A. **STATE TITLE AND SCOPE OF TC**

The title of TC 111 is Environmental Standardization for Electrical and Electronic Products and Systems.

The scope of TC 111 is:

Standardization of environmental aspects concerns:

- To prepare the necessary guidelines, basic and horizontal standards, including technical reports, in the environmental area, in close cooperation with product committees of IEC, which remain autonomous in dealing with the environmental aspects relevant to their products;
- To liaise with product committees in the elaboration of environmental requirements of product standards in order to foster common technical approaches and solutions for similar problems and thus assure consistency in IEC standards;
- To liaise with ACEA and ISO/TC 207;
- To monitor closely the corresponding regional standardization activities worldwide in order to become a focal point for discussions concerning standardization;
- EMC and EMF aspects are excluded from the scope.

B. **MANAGEMENT STRUCTURE OF THE TC**

The TC 111 Committee is made up of members from the national standards bodies of 35 countries, of which 26 are P-members and 9 are O-members. Members play a vital role in the committee’s standardization work.

TC 111 is chaired by Christophe Garnier (FR) since 1 August 2018. The vice-chair is Miyuki Takenaka (JP). In addition to supporting the chair, she has specific roles in the substances domain.

The TC 111 Secretary is Marco Iadevaia (IT), having taken on the role starting in 2020. Andrea Legnani (IT) has been appointed as assistant secretary of TC 111.

A chair’s advisory group (CAG), established in 2018, supports experts and working groups in areas not directly related to development of standards, such as promotion, helping establish contacts with other bodies, increasing visibility of the committee through website, and communication.

**TC 111 Committee Strategy**

TC 111 is the central point for defining standards on all environmental aspects of electrotechnical products and systems. TC 111 will apply for and maintain the horizontal function (Guide 108 ED3) for all of its main fields of activity. Work developed at IEC by the TC 111 experts is intended to be applicable worldwide – either directly or by adoption into a local standard.
TC 111 seeks collaboration with IEC committees, Standards Development Organizations (SDOs) and other organizations to develop standards documents on environment related aspects. TC 111 also invites and considers standards published at national or regional level to see if they can be used as a basis for developing IEC standards. For instance, the European CENELEC standards organization has been active in several emerging areas of environmental standardization of electrotechnical products. These standards, once published, are reviewed and considered by TC 111 for possible IEC standardization under the Frankfurt agreement.

TC 111 is a member of ACEA and liaises with various ISO Technical Committees, product technical committees, and external organizations in the elaboration of environmental requirements of product standards in order to foster common technical approaches and solutions for similar problems and thus assure consistency in IEC standards. The list of TC 111 liaisons is provided on the IEC TC 111 dashboard.

**Standardization Teams**

TC 111 contributes to improving the global environment by timely delivery of technical reports, specifications, and standards to users. TC 111 sets up standardization teams to address environmental issues over the next 5 years, to be able to address in a competent and efficient way work items in the field of material efficiency and resulting from further digital integration. The structure of TC 111 includes working groups (WGs), project teams (PTs), maintenance teams (MTs), ad-hoc groups (AHGs) and Advisory Groups (AGs) as needed. The committee also includes a validation team (VT) responsible for regular updates to the database portion of one of the standards.

TC 111 has initiated joint WGs with ISO and will support development of this joint collaboration over the next five years, to be able to address in a competent and efficient way work items in the field of material efficiency and resulting from further digital integration. For such joint activity, the WGs, whenever possible, should try to assign an 8XXXX number to the document, clearly indicating that the document is produced by an ISO/IEC Joint WG (JWG).

The structure of TC 111 is reviewed every three years and updated as needed in response to new and emerging technologies, changes in regulations, and upon publication of standards.

**Workgroups and teams working on standardization deliverables related to environmental aspects:**

- **WG3 Test methods of certain substances:** to develop new and improved harmonized test methods for regulated substances;
- **WG19 Work Group of IEC 62474 Material Declaration:** to revise the IEC 62474 standard and guidance documents;
- **VT 62474 Material Declaration for Products of and for the Electrotechnical Industry Database:** to maintain and improve material declaration tools by performing two maintenance cycles per year to the IEC 62474 declarable substance list, material classification list, exemption lists and data exchange format;
- **JWG ECD - IEC 62430: 2019 Environmentally Conscious Design (ECD) - Principles, requirements and guidance:** to prepare guidance documents and other application specific documents related to ECD. The JWG is collaborative joint work of IEC/TC 111 and ISO/TC 207;
- **JWG 14 collaborative joint work of IEC/TC 111 and ISO TC 61 to develop test methods for TCEP (Tris(2-chloroethyl) phosphate)) and other certain substances in plastics**
- **MT 63000 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances**
- **WG 5 General method for assessing the proportion of reused components in products**
- **WG 15 Product category rules for LCA of electrical and electronic products and systems.**
C. BUSINESS ENVIRONMENT

