行政院及所屬各機關因公出國人員出國報告書
（出國類別：開會）

「出席全球環保標章網路組織 2023 年會、國際論壇及研討會」報告

服務機關：環境部

姓名職稱：林慧華科長、許勝雄薦任技士

派赴國家/地區：德國/科隆

出國期間：112 年 10 月 22 日至 112 年 10 月 28 日

報告日期：113 年 1 月 8 日

摘要：

本次主要係出席全球環保標章網路組織（Global Ecolabelling Network，簡稱GEN）辦理之年度會員活動，該組織成立於西元 1994 年，係針對產品與服務生態標籤之第三方環境績效標籤組織所組成的非營利性協會，我國以財團法人環境與發展基金會（以下簡稱環發會）名義參加，為創始會員之一。

本次開會重點包括：

一、全球環保標章網路組織為全球最大的環保標章國際組織，我國代表曾擔任主席與多屆董事，具相當影響力。

二、我國之環保標章與綠色採購，於全球屬技術領先者，歷年已提出許多報告向各國分享。本（112）年度以我國綠生活推動，及環保標章追蹤查核作業對標章完整性之貢獻為題，向各會員提出報告。

三、近年執行單位（環發會）主要透過以下三項途徑，維持我國於 GEN 組織中之影響力與形象地位：

（一）積極參與全球環保標章同行評鑑（GENICES）作業。

（二）凸顯我國技術優勢。

（三）爭取出席相關國際會議。

四、目前推動相互承認與發展共同核心規格標準，為 GEN 之重要政策，我國亦持續密切關注中。

目錄

壹、前言

全球環保標章網路組織（Global Ecolabelling Network, GEN）創始於西元 1994 年，係由全球三十餘個環保標章組織所組成的國際組織，目的是促進各國環保標章的推廣與推動國際合作活動。我國（以財團法人環境與發展基金會為代表組織，下稱環發會）為全球環保標章網路組織（GEN）之創始會員國之一，環發會前總經理于寧博士曾擔任該組織多屆董事與一屆主席，環發會陳靖原總經理也曾連任３屆 GEN 董事。另我國曾主辦 2 屆 GEN 年會，其中配合我國建國 100 年「2017 年 GEN 年會」，國外來賓參與人數達 48 人，創下歷屆年會參與會員數最高紀錄，迄今無人能破。

GEN 管理決策權主要在其董事會會議（Board Meeting）與年度的會員大會（GEN Annual General Meeting），本（112）年之會員大會於德國科隆辦理，為連續三年視訊年會後之首次實體年會，派員參與對維持影響力與國際交誼甚為重要。

全球環保標章同行評鑑（GENICES）作業，為我國于寧博士擔任 GEN 主席時提出，由 GEN 指派資深專家對各會員標章進行品質評鑑，作為申請正式會員之前提。我國在此領域基礎深厚，十分有利於爭取擔任 GENICES 評鑑之 GEN 專家。而 GENICES 評鑑內容在於徹底檢視各會員組織之運作狀況，再判定其組織運作是否符合 ISO 相關標準，並對其作業提出改善建議，故於此過程中可深入了解外國標章之基本程序運作細節，對於吸收外國標章經驗並用以精進我國標章制度，有明顯效益。

此外，透過如此深層之交流，GENICES 評鑑代表與被評鑑機構間，通常可以建立較深厚之情誼，對日後交流或合作甚有助益，尤其以近五年而言，執行單位（環發會）陳靖原總經理擔任 GENICES 評鑑代表期間出訪泰國、馬來西亞、新加坡、韓國等國標章組織，並透過共同擔任 GENICES 評鑑員，與香港、瑞典 SSNC、印度環保標章之負責人建立密切聯繫。

由於近年國際性環保標章推動會議多由聯合國環境署（UNE）出資贊助，我國受限於非聯合國會員，參與相關會議之機會驟減，故持續利用 GEN 本身可掌控之管道維持我國能見度益加重要。為達此一目的，執行單位自西元 2013 年 GEN 年會起逐年發表我國重要之標章執行經驗或研究成果，持續提出創新意見，凸顯我國技術優勢，成功維持我國為環保標章與綠色採購重要國家之形象地位，而近年 GEN 董事會若有技術領域議題，亦多指定由我國執行單位陳靖原總經理主持辦理。

近年我國曾提出之議題包含環保標章相互承認研究、標章產品環境效益評估、政府綠色採購推動與績效評核管考、環保標章組織效益評鑑、產品環境效益共同指標與績效評量、及全球環保標章相互承認實例盤點與分析等議題，執行單位能夠提出相關議題之基礎皆在於我國有厚實之執行經驗，後續執行單位將加強與其他環保標章相關團隊合作，如推動綠生活、環保集點等政策之團隊，設法將相關團隊之成果，亦轉化為我國於國際場合之新亮點。

以近兩年成果而言，環境部委託之執行單位已多次受邀於東南亞國家環保標章與綠色採購國際訓練班，發表視訊演說或主持實體訓練課程，此外亦利用國際邀請機會，順利推薦機關人員針對亞洲各國對永續採購與環保標章有興趣之政策制定者、專家、企業和標章從業人員，分享我國之發展經驗，鞏固並提升我國於此領域之領先地位。

而本年度參與 GEN 年度會員大會，我國發言內容主要集中於推動相互承認並發展共同核心規格標準議題，此外亦提出我國以環保標章推動綠生活，並透過追蹤查核保障環保標章完整性之報告。在相互承認與共同核心規格標準議題，我國重點在於強調 GEN 各會員國有不同之人文與自然環境，GEN 應尊重各國環境差異，不宜干涉各會員國如何經營其本土市場，應將跨國合作重點集中於如何透過共同標準促進國際綠色貿易，此觀點亦受到印度、香港等會員之支持。

關於推動綠生活與追蹤查核機制議題，一方面是呼應 GEN 主席，希望以環保標章作為社會大眾參與淨零、SDG 議題之途徑，另一方面在於歷年執行各國 GENICES 同行評鑑之過程中發現，許多新興環保標章組織，或受限於資源，完全未考慮建立標章發證後之追蹤查核作業，且歷年標章年會似乎從未有國家就此議題進行討論或提出報告。而我國在此領域投入大量資源，以此為題進行報告，一方面可協助外國標章組織體認後市場管理之重要，與可能之執行方式及技巧，而另一方面是再次凸顯我國環保標章於各層面之全面優越性。

貳、出席會議人員及行程

本次會議由環境部綜合規劃司科長林慧華、薦任技士許勝雄，以及財團法人環境與發展基金會陳靖原總經理、張耀天研究員（表一），共計 4 人赴德國科隆參加，出國期間自 112 年 10 月 22 日至 10 月 28 日，行程如表二。

