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COMMISSION DELEGATED REGULATION (EU) 2025/422

of 17 December 2024

supplementing Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to regulatory technical standards specifying the content, methodologies and presentation of information in respect of sustainability indicators in relation to adverse impacts on the climate and other environment-related adverse impacts

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937⁽¹⁾, and in particular Article 6(12), fourth subparagraph, Article 19(11), fourth subparagraph, Article 51(15), fourth subparagraph, and Article 66(6), fourth subparagraph, thereof,

Whereas:

- (1) Transactions relating to crypto-assets, including their issuance, are validated and recorded via consensus mechanisms, namely the rules and procedures to reach an agreement on the validation of a transaction among distributed ledger technology (DLT) network nodes, which are also responsible for holding records of all transactions on a distributed ledger. The achievement of consensus, which requires the use of materials and computing power, comes with impacts on the climate and environment, which differ across DLTs depending on their specific features.
- (2) The adequate identification and disclosure of the climate and other environment-related adverse impacts linked to the use of consensus mechanisms to issue crypto-assets is therefore key to the decision-making of those investing in crypto-assets.
- (3) It is important that investors receive accurate, fair, clear, not misleading, simple, concise and comparable information on the impacts of the technologies underpinning issuance of crypto-assets on the climate and the environment. At the same time, given the distributed nature of the technology at hand, it may be difficult to obtain and disclose accurate and reliable information in this regard. It is therefore necessary to develop a list of indicators that considers those constraints to provide investors with understandable and comparable information on the adverse impacts of consensus mechanisms, based on accessible and reliable data, including estimates where necessary and duly justified.
- (4) The information referred to in Article 6(1), first subparagraph, point (j), Article 19(1), first subparagraph, point (h), Article 51(1), point (g), and Article 66(5) of Regulation (EU) 2023/1114 to be included in the crypto-asset white papers and on the websites of crypto-assets service providers regards climate and other environment-related impacts of consensus mechanisms and is therefore closely linked. To ensure consistency, coherence and comparability of that information, it is appropriate to regulate it by way of a single Regulation.
- (5) To ensure consistency between the information found across crypto-asset white papers issued via the same consensus mechanism, as well as proportionality in complying with this Regulation, it should be possible, without prejudice to the entities' respective legal obligations, to reuse information on the consensus mechanism that are relevant to a crypto-asset for which a crypto-asset white paper is prepared, where such information has already been published in the context of another crypto-asset white paper.

⁽¹⁾ OJ L 150, 9.6.2023, p. 40, ELI: <http://data.europa.eu/eli/reg/2023/1114/oj>.

- (6) Considering that all disclosing entities remain responsible for their own disclosures, including where they source information from existing crypto-asset white papers, information included in the white papers and information made available on the websites of crypto-asset service providers should be reviewed on a regular basis and updated accordingly. Considering that disclosing entities may make use of independent third parties to obtain or verify information to be disclosed, the use of such independent third parties for those purposes should be disclosed and the relevant independent third-party identified.
- (7) To facilitate investors' ability to compare between the adverse impacts of the consensus mechanisms on which are issued different crypto-assets, the information on crypto-asset service providers' websites should allow the public to compare the adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanisms and their incentive structures across all the crypto-assets in relation to which the crypto-asset service provider provides crypto-asset services.
- (8) To assess the impact of the consensus mechanism used to issue each crypto-asset on the climate and other environment-related impacts, it is appropriate to take into account both the validation of each transaction in the relevant crypto-asset, taking into account the DLT network nodes actively involved in the validation, and the maintenance of the integrity of a DLT by all DLT network nodes.
- (9) Key indicators should be used to easily understand the impacts on climate and other environment-related impacts of the consensus mechanisms. To incentivise the use of more climate and environmentally friendly consensus mechanisms and to prevent greenwashing practices, it is crucial to rely to the extent possible on quantitative metrics. Quantitative metrics should display gross energy consumption and emissions, without reflecting potential off-setting mechanisms.
- (10) Annual energy consumption should be used as the key mandatory indicator because it is considered to be the most conducive to investor awareness of the impact of consensus mechanisms. Considering the key role of electricity in the operation of DLT networks, electricity consumption should be considered a suitable proxy for energy consumption.
- (11) In order to ensure a proportionate approach to sustainability information, it is appropriate to require additional information with regard to consensus mechanisms with more significant climate and other environment-related adverse impacts, especially where they exceed a certain level of energy consumption. Therefore, supplementary key indicators on energy and greenhouse gas (GHG) emissions should be used for crypto-assets issued via consensus mechanisms with higher levels of yearly energy consumption in order to deepen investors' understanding on the adverse impacts of such consensus mechanisms.
- (12) In addition to mandatory and supplementary key indicators, it should be possible to voluntarily include, in a specific part of the white papers or the websites of crypto-asset service providers, information on climate and other environment-related indicators that may be more complex to assess or for which it may be more difficult to find relevant data, for instance in relation to waste production and the use of natural resources, such as water.
- (13) To prevent greenwashing and to ensure the comparability of information to be included in the crypto-asset white papers and on the websites of crypto-assets service providers, information regarding optional indicators should be subject to the same harmonised rules on the presentation of information and on the methodologies as the information regarding mandatory and supplementary indicators. This applies, for instance, to indirect GHG emissions, such as upstream emissions linked to the equipment purchased by the DLT network nodes or downstream emissions related to waste management.
- (14) In order to foster consistency of disclosed information in the absence of consensus on a specific set of reliable methodologies to calculate the identified indicators at this stage, harmonised principles should nonetheless apply to ensure the comparability of disclosed information, avoid any methodological bias, and ensure the consistency of methodologies used with those referred to in the framework of the application of Directive (EU) 2022/2464 of the