Environmental issues have become more and more important globally, especially regarding the impact on ecosystems, climate change, energy and natural resource depletion and impact on humans. With the advent of global legally binding agreements, such as the Paris agreement to limit global warming, industry has committed to meeting ambitious environmental targets. In the electrotechnical industry specifically, the exponential growth in the use of electronic devices by individuals and industry is another key factor in the need to address the environmental issues with these devices. The range of environmental issues has widened and now includes the whole life cycle of these products as used within the ecosystem. Accordingly, purchasing of products based on environmental performance is a significant growing factor for government, institutional and consumer purchasing. In response to these trends, legislation as well as voluntary initiatives from business and other organizations have been developed globally.

In the electrical and electronic equipment sector, the focus is on control of chemical substances, circular economy (including product waste management), and environmentally conscious design of products and systems (including the reduction of adverse environmental impacts of a product throughout its entire life cycle, such as the efficient use of materials, energy, and other resources and controlling emissions).

Moreover, material efficiency aspects relating to the circular economy are becoming an increasingly important topic. As part of the European Commission Vision 2020, standards for a sustainable economy were developed, with topics such as material efficiency and circular economy at its core. This will be an area to continue monitoring and assessing what the global response should be.

Reference to standards has been effective for assessing regulatory compliance and can also be equally effective in considering environmental aspects to applicable product life stages. Under the above circumstances, it is strongly desired to provide all stakeholders including product committees (TCs/SCs), industry, and regulators with environmental standardization publications for electrical and electronic products and systems. Attention should be given to maintaining the deliverables as credible and as representative to intended and actual use cases and to avoid unintended or intended circumvention.

D. MARKET DEMAND

Customers of the standards and other deliverables developed by TC 111 are:

- organizations that manufacture and use electrical and electronic products and systems;
- suppliers to the electrotechnical industry;
• IEC technical committees and other SDOs
• test and certification bodies, dealing with product certification and compliance assessment and ecotag label operators;
• waste treatment operators and WEEE recyclers;
• governments and other equivalent organisations, dealing with conformity assessment and/or setting up product conformity;
• other organizations dealing with climate change, energy and natural resource depletion (for example, United Nations, NGOs and other non-profit organizations);

Avoiding inconsistency between standards on environmental specifications and guidance is necessary for the market. This includes standards developed by product TCs/SCs. TC 111 provides horizontal publications in the area of environment for use by TCs and SCs.

E. SUSTAINABILITY DEVELOPMENT GOALS

☐ GOAL 1: No Poverty
☒ GOAL 2: Zero Hunger
☐ GOAL 3: Good Health and Well-being
☐ GOAL 4: Quality Education
☐ GOAL 5: Gender Equality
☒ GOAL 6: Clean Water and Sanitation
☒ GOAL 7: Affordable and Clean Energy
☒ GOAL 8: Decent Work & Economic Growth
☒ GOAL 9: Industry, Innovation & Infrastructure

☐ GOAL 10: Reduced Inequality
☒ GOAL 11: Sustainable Cities and Communities
☒ GOAL 12: Responsible Consumption and Production
☒ GOAL 13: Climate Action
☒ GOAL 14: Life Below Water
☒ GOAL 15: Life on Land
☐ GOAL 16: Peace & Justice Strong Institutions
☐ GOAL 17: Partnerships to achieve the Goal

F. TRENDS IN TECHNOLOGY AND IN THE MARKET

The progress of technologies, legal requirements and scientific data on environmental impacts have led to additional environmental requirements and opportunities. Examples include worldwide opportunities to establish harmonized international standards to address

• energy saving effects made by energy-efficient products,
• life-cycle evaluation of GHG emission from products, and
• resource scarcity.