表一、本次參加會議成員

單位	職稱	姓名
環境部綜合規劃司	科長	林慧華
	薦任技士	許勝雄
財團法人環境與發展基金會	總經理	陳靖原
	研究員	張耀天

表二、出國行程

日期	內容概要
112.10.22	啟程，出發前往德國科隆。
112.10.23	法蘭克福轉乘德國國鐵並抵達科隆。
112.10.24	赴德國科隆 TUV 萊茵公司總部，參與“Conference Sustainability of

日期	內容概要
	Products”產品永續性研討會，與會報告者包括德國 TUV 萊茵公司總裁、歐盟司法・消費者總局副處長、德國 TUV 萊茵公司產品經理、德國 TUV 萊茵公司 GEN 代表、德意志電信公司代表、德國 TUV 萊茵公司永續性專家、德國 GREENZERO 公司代表，與德國 TUV 萊茵公司技術能力中心等。
112.10.25	參與全球環保標章組織（GEN）年會與工作討論會（Workshop）。中國品質驗證中心（CQC）受限於行程安排，無法依原規劃參與 26 日之年會後工作討論會，故特別提前於 25 日提出該組織參與推動之杭州亞運會千島湖園區低碳措施。當日午餐後，主辦單位依往例，安排市區參訪行程，提供出席之各會員代表社交互動，增進交誼之活動。
112.10.26	參與年會後工作討論會（Workshop），並報告我國環保標章推動與追蹤查核成果。
112.10.27	搭乘德鐵赴法蘭克福，並搭機返臺。
112.10.28	返程，抵達臺灣。

參、會議目的

本次行程之最主要目的，包括掌握全球環保標章與永續生產消費最新動態、收集歐盟政府綠色產品設計指令與綠色聲明（green claim）管理指令提案、宣達我國環保標章與綠生活推動績效、與展現我國環保標章技術領先優勢等。

肆、會議過程

一、10 月 24 日：當天研討會上午場會議之報告議題，包含歐盟永續產品生態設計法規（Ecodesign for Sustainable Products Regulation, ESPR）、歐盟環境綠色聲明（green claim）管理指令提案、產品維修權相關法規、GEN 與綠色產品驗證介紹、及德意志電信公司提出之超越法規之產品綠化目標。下午場會議之

討論議題，則包含產品生命週期分析、減量與永續策略、循環經濟下的回收料要求、與 ESPR 下的數位產品護照。

	
圖 1、TUV 萊茵公司總部	圖 2、與會人員參與研討會

二、10 月 25 日：參與全球環保標章組織（GEN）年會與工作討論會（Workshop），年會之主要議題包含通過西元 2022 與 2023 年財務報告與規劃、接受佳能（CANON）公司為新附屬會員（affiliate member）、決定 GEN 秘書處新合約、董事會報告西元 2022 年對外溝通成果、票選 3 名董事會成員、與各工作小組（subcommittee）提出工作報告、頒發 GENICES 同行評鑑證書等。

	
圖 3、與會人員參與年會與工作討論會	圖 4、頒發 GENICES 同行評鑑證書

三、10 月 26 日：參與年會後工作討論會（Workshop），報告之主要議題包含結合環保標章以推動永續採購（Sustainable Public Procurement,簡稱 SPP）、精進環保標章與永續採購以因應氣候變遷與生物多樣性議題、全球綠色採購聯盟最新發展、北歐天鵝標章之數位化發展、以環保標章推動聯合國 SDG12、印度

營造業如何以環保標章推動淨零轉型、如何透過結盟力量推動永續（CANON公司）、環境效益評估與永續採購、歐盟更新環境綠色聲明（green claim）管理指令提案、澳洲/紐西蘭標章調和與合作、新加坡標章最新發展等，並報告我國環保標章推動與追蹤查核成果。

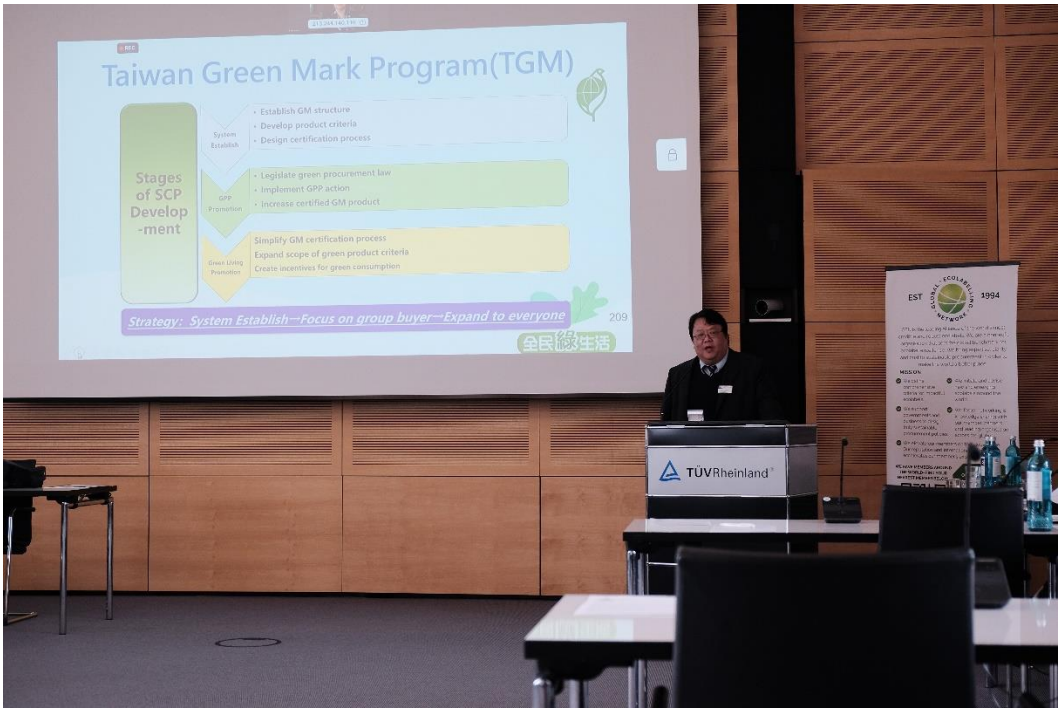

圖 5、財團法人環境與發展基金會陳靖原總經理向各國說明我國綠色採購推動成果

表三、公務出國期間國外人士個人資料彙整表

會議名稱	姓名	單位職稱	國別	專長領域	會晤日期	交流內容	備註
2023全球環保標章網路組織(GEN)年會前研討會	Mr. Bjorn-Erik Lonn	Nordic Ecolabelling Board, General Manager	挪威	環保標章	10.24	1.介紹我國環保標章進展。 2.表示我國對於國際合作之重視，並樂意配合GEN推動區域性環保標章合作。	Mr. Bjorn-Erik Lonn為前任GEN主席。
2023	Linda	Green	香港	環保標	10.24	交換於香港	何女士