European Parliament and of the Council ⁽²⁾). As a result, information on energy consumption and GHG emissions should be aligned with the calculation guidance laid down in Commission Delegated Regulation (EU) 2023/2772 ⁽³⁾, while the methodology used to calculate each quantitative metric and any deviations from this calculation guidance should be disclosed.

- (15) Where information related to indicators is not available in a reasonable timeframe, estimates should be disclosed together with reasonable assumptions used to calculate such estimates and with details of the best efforts used to obtain the information. Therefore, where the location of nodes cannot be identified as needed for certain disclosures, local, regional or global data should be used as necessary and appropriate. This data should be disclosed together with details on the best efforts used to obtain the information.
- (16) This Regulation is based on the draft regulatory technical standards submitted to the Commission by the European Securities and Markets Authority ('ESMA'), in cooperation with the European Banking Authority.
- (17) ESMA has conducted open public consultations on the draft regulatory technical standards on which this Regulation is based, analysed the potential related costs and benefits and requested the advice of the Securities and Markets Stakeholder Group established in accordance with Article 37 of Regulation (EU) No 1095/2010 of the European Parliament and of the Council ⁽⁴⁾,

HAS ADOPTED THIS REGULATION:

Article 1

Definitions

For the purposes of this Regulation, the following definitions apply:

- (a) 'incentive structure' means the set of incentives and penalties established as part of a consensus mechanism to economically incentivise distributed ledger technology (DLT) network nodes to cooperate in applying the rules and procedures of the consensus mechanism for the purpose of validating transactions in crypto-assets;
- (b) 'greenhouse gas (GHG) emissions' means emissions of gases listed in Part 2 of Annex V to Regulation (EU) 2018/1999 of the European Parliament and of the Council ⁽⁵⁾ expressed in tonnes of CO₂-equivalent;
- (c) 'climate and other environment-related indicators' means the indicators listed in the section 'Mandatory key indicator on energy consumption' of Table 2 of the Annex, in the section 'Supplementary key indicators on energy and GHG emissions' of Table 3 of the Annex, and in the section 'Optional indicators' of Table 4 of the Annex;

⁽²⁾ Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting (OJ L 322, 16.12.2022, p. 15, ELI: <http://data.europa.eu/eli/dir/2022/2464/oj>).

⁽³⁾ Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards (OJ L, 2023/2772, 22.12.2023, ELI: http://data.europa.eu/eli/reg_del/2023/2772/oj).

⁽⁴⁾ Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC (OJ L 331, 15.12.2010, p. 84, ELI: <http://data.europa.eu/eli/reg/2010/1095/oj>).

