maritime. Regarding the Applicants' claim that the additional provision only addresses methane slippage '*at the point of combustion',* the approach is following the practice of all existing studies and scientific evidence available to date.

3.2. Failure to take into account life cycle (Article 19(1)(g))

<u>Applicants' claim</u> (§§ 237-239 of its request)

300. The Applicants claim that there is no evidence that the Commission took into account the criterion of Article 19(1), point (g) of the Taxonomy Regulation 'when making the Shipping TSC'. In particular, the reference in the impact assessment for the Climate Delegated Act to the assessment of life-cycle emissions as being ambitious, would not have been relevant in the adoption of the challenged Amended Climate Delegated Act since, in accordance with the requirements set out in Article 19(1) of the Taxonomy Regulation, the life-cycle assessment is not an optional consideration.

301. Given existence of scientific evidence demonstrating that LNG may be worse for the climate compared to conventional fuels, due to uncertainty of methane slippage and leaks, it 'was essential for *the Commission to take into account the life cycle of LNG-powered vessels operating under the Shipping TSC'*. According to the Applicants, the Commission breached, therefore, Article 19(1), point (g) of the Taxonomy Regulation.

<u>Commission's response</u>

302. The Commission first points out that the Applicants fail to identify the specific TSC that allegedly are in breach of Article 19(1), point (g) of the Taxonomy Regulation. The allegation is therefore to be dismissed as inadmissible because it is unsubstantiated.

303. In any case, the Commission refers to section 1.3 of Annex II to this reply for general considerations on the interpretation of Article 19(1), point (g) of the Taxonomy Regulation.

304. Furthermore, in respect of the Applicants' claim that the Commission has failed to take into account the life-cycle of LNG-powered shipping, it is important to note that the LCA approach has been considered in the Platform discussions and reflected in the final criteria. One of the TSC included in the Amended Climate Delegated Act, in Annex-I, Section 6.10.1(f) and 6.11.1(f), is in fact, based on Life-Cycle/Well-to-Wake (189) approach, supported in the methodology embedded in FuelEU Maritime. Also, the EEDI-based TSC has considered this LCA/WtW framework to the extent that best energy-efficient ships and methane-based energy systems are the best placed to follow a decarbonisation path based on LCA/WtW (less fuel consumption/operational costs for the same transport work). Methane-based energy systems are enablers for the use of renewable green synthetic methane or biomethane. The use of Natural Gas alone will not allow ships to comply with GHG emissions regulations in the mid-to-long term and would, ultimately, penalise ships when pricing of methane emissions becomes applicable in the ETS. Whilst the use of LNG may allow compliance for the first 5-10 years under FuelEU, this will only be the case if the best performant (i.e. with less methane slippage) are used.

305. Following the above, and in opposition to the claim by the Applicants that the Commission '*failed to take into account the life cycle of LNG-powered vessels operating under the Shipping* TSC', it is important to clarify that ships which are Taxonomy-aligned, will still 'operate' under the relevant regulatory framework on GHG emissions. While the EU Taxonomy will allow for the direction of investments towards the projects considered best-fit for energy transition and decarbonisation, the existing regulatory framework covering GHG emissions from ships, especially FuelEU Maritime, will provide the substantial 'operating regulatory framework' that will drive ships with methane-based energy systems to use increasingly decarbonised fuels, on a life-cycle/Well-to-Wake basis. The adoption of decarbonisation blending-in strategies will allow methane-fuelled ships to decarbonize gradually as the renewable methane molecules become increasingly available in the market.

306. The EU Taxonomy, in this case the EEDI-based TSC, will direct the investment towards ships which, de facto, are able to present improved combustion CO_2 emissions per transport work. Methane-fuelled ships will be able to demonstrate such performance and optimum EEDI as a result of an advanced and capital-intensive energy system, being in fact a high capital-intensive energy system when compared to other options (such as oil based or methanol). It would for instance be exceeded in capital cost by technologies such as hydrogen or all-electric systems which, for deep-sea shipping are, in any case, not a technically and commercially feasible option at this stage. Despite the negative impacts of

(189) Well-to-Wake is here presented as a limitation of the full Life-Cycle approach. It is the methodology embedded in Regulation 2023/1805 and IMO MEPC 80 adopted by Resolution MEPC.376(80) the 'Guidelines on Life Cycle GHG Intensity of Marine Fuels' (LCA Guidelines), which sets out methods for calculating well-to-wake and tank-to-wake GHG emissions for all fuels and other energy carriers (e.g. electricity) used on board a ship.

methane slippage associated to less performant engine technologies, methane-energy systems present important benefits, in terms of:

- ensuring effective lower CO_2 emissions from combustion;
- substantially mitigating air pollution emissions;
- being fit-for-decarbonisation by allowing blending of biomethane and synthetic green methane, both with deep-decarbonisation potential, well above 70% GHG saving potential (with biomethane, blue methane or RFNBO methane with potential for even greater decarbonization, theoretically up to 100%).

307. Some dual-fuel engines need to take steps to mitigate methane slip. The framework to address this is already in place, entering into force as from 1 January 2025. FuelEU Maritime, based on a Well-to-Wake approach, with both CO_2 and non- CO_2 GHG emissions in scope, has defined default methane slip emission factors for the different technologies used onboard of methane-fuelled ships. In addition, guidelines are to be set for the certification/demonstration of actual Tank-to-Wake Methane, Nitrous Oxide and Slippage emissions. Work under development by the Sustainable Power for Ships subgroup of the European Sustainable Shipping Forum (ESSF-SAPS) will enable the evaluation and demonstration of actual emission factors diverging from those defined in Annex-II of FuelEU Maritime. In addition, from 2026 onwards, the EU ETS extension to maritime transport will turn into a CO_2-equivalent instrument, serving de facto as a further disincentive to methane emitting energy systems, such as dual-fuel high speed engines, known in the market for having the highest slippage values and, in fact, representing a risk if not controlled.

308. In summary, as it can be depicted from the table below, methane-based energy systems operating on natural gas, with the different engine technologies indicated, will have to comply with FuelEU Maritime target for the different relevant 5-year steps of application of this Regulation. For this reason, and strictly for compliance, methane-fuelled ships operating on natural gas will have to blend in biomethane or synthetic methane which will enable these ships to become compliant or even to exceed the required thresholds for the different target years. With provisions in place to reward overachievers, FuelEU Maritime will create the incentive for these ships to further decarbonise and monetise their overcompliance through ‘pooling’.