會議名稱	姓名	單位職稱	國別	專長領域	會晤日期	交流內容	備註
全球環保標章網路組織(GEN)年會前研討會	W.P.HO	Council, General Manager		章、其他綠色生活措施推動		推動民間企業綠色採購之心得與可能困難。	為香港環保促進會負責人，亦為香港環保標章主持人。
GEN Workshop	Mr. Hiro Koayashi(小林弘信)	Japan Environment Association (JEA)	日本	環保標章國際合作	10.25	1.小林先生再次表示十分希望能針對台日影像設備產品完成相互承認合約換約。 2.討論我國環保標章出訪 JEA 可能性。	小林先生負責日本環保標章之國際合作業務。
GEN Workshop	Ms. Svetlana Berzina	President, Living Planet Ukraine	烏克蘭	國際合作	10.25	1.討論我國與烏方如何落實雙邊相互承認協議。 2.烏方期望我國擔 CCC 研擬工作。	Ms. Svetlana Berzina 為本次會議主辦方代表。

伍、會議成果

一、掌握全球環保標章與永續生產消費最新動態：本次行程透過參與永續產品研討會，發現目前多已 SPP（Sustainable Public Procurement, 永續公共採購）取代 GPP（Green Public Procurement, 綠色公共採購）。GPP 之定義為滿足政府採購需要的同時，可兼顧員工健康、社會福利與環境保護。然而，有關何種採購作為可列為 SPP，迄今並無明確定義。以國際間對“永續”之常見定義，應包含環境、社會、經濟等三大要素，然而除“環境”一項之綠色採購有較

明確範圍外，對於“社會”、“經濟”兩項之客觀判定原則較不明確，故有必要持續掌握歐盟對“永續產品”之最新指令內容，以釐清“永續產品”與“綠色產品”間之差異。

二、收集歐盟政府綠色產品設計指令與綠色聲明（green claim）管理指令提案：依據本次由歐盟司法-消費者總局副處長提出之專題報告，歐盟評估在其境內，約有半數之產品環境宣告或訴求是虛偽不實或具欺騙性。為解決此一問題，歐盟期望透過綠色產品設計指令、綠色聲明管理指令、與數位產品護照等方式對抗漂綠行為。此三項措施對於未來之產品環境標章與宣告，可能發生影響，故未來有必要密切觀察與收集相關指令與政策之發展。宣達我國環保標章與綠生活推動績效：與絕大多數 GEN 會員相較，我國對於永續生產消費之推動，起步較早且有完整之策略規劃，由標章制度的建立，到透過政府綠色採購擴大綠色產品市場，再基於政府綠色採購成果全面推展綠生活，提供全民直接參與淨零、及落實聯合國 SDG 的途徑。本次透過在 GEN 年會中完整闡述我國執行思維與實際成果，可以提供許多近年新加入 GEN 之新興環保標章國家與組織，明確可以參考遵循之推動模式範例，也可以展現我國於此一領域之最新策略與成效。

三、展現我國環保標章技術領先優勢：本次年會我國提出之報告，除了介紹我國在永續生產消費推動的各階段策略成果外，另一個重點便在於介紹我國為維護環保標章公信力與完整性，所採取的追蹤查核作業及近年成果。提出此一議題之原因，在於歷年執行各國 GENICES 同行評鑑之過程中發現，許多新興環保標章組織，或受限於資源，完全未考慮建立標章發證後之追蹤查核作業，且依執行經驗，歷年標章年會似乎從未有國家就此議題進行討論或提出報告。而我國在此領域投入大量資源，以此為題進行報告，一方面可協助外國標章體認後市場管理之重要，與可能之執行方式及技巧，而另一方面是再次凸顯我國環保標章於各層面之全面優越性，甚至可能如當年政府綠色採購

議題，促成國際間重視而成為熱門討論議題。

陸、心得與建議

參與本次行程之最重要心得在於確認綠色產品相關之標章、標誌、與環境訴求，確實已經成為國際間之重要議題，而歐盟針對此一議題，預計透過 ESPR、環境綠色聲明管理、數位產品護照等方式著手管理，此一發展值得我國持續關注借鏡。此外，國際間對於透過政府採購力量推動永續發展與 SDG，亦已逐漸形成共識，而各國也都承認環保標章是永續採購或綠色採購的重要工具，凸顯環保標章之重要性與價值。

相互承認與共同標準再次成為 GEN 內部重要議題，我國透過參與小組運作，目前已經成功扭轉主持研究之烏克蘭提議以歐盟標準統一全球環保標章標準之提議，後續該小組仍將邀集各會員國，重新展開共同核心標準研擬，預計環保旅館可能為第一項案例，我國亦將持續參與，以發揮影響力。

為持續精進並維持我國之技術領先與國際影響力，提出以下建議：

一、加強收集歐盟對於綠色產品與綠色環境訴求之指令，以掌握國際潮流：由本次會議觀之，歐盟提出之報告亦承認歐盟市場上，約有半數之產品環保訴求是虛偽不實或具欺騙性，亦由此導出應對產品提出之環境資訊或環境訴求進行第三方查證或加以管理之結論。我國核發之各類綠色標章雖維持相當良好之公正性與公信力，然近年也發現有必要對廠商自我提出之產品環境訴求或廣告進行約束或管理，可加強收集參考歐盟提出之指令與管理措施，以為我國精進之參考。

二、觀察全球 “永續政府採購” 之後續發展，並視需要納入我國綠色採購範圍：如前所述，目前全球皆以 “SPP (sustainable public procurement)” 為政府採購目標，但亞洲國家多半仍以 “GPP (green public procurement” 為推動範圍，此一議題於執行單位 112 年 9 月份赴曼谷主持跨國研討會時亦已發現

並討論，然目前國際間對於 SPP 並不像 GPP 已有較明確之執行原則與範疇界定，此點仍需持續關注，並視需要評估是否調整我國之政府採購政策。

三、配合國際合作需求重新檢視我國標章驗證方式：如前所述，標章相互承認本次再次成為議題，本次年會俄羅斯與印度也再次推出新的合作方案。由於我國環保標章技術領先，時有國家向我國表達相互承認意願，以目前狀況而言，近期泰國標章組織與日本標章組織皆希望與我國就如何落實相互承認協議在行商談。然而，由於我國環保標章之驗證流程相較其他國家更為嚴謹，絕大部分有意與我國進行合作之標章皆難達到我國要求之嚴謹度，常造成國際合作或相互承認之問題，故需要就國際合作需求檢視我國標章驗證方式。

四、持續參與 GEN 工作小組並實際投入工作：如前所述，GEN 設立之 Common Core Criteria 工作小組，將繼續於烏克蘭籍 GEN 董事之領導下繼續推動共同核心標準，然依西元 2023 年執行經驗，發現其視角偏重歐洲經驗，容易忽略亞洲國家特性與需求，故有必要持續積極參與，反映我國與鄰近亞洲國家需求，以免未來該小組提出之結論建議，對我國與亞洲國家產生衝擊。

柒、附錄

1. 本次會議簡介資料掃瞄（第 1~16 頁）
2. 本次會議簡報（因無提供紙本資料及簡報檔，經主辦方同意後，以相機拍攝螢幕）（第 17~65 頁）
3. 交流名片掃描（第 66 頁）

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Procurement for People and the Planet

Solutions for sustainable procurement dedicated to governments and businesses

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Sustainable Procurement Solutions

The power of procurement for people and planet is a much-needed tool for driving circular economy solutions, future innovations and saving money!

