

Webinar
**Semi-conductor technology and value chain,
standardization and the energy transition**

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Housekeeping

- *The event is recorded and will be made available on the EDU4Standards*
- *You may ask questions by raising you hand or entering you question in chat*
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Outline

- The semi-conductor technology and value chain: its strategic importance to the EU and its energy transition
- Semi-conductor standardization and its soft power in shaping technology: legal, institutional and geopolitical considerations
- Geopolitics: China's influence in shaping international standards
- The EU Standardization Strategy: navigating challenges while maintaining global influence

Semi-conductor technology and value chain

and its strategic importance to the EU and its energy transition

The EU is committed to becoming energy neutral by 2050 (EU Green Deal)

- Semi-conductors: an enabler of green technologies needed to realize the energy transition
- EU semi-conductor industry: current and future earning capacity and prosperity
- An increasing demand for semi-conductors:
 - Global energy transition, AI and defence applications

Semi-conductor technology and value chain

and its strategic importance to the EU and its energy transition

A stable and secure supply of semiconductors

- Competitiveness of EU companies (economic risk)
- Dependencies and economic pressure and coercion (economic security risk)
- Dual use: strengthened military and defence capabilities (national security)

The EU promotes the competitiveness of its own economy and industry, by reducing its vulnerability to economic security risks, to become more resilient and strengthen its open strategic autonomy.

Open strategic autonomy

“The ability, as a global leader, to protect its public interests, cooperate with international partners, rely on its own insights and choices, and remain resilient in an interconnected world.”

Economic security strategy (2023)

De-risk and protect economic security

- **Promote** the EU's competitiveness and growth (e.g. the EU Chip Act)
- **Protect** economic security (e.g. the Critical Raw Materials Act)
- **Partnering** and further strengthening cooperation with countries worldwide

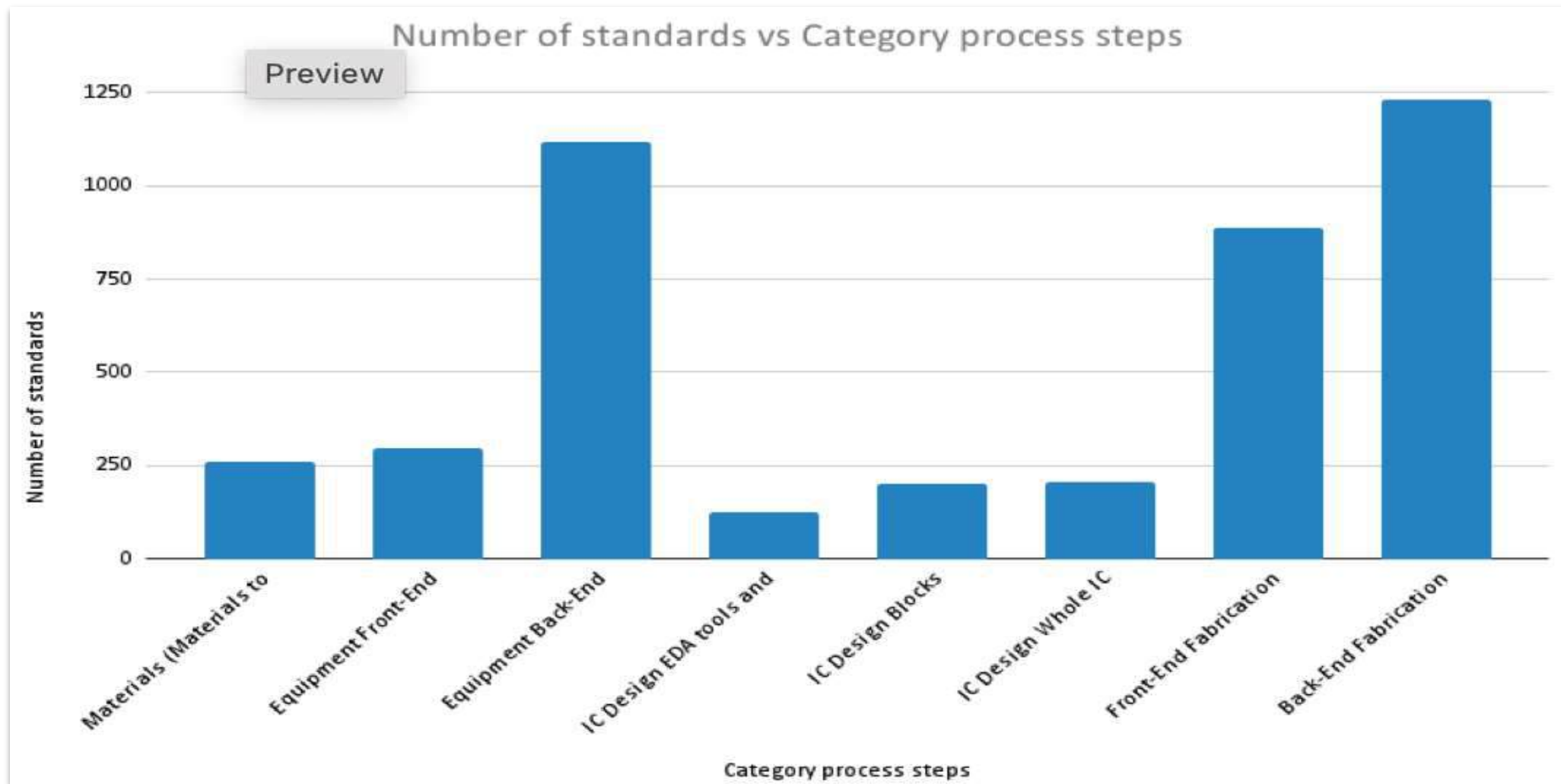
Standardization 'is important as part of the 'soft power' influence over the shape of tech developments and has therefore an indirect bearing on the EU's economic security'.