Trends in standardization include:

• A continuing shift of focus from a specific life cycle stage to the entire life cycle. This trend leads to supply-chain issues including information exchange, cooperation and management;
• Use of Life Cycle Assessment (LCA) methodologies and tools to evaluate the environmental impacts of products and processes across the entire life cycle;
• The scope of environmental assessment is moving from a product to complete system solutions, such as addressing urbanization issues through infrastructures (e.g. Smart Cities).

The market will require further effective guidance and standards since it is anticipated that laws and regulations in the environmental field will continue to diversify and expand. It is increasingly important to have a robust evaluation for the environmental impact such as GHG emission based on a scientific approach.

The UN Conventions on Climate Change and Biodiversity and the abundancy of regional regulations on recyclability and restriction of hazardous substance content in products demonstrate the growing demand for international standards in the environmental field. A range
of other international sustainability initiatives and trends have also emerged, including: ESG (environmental, social, and governance) investing, Carbon Disclosure Project (CDP), the Task Force on Climate-related Financial Disclosure (TCFD), and Science Based Targets (SBT). Many of these have significant environmental requirements.

IEC TC 111 has worked proactively regarding the standardization needs on environmental topics by publishing standards on substances, environmentally conscious design (also referred to as ecodesign) and other relevant environmental topics. IEC TC 111 is expecting to start new work in response to standardization needs in the areas of recyclability, climate change, and environmental performance assessment of products. It is anticipated that there could be future environmental standardization needs associated with resource efficiency and smart cities concepts. IEC TC 111 would respond to such new and prospective business needs by providing expertise in environmental aspects and impacts.

Further expectations on GHG emission reductions by digitalization of electrotechnical products (including services) are also raising attention with Paris Agreement for both mid- and long-term targets.

For economic growth, one must consider natural resource availability. This concept of “Resource Efficiency” is designed to maintain growth and promote improvement in quality of life globally in the face of resource depletion and cost increases. Governments are considering legislative frameworks to provide the economic conditions for an “environmentally-conscious economy”. These legislative frameworks include:

- Implementation of environmentally conscious design in products;
- Waste reduction and recycling requirements to boost a circular economy.

There are many emerging environmental performance programs (certifications, registries and logos) across different products and regions (e.g. EPEAT, ECOLOGO, Ecolabel, Eco Mark, Blue Angel). The creation of these programs is driven by a market and regulatory environment that is trying to interpret the complexity of environmental performance. Such simplification and standardization of environmental performance is needed by purchasers and other stakeholders that are not experts in the evaluation of environmental aspects. The environmental assessment programs have generally been regional and many of the environmental performance criteria for these programs are inconsistent. The lack of standardization results in duplication of work and confusion within the market. There is growing market demand and industry demand for global harmonization of these criteria.

The growing use of nanomaterials is a technology trend in electrical and electronic products and systems. The interest from several countries in tracking and regulating nanomaterials is expected to lead to new environmental regulatory requirements.

G. SYSTEMS APPROACH ASPECTS (SEE DIRECTIVES PART 1 ANNEX SP)

TC 111 is not considered a system committee. A systems approach is not applicable.

H. CONFORMITY ASSESSMENT

TC 111 has published and/or is developing standardization documents that support conformity assessment of products and processes, such as:

- standards covering test methods for the determination of the levels of substances in materials/products (IEC 62321 series) in support of hazardous substances legislation world-wide
- guidance for evaluation of product with respect to substance-use restrictions and technical documentation requirements (IEC/TR 62476)
- standard for technical documentation for the assessment of products with respect to the restriction of hazardous substances (IEC 63000)
standards related to exchange of information on materials in products (IEC 62474 database on material declaration)

Due to the structuring potential of standards on (upcoming) environmental legislations, TC 111 standards have the potential to positively influence the harmonisation of requirements specified in legislation and with it conformity assessment worldwide.