As most organizations spend 40 to 80% of their financial resources in their supply chains, sustainable procurement is a powerful instrument and lever for governments, organizations and communities wishing to purchase more sustainable products and services, while also contributing to the achievement of the United Nations Sustainable Development Goals. "Public procurement, which amounts to over US$13 trillion annually at global level" and "public and private procurement, accounting for roughly 20-30% of global GDP each year" (Sustainable Public Procurement 2022 Global Review).

Through sustainable procurement, organizations can better manage costs, ensure compliance with major regulations and policies, protect their reputations, and increase their competitive advantage in increasingly complex markets. Sustainable procurement is procurement that takes into account of the environmental, social, and economic impacts possible over the entire product life cycle.

Ecolabelling- based on the type 1 environmental labelling program and life cycle considerations, indicates overall environmental preferability of the product/service, has gradually become the mainstream for sustainable procurement practice.

A whole- of- life cycle perspective is key because impacts on people and the planet are created at many different stages of a service and product's life - and more sustainable products, often result in significant cost savings for the user over the life of the product, through energy savings, and lower disposal fees, for instance.

SO WHAT IS SUSTAINABLE PROCUREMENT?

Sustainable procurement is the process of acquiring goods, services, and works in a manner that takes into account environmental, social, and economic sustainability. It involves integrating sustainability criteria into the procurement process to ensure that the products and services purchased:

- minimise negative outcomes and optimise positive outcomes for society and the planet;
- align with an organization's commitment to environmental protection, social responsibility, and long-term economic viability; and
- provide good value for money, from a lifecycle cost perspective

WHAT IS SUSTAINABLE PUBLIC PROCUREMENT?

Sustainable Public Procurement (SPP) integrates sustainability considerations specifically into the public procurement process. It involves making purchasing decisions that not only meet the immediate and long term needs of government entities but also consider social, economic, and environmental impacts throughout the entire product or service lifecycle. The primary goal of SPP is to take into account if the environmental and social outcomes while also maximizing value for money. SPP are about going beyond traditional procurement practices, which often prioritize compliance, cost and quality, by adopting a triple-bottom-line approach.

Incorporating ecolabels based on ISO 14024 into procurement processes enables public entities to consider the long-term costs and benefits of their purchasing decisions. By choosing products and services with lower lifecycle costs, public procurers can contribute to cost savings, environmental protection, and sustainability in the long run.
When considering public procurement, the economics of spending public funds and its associated impacts, governance and ethical considerations are critical. Sustainable procurement including SPP considers not only economic factors but also social and environmental factors. Economics with longer term considerations and through a lens of good governance are key to ensure that the true cost is measured and considered.

Life cycle thinking is fundamental to this approach in order to ensure decision making and communication is done responsibly.

> SPP is a powerful lever for the government to leverage the green development of the economy, with typical public procurement characteristics and a market-oriented role. It is not only an important measure of purchasing public goods and services but also an effective policy tool. - **China Environmental United Certification Center**

Sustainable Public Procurement decisions consider:

1. **Environmental Considerations:** through reducing the environmental impact of government purchasing activities. It involves selecting products and services that are energy-efficient, have a lower carbon footprint, use fewer natural resources, are recyclable or biodegradable, and minimize harmful emissions and pollutants.
2. **Social Considerations:** takes into account the social aspects of procurement. This includes ensuring fair labour practices, health and safety, , promoting diversity and inclusion in supplier selection, and avoiding products that may have been produced using child labour or under exploitative working conditions.
3. **Economic Considerations:** While environmental and social factors are critical, sustainable procurement also considers economic aspects. It aims to obtain the best value for money over the entire lifecycle of the purchased products or services. This may involve evaluating life cycle costs, including maintenance, disposal, local acquisition, fairness / anti corruption regulations and energy expenses.
4. **Policy and Legal Frameworks:** Many governments develop policies, guidelines, and legal frameworks to support and enforce SPP practices. These frameworks may set sustainability targets, require specific certifications or standards, or mandate that certain percentages of procurement must be sustainable.
5. **Supplier Engagement:** it is important to engage suppliers to encourage more sustainable products and services. This can lead to market transformation, with suppliers adapting their practices to meet the demand for environmentally and socially responsible offerings.
6. **Life Cycle Thinking:** Sustainable procurement considers the entire life cycle of a product or service, from raw material extraction to disposal or recycling. This approach allows for a comprehensive assessment of environmental and social impacts throughout the product's life.
7. **Stakeholder Collaboration:** both sustainable procurement and SPP requires collaboration with various stakeholders, including government departments, suppliers, civil society, and experts. Involving stakeholders ensures that the procurement decisions reflect a broad range of perspectives and expertise.
8. **Measuring and Reporting:** SPP may include measuring and reporting the environmental and social benefits achieved through sustainable procurement. This helps assess progress, identify areas for improvement, and demonstrate the impact of sustainable purchasing decisions.
9. **Sustainable Development Goals (SDGs)**: SPP aligns with the United Nations Sustainable Development Goals (SDGs), as it contributes to the achievement of environmental protection, social well-being, and economic prosperity. Overall, Sustainable Public Procurement aims to leverage the purchasing power of governments and public entities to drive positive environmental and social change while also promoting economic efficiency and responsible governance. By integrating sustainability considerations into the procurement process, SPP contributes to building a more sustainable and resilient future for societies and the planet.

WHY

WHY DO WE NEED SUSTAINABLE PROCUREMENT/PUBLIC PROCUREMENT?

Sustainable development should be based on the premise that we protect the planet of human beings, which has been a global consensus. Agenda 21, a global action plan for sustainable development, adopted by 183 countries at the United Nations Conference on Environment and Development (UNCED Earth Summit) held in Rio1992, pointed out:

> "The major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production". - **UNCED Earth Summit**

Organizations spend billions annually on the procurement of goods and services. The need for sustainable procurement is unequivocal - there is broad consensus that social and environmental factors are inseparable from economic success. The close connection between financial goals and social and environmental goals, where they are internalised into the way organizations manage their supply chains through procurement, is a prerequisite for success over the long term. (source: Australian sustainable procurement guide ISO 20400).

If we account for environmental degradation, the cost of climate change adaptation, social welfare and human health impacts through the provision of medical care, the economic argument is clear.

Procurement policies and procedures regarding ethics are also key contributors to organizational behaviour and reputation. Consumers expect more from businesses and governments and the time for consumption without consciousness and sustainability is over.