Standardization is of importance to the semi-conductor technology and its value chain: why?

- Interoperability
- Quality and safety
- Sustainability
- Innovation
- Security

5000 global standards connected with semi-conductors and chips technology

(StandICT.eu, ALLPROS.eu, & ICOS, 2025)



Standardization for Critical Raw Materials (CRM)

Metal and mineral standards

- *Classification and characteristics:* commonly agreed categorization system ensures consistency and uniformity in terminology and conventions across industry.
- *Chemical analysis & Testing:* measurement methods and techniques to determine the composition/ and/or purity of certain material.
- *Traceability and transparency:* ability to track the origins, processing and distribution of all parts of the value chain
- *Sustainability and ESG:* to demonstrate responsible and sustainable mineral supply chains and compliance with regulations.
- *Recycling:* criteria for the environmental and technical requirements of recycling technologies

The EU uses standards in support of policy and legislation. Why?

There are different approaches to referencing standards in legislation:

- **The EU “New Approach”:** Regulations and directives define essential requirements while *European standards* specify the technical specifications required.
- EU legislation may also reference standards as **mandatory**.

European Union (Regulation (EU) No 1025/2012 (art. 2)

“standard” means a **technical specification** adopted by a **recognized standardisation body**, for repeated or continuous application, with which **compliance is not compulsory**, and which is one of the following”:

- a) ‘**international standard**’ means a standard adopted by an international standardisation body;
- b) ‘**European standard**’ means a standard adopted by a European standardization organization;
- c) ‘**harmonised standard**’ means a European standard adopted on the basis of a request made by the Commission for the application of Union harmonisation legislation’;
- d) ‘**national standard**’ means a standard adopted by a national standardisation body.”

Vienna Declaration, 1991 (revised in 2001)

- Technical cooperation between ISO and CEN, with the aim to avoid duplication and increase the efficiency of standardization at the international and European level.
- Recognizes the primacy of international standardization, so that international standardization takes precedence over national standardization
- International Standards are simultaneously approved as a European Standard, and adopted by each National SDO that is a member of CEN
- National SDOs must withdraw any pre-existing conflicting requirements

How do standards enter the EU law?