I. 3-5 Year Projected Strategic Objectives, Actions, Target Dates

<table>
<thead>
<tr>
<th>Strategic Objectives 3-5 Years</th>
<th>Actions to Support the Strategic Objectives</th>
<th>Target Date(s) to Complete the Actions</th>
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</table>
| 1. New and improved harmonized test methods for regulated substances | Continue to develop new and improved harmonized test methods for regulated substances. New substances include:  
- Phthalate substances  
- BPA  
- Other substances as identified by IEC TR 62936  
Test method development - Guidelines for substance selection  
JWG14: Collaboration with ISO TC 61/SC 5/WG 11  
- TCEP | On-going |
| 2. Up to date and comprehensive material declaration requirements for the electrotechnical industry | 1. Maintenance of IEC 62474 database by VT 62474 (includes declarable substance list, material class list, exemption lists and data exchange format  
2. Update IEC 62474-1 guidance document based on IEC 62474 – 2018 and latest industry requirements. | Two updates per year  
Publication in 2022 Q3 |
| 3. Joint ISO/IEC standard for material declaration. Note: The joint standard is to reflect the disappearing boundary between electrotechnical and other products, supply chain overlaps and the need for harmonization across product sectors. | 1. NWIPs in ISO TC 207/SC 1 and IEC/TC 111 to approve JWG for ISO/IEC 62474(approved Q1 2021)  
2. Launch JWG for ISO/IEC 82474-1 (First meeting in Q2 2021)  
3. Development of Dual Logo standard | CD planned 2022 Q1  
Planned publication end of 2023 |
| 4. Develop standards and guidance for demonstration of due diligence for substance restriction conformity | Evaluate the need for an update of IEC/TR 62476 on Guidance for Restricted Substance Controls  
Maintain IEC 63000 to meet industry needs | 2021: AG2 to review the contents of the TR to investigate the need for a revision or withdrawal of this document |
| **5. Develop technical guidance and examples to support the published dual-logo ISO/IEC standard (IEC 62430 Ed.2) on Environmentally Conscious Design** | • **align with updates to reference documents (IEC 62474:2018)** | Expected IEC 63000 AM1 publication in 2021 |
| 6. Develop minimum requirements for the **collection, logistics and treatment of WEEE** in order to minimize environmental impacts. | • **Development of TR with examples showing application of ECD requirements** | Proposal for TR development in 2022 |
| 7. **Standardized methodologies and rules for carbon footprint calculation of EEE** | TC 111 to consider CENELEC offer of standards (possible NWIP to consider EN 50625 series of standards and other regional deliverables) | CD 2022 Q2 Forecast publication in 2024 Q1 |
| 8. **Environmental performance criteria** that are consistent and compatible. (Develop a standardization document that specifies environmental performance criteria which are common across product sectors and may be harmonized for consistency. A set of rules for developing sector specific criteria that supplement the common criteria could be provided.) | **develop IS** | NWIP expected in 2022 |
| 9. **Product Category Rules** (PCRs) for full LCA of multiple environmental impacts to enable transparency for EPD development and improve comparability between different EPDs based on the same PCR. | **Study was completed in 2020 NWIP approved and WG launched 2021 Q1** | CD: 2021 Q4 Published IS: 2024 Q1 |
| 10. Standardization documents related to **Circular Economy** (CE) covering: | | NWIP to convert to TS with CD: 2021 Q3 |
- Efficient use of materials [rethink, reduce, refuse]
- Product lifetime / durability strategies [products designed to last longer]
- Product life extension strategies [repair, reuse, upgrade, refurbish, remanufacture]
- Materials recovery [recycling, recycled content]
- End-of-life management [harvest for life extension]

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<tr>
<th>Design Efforts</th>
<th>First PT Meeting: 2020 Q3</th>
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<tr>
<td>2. IS on assessing the proportion of reused components</td>
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<tr>
<td>3. Develop requirements strategy for CE standards with consideration of EN 4555X standards on durability; ability to remanufacture; ability to repair, reuse and upgrade; assessing recyclability and recoverability) (to be conducted by AG2. Investigate the need for standardization strategy on Critical Raw Materials (CRMs). Consideration should be given to (1) market need and (2) optimizing the full life cycle of Electrotechnical products and in particular the trade-offs between different potential ecodesign measures.</td>
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<td>4. Revision of recyclability rate TR 62635 (considering the new EN 45555).</td>
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<tr>
<th>Actions</th>
<th>CD: January 2021</th>
<th>CDV: January 2022</th>
<th>IS: December 2022</th>
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<tbody>
<tr>
<td>1. Collaboration of TC 111/AG1 with TC 111 work groups and teams</td>
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<td>2. Collaboration of TC 111/AG 1 with IEC TC1 and ISO TC 207 Terminology TF</td>
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<tr>
<td>3. Collaboration of TC 111 with IEC TC 1 JWG to develop Terminology on Circular Economy and Material Efficiency (DC distributed to all relevant TCs)</td>
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<th>Continuous Activities</th>
<th>Ongoing</th>
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<td>11. Harmonization of environmental terminology in the scope of TC 111</td>
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Note: The progress on the actions should be reported in the RSMB.