MATERIALS MATTER

We only have one planet and we are currently living well beyond our boundary of one planet living. Our levels and patterns of what we consume and how much are destroying our world. Find out more about One Planet Network Living:

We need practical, impactful solutions and we need them now. Whether you care about climate or chemicals, manufacturers or materials or slavery and safety, we need scalable solutions for sustainable procurement and we need to address all of these aspects, all at once.

For those private organizations – providers, distributors including group purchasers) and manufacturers working with government purchasing, it is important to note that government expectations are rapidly changing. One example of this is the European Commission's leadership on the Green Deal and green directive.

These leadership actions drive global sustainability benchmarks across the whole supply chain and therefore to stay relevant, transforming your products and services is essential.
Take a look here for more information.

THE FUTURE IS BRIGHT - GOING BEYOND BUSINESS AS USUAL

Our next generations expect more of our current and future leaders and will demand change. Whilst there are increasing expectations to buy better, there is also an opportunity to be a leading organization or government and go from good to great. The increase of market share of sustainable products provide business with the opportunity to go green.

Through working with your suppliers and manufacturers, and highlighting what good looks like, your procurement practice can transform the world of products together. As procurers, you help drive industry from good to great and it is as simple as being clear on your sustainable specifications.

CIRCULAR ECONOMY

The Circular Economy is also an emerging trend and increasingly an expectation of buyers around the world. The importance of longer-life more durable products and resource reuse needs to be a consideration for every input into every product. Ask your suppliers and manufacturers to design with the end in mind. If they know you are committing to purchasing circular solutions, there is more incentive for manufacturers to move, knowing they will be rewarded.

The type 1/ISO 14024 life cycle ecolabel is often referred to as the circular economy ecolabel.

SUSTAINABLE DEVELOPMENT GOALS

The sustainable development goals are a future focussed road map to making the world a better place.

What SDSGs are part of your sustainability strategy and why?
How are you achieving SDG success?

SDG 12- responsible consumption and production is a priority focus when it comes to procurement spend.
Given the spending on your products and services, this is where the biggest positive impact can be created. Money does make the world go around and you can make it count.

SDG 12 - Ensure sustainable consumption and production patterns
SDG 12.7 - Promote public procurement practices that are sustainable, in accordance with national policies and priorities
SDG12.7.1 - Number of countries implementing Sustainable Public Procurement (SPP) policies and action plans
Learn more information on SDG Goal 12.7.

The specific target of SDG12.7 (Promote public procurement practices that are sustainable, in accordance with national policies and priorities) is measured through indicator SDG12.7.1)Number of countries implementing Sustainable Public Procurement (SPP) policies and action plans).

Let us all work together to achieve this goal

> SPP has the potential to leverage some of the largest procurement budgets in the world for driving down climate impacts and achieving more resilient, responsible supply chains across a multitude of product categories **- Clare Hobby, TCO**

> 'We Are the First Generation that Can End Poverty, the Last that Can End Climate Change' **- Ban Ki -moon, Secretary-General Stresses at University Ceremony**

> **Example of SPP:**
> **At present, China is committed to green development and vigorously promotes green production and consumption. The implementation of SPP can greatly promote the formation of a green industry market and the realization of SCP macro market effects. Against this background, the scale of SPP will continue to grow in China.**
> **In the context of a global response to climate change, reduction of plastic pollution and protection of biodiversity, as a powerful tool for the government to promote green development, SPP will be more opportunities in the future - China Environmental United Certification Center**

HOW

HOW DO WE BUY BETTER

We know buyers and purchasers are often busy navigating competing and often conflicting priorities- including economic limitations, so how do you make a profound difference across your supply chain? How do you understand your top priority impacts and compare suppliers in a fair and transparent way? This is where the role of international standards and ecolabels are critical to ensure we are truly delivering on our sustainable development goals and beyond.

Once you have decided what impact areas to focus on, how do you know what to buy and why? What does good look like?
There is often the complexity of life cycle analysis and reams of data which unless you are technically trained in environmental science are prohibitive to interpret and implement.

There is good news.

Procurement organizations sometimes face resource constraints (including lacking the necessary time and expertise) when it comes to the implementation of sustainable procurement practices. This may lead to a situation where price plays the most significant role in the selection criteria for tenders and qualitative factors take a back seat. Therefore, it is essential to provide them with incentives and assistance to facilitate the implementation of sustainable purchasing initiatives.

> Procurement as a profession is charged with a larger scope than ever. As procurement becomes a more strategic tool for supporting an organization's sustainability objectives, there is a challenge in knowing what tools are available to support a more sustainable product choice, and most importantly, which of those tools deliver the relevant criteria and verification essential to true environmental and social responsibility progress - **Clare Hobby, TCO**

Progress on the implementation of SPP in Ukraine in 2017-2020 has been significant. More information can be found here.

ECOLABELS MAKE IT EASIER - TYPE 1/ISO 14024 ECOLABELS HAVE ALREADY DONE ALL THE WORK FOR YOU.

Beware that only the true and trusted Type 1 ISO 14024 ecolabel delivers. Type 1 ecolabels are lifecycle based, meaning they develop criteria which address environmental (and increasingly, social) impacts across the entire product lifecycle, from raw materials extraction and manufacturing, through to product assembly, use, and end of life. And it focuses on the primary impacts by prioritising products and services. Whilst the ISO 14024 life cycle ecolabel is the key solution for SDG Goal 12, many of the eco-labelled products deliver solutions for the majority of the SDG's.

The ISO 14024 life cycle ecolabel is also globally known as the type 1 ecolabel.

G	Good to great- make sure the products are beyond minimum compliance
R	Relevant- the benefit is material to the product- eg paper covers sourcing of timber, not just carbon neutral
E	Ecolabel- ensure it is a full life cycle ecolabel (ISO 14024)
E	Evidence- make sure you check for a valid certificate
N	Name it- ensure your requirements are clear in bid/ tenders/ policies specifications

DID YOU KNOW?

The First Ecolabel was launched by the German Blue Angel (Der Blaue Engel) program in 1978.

ECOLABELS MAKE IT EASY: WHAT IS AN ECOLABEL?

An ecolabel, by the true definition, is awarded to a product or service that has met a ISO 14024 standard.
Ecolabels are voluntary environmental certifications that help buyers including public procurement officials identify products and services with reduced environmental impacts.
It is as easy as looking for products and services certified as an ecolabel under ISO 14024.
ISO 14024 is a guidance standard developed by the International Organization for Standardization (ISO) for Type I environmental labelling. ISO defines Type I environmental labelling as "a voluntary, multiple-criteria based, third party program that awards a license which authorizes the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations". (ISO 14024)
Ecolabels make it easy to purchase products that are better for people and the planet.

SO, WHAT ARE THE BENEFITS OF USING ECOLABELS?