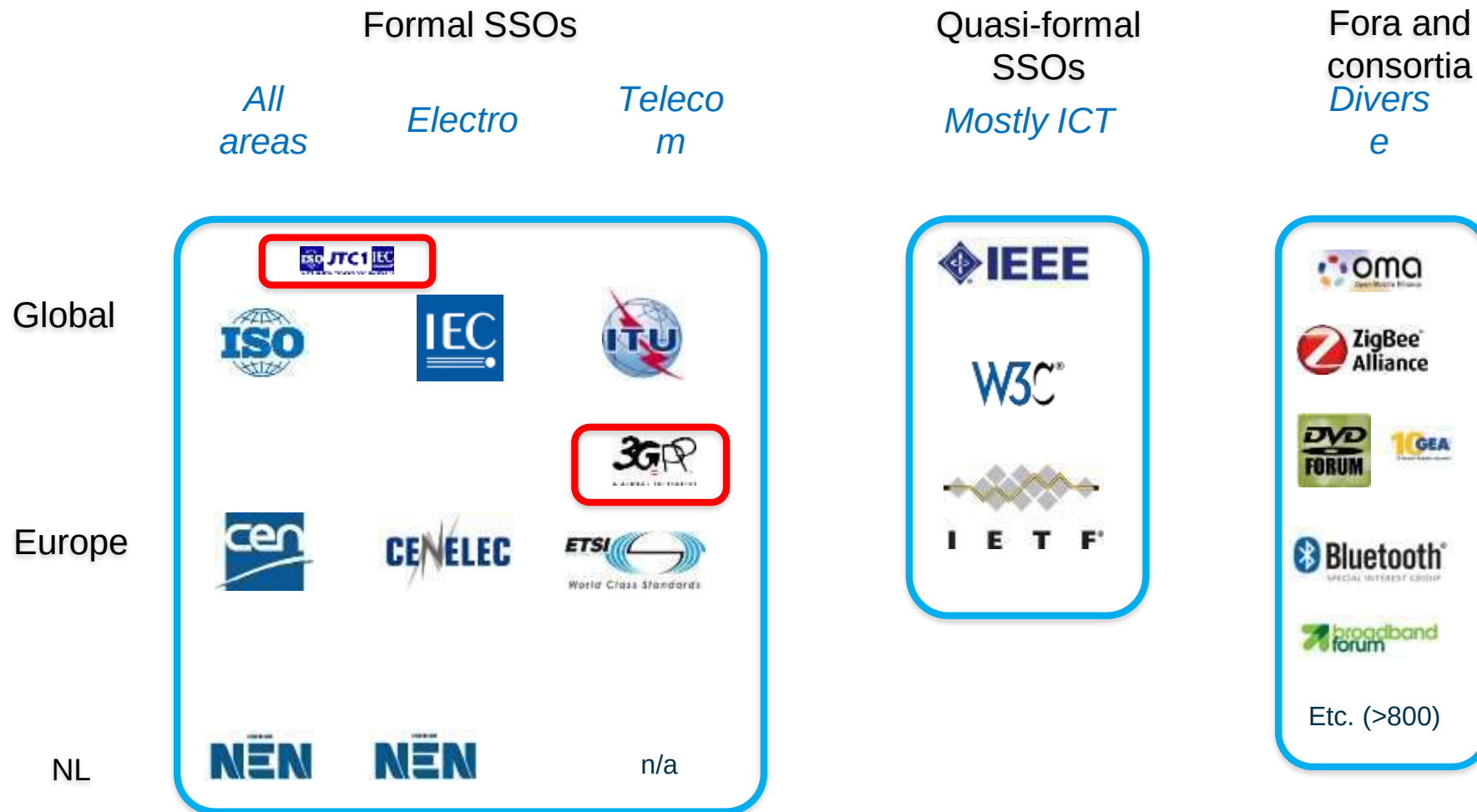


Standards, like technical solutions, are seldom neutral.

How do standards for chip industry reflect normative preferences?