Methane-fuelled Ships (technological combinations Fuel + Energy Conversion)		**Cslip as % of the mass of the fuel used by the engine**	**Decarbonisation target 2030** Target FuelEU Maritime (6% 85,69 g CO_2e/MJ)	**Decarbonisation target 2035** Target FuelEU Maritime (14,5% 77,94 g CO_2e/MJ)	**Decarbonisation target 2040** Target FuelEU Maritime (31% 62,90 g CO_2e/MJ)	**Decarbonisation target 2045** Target FuelEU Maritime (62% 34,64 g CO_2e/MJ)
LNG	Otto (dual fuel mediu	3,1	Non-Compliant	Non-Compliant	Non-Compliant	Non-Compliant

	m speed)					
	Otto (dual fuel slow speed)	1,7	Compliant	Non-Compliant	Non-Compliant	Non-Compliant
	Diesel (dual fuels)	0,2	Compliant	Compliant	Non-Compliant	Non-Compliant
	LBSI (Lean Burn Spark Ignited)	2,6	Compliant	Non-Compliant	Non-Compliant	Non-Compliant

309. The DNSH criteria have been formulated to that effect.

310. Concerning the vessel itself, DNSH criteria have been formulated to take into account the end-of-life phase including decommissioning. Recycling of waste according to the waste hierarchy and EU waste regulation principles have to be taken into account as well as management of hazardous materials.

3.3. Failure to satisfy the requirements of Article 10(2) of the Taxonomy Regulation (transitional activity)

<u>Applicants' claim</u> (§§ 240-246 of its request)

311. The Applicants claim that the 'Shipping TSC' fail to fulfil the requirements set out in Article 10(2) of the Taxonomy Regulation. In particular, they state that:

- technologically and economically feasible low-carbon alternatives to LNG powered vessels are currently available and more such technology will become available in the near future (2024), e.g. batteries and two- and four-stroke ammonia engines;

- the Commission failed to gather conclusive scientific evidence demonstrating that the TSC in question support the transition to a climate-neutral economy consistent with a pathway to limit the temperature increase to 1.5°C above pre-industrial levels. Neither the impact assessment for the 2021 Delegated Act contains '*anything that can be deemed to constitute conclusive scientific evidence'* nor did the SWD formally assess whether the TSC '*continued reliance on the EEDI was consistent with making the Shipping TSC on the basis of conclusive scientific evidence*' thereby failing to '*take into account scientific evidence demonstrating the inadequacy of LNG and the EEDI of contributing to climate change mitigation*';

- '*by making it easier for LNG-powered vessels to become taxonomy-compliant, the Delegated Act will send market signals that contribute to the 'lock-in' of carbon-intensive LNG technology'*. Therefore, the challenged TSC lead to a lock-in of carbon-intensive assets. This is exacerbated by the absence of any sunset clause in Sections 6.10 and 6.11 of Annex I to the Climate Delegated Act.

Commission's response

312. The Commission first points out again hat the Applicants fail to identify the specific TSC that allegedly are in breach of Article 19(2) of the Taxonomy Regulation. The allegation is therefore to be dismissed as inadmissible because it is unsubstantiated.

313. Next, when developing the TSC, the Commission has made sure that the substantive conditions of Article 10(2) of the Taxonomy Regulation are met.

314. In view of the 2050 climate neutrality target, the Commission's assessment showed a gradual decarbonisation of the transport sector, where transitional shipping activities are still present in the short- and mid-term projections, but show a strongly reduced share of GHG emissions in the longer-term. Therefore, appropriately designed TSC for transitional shipping activities could help guide the necessary investments in those activities to contribute to the transition, rather than leaving it to the market without equally clear constraints or timelines. Transition towards carbon-neutrality could be achieved in the EU Taxonomy via stringent, but realistic TSC, so that investments in those activities help the EU meet its sustainability goals, boost the transition and minimise the risk of locking in harmful reliance on shipping activities. Clear TSC for transitional activities concerning the conditions and timelines for their use have been established to allow switching to low-carbon transport activities in the longer term.

315. The Applicants' claim that *technologically and economically feasible low-carbon* alternatives *to LNG powered vessels are currently available and more such technology will become available in the near future (2024), e.g., batteries and two- and four-stroke ammonia engine* contains an erroneous assumption needs to be corrected.

316. First, the Applicants' focus on battery and ammonia engine powered vessels does not respect the requirement of technological neutrality as set out in Article 19(1), point (a) of the Taxonomy Regulation. As opposed to the Applicants' narrow focus on those technologies, the TSC of sections 6.10. and 6.11. (e) and (f) of Annex I to the Climate Delegated Act respect the principle of technological neutrality. In particular, they are not limited to be applied by gas-fuelled ships only. Indeed, sub-point (b) of point (e) of section 6.10. and 6.11. sets a specific criterion applicable only for gas-fuelled ships. It follows therefrom that the other criteria are applicable to other technologies.

317. When it comes to LNG, it is important to note that LNG is not a 'power system', but is a fuel. Ships that are able to use LNG as fuel have installed methane-based energy systems. Such energy systems are amongst the most advanced and capital-intensive systems installed onboard ships. Methane-based energy systems are enablers for the introduction of important deep-decarbonisation strategies, such as blending in of biomethane (Advanced Biofuel) or synthetic green methane (RFNBO). Distinguishing between the 'fuel' and the 'energy system' is an important starting point in order to assess the option of using natural gas as fuel for ships. With this in mind, the use of natural gas in the best performing energy conversion technologies, such as low-speed high pressure 2-stroke engines, represents a *de facto* improvement of GHG emissions on a CO_2-equivalent basis. In the opposite direction, and in agreement with the general concerns of the Applicants regarding methane slip from engines, the combination of LNG as fuel in 4-stroke medium-speed engines can be characterised by potentially high to very high risk of negating any benefits from using natural gas, in view of associated methane emissions. This is why the current regulatory framework on GHG emissions from ships (FuelEU Maritime) contains strong control

measures against the proliferation of high 'methane-slip emitting' ships (190). With default methane slip emission factors for the different technologies, those with higher methane-slip emissions are penalised with a high default slippage factor and are not able to comply with FuelEU Maritime GHG intensity targets already form 2030.

318. The availability of 'options' in terms of energy systems and fuels for ships has been subject to extensive analysis, following studies underpinning the Impact Assessment for 'Fit for 55' initiatives, notably for FuelEU Maritime ([191]), and support from the EMSA. The conclusion from this analysis allowed to distinguish the short-term from a medium-to-long term perspective:

319. **Short-term perspective (2025-2035)**: reliance on existing energy system technologies and adoption decarbonisation strategies supported by blending of biofuels and initial (small) volumes of renewable synthetic fuels. Use of methane-based energy systems with natural gas as a transitional fuel. Non-available low-carbon bio or synthetic fuels (e-Methanol or e-Ammonia) in volume required for international shipping for the first 5 years.

320. **Medium-to-long term (2035-2050)**: increased use of advanced biofuels, renewable and low-carbon synthetic fuels, including e-Methanol, e-Ammonia. Use of methane-based energy systems with biomethane and green synthetic methane as replacement fuels.

321. The table below provides an overview of existing energy systems and fuels with relevance to international deep-sea shipping, based on existing literature and Market reports.