⁽⁵⁾ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (OJ L 328, 21.12.2018, p. 1, ELI: <http://data.europa.eu/eli/reg/2018/1999/oj>).

- (d) 'scope 1 DLT GHG emissions' means greenhouse gas (GHG) emissions generated from sources that are controlled by the distributed ledger technology (DLT) network nodes using the consensus mechanism;
- (e) 'scope 2 DLT GHG emissions' means GHG emissions from the consumption of purchased electricity, steam, or other sources of energy generated upstream from the DLT network nodes using the consensus mechanism;
- (f) 'scope 3 DLT GHG emissions' means all indirect, upstream and downstream GHG emissions not covered by points (d) and (e) that occur in the value chain of the DLT network nodes using the consensus mechanism;
- (g) 'energy from renewable sources' or 'renewable energy' means energy from renewable sources or renewable energy as defined in Article 2, point (1), of Directive (EU) 2018/2001 of the European Parliament and of the Council ⁽⁶⁾;
- (h) 'waste' means waste as defined in Article 2, point (23), of Directive (EU) 2018/2001;
- (i) 'waste electrical and electronic equipment' ('WEEE') means waste electrical or electronic equipment as defined in Article 3(1), point (e), of Directive 2012/19/EU of the European Parliament and of the Council ⁽⁷⁾;
- (j) 'non-recycled waste' means any waste not recycled within the meaning of 'recycling' in Article 3, point 17, of Directive 2008/98/EC of the European Parliament and of the Council ⁽⁸⁾;
- (k) 'hazardous waste' means hazardous waste as defined in Article 3, point 2, of Directive 2008/98/EC;
- (l) 'natural resources' means natural resources as defined in Table 2 of Annex II to the Delegated Regulation (EU) 2023/2772.

Article 2

Presentation of information in the crypto-asset white papers

1. Information in crypto-asset white papers, referred to in Article 6(1), first subparagraph, point (j), Article 19(1), first subparagraph, point (h), or Article 51(1), first subparagraph, point (g), of Regulation (EU) 2023/1114, shall be reviewed and updated on a regular basis.
2. Where the information referred to in paragraph 1 can be found in other crypto-asset white papers for crypto-assets issued via the same consensus mechanism, this information may be obtained from those other crypto-asset white papers.

Article 3

General principles for the presentation of information by crypto-asset service providers

1. The following requirements shall apply to information that crypto-asset service providers are to make publicly available on their website in accordance with Article 66(5) of Regulation (EU) 2023/1114:
 - (a) the information shall be made available free of charge;
 - (b) it shall be in form of a downloadable file and presented in a way that is easy to read, with characters of readable size and a style of writing that facilitates its understanding and that facilitates comparisons between the information relating to each of the crypto-assets in relation to which the crypto-asset service provider provides services.

⁽⁶⁾ 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, ELI: <http://data.europa.eu/eli/dir/2018/2001/oj>).

⁽⁷⁾ Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38, ELI: <http://data.europa.eu/eli/dir/2012/19/oj>).

⁽⁸⁾ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3, ELI: <http://data.europa.eu/eli/dir/2008/98/oj>).

2. Crypto-asset service providers shall review and update the information referred to in paragraph 1 on a regular basis, at least annually. In case of material changes, the information shall be updated without undue delay and accompanied by clear indications of the changes made. The date of publication of the information and the date of the latest review or update shall be clearly indicated on the website of the crypto-asset service providers.

3. Information referred to in paragraph 1 shall be made available in at least one of the official languages of the home Member State of the crypto-asset service provider, or in a language customary in the sphere of international finance.

Where the crypto-asset service provider is providing crypto-asset services with respect to a specific crypto-asset in a Member State other than its home Member State, the information referred to in paragraph 1 for that crypto-asset shall also be made available in an official language of that host Member State or in a language customary in the sphere of international finance.

Article 4

Information to be included in the crypto-asset white papers

1. Persons drawing up the crypto-asset white papers referred to in Articles 6, 19 or 51 of Regulation (EU) 2023/1114 shall provide in those white papers the information referred to in Article 6(1), first subparagraph, point (j), Article 19(1), first subparagraph, point (h), and Article 51(1), first subparagraph, point (g), of Regulation (EU) 2023/1114, as set out in Table 2 of the Annex, in the format set out therein.