1. **Sustainability:** By choosing ecolabelled products and services, public procurement contributes to sustainability goals, reducing the overall environmental impact of their operations. ISO 14024 establishes clear and consistent environmental criteria for ecolabelling, ensuring that products and services meet specific environmental performance standards. This helps procurement officials in the public sector make informed decisions when purchasing goods and services that align with their sustainability goals.
2. **Cost Savings:** Ecolabelled products often have improved energy efficiency, durability, and resource conservation, leading to potential cost savings over the product's lifecycle.
3. **Credibility and Trust:** The standard sets rigorous requirements for the certification process, enhancing the credibility and trustworthiness of eco-labels. Procurement officials including government procurement officials can rely on these labels to make environmentally responsible choices, fostering sustainable practices in their organizations.
4. **Reputation:** Embracing eco-labels showcases a commitment to environmental responsibility, enhancing the reputation of the public procurement entity as an environmentally conscious organization.
5. **Market Incentive:** By promoting ecolabelled products and services, ISO 14024 encourages businesses to adopt environmentally friendly practices. Private and public procurement's preference for ecolabelled goods creates a market incentive for companies to improve their environmental performance to meet the demand for sustainable products. Eco design also fosters innovation and circular economy solutions.
6. **International Consistency:** ISO 14024 provides a globally. recognized framework for ecolabelling, enabling harmonization and consistency across different countries and regions. This facilitates international trade and allows public procurement officials to compare eco-labels from different sources easily.

Benefits of ecolabels

Don't forget health and safety of our manufacturers and consumers.

Ecolabelled products deliver on wellbeing too!

UNEP also recommends using a government directory of environmental ecolabelled products. This way governments can prioritise impactful products and align GDP spending.

> With the global emergence of sustainable procurement, the best way to ensure that suppliers comply with the requirements of sustainable procurement tenders is to rely on 14024 ecolabels which provide through third-party certification and the consideration of life cycle impacts the assurance that products provided by suppliers possess the right sustainability attributes." - **Farid Yaker, former UNEP SPP Global Lead**

CASE STUDIES

Take a look at the One Planet Network for other ways you can help.

See what the US EPA are doing to integrate ecolabels into their purchasing solutions
The U.S. federal government is the single largest purchaser in the world spending more than $630 billion on products and services each year and, in leading by example, has the power to catalyze a more sustainable marketplace for all - reducing climate impacts, improving the health of frontline communities, preventing pollution, and increasing U.S. industry competitiveness.

The Framework for the Assessment of Environmental Performance Standards and Ecolabels provides a transparent, fair and consistent approach to assessing marketplace standards and ecolabels for environmental sustainability and for potential inclusion into EPA's Recommendations of Specifications, Standards and Ecolabels for Federal Purchasing (Recommendations).
Take a look here.

> Consumption of sustainable products and materials is the key for addressing resource efficiency at the National level and achieving sustainability goals. There is a need for implementing sustainable procurement at national level and at every organization level. Type-1 Life cycle based Ecolabels are third party tested, verified, and certified. Hence, bring in enormous credibility and enable countries and the private organizations to implement the sustainable procurement.
> **- K. S. Venkatagiri, Chairman of the Board of Directors at Global Ecolabelling Network**

Can businesses benefit too or are ecolabels just for the government purchasing?

Below are the key benefits for businesses:

- **Environmental Impact Reduction:** Using ISO 14024 Ecolabels helps the corporation identify and procure products and services with lower environmental impacts. This reduces the corporation's overall carbon footprint and resource consumption.
- **Achievement of Sustainability Goals:** By favouring ecolabelled products, the corporation actively contributes to its sustainability goals, such as reducing greenhouse gas emissions, conserving natural resources, and supporting ecofriendly practices.
- **Enhanced Corporate Social Responsibility (CSR):** Incorporating ISO 14024 Ecolabels in procurement decisions showcases the corporation's commitment to CSR and sustainable business practices. This can improve the corporation's reputation and stakeholder perception.
- **Competitive Advantage:** Corporations that use ISO 14024 Ecolabels in procurement can gain a competitive edge by positioning themselves as environmentally conscious and socially responsible organizations. This can attract environmentally conscious consumers and business partners.
- **Cost Savings in the Long Run:** Ecolabelled products are often designed for resource efficiency and durability, leading to cost savings over their life cycle. Reduced energy consumption, longer product lifespans, and minimized waste disposal costs contribute to financial savings.
- **Risk Mitigation:** Procuring ecolabelled products can reduce the corporation's exposure to environmental and regulatory risks associated with non-compliant or harmful products.
- **Meeting Stakeholder Expectations:** Investors, customers, and employees increasingly expect corporations to adopt sustainable practices. Using ISO 14024 Ecolabels demonstrates a proactive approach to meeting these expectations.
- **Supply Chain Improvement:** Encouraging suppliers to provide ecolabelled products fosters a demand for more sustainable offerings, prompting suppliers to adopt greener practices throughout their supply chain.
- **Fostering Innovation:** ISO 14024 Ecolabels promote innovation in sustainable technologies and processes. By supporting such products, the corporation stimulates research and development in eco-friendly solutions.
- **Access to Green Markets:** Many governments and organizations prefer or require ecolabelled products in their procurement processes. By using ISO 14024 Ecolabels, the corporation gains access to these green markets, expanding its potential customer base.
- **Public Relations and Brand Image:** Incorporating ISO 14024 Ecolabels into procurement decisions allows the corporation to share its sustainability efforts with the public, reinforcing a positive brand image and creating a positive impact on customers.

By using Type 1 ISO 14024 Ecolabels to guide procurement, a corporation can foster a culture of sustainability, minimize environmental impacts, and contribute to a more sustainable future, all while gaining competitive advantages and positive brand recognition.

Take a look for another global case study.

EPEAT is a lifecycle-based Type 1 ecolabel that helps government agencies, the private sector, educational institutions, and other organizations find and procure technology products that meet rigorous sustainability criteria. EPEAT is owned and managed by the Global Electronics Council (GEC), a mission-driven non-profit that leverages the power of purchasers to create a world where only sustainable technology is bought and sold.

As an ecolabel originally established in 2006 to meet institutional purchaser needs in the United States, the reach of EPEAT has grown considerably—in 2022, over 70 organizations ranging from state and national governments to universities and hospitals, reported spending $2.6B USD on EPEAT-registered products.
EPEAT is increasingly being specified by purchasers in a wide range of countries and organizations including the United States, Canada, Paraguay, Colombia, Brazil, Scotland, and a variety of European Union (EU) countries including Spain. In the United States as an example, the Federal Acquisition Regulation requires federal agencies to purchase EPEAT-registered electronic products —and in 2021 alone, the US Federal Government reported purchasing over 43 million EPEAT-registered products which resulted in estimated cost savings of almost $2 billion USD.

Global Electronics Council has spent almost two decades helping purchasers procure more sustainable electronic products and to this end, has made a series of resources available to do so, including sustainability impact overviews, State of Sustainability Research, purchaser guides, training, and sample contract language. Perhaps more importantly, purchasers can search the publicly available EPEAT Registry to find EPEAT-registered products that meet their needs across a variety of product categories, including computers and displays, imaging equipment, mobile phones, network equipment, photovoltaic modules and inverters, servers, and televisions. To learn more about how purchasers are using EPEAT to accelerate sustainable procurement, Global Electronics Council has published a series of EPEAT procurement case studies, which are available here.