Energy Systems	State-of-the-art	Energy Conversion	Fuel Availability
Oil Fuels	Residual oil fuels used in internal combustion engines are the predominant technology standard internationally. Potential for blending in of advanced biodiesel/HVO but only on diesel/distillate Marine Diesel installations.	High technology maturity of internal combustion engines. No major modifications to blend in biofuels.	Despite uptake of advanced biofuels/HVO production processes, the availability of biofuels for maritime is not expected to be high. Competition from aviation will make availability of biofuels for maritime limited in the first years. Biofuels will be an important blend-in option up to 2035/40 but expected to be of very limited availability.
Methane	**High technology maturity** of methane energy systems. Close to 1000 ships operating on methane-based energy systems	Developing technology maturity of internal combustion engines with a view to reduce methane-slip at all load levels and for all engine types. High-speed 4-stroke low pressure dual-fuel engines represent the energy	High availability of natural gas as a transition fuel. Evolution towards biomethane blending. Important biomethane pathway (despite limited availability of biofuels) Green synthetic methane to be a future option (with

([190]) For more information, see the Annex-I and Annex-II of FuelEU define a methodology that penalizes use of less performant gas/dual-fuel engines.

([191]) For more information, see: https://cedelft.eu/wp-content/uploads/sites/2/2021/11/CE_Delft_Ecorys_200249_Final_Report.pdf

Energy Systems	State-of-the-art	Energy Conversion	Fuel Availability
		conversion technology with highest methane slip. High-pressure, 2-stroke, slow-speed dual fuel engines are those with lowest, near-zero, methane slip. High temperature Fuel Cells market available.	improved scalability/ availability as a function of increased green hydrogen production.
Methanol	**Increasing technology maturity**, with an increasing number of ships operation (280) and more on order. ([192])	Increasing technology maturity of methanol dual-fuel engines. Still limited power availability for higher power demanding application (such as Ultra Large Container Carriers – ULCC)	Available methanol today is limited to synthetic grey methanol, derived from natural gas, with a very high Well-to-Tank emission factor. Availability of green methanol expected to increase significantly in the next 10 years, as a result of demand from shipping, but not expected to be enough in the short term up to 2035.
Ammonia	**Low technology maturity**, however, already with market-solutions being prepared and a few ships on order. One ship using ammonia as fuel as of today (pilot demonstrator offshore supply ship) ([193]).	Low technology maturity of ammonia dual-fuel engines. Still being developed the technology is currently at test-bed trials with the main engine manufacturers.	Available ammonia today is limited to synthetic grey ammonia, derived from coal and natural gas, with a very high Well-to-Tank emission factor. Availability of green ammonia expected to increase significantly in the next 10-15 years, as a result of demand form shipping, but not expected to be enough in the short term up to 2035.
Hydrogen	**Developing technology maturity**, however, hydrogen **cannot be considered as a technical and economically viable option for deep-sea shipping** owing to the low energy density of hydrogen.	Hydrogen use in internal combustion engines makes little sense as it would be the most inefficient way of using hydrogen as fuel in shipping. Hydrogen fuel cells are the most likely/efficient way to use hydrogen as fuel onboard ships. However,	Good prospects for production of green hydrogen in the next years

([192]) https://futurefuels.imo.org/home/latest-information/fuel-uptake/

([193]) https://futurefuels.imo.org/home/latest-information/fuel-uptake/

Energy Systems	State-of-the-art	Energy Conversion	Fuel Availability
		with very low power density making applications unlikely for deep-sea shipping.	
Batteries	**High technology maturity**, however, batteries **cannot be considered as a technical and economically viable option for deep-sea shipping** owing to the low energy density of hydrogen.	No energy conversion needed but with very high volume/space requirements for batteries onboard ships, it is very easy to point out that a 'battery-powered deep-sea-ship' would be twice as an equivalent 'internal combustion engine' equivalent.	Limited availability of battery components and critical raw materials, affecting economic feasibility, sustainability and impacts, for shipping applications (large amount of battery modules)

322. From the table above it can be concluded that alternative energy systems to traditional fossil oil-based energy for ships, exist and are all part of the future portfolio of sustainable options for ships. However, in the short-term, despite the current development well reported in the literature and market forecasts, there are no alternatives at scale to fossil oil fuels and natural gas. Both fuels have today technologically mature energy systems and both have potential for further decarbonisation, though the use of bio or synthetic versions of the fuels. Methane-based systems have however strong advantages in comparison to oil-based fuels. These advantages are well illustrated today by the lower carbon content and combustion emission factor of methane, and by the better preparedness of methane-based energy systems to allow deep decarbonisation fuels such as biomethane or renewable synthetic methane, both with very good potential, on a life-cycle Well-to-Wake basis to decarbonise shipping.

323. Regarding the allegation from the Applicants that that the TSC are not based on 'conclusive scientific evidence', it is important to note that the TSC are consistent with the 'basket of measures' defined in the formulation of the EU 'Fit for 55' instruments, where energy efficiency and the introduction of clean energy (renewable and low-carbon fuels) are the two pillars for decarbonisation of shipping. EEDI-based TSC with an ambitious quantitative threshold have been assessed to be adequate ([194]) and contributing substantially to climate change mitigation. The use of the TSC criteria based on EEDI, by methane-fuelled ships cannot be dissociated from the applicable regulatory framework which will impose control of non- CO_2 GHG emissions already as of 1 January 2025 ([195]).

324. Finally, the allegation concerning the *'lock-in' of carbon-intensive LNG technology'* ignores two important facts:

- Methane-fuelled ships are one of the most capital-intensive ships, when compared to equivalents based on other energy systems (oil, methanol, ammonia, other). They are complex engineering systems designed to operate with cryogenic cooled

([194]) With use of data in IMO GISIS database and technical scientific support from the European Maritime Safety Agency.

([195]) FuelEU Maritime will apply control measure to penalize any emissions of methane slippage form gas fuelled engines – FuelEU methodology for GHG intensity calculation as detailed in Annex-I of that Regulation.

methane gas and including important environmental improvements when compared to similar oil-based energy systems. It is not a straightforward economic exercise to invest in a methane-fuelled ship. The signal given by the EU Taxonomy in the Climate Delegated Act new EEDI-based criteria is that ships with the highest energy efficiency are important in the energy transition. The concerns about the use of natural gas in methane-based energy systems would only be founded if there was no legislation addressing methane-slip or no additional criteria to address this specific issue. This is not the case since the publication of Regulation 2023/1805 (FuelEU Maritime). Methane-fuelled systems using natural gas will not be compliant with FuelEU Maritime targets if they have high methane slip, by application of methodology in Annex-I with default emission factors from Annex-II of FuelEU.