2. The persons referred to in paragraph 1 shall also provide in the white paper the information set out in Table 3 of the Annex, in the format set out therein, where the yearly energy consumption as reported in Table 2, field S.8, of that Annex exceeds 500 000 kilowatt-hours.

Where the condition laid down in the first subparagraph is not met, the persons referred to in paragraph 1 may provide in the white paper information on one or more of the supplementary indicators listed in Table 3 of the Annex in the format of the templates set out therein. When such information is included, the corresponding information on sources and methodologies referred to in that Table shall also be provided.

3. The persons referred to in paragraph 1 may provide in the white paper information on one or more of the indicators listed in Table 4 of the Annex, in the format set out therein. When such information is included, the corresponding information on sources and methodologies, referred to in that Table, shall also be provided.

Article 5

Information to be included on the websites of crypto-assets service providers

1. Crypto-asset service providers shall, in accordance with Article 66(5) of Regulation (EU) 2023/1114, make publicly available on their website the information set out in Table 2 of the Annex, in the format set out therein.

2. Crypto-asset service providers shall, in accordance with Article 66(5) of Regulation (EU) 2023/1114, make publicly available on their website the information set out in Table 3 of the Annex, in the format set out therein, where both of the following conditions are met:

- (a) the crypto-asset service provider provides one or more of the services referred to in Article 3(1) (16), points (b), (c) and (d), of Regulation (EU) 2023/1114;
- (b) the yearly energy consumption as reported Table 2, field S.8, of the Annex exceeds 500 000 kilowatt-hours.

Where the conditions laid down in the first subparagraph are not met, the crypto-asset service provider may provide on their website information on one or more of the supplementary indicators referred to in Table 3 of the Annex in the format set out therein. When such information is provided, the corresponding information on sources and methodologies referred to in that Table shall also be provided.

3. Crypto-asset service providers may, in accordance with Article 66(5) of Regulation (EU) 2023/1114, make publicly available on their website, the information on one or more of the optional indicators referred to in Table 4 of the Annex, in the format set out therein. When such information is provided, the corresponding information on sources and methodologies referred to in that Table shall also be provided.

Article 6

Rules on the disclosures

1. Persons drawing up the crypto-asset white papers referred to in Articles 6, 19 and 51 of Regulation (EU) 2023/1114 and crypto-asset service providers shall disclose in the section 'General information' in Table 2 of the Annex all of the following information:

- (a) the name and the legal entity identifier of the person drawing up the crypto-asset white paper or crypto-asset service provider as reported, respectively pursuant to Commission Implementing Regulation (EU) 2024/2984 ⁽⁹⁾ or to the Commission Delegated Regulation (EU) 2025/305 ⁽¹⁰⁾;
- (b) information on the features of the consensus mechanisms used for the validation of transactions and for the maintenance of the integrity of the distributed ledger, of transactions and the incentive structure as reported pursuant to Implementing Regulation (EU) 2024/2984;
- (c) the reference period of the statement, and the period for which estimates are used.

2. Where, pursuant to Article 2(2), persons drawing up crypto-asset white papers use information obtained from other crypto-asset white papers in order to comply with Article 4 they shall provide the name and relevant identifier of the person drawing up that other crypto-asset white paper in the section on 'Sources and methodologies' of the relevant Table of the Annex.

3. Where, pursuant to Article 66(5) of Regulation (EU) 2023/1114, crypto-asset service providers use information obtained from crypto-asset white papers in order to comply with Article 5, they shall provide the name and relevant identifier of the person drawing up that white paper in the section on 'Sources and methodologies' of the relevant Table of the Annex.

4. Where the information referred to in Tables 2, 3 or 4 of the Annex was subject to a verification by one or more third parties, the names of those third parties shall be indicated in the section on 'Sources and methodologies' of the relevant Table of the Annex.

5. The methodologies used to calculate the climate and other environment-related indicators shall be rigorous, systematic, objective, capable of validation and applied continuously.

The information referred to in Table 2, field S.8, Table 3, fields S.10 and S.11, and Table 4, fields S.17 and S.18, of the Annex shall be calculated in accordance with the calculation guidance in point AR 32 of Appendix A to the ESRS E1 in Annex I to Delegated Regulation (EU) 2023/2772.