- Chip design and energy use (sustainability, green).
- Chip design and embedded security: how strong is it, who has access to backdoors, etc.
- Unethical use of chip designs
- Unintended military use of chip designs

(Edu4Standards, Rudi Bekkers, 2025)



(Edu4Standards, Rudi Bekkers, 2025)

Who develops standards?

- Standardization experts, with relevant technical skills, experience and soft competences
- National delegation principle: delegates of national standards bodies represent consensus of all stakeholders in their respective countries
- Annex III organizations: ANEC, ECOS, ETUC and SMEs

(Edu4Standards, 2025)

Balance

- All representatives are allowed to express their position and comments and every representative opinion is considered
- However, it might happen in some cases that the valid opinion of a participant is noted and not further considered to be part of the standard, because it hampers the objectives of a specific group of interest. SDO governing rules tend to avoid this situation

(Edu4Standards, 2025)

ISO' definition of a 'standard'

“Document, established by **consensus** and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.”

“general agreement, characterized by the absence of **sustained opposition to substantial issues** by **any important part of the concerned interests** and by a process that involves seeking to take into account the views of all parties concerned and to recognize any conflicting arguments”.

Only views ‘maintained by **an important part of the concerned interest** and which are incompatible with the committee consensus’...”

Balance

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(Edu4Standards, 2025)

Transparency, openness, impartiality, **balance**, consensus, effectiveness, relevance, development dimension, coherence



Code of Good practise, WTO TBT Committee, 2022

Geopolitics

China's influence in shaping international standards

- Chinese standardization strategy (China Standards 2035)
 - assuming leadership positions in technical committees (secretariat or chairpositions) to shape digital technologies
 - Increased engagement in licensing governance (to reshape interpretation of FRAND terms)
 - Digital Silk Road (Belt and Road Initiative- BRI): promoting Chinese technical standards in BRI countries
- (Gamito, 2025; Rühlig, 2023)

Why does China want to shape international standards?

- **Competitiveness:** IPR and licensing fees
- **Regulatory and legal influence:** (EU) market access
- **International Trade Law:** technical regulation must be based on international standards, or the relevant parts thereof - if these standards exist or their completion is immanent (TBT Agreement: Article 2.4)
- **Security:** exploiting vulnerabilities that undermine cyber, network, IT security
- **Lock-in dependencies:** use of Chinese standards for critical infrastructure in BRI countries creates dependencies, which can be used to achieve security policy goals
- **Values:** technological standards spread political and societal values

(Gamito, 2025; Rühlig, 2023)

European Commissions' Standardization Strategy (2022)

Strategic importance of standards: The EU's policy ambitions and objectives for a digital and green transition of EU industries and a well-functioning and resilient single market cannot be realized without standards

Policy challenges and five action points

- Prioritizing standardisation and speed
- Governance and integrity of the European standardisation system
- European leadership in global standards
- Support innovation
- Education and research

Action point

Prioritizing standardisation and speed

Standardization urgencies: standards are needed to avoid strategic dependencies and to manifest the EU's global leadership in green and digital technologies (e.g. standards to support recycling for CRM)

Speed of standard development: reduce the time between adoption of a harmonized standard and its formal delivery to the commission.

Action point

Prioritizing standardization and speed

- **High level forum**
- **EU excellence hub on standards**
- **Chief standardization officer**

Action point

Governance and integrity of the European standardization system

- Legislative proposal amending Regulation (EU) No 1025/2012
- Modernizing the ESO's governance and inclusiveness

The EU seeks to ensure harmonized standards reflect EU interests and values

Navigating challenges (*while maintaining global influence*)

- Delegated authority: shaping standardization outcomes without undermining the EU standardization system (politization), and its legal arquis
- Are those developing the standard equipped to understand and identify all relevant values, translate them to technical properties, and implement them?
- Global relevance of harmonized standards: competition between standards, a race to the bottom or the top?
- Justiciability: Access and contesting standard that undermine EU public objectives?

Opportunities: to promote European values and interests



Challenge: to ensure the resilience of the EU standardization ecosystem, and the global relevance of EU standards

Thank you!

Questions?

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