- LNG is not a 'technology', but is a fuel. The technology (methane-based energy systems) is a cost-intensive technology, able to burn/use sustainable methane molecules in the future, as the roadmap towards decarbonisation progresses. Methane-fuelled ships can use biomethane or renewable synthetic methane in the future. There is therefore no 'lock-in' of carbon-intensive methane technology. Methane-fuelled ships are fit for the energy transition. To the extent that methane-fuelled ships use natural gas in a transition period, they will be covered by existing regulatory framework (FuelEU Maritime and ETS extension to maritime) which also will address non- CO_2 emissions (FuelEU Maritime already in 2025 and ETS in 2026). For this reason, investments in methane-fuelled ships do not mount to 'locking in' carbon-intensive assets.

325. In conclusion, the Applicants' claim are unfounded.

3.4. Failure to consider the risk of creating inconsistent incentives (Article 19(1)(i))

<u>Applicants' claim</u> (§ 247 of its request)

326. The Applicants claim that the '*Delegated Act's additions to ss. 6.10 and 6.11 of the 2021 Delegated Act risk encouraging further investment in LNG-powered vessels. This is likely to come at the expense of* investment *in solutions that are consistent with the transition to a climate-neutral economy, such as electrification, wind power, and synthetic fuels*'. The Applicants claim that the TSC do not address the risk of heavy investment in LNG-powered vessels, giving rise to the risk of stranded assets and lock-in of carbon intensive assets.

<u>Commission's response</u>

327. The Applicants' claim is a mere unsubstantiated allegation and is to be dismissed as inadmissible for that reason alone. It therefore does not fulfil the requirement that a party requesting the internal review is required to put forward any facts or legal arguments raising serious doubts about the assessment bade in that act by the EU institution. ([196])

328. In any case, the EEDI-based TSC are designed to promote the development of energy efficient shipping in view of its substantial contribution to climate change mitigation based on two important assumptions:

- improved energy efficient shipping will emit less CO_2 for the same transport work;

([196]) Court of Justice, Case C-82/17P, TestBio Tech, points 65 to 69.

- ships that consume less fuel will be able to mitigate excessive cost in the transition to renewable replacement fuels (such as advance biofuels or RFNBOs). The use of less energy will allow ships to release more scarce resources/ renewable fuels for other ships on the roadmap to decarbonisation.

329. The EEDI-based criterion is designed to qualify the **vessels with improved energy efficiency levels, concretely with EEDI attained 20 percentage points below the requirements applicable on 1 April 2022 (phase 3)**, as a transitional activity, in combination with the requirements for:

- ability to plug-in at berth, and
- for gas-fuelled ships, demonstration of the use of state-of-the-art measures and technologies to mitigate methane slippage emissions.

330. The TSC are not designed to promote methane-fuelled ships as such but rather to identify investments in ships that are more energy efficient and use the best environmental performance technologies.

331. The inclusion of EEDI-based TSC in the Amended Climate Delegated Act, despite not being advised in the Platform Report, followed extensive debate, EMSA scientific and technical advice and public consultation, with a view to support the Taxonomy-alignment of shipping transitional activities based on optimised energy efficiency, measured in grams of CO_2 emissions per tonne-mile.

332. As already detailed above, the following factual elements are important to justify the qualification of shipping as transitional activities in the TSC:

- Methane-fuelled ships are one of the most capital-intensive ships, when compared to equivalents based on other energy systems (oil, methanol, ammonia, other). They are complex engineering systems designed to operate with cryogenic cooled methane gas and including important environmental improvements when compared to similar oil-based energy systems. It is not a straightforward economic exercise to invest in a methane-fuelled ship.
- The signal given by the EU Taxonomy in the Climate Delegated Act new EEDI-based criteria is that ships with highest energy efficiency are important in the energy transition. The concerns about use of natural gas use in methane-based energy systems would only be founded if there was no regulation addressing the issue of methane-slip. This is not the case since the publication FuelEU Maritime. Methane-fuelled systems using natural gas will not be compliant with FuelEU Maritime targets if they have high methane slip.
- LNG is not a 'technology', it is a fuel. The technology (methane-based energy systems) is a cost-intensive technology, able to burn/use sustainable methane molecules in the future, as the roadmap towards decarbonisation progresses.
- Methane-fuelled ships can use biomethane or renewable synthetic methane in the future. There is therefore no 'lock-in' of carbon-intensive methane technology. Methane-fuelled ships are fit for the energy transition;
- To the extent that methane-fuelled ships use natural gas in a transition period, they will be covered by existing regulatory framework (FuelEU Maritime and ETS extension to maritime) which will address non- CO_2 emissions (FuelEU Maritime already in 2025 and ETS in 2026).

333. Finally, on the allegation that the '*Delegated Act risk encouraging further investment in LNG-powered vessels. This is likely to come at the expense of investment in solutions that are consistent with the transition to a climate-neutral economy, such as electrification,*

wind power, *and synthetic fuels*', it is important to reiterate that LNG is not an energy system but is, instead, a fuel. Methane-based energy systems (engines, tanks, pumps, piping, safety systems) will be able and immediately fit for the use of biomethane and renewable synthetic methane. The use of natural gas by ships which do not demonstrate low methane-slip emissions will be penalised under the current EU regulatory framework.

334. Therefore, the claim of the Applicants that the TSC incentivise investments in stranded assets is unfounded.

3.5. Failure to be quantitative and contain thresholds to the extent possible (Article 19(1)(c)) and to be set in a manner that facilitates the verification of their compliance (Article 19(1)(k))

Applicants' claim (§§ 248-249 of its request)

335. The Applicants set out that '*part b of Section 6.10(e) and Section 6.11(d) requires gas-fuelled vessels that overachieve the IMO Phase 3 EEDI targets by 20 percentage points to also 'demonstrate the use of state of-the-art measures and technologies to mitigate methane slippage emissions' in order to comply with these sections'*, thereby not providing any minimum amount of methane slippage to be avoided as well as targeting only methane slippage arising at the point of combustion. Therefore, it will be easy for vessels to comply with this provision even when significantly failing to reduce methane slippage. Furthermore, - '*unless any vessel that uses state-of-the-art measures to mitigate methane slippage even in a very limited way are deemed compliant*' – it will be difficult for the Commission to verify compliance with this provision.

336. The Applicants further set out that '*shipping companies are not required to report the engine load of their vessels*', and hence the '*Commission will not be able to ensure that 'state-of-the-art measures' contribute to methane slippage mitigation and will have to rely on the good-faith of shipping companies*'.

Commission's response

337. The Commission first recalls that Article 19(1), point (c) of the Taxonomy Regulation does not require that TSC are always to be quantitative. Indeed, according to that provision, TSC are to be quantitative and contain thresholds to the extent possible, and otherwise be qualitative. The Applicants' claim is too unsubstantiated to support the view that quantitative *thresholds* would have been possible in the context of the EEDI-based TSC. It actually boils down to criticising that the criteria are too easy to be met.