The information referred to in Table 3, fields S.12, S.13 and S.14, and Table 4, fields S.19, S.20 and S.21, of the Annex shall be calculated in accordance with the calculation guidance in points AR 39, 43, 45, 46 and 47 of Appendix A to the ESRS E1 in Annex I of Delegated Regulation (EU) 2023/2772.

6. Where DLT network nodes use mechanisms to off-set their energy consumption and GHG emissions, the use of these mechanisms may be separately disclosed in the section 'Sources and methodologies' of Tables 2, 3 and 4 of the Annex. The effect of such off-setting mechanisms shall not be taken into account when calculating the climate and other environment-related indicators.

⁽⁹⁾ Commission Implementing Regulation (EU) 2024/2984 of 29 November 2024 laying down implementing technical standards for the application of Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to forms, formats and templates for the crypto-asset white papers (OJ L, 2024/2984, 3.12.2024, ELI: http://data.europa.eu/eli/reg_impl/2024/2984/oj).

⁽¹⁰⁾ Commission Delegated Regulation (EU) 2025/305 of 31 October 2024 supplementing Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to regulatory technical standards specifying the information to be included in an application for authorisation as a crypto-asset service provider (OJ L, 2025/305, 31.3.2025, ELI: http://data.europa.eu/eli/reg_del/2025/305/oj).

7. Where information relating to the climate and other environment-related indicators is not readily available, the information referred to in Article 6(1), first subparagraph, point (j), Article 19(1), first subparagraph, point (h), Article 51(1), point (g), or Article 66(5) of Regulation (EU) 2023/1114 shall contain estimates, together with details of the best efforts used to obtain that information, including by conducting additional research, cooperating with third party data providers or external experts or making reasonable assumptions.

Those details shall be indicated in the section on ‘Sources and methodologies’ of Tables 2, 3 and 4 of the Annex and shall include:

- (a) the fact that estimates have been used and a clear indication of which sustainability indicators are provided based on estimates;
- (b) the methodology used to calculate the climate and other environment-related indicators, including a description of deviations from the calculation guidance referred to in paragraph 5, second and third subparagraphs, an explanation of the reasons for such deviations, and the main assumptions and precautionary principles underlying those estimates.

8. In the section on ‘Sources and methodologies’ of Tables 2, 3 and 4 of the Annex the following information may be provided:

- (a) the methodology to estimate missing, unreported, or underreported metrics;
- (b) the external datasets used in the estimation of missing, unreported or underreported metrics;
- (c) the name and a hyperlink to the website of the external provider of the data on which the estimates are based, where relevant; and
- (d) the methodology used to offset their energy consumption in accordance with paragraph 6, where relevant.

Where any information referred to in points (a) to (d) is not provided, it shall be indicated in a clear manner that that information is not included.

Article 7

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 17 December 2024.

For the Commission
The President
Ursula VON DER LEYEN

Template for the presentation of the information on principal adverse impacts on the climate and other environment-related adverse impacts in the crypto-asset white paper and on the website of a crypto-asset service provider

Table 1

Legend for Tables 2, 3 and 4

Symbol	Data type	Definition
{DATEFORMAT}	ISO 8601 date format	Dates shall be indicated in the following format: YYYY-MM-DD.
{DECIMAL-n/m}	Decimal number of up to n digits in total of which up to m digits can be fraction digits	Numerical field for both positive and negative values. Decimal separator is '.' (full stop); Negative numbers are prefixed with '-' (minus); Values are rounded and not truncated.

Table 2

Mandatory information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism

N	Field	Content to be reported	Format and standards to be used
General information			
S.1	Name	Name reported in Annex II to Commission Implementing Regulation (EU) 2024/2984 ⁽¹⁾ , Table 2, fields A.1, B.2 or C.1, Table 3, field A.1, or Table 4, or name of the crypto-asset service provider	Free alphanumerical text
S.2	Relevant legal entity identifier	Identifier referred to in Annex II to Implementing Regulation (EU) 2024/2984, Table 2, fields A.6 or A.7, B.7 or B.8 or C.6 or C.7, Table 3, fields A.7 and A.8 or Table 4, fields A.7 and A.8 or identifier of the crypto-asset service provider referred to in Article 1 of Commission Delegated Regulation (EU) 2025/305 ⁽²⁾	Free alphanumerical text
S.3	Name of the crypto-asset	Name of the crypto-asset, as reported in Annex II to Implementing Regulation (EU) 2024/2984, Table 2, field D.2, Table 3, field B.1, or Table 4, field B.1 where relevant	Free alphanumerical text
S.4	Consensus Mechanism	The consensus mechanism, as reported in Annex II to Implementing Regulation (EU) 2024/2984, Table 2, field H.4, Table 3, field E.4, or Table 4, field E.5, where relevant, including the information referred to in Article 6(1), point (b), of this Regulation.	Free alphanumerical text

N	Field	Content to be reported	Format and standards to be used
General information			
S.5	Incentive Mechanisms and Applicable Fees	Incentive mechanisms to secure transactions and any fees applicable, as reported in Annex II to Implementing Regulation (EU) 2024/2984, Table 2, field H.5, Table 3, field E.5 or Table 4, field E.6, where relevant. For persons drawing up a crypto-asset white paper pursuant to Articles 6, 19 or 51 of Regulation (EU) 2023/1114, the information may be provided by including a cross-reference to the aforementioned fields.	Free alphanumerical text
S.6	Beginning of the period to which the disclosed information relates	Start date of the period covered by the disclosed information	{DATEFORMAT}
S.7	End of the period to which the disclosed information relates	End date of the period covered by the disclosed information	{DATEFORMAT}
Mandatory key indicator on energy consumption			
S.8	Energy consumption	Total amount of energy used for the validation of transactions and the maintenance of the integrity of the distributed ledger, expressed in kilowatt-hours per calendar year	Amount in kilowatt-hours (kWh) {DECIMAL-18/5}
Sources and methodologies			
S.9	Energy consumption sources and methodologies	Sources and methodologies used in relation to the information reported in field S.8	Free alphanumerical text
<p>(¹) Commission Implementing Regulation (EU) 2024/2984 of 29 November 2024 laying down implementing technical standards for the application of Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to forms, formats and templates for the crypto-asset white papers (OJ L, 2024/2984, 3.12.2024, ELI: http://data.europa.eu/eli/reg_impl/2024/2984/oj).</p> <p>(²) Commission Delegated Regulation (EU) 2025/305 of 31 October 2024 supplementing Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to regulatory technical standards specifying the information to be included in an application for authorisation as a crypto-asset service provider (OJ L, 2025/305, 31.3.2025, ELI: http://data.europa.eu/eli/reg_del/2025/305/oj).</p>			

Table 3

Supplementary information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism

N	Field	Content to be reported	Format and standards to be used
Supplementary key indicators on energy and GHG emissions			
S.10	Renewable energy consumption	Share of energy from renewable sources, used for the validation of transactions and the maintenance of the integrity of the distributed ledger, expressed as a percentage of the total amount of energy used per calendar year	Percentage {DECIMAL-11/10}

N	Field	Content to be reported	Format and standards to be used
Supplementary key indicators on energy and GHG emissions			
S.11	Energy intensity	Average amount of energy used per validated transaction	Amount in kWh {DECIMAL-18/5}
S.12	Scope 1 DLT GHG emissions – Controlled	Scope 1 GHG emissions per calendar year for the validation of transactions and the maintenance of the integrity of the distributed ledger	Amount in tonnes (t) carbon dioxide equivalent (CO ₂ e) {DECIMAL-18/5}
S.13	Scope 2 DLT GHG emissions – Purchased	Scope 2 GHG emissions, expressed in tCO ₂ e per calendar year for the validation of transactions and the maintenance of the integrity of the distributed ledger	Amount in tCO ₂ e {DECIMAL-18/5}
S.14	GHG intensity	Average GHG emissions (scope 1 and scope 2) per validated transaction	Amount in kilogram (kg) CO ₂ e (Tx) {DECIMAL-18/5}
Sources and methodologies			
S.15	Key energy sources and methodologies	Sources and methodologies used in relation to the information reported in fields S.10 and S.11	Free alphanumerical text
S.16	Key GHG sources and methodologies	Sources and methodologies used in relation to the information reported in fields S.12, S.13 and S.14	Free alphanumerical text