338. In any case, the safeguard introduced in the EEDI-based TSC in part (b) of Section 6.10. (e) and Section 6.11. (d) of Annex I to the Climate Delegated Act requires indeed gas-fuelled vessels that exceed the IMO Phase 3 EEDI targets by 20 percentage points to also *'demonstrate the use of state of-the-art measures and technologies to mitigate methane slippage emissions*'. This safeguard was introduced as a response to earlier contributions during stakeholder and public consultation. It followed the Commission's own analysis and scientific support from the EMSA. This safeguard covers only methane emissions from combustion as they are not only the most significant but also they are the only ones that can be subject to demonstration/quantification in a context of test-bed or onboard measurements.

339. Regarding the availability of such technologies, and their implementation, there are different technologies able to mitigate methane-slip emissions from dual-fuel gas engines.

These are well described in the literature and can consist in a variety of different technological approaches ([197]).

340. The quantification of methane slip emissions in a context where the demonstration of actual non- CO_2 GHG emissions is required will be covered by forthcoming *EU Guidelines for the certification/demonstration of actual Tank-to-Wake Methane, Nitrous Oxide and Slippage emissions* (currently under development by the Sustainable Power for Ships subgroup of the European Sustainable Shipping Forum (ESSF-SAPS) that will enable the evaluation and demonstration of actual non- CO_2 GHG emission factors diverging from those defined in default values of Annex-II of FuelEU Maritime).

341. The regulatory framework itself includes relevant control measure against GHG impact from methane slippage emissions. FuelEU Maritime includes in Annex-II important default slippage emission factors which will be able, alone, to differentiate the climate impact of different energy conversion technologies.

342. The table below lists the different technologies included in FuelEU Maritime:

Engine Technology	**Cslip as % of the mass of the fuel used by the engine**
LNG Otto (dual fuel medium speed)	3,1
LNG Otto (dual fuel slow speed)	1,7
LNG Diesel (dual fuels)	0,2
LBSI (Lean Burn Spark Ignited)	2,6

References/sources for Cslip in Annex-II of FuelEU Maritime: 1) IMO 4th GHG Study ([198]) and 2) Advice from the European Sustainable Shipping Forum (ESSF) subgroup on Alternative Power for Shipping (SAPS).

343. In addition, also the extension of ETS to maritime shipping, which will become CO_2-equivalent, and covering non- CO_2 GHG emissions, introduces a price on CO_2-equivalent basis and penalise all ships that do not demonstrate actual mitigation of methane emissions.

344. Based on the above, there is no need for introducing quantitative threshold in addition to those laid down in the applicable **regulations that cover methane-slip emissions** and pricing on negative externalities associated to methane slip. Hence, the Applicants' claim is unfounded.

4. MANIFEST ERRORS OF ASSESSMENT OF SHIPPING ACTIVITIES

345. The Applicants claim that there is no conclusive scientific evidence for the TSC in shipping activities and there is no proven substantial contribution to climate change mitigation and DNSH to the environmental objectives. The Applicants claim that the TSC for maritime freight and passenger transport does not satisfy the requirements in Article 10(2) of the Taxonomy Regulation in light of the scientific evidence on the effects of LNG and the utility of the EEDI standard.

346. As regards the application of the notion *'conclusive scientific evidence'*, the Commission would like to recall, as explained in section 1.1 of Annex II to the reply, the standard to be

([197]) For more information, see the Methane Emission Reduction Technologies for Natural Gas Engines: A Review – A. Huonder, D. Olsen, 2023: https://www.mdpi.com/1996-1073/16/20/7054

([198]) For more information, see: https://www.imo.org/en/OurWork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx

applied by the Commission when developing the relevant TSC, that is that the scientific evidence must not be inconclusive and that it has to be seen in the wider context of Article 19(1) of the Taxonomy Regulation. Specific responses are provided below for each specific claim.

4.1. Lack of conclusive scientific evidence that the Shipping TSC would contribute substantially to climate change mitigation

i. LNG: GHG Emissions and Methane Slippage

Applicants' claim (§§ 252-257 of its request)

347. The Applicants' claims that there is a significant body of evidence indicating that the environmental benefits of LNG are limited and/or negative when its full lifecycle GHG performance is considered. The Applicants note that the levels of methane slippage associated with LNG vary depending on engine type and load, and the TSC fail to ensure that vessels that are covered in Sections 6.10. (e) and 6.11. (d) of Annex I to the Climate Delegated Act substantially contribute to climate change mitigation. In particular, the Applicants state that:

- *'the Additional Provision does not specify a level of methane slippage emissions that must be achieved';*
- *'the Additional Provision does not specify the type of technology/measures that should be used';*
- *'requiring gas-fuelled ships to demonstrate use of ''state-of-the-art measures and technologies'' risks creating inconsistent incentives for investment and leading to stranded assets';*
- *'there is a serious risk that promoting investment into/use of LNG-powered vessels now risks leading to a significant levels of stranded value in the future'.*

Commission's response

348. LNG is not an energy system but, instead, is a fuel. Methane-based energy systems (engines, tanks, pumps, piping, safety systems) will be able and will be immediately fit for use of **biomethane** and **renewable synthetic methane**. The use of natural gas by methane-fuelled ships which do not demonstrate low methane-slip emissions will be penalised under current EU regulatory framework with substantial financial penalties.

349. The safeguard introduced in the EEDI-based TSC in part b of Section 6.10. (e) and Section 6.11. (d) of Annex I to the Climate Delegated Act requires gas-fuelled vessels that overachieve the IMO Phase 3 EEDI targets by 20 percentage points to also '*demonstrate the use of state of-the-art measures and technologies to mitigate methane slippage emissions'*. This was introduced as a response to earlier contributions during stakeholder and public consultation, and it followed Commission own analysis and scientific support from the EMSA. The safeguard provision covers only methane emissions from combustion as they are not only the most significant but also because they are the only ones that can be subject to demonstration/quantification in a context of test-bed or onboard measurements.

350. The concerns of the Applicants are nevertheless understood in a context where the new Regulatory Framework covering GHG from methane-fuelled ship is entering into

application, with FuelEU Maritime covering methane slip emissions ([199]), and establishing an assessment framework which is not only Life-Cycle/WtW based, but also covering non-CO_2 GHG emissions.

<table>
<tr><th>Applicants' Claim – Specific complaint against EEDI criteria – specific concern regarding 'Additional safeguard Provision'</th><th>Arguments in support of EEDI-based TSC and their additional (safeguard) provision [referred to in …] requiring demonstration of state-of-the-art 'methane-slip mitigation technologies'</th></tr>
<tr><td>'The Additional Provision does not specify a level of methane slippage emissions that must be achieved'</td><td>Default methane slip emission (Cslip) factors are defined in FuelEU Maritime Annex-II, differentiated in accordance to engine technology. These are included in the table below.
<table>
<tr><th>Engine Technology</th><th>Cslip as % of the mass of the fuel used by the engine</th></tr>
<tr><td>LNG Otto (dual fuel medium speed)</td><td>3,1</td></tr>
<tr><td>LNG Otto (dual fuel slow speed)</td><td>1,7</td></tr>
<tr><td>LNG Diesel (dual fuels)</td><td>0,2</td></tr>
<tr><td>LBSI (Lean Burn Spark Ignited)</td><td>2,6</td></tr>
</table>
A state-of-the-art methane slip mitigation technology would have to demonstrate the reduction of any of the above.

A specific level of methane slippage emissions was not defined along with the additional safeguard provision of the TSC in view of the difficulty to establish this level, highly dependent on a large range of factors, remarkably engine technology. It would nevertheless be possible to define a percentage reduction in relation to the default values included in FuelEU Maritime. This option was not followed since the intention of the safeguard provision was not to be prescriptive but rather to guide the investment in methane-fuelled ships with 4-stroke engines, high speed, low-pressure which require the adoption of specific measures to control and mitigate methane slippage emissions.

The quantification of methane slip emissions in a context where the demonstration of actual non- CO2 GHG emissions is required will be covered by forthcoming EU Guidelines for the certification/demonstration of actual Tank-to-Wake Methane, Nitrous Oxide and Slippage emissions (currently under development by the Sustainable Power for Ships subgroup of the European Sustainable Shipping Forum (ESSF-SAPS) that will enable the evaluation and demonstration of actual non- CO2 GHG emission factors diverging from those defined in default values of Annex-II of FuelEU Maritime).</td></tr>
<tr><td>'The Additional Provision does not specify the type of technology/measures that should be used';</td><td>Regarding the availability of such technologies, and their implementation, there are different technologies able to mitigate methane-slip emissions from dual-fuel gas engines. These are well described in the literature and can consist in a variety of different technological approaches. EU funded projects like GREENRAY are for instance working on innovative technologies for LNG engines that can be installed on new and existing ships in order to minimise methane slip.

The safeguard provision was not prescriptive in this sense, given the large variety of methane emission mitigation technologies exist and are under</td></tr>
</table>

([199]) FuelEU maritime includes emissions of methane form ships – Methodology in Annex-I, with methane slip default emission factors listed in FuelEU Annex-II.

Applicants' Claim – Specific complaint against EEDI criteria – specific concern regarding 'Additional safeguard Provision'	**Arguments in support of EEDI-based TSC and their additional (safeguard) provision [referred to in …] requiring demonstration of state-of-the-art 'methane-slip mitigation technologies'**
	development. Specifying the type of technology to be used would violate the principle of technological neutrality set out in Article 19(1), point (a) of the Taxonomy Regulation.
'requiring gas-fuelled ships to demonstrate use of ''state-of-the-art measures and technologies'' risks creating inconsistent incentives for investment and leading to stranded assets';	The additional safeguard provision in the TSC requiring gas fuelled ships to demonstrate use of *'state-of-the-art measures and technologies'* to mitigate methane slippage is consistent with the objective to promote energy efficient ships, whilst establishing a safeguard against methane emissions form methane-fuelled ships that use natural gas in low-pressure medium/high speed dual fuel engines. The regulatory framework itself includes relevant control measure against GHG impact form methane slippage emissions. FuelEU Maritime includes important default slippage emission factors which will be able, alone, to differentiate the climate impact of different energy conversion technologies. In addition, also the extension of ETS to maritime shipping, which will become CO_2-equivalent, and covering non-CO_2 GHG emissions, introduces a price on CO_2-equivalent basis and penalise all ships that do not demonstrate actual mitigation of methane emissions. Based on the above, there is no need for introducing quantitative threshold in addition to those laid down in the applicable **regulations that cover methane-slip emissions** and pricing on negative externalities associated to methane slip. Hence, the Applicants' claim is unfounded.
'there is a serious risk that promoting investment into/use of LNG-powered vessels now risks leading to a significant levels of stranded value in the future'.	LNG is not a 'technology', but it is a fuel. The technology (methane-based energy systems) is a cost-intensive technology, able to burn/use sustainable methane molecules in the future, as the roadmap towards decarbonisation progresses. Methane-fuelled ships can use biomethane or renewable synthetic methane in the future. There is therefore no 'lock-in' of carbon-intensive methane technology. Methane-fuelled ships are fit for the energy transition. To the extent that methane-fuelled ships use natural gas in a transition period, they will be covered by existing regulatory framework (FuelEU Maritime and extension of ETS to maritime) which will address non-CO_2 emissions (FuelEU Maritime already in 2025 and ETS in 2026).

ii. Limitations of the EEDI Criteria

<u>Applicants' claim</u> (§§ 258-260 of its request)

351. The Applicants submit that '*the main limitation of the EEDI measure is that it focuses exclusively on tailpipe CO_2 emissions and disregards upstream or midstream CO_2 emissions and non-CO_2 GHG emissions (including methane)*'. Therefore, the Applicants conclude that:

- *'relying on the EEDI in the TSC for Sections 6.10 and 6.11 will allow high-emitting vessels to become Taxonomy-compliant';*
- *'fulfilment of the EEDI Phase 3 requirements does not necessarily lead to a substantial reduction of GHG emissions at all';*

- *'the EEDI standard is maintained as a standalone criterion, the over-compliance threshold of 20 percentage points is insufficient to make a substantial contribution to climate change mitigation'.*

Commission's response

352. The TSC introduced by the Amended Climate Delegated Act recognised the importance of promoting the development of low to zero-carbon energy systems for ships, identifying the zero-emission (direct/tailpipe) as the relevant low-carbon activity that falls under Article 10(1) of the Taxonomy Regulation. Notwithstanding this, it was clear that meeting a zero direct (tailpipe) emission criterion was not achievable for the largest majority of shipping sector, in particular for deep sea international voyages (200). As a result, for the purpose of a meaningful inclusion of maritime transport activities as a transitional activity under Article 10(2) of the Taxonomy Regulation, specific criteria were introduced defining such transitional activities. The TSC established serve defining 'best-in-class' performance and support the identification of a substantial contribution to climate change mitigation.

353. The Amended Climate Delegated Act for maritime transport activities include TSC applicable after 2025. The TSC reduce the scope of shipping transitional activities, by including a revised, more stringent EEDI-based criterion and an ambitious GHG Well-to-Wake criterion, the latter merged with an energy efficiency (EEXI) ([201]) requirement, designed altogether in close alignment with 'Fit for 55' studies underpinning both impact assessments for FuelEU Maritime ([202]) and extension of ETS to the Maritime Sector ([203]). The new criteria follow the same rationale and principle applied for the decarbonisation of shipping under the 'Fit for 55'. On the one hand, the TSC promote improved energy efficiency of ships and, on the other, they introduce a framework to promote the uptake of renewable and low-carbon fuels. As concluded in the context of 'Fit for 55' Impact Assessments, the contribution from shipping to climate change mitigation requires progress along two important vectors for decarbonisation: using less energy/fuels and using cleaner energy/fuels.