Table 4

Optional information on principal adverse impacts on the climate and on other environment-related adverse impacts of the consensus mechanism

N	Field	Content to be reported	Format and standards to be used
Optional indicators			
S.17	Energy mix	Description of the relative contributions of each different primary energy source used for the validation of transactions and the maintenance of the integrity of the distributed ledger, expressed as percentages	Percentage {DECIMAL-11/10}
S.18	Energy use reduction	Energy use reduction targets or commitments, expressed in absolute or relative reduction of energy use over one calendar year	Amount in kWh {DECIMAL-18/5} or Percentage {DECIMAL-11/10}
S.19	Carbon intensity	Carbon intensity of the energy used for the validation of transactions and the maintenance of the integrity of the distributed ledger	Amount in kgCO ₂ e per kWh {DECIMAL-18/5}
S.20	Scope 3 DLT GHG emissions – Value chain	Scope 3 GHG emissions for the validation of transactions and the maintenance of the integrity of the distributed ledger per calendar year	Amount in tCO ₂ e {DECIMAL-18/5}

N	Field	Content to be reported	Format and standards to be used
Optional indicators			
S.21	GHG emissions reduction targets or commitments	GHG emissions reduction targets or commitments, expressed in terms of absolute or relative reduction in GHG emissions over one calendar year	Free alphanumerical text
S.22	Generation of waste electrical and electronic equipment (WEEE)	Total amount of WEEE generated for the validation of transactions and the maintenance of the integrity of the distributed ledger per calendar year	Amount in t {DECIMAL-18/5}
S.23	Non-recycled WEEE ratio	Share of the total amount of WEEE generated for the validation of transactions and the maintenance of the integrity of the distributed ledger, not recycled per calendar year	Percentage {DECIMAL-11/10}
S.24	Generation of hazardous waste	Total amount of hazardous waste generated for the validation of transactions and the maintenance of the integrity of the distributed ledger per calendar year	Amount in t {DECIMAL-18/5}
S.25	Generation of waste (all types)	Total amount of waste generated by the validation of transactions and the maintenance of the integrity of the distributed ledger	Amount in t {DECIMAL-18/5}
S.26	Non-recycled waste ratio (all types)	Share of the total amount of waste generated for the validation of transactions and the maintenance of the integrity of the distributed ledger not recycled per calendar year	Percentage {DECIMAL-11/10}
S.27	Waste intensity (all types)	Total amount of waste generated per transaction validated	Amount in grams (g) per Tx {DECIMAL-18/5}
S.28	Waste reduction targets or commitments (all types)	Waste reduction targets or commitments, expressed in absolute or relative reduction in waste generation over one calendar year	Free alphanumerical text
S.29	Impact of the use of equipment on natural resources	Description of the impact on natural resources of the production, the use and the disposal of the devices of the DLT network nodes	Free alphanumerical text
S.30	Natural resources use reduction targets or commitments	Natural resources use reduction targets or commitments, expressed in absolute or relative reduction in use of natural resources over one calendar year	Free alphanumerical text
S.31	Water use	Total water consumption linked to the validation of transactions and the maintenance of the integrity of the distributed ledger, expressed in cubic meters	Amount in cubic meters {DECIMAL-18/5}
S.32	Non recycled water ratio	Share of the total water consumed not recycled and not reused linked to the validation of transactions and the maintenance of the integrity of the distributed ledger per calendar year, expressed as a percentage	Percentage {DECIMAL-11/10}

N	Field	Content to be reported	Format and standards to be used
Optional indicators			
Sources and methodologies			
S.33	Other energy sources and methodologies	Sources and methodologies used in relation to the information reported in fields S.17 and S.18	Free alphanumerical text
S.34	Other GHG sources and methodologies	Sources and methodologies used in relation to the information reported in fields S.19, S.20 and S.21	Free alphanumerical text
S.35	Waste sources and methodologies	Sources and methodologies used in relation to the information reported in fields S.22, S.23, S.24, S.25, S.26, S.27 and S.28	Free alphanumerical text
S.36	Natural resources sources and methodologies	Sources and methodologies used in relation to the information reported in fields S.29, S.30, S.31 and S.32	Free alphanumerical text