354. In particular, the EEDI-based TSC allow the classification of **Vessels with Energy Efficiency/EEDI attained 20 percentage points below the requirements applicable on 1 April 2022**, as a transitional economic activity, with the additional requirements concerning:

- ability to plug-in at berth; and

([200]) Zero direct (tailpipe) CO2 emissions can only be achieved through full electrification of the ship energy system or, alternatively, with the use of hydrogen fuel cells. Both have very low energy density and are not technically or economically viable as integral energy systems for ships engaged in long international voyages. Electrification or hydrogen fuel cells are energy systems most applicable to operating profiles based on short-voyages.

([201]) For more information, see: https://www.imo.org/en/MediaCentre/HotTopics/Pages/EEXI-CII-FAQ.aspx

([202]) Commission Staff Working Document Accompanying the Proposal for a Regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport (SWD(2021) 636 final).

([203]) Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757 (COM/2021/551 final).

- for gas-fuelled ships, a demonstration of the use of state-of-the-art measures and technologies to mitigate methane slippage emissions.

355. The EEDI-based TSC are included in the Amended Climate Delegated Act following extensive debate, EMSA scientific and technical advice and public consultation, with a view to support the Taxonomy-alignment of shipping transitional activities based on optimised energy efficiency, measured in grams of CO_2 emissions per tonne-mile.

356. The following risks were identified when considering the continuation of EEDI as part of the TSC for the Amended Climate Delegated Act:

- EEDI as an inadequate metric to support TSC for climate change mitigation;
- indirect promotion of LNG fuelled ships, resulting in even higher GHG negative impacts when compared to ships operating with fossil oil fuels;
- risk of not being able to implement a safeguard based on demonstration of state-of-the-art methane mitigation technology.

357. The following measures are introduced to address the above risks:

- Existing statistics from EEDI reported values in IMO GISIS ([204]) confirm the adequacy of EEDI as a quantitative metric for TSC;
- Requirements for demonstration of methane mitigation state-of-the-art technology mitigates the risk of wrong incentive of climate;
- Ships will operate in a regulatory framework which penalises methane emissions from LNG fuelled ships (Regulation 2023/1085 ([205])) – applicable to ships in scope (equal or above 5,000GT);
- Details/examples of methane mitigation measures and procedure for demonstrations are to be outlined in Guidance for implementation of FuelEU Maritime.

358. The fact that EEDI does not factor-in tank-to-wake emissions is not considered a limitation for its application as a metric for assessing substantial contribution to climate change mitigation due to the following:

- the TSC based on EEDI will be used to direct green investment in support of further development of energy efficient and decarbonised shipping. EEDI allows a benchmark that identifies, de facto, ships emitting less CO_2 per unit of transport work.
- Ships operating on gaseous fuels, prone to have possible non-combustion/ slippage emissions of non-CO_2 GHG emissions, namely LNG-fuelled ships will be:
    - covered by applicable EU regulatory framework which penalises such GHG emissions. This will be the case of FuelEU Maritime, from 1 January 2025, and extension of ETS to maritime shipping, as from 2026, with relevant provisions and requirements applicable on a CO_2-equivalent basis, covering not only CO_2 but also non- CO_2 GHG emissions;

([204])For more information, see database including voluntary reporting of EEDI:https://gisis.imo.org/Public/Default.aspx

([205]) Commission Implementing Decision (EU) 2023/1085 of 2 June 2023 postponing the expiry date of the approval of Bacillus thuringiensis subsp. israelensis Serotype H14, Strain AM65-52 for use in biocidal products of product-type 18 in accordance with Regulation (EU) No 528/2012 of the European Parliament and of the Council (OJ L 144, 5.6.2023, p. 94).

- required to demonstrate state-of-the art methane slippage mitigation technologies in accordance with Sections 6.10.1(e) and 6.11(d) of Annex I to the Climate Delegated Act.

359. In addition to the above, the importance of LNG-fuelled ships lies much more on their ability to deploy low-carbon methane-based energy systems, rather than on the negative perception/risk associated to methane slip. With the replacement of natural gas with biomethane and green synthetic methane it will be possible to establish a viable cost-efficient path to decarbonisation of methane-fuelled ships

360. The threshold of 20 percentage points was designed in close observation of the relevant EEDI statistics, based on available information from EEDI data reported in IMO GISIS.

361. The table below shows how the different ship types covered under EEDI with a view to demonstrate the number of vessels that, as of today, meet the EEDI-based TSC in the Amended Climate Delegated Act, Sections 6.10.1(e) and 6.11(d)

Ship Type	**Number Reported EEDI Ships**	**Number Taxonomy-compliant Ships**	**Number LNG Fuel - ready ships**	**% Ships already meting EEDI TSC**
Bulkers	3619	21	8	0,6%
Cruise Liners	38	2	1	5,3%
Gas Carriers	439	10	0	2,3%
Tankers	2381	51	9	2,1%
General Cargo	404	113	0	28,0%
Refrigerated Cargo Carriers	37	16	0	43,2%
Combination Carriers	5	0	0	0,0%
Ro-Ro Cargo (Vehicle Carriers)	37	7	4	18,9%
Ro-Ro Cargo	38	9	0	23,7%
Ro-Pax	27	3	2	11,1%
LNG Carriers	130	80	16	61,5%
Containerships	1232	18	14	1,5%
Totals	**8387**	**330**	**54**	**3,9%**

The above values totalled 8387 EEDI reported ships, corresponding approximately to 4% Fleet average Taxonomy-compliant rate. This allows it to be concluded that, for the fleet considered representative for this analysis, **the 20 percentage points is adequate** as a quantitative threshold defined in relation to the applicable EEDI required value as from 1 April 2022 (EEDI Phase 3).

362. It should be noted that the EEDI framework has been subject to several revisions/amendments since 2012 and is based on over-compliance with the EEDI reported rate values and supports agreed differentiated application dates and reduction rates per ship type and size. Consequently, differentiated overcompliance rates have therefore been observed as soon as the EEDI database became more populated. Ship types such as the General Cargo, LNG Carriers, Refrigerated Cargo Carriers, Ro-Ro Cargo and Ro-Pax, are amongst those benefiting from a less stringent EEDI reference line and reduction rate criteria; apart from the General Cargo ships which had solely their Phase 3 application date advanced (from 2025 to 2022), none of the referred ship types were subject to the aforementioned amendments due to the lack of data observed during the IMO EEDI Review Periods. It can be concluded that the latest MARPOL Annex VI amendments regarding the

EEDI makes the selected quantitative threshold of 20 percentage points below EEDI an applicable requirement.

4.2. Manifest Error as to DNSH (Shipping)

Applicants' claim (§§ 261-264 of its request)

363. The Applicants claim that significant harm will be caused by the TSC for shipping activities to climate change mitigation and climate change adaptation referred to in Article 9(a) and (b) of the Taxonomy Regulation. This is for the following reasons:

- '*allowing vessels that overachieve the IMO's Phase 3 EEDI targets by 20 percentage points to be classified as 'sustainable'* will lead to existing LNG-powered vessels becoming immediately compliant with the Taxonomy Regulation;
- *'the use of LNG engines in this ship is likely worse than a traditional marine fuel such as marine gasoil or heavy fuel oil';*
- *'Sections 6.10(e) and 6.11(d) could lead to LNG-certified vessels that are powered by fossil diesel or residual fuel oil being classified as Taxonomy-compliant';*
- *'recent examples of companies citing their use of LNG-powered ships as part of their sustainability plans demonstrates the greenwashing opportunities that arise from the promotion of LNG'.*

Commission's response

364. The Commission first notes that the entire section 'Manifest Error 9: Manifest Error as to DNSH (Shipping)' is to be dismissed as inadmissible in that it fails to specify which TSC specifically would violate Article 17(1), points (a) or (b) of the Taxonomy Regulation.

365. In any case, the Applicants' claim that '*by allowing vessels that overachieve the IMO's* Phase *3 EEDI targets by 20 percentage points to be classified as 'sustainable'*, existing LNG-powered vessels will become immediately compliant with the Taxonomy Regulation is neither correct nor based on factual data.

366. The EU Taxonomy or the Amended Climate Delegated Act do not constitute themselves Environmental or Climate/GHG Standards, but rather provide criteria for investors to identify technologies which can be scientifically proven as contributing substantially to decarbonisation of shipping and energy transition in this hard-to-abate sector. The TSC are intended to guide investment in methane-fuelled ship technology with a view to support the energy transition. Natural Gas can be used as a transition fuel, allowing for deeper decarbonisation through the use of renewable replacement fuels such as biomethane or renewable synthetic methane, both with GHG saving potential well above 70%, using the calculation methodology from the RED.

367. The important aspect to highlight is the clear distinction that needs to be made between LNG (a fuel) and methane-based energy systems (the equipment, engine, storage tanks and cryogenic systems). The EU Taxonomy and the Climate Delegated Act can support directing investment to energy systems which, on one hand, demonstrate better performance in terms of energy efficiency and, on the other hand, are better suited for decarbonisation and 'energy transition', allowing for blending and replacement renewable fuels.

368. Methane-based energy systems can be considered advantageous in comparison to oil-based or methanol-based energy systems during the next 5-10 years. Methane-based energy

systems will allow the use of natural gas as a transition fuel, while methanol energy systems would only allow, today, the use of grey fossil-based methanol. While the use of natural gas on the (worst performing) dual fuel engines may represent up to a worsening of 10% to 20% in GHG Well-to-Wake emissions, on a Life-Cycle WtW basis, the use of grey methanol as a transition fuel, over the short-term, would represent a more serious worsening of WtW GHG emissions, up to 100% worse in comparison with existing oil-based systems, depending on the fossil feedstock origin for the grey-methanol production ([206]). To this end, a grey methanol-fuelled ship, in the absence of renewable methanol, would be much worse than the worse LNG fuelled ship.

369. The Applicants' claim is therefore unfounded.

i. Harm to Climate Mitigation

<u>Applicants' claim</u> (§§ 265-267 of its request)

370. The Applicants claim that '*it is highly likely that vessels fitted with LNG propulsion systems that nevertheless use conventional marine fuels will be classified'* as Taxonomy-compliant which risks causing significant greenhouse gas emissions in breach of Article 17(a) of the Taxonomy Regulation. This is for the following reasons:

- '*vessels may seek to obtain taxonomy-compliance on the basis of the EEDI standard instead of investing in zero-tailpipe emission vessels or truly sustainable fuels*' and this failure to invest in zero carbon technologies will delay decarbonisation;
- the TSC for shipping activities '*risks giving a green investment label to dual-fuel vessels notwithstanding that the operators of such vessels may continue to burn conventional marine oil*';
- '*the short-term consequences of promoting investment into LNG via the EEDI standard risk significantly harm climate change mitigation'* as '*methane has an extremely powerful short-term climate impact'*.

371. The Applicants believe that the TSC for shipping activities should focus on yearly average GHG energy intensity.

<u>Commission's response</u>

372. The Applicants overlook that a breach of the DNSH requirement of Article 17(1), point (a) of the Taxonomy Regulation on climate change mitigation by the TSC of sections 6.10. and 6.11. of Annex I to the Climate Delegated Act is logically excluded. Indeed, those TSC set the criteria for the substantial contribution to climate change mitigation pursuant to Article 10(3), point (a) of the Taxonomy Regulation. Activities for which TSC on the substantial contribution to a specific environmental objective - here climate change mitigation - are set do have to comply with DNSH criteria for the other environmental objectives, as explained in recital 40 of the Taxonomy Regulation, but not to DNSH criteria for the very objective for which they provide a substantial contribution.

ii. Harm to Climate Adaptation

<u>Applicants' claim</u> (§§ 268-269 of its request)

([206]) https://www.methanol.org/wp-content/uploads/2022/01/CARBON-FOOTPRINT-OF-METHANOL-PAPER_1-31-22.pdf

373. The Applicants believe that Article 17(b) of the Taxonomy Regulation provides 'that an economic activity shall be considered to significantly harm climate change mitigation where that activity leads to an increased adverse impact of the current climate and expected future climate. The Applicants consider that the greenwashing that may result from the impugned measures risks:

- harming the current climate by increasing the use of fossil fuels in shipping operations; and
- the future climate by disincentivising investment in truly sustainable shipping fuel, and therefore the TSC for shipping activities are not in line with Article 3(b) of the Taxonomy Regulation.

Commission's response

374. The Applicants' claim shows that they failed to understand the concept of Article 17(b) of the Taxonomy Regulation. First, Article 17(b) is not about climate change mitigation, but about climate change adaptation. Furthermore, the Applicants have failed to refer to crucial elements of Article 17(b), namely to the qualifier that the activity leads to an increased adverse impact of the current climate and the expected future climate **on the activity itself or on people, nature or assets**. It is that impact on those two objects of protection that is the key element of that provision, not the impact of an activity on the climate as such, as the Applicants obviously believe. The Applicants have not even tried to explain that sections 6.10 and 6.11 of Annex I to the Climate Delegated Act would have such an impact.

375. Moreover, the Applicants have failed to analyse the Climate change adaptation TSC of sections 6.10 and 6.11 of Annex I to the Climate Delegated Act, according to which the activity has to comply with the criteria set out in Appendix A to that Annex.