EPEAT-registered products address social and environmental impacts throughout the product lifecycle, and with robust requirements for third-party verification in place, purchasers can trust that EPEAT-registered products provide real environmental and social benefits. In fact, GEC makes Benefits Calculators freely available to enable organizations to measure and quantify the financial and environmental benefits associated with their EPEAT purchases. This allows purchasers to understand the impact of their EPEAT-related purchases in terms of energy savings, greenhouse gas emission reductions, water consumption, cost savings, and more.

GEC recently published Climate Criteria which will help purchasers identify electronics with lower climate impacts. Released in May 2023, the Climate Criteria establish requirements that reduce greenhouse gas emissions, including contributing to the complex issue of supply chaindecarbonization and Scope 3 emission reductions. This is a key step in accelerating the power of the purchasing community to have a fundamental impact on global climate change.

In conclusion, using ecolabels to guide procurement allows governments and businesses to prioritise sustainability, protect the environment, and lead by example. It leverages purchasing power to drive positive change in the market, encouraging businesses to adopt greener practices and offer more sustainable products and services.

CAN I SAVE MONEY AS WELL AS THE PLANET? YES YOU CAN!

Ecolabels based on ISO 14024 can save on lifecycle costs through their focus on sustainable and environmentally responsible products and services. The ISO 14024 standard encourages ecolabelling programs to consider the entire life cycle of a product or service, from raw material extraction to disposal. This life cycle approach allows public procurers to make more informed decisions, taking into account the long-term environmental and economic impacts of their purchases. Most evidence shows that meeting the certification process is less than 3% of the product cost for the manufacturer.

Talk to your suppliers today to find out how much are their ecolabelled product range. You may find that some ecolabelled products cost about 11% more up front that products that do damage to the environment, but this is looking at economic cost from only a short-term return on investment. If you factor in the cost of not doing the right things across the supply chain, ecolabels are a cost-effective solution and the savings are well beyond the initial investment.

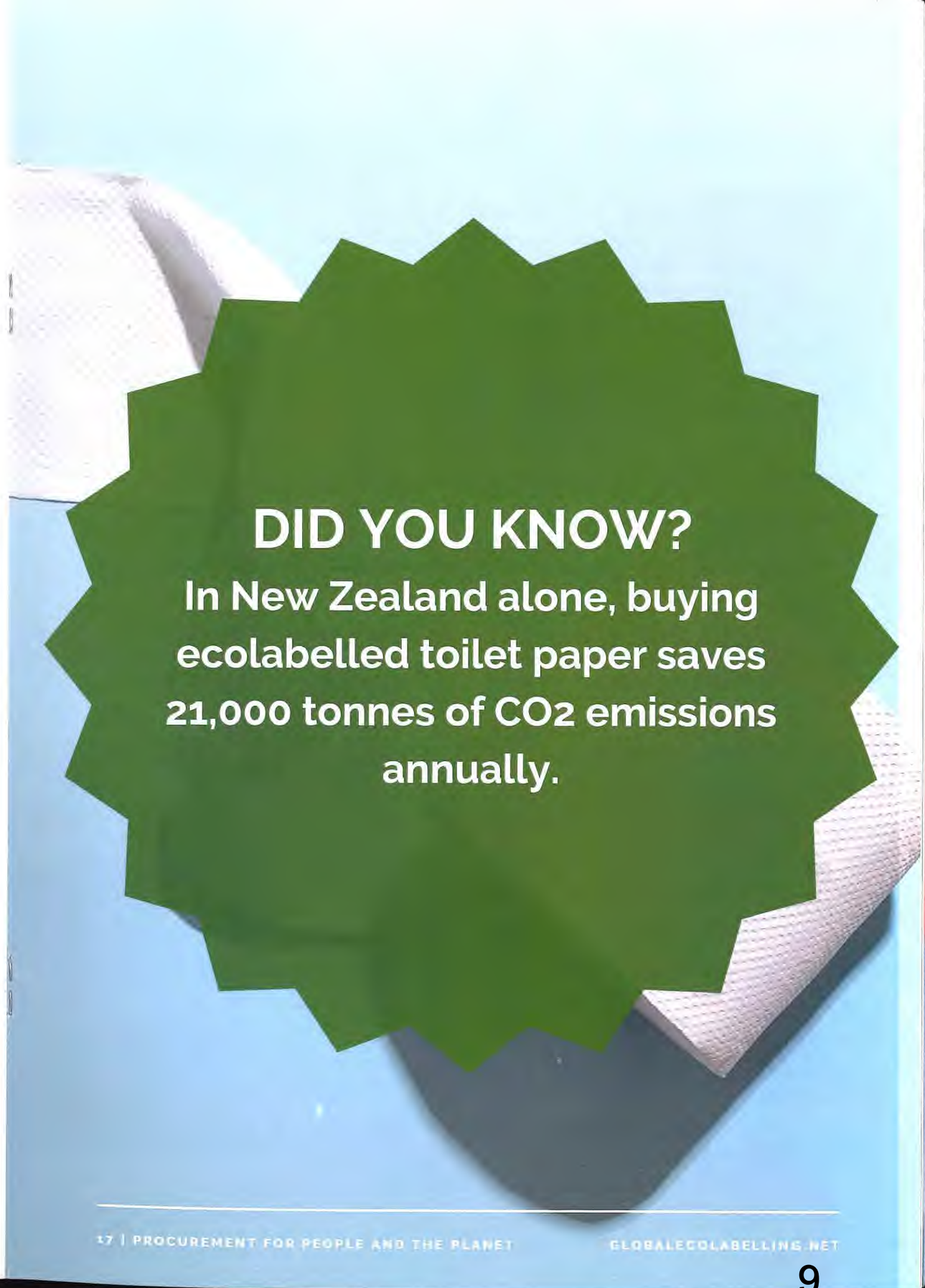
Ecolabels save money through

Here's how ecolabels based on ISO 14024 can lead to cost savings over the product's life cycle:

- **Energy Efficiency:** Ecolabels often prioritize energy-efficient products. Energy-efficient products typically consume less energy during use, leading to reduced utility bills and operational costs over the product's lifetime.
- **Resource Conservation:** Ecolabels promote products made from sustainable materials and designed for resource conservation. Such products are often more durable and have a longer lifespan, reducing the frequency of replacements and associated costs.
- **Reduced Waste:** Ecolabelled products are often designed to minimize waste generation and facilitate recycling or reuse. This reduces waste disposal costs and can even create opportunities for revenue generation through recycling programs.
- **Lower Maintenance and Repair Costs:** Products awarded ecolabels are typically designed with a focus on durability and quality. As a result, they may require less frequent maintenance and have fewer repair issues, saving on maintenance and repair expenses.
- **Health and Safety Benefits:** Some ecolabels consider health and safety aspects of products, ensuring they do not contain harmful substances. Using such products in public procurement can reduce health-related costs and liabilities associated with exposure to hazardous materials.
- **Water Conservation:** Ecolabels may prioritize water-efficient products, leading to reduced water consumption and lower water bills in the case of water-intensive products.
- **Longer Product Lifespan:** Ecolabelled products often undergo rigorous testing to ensure they meet durability and performance requirements. Choosing products with longer lifespans reduces the need for frequent replacements and, subsequently, lowers procurement and disposal costs.
- **Financial Incentives and Rebates:** In some cases, governments and utilities offer financial incentives or rebates for the purchase of ecolabelled products, further reducing the initial purchase cost.
- **Certification Process:** While obtaining an ecolabel may require upfront costs for businesses, the long-term benefits of being ecolabelled, including increased sales and access to environmentally conscious markets, can offset these costs.
- **Corporate Image and Brand Reputation:** Businesses that offer ecolabelled products may enjoy a positive reputation among environmentally conscious consumers. This can lead to increased customer loyalty and market share, contributing to overall financial sustainability.

Incorporating credible, lifecycle based, Type 1 ecolabels into procurement processes enables purchasers to consider the long-term costs and benefits of their purchasing decisions. By choosing products and services with lower lifecycle costs, purchasers can contribute to cost savings, environmental protection, and sustainability in the long run.

When considering public procurement, the economics of spending public funds and its associated impacts, governance and ethical considerations are critical.



FIGHT THE GOOD FIGHT AGAINST GREENWASHING - SINGLE ISSUE CAN BE AN ISSUE

There are many labels out on the marketplace, but many are either self-declared claims or just tend to one issue across the supply chain.
Great care needs to be taken to make sure that it is a relevant criterion for the product and the potential harm that it creates.
Otherwise, it can be a form of greenwashing.

Examples of Greenwashing

- As carbon claim on a carpet is not the most significant aspect. The most material impacts of carpets are chemical impacts on the environment and human health because of volatile organic compounds.
- Counting embodied carbon for a clothes tumble dryer is not as significant as the amount of energy that the dryer uses through its use over its lifetime.
- Packaging is often used to market an environmentally preferred product but this is often a minimal impact of the total product manufacturing.

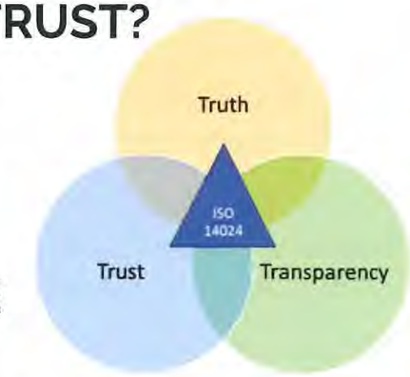
Take a look at the guidelines to make sure you are not greenwashing!
UNEP guidelines.

But I already have a carbon-neutral label- isn't that enough?
Carbon may not be the biggest impact of your product.
It is easy with ecolabelling- we do the hard work for you
All you need to do is use ISO 14024 ecolabels

> By stipulating the requirement of an ecolabel in their procurement processes, procurers can delegate the responsibility of verifying compliance with standards to the issuing entity. Consequently, this mitigates the need for procurers to individually assess the product/service's adherence to environmental requirements. Secondly, the benefits derived from ecolabelling extend throughout the entire product life cycle, spanning from manufacturing to recycling. Ecolabelled products exhibit reduced environmental impact compared to their counterparts **- Nordic Swan**

TRUST AND TRANSPARENCY - HOW DO I KNOW WHICH ECOLABELS ARE TRUE ECOLABELS AND WHO TO TRUST?

Ecolabels are voluntary and third party so they are removed from benefiting from the certification decision. They are not the manufacturer and are an independent body.



BUT HOW DO I FIND A TRUE AND TRUSTED ECOLABEL?

It is great that using ecolabels is easy to buy better, but how do I know which ones are ISO 14024 and look at the whole life cycle?
The good news is that GEN does the work for you.

GEN is the leading global expert for true ecolabels

WHO IS THE GLOBAL ECOLABELLING NETWORK AND HOW DO THEY SUPPORT BETTER PUBLIC PROCUREMENT?

The Global Ecolabelling Network (GEN) is a non-profit association of ecolabelling organizations from around the world.
We make it easy with ecolabelling and help you to fight the good fight against greenwashing.

GEN was established in 1994 and serves as a global network to promote and support credible ecolabelling practices. The main objective of GEN is to improve, promote, and develop ecolabelling as a tool for encouraging sustainable consumption and production.

GEN plays a crucial role in supporting better public procurement through the following ways:

- **Setting Standards and Criteria:** GEN facilitates the development of internationally recognized ecolabelling standards and criteria. These standards help define what environmental and sustainability attributes a product or service must meet to receive the ecolabel. When incorporated into public procurement policies, these criteria guide government agencies in selecting products and services with lower environmental impacts.
- **Certification Assurance:** GEN ensures that ecolabels associated with its member organizations maintain a high level of credibility and transparency. They establish procedures to verify that the products and services awarded to the ecolabel comply with the defined standards. This gives confidence to public procurers that the ecolabelled products meet established environmental and sustainability requirements.
- **Information and Awareness:** GEN works to raise awareness and understanding of ecolabelling among various stakeholders, including governments, businesses, and consumers. By providing information on ecolabels and their significance, they enable public procurement officers to make informed decisions when selecting products and services for government use.
- **Capacity Building:** The network engages in capacity-building activities for ecolabelling organizations and relevant government bodies. This helps strengthen the competence of ecolabelling schemes, making them more effective tools for guiding public procurement towards more sustainable choices.
- **Advocacy and Collaboration:** GEN advocates for the recognition and use of ecolabels in public procurement policies and regulations at the national and international levels. They collaborate with governments and other stakeholders to promote the integration of credible ecolabels into sustainable public procurement strategies.
- **International Cooperation:** As a global network, GEN facilitates cooperation and knowledge exchange among ecolabelling organizations worldwide. This fosters the harmonization of ecolabelling criteria and approaches, enabling better alignment with global sustainability goals.

By supporting the development and recognition of ecolabels, GEN- the Global Ecolabelling Network encourages and assists governments in leveraging these labels to improve their public procurement practices. Through their efforts, GEN contributes to the broader goal of achieving more sustainable consumption and production patterns worldwide.

For the most current information about GEN and its activities, please refer to their official website or other up-to-date sources.
By using a GEN member ecolabel, you know you have simple, sustainable and impactful solutions.

GEN as leading credibility global expert for true ecolabels

GEN is uniquely positioned to educate both public and private sector organizations on the essential role of sustainable procurement in moving markets, and driving more uptake of the credible ecolabels available to enable the process.
We have members across the globe helping you go from good to great.
Find them here.

We could not celebrate every member in one document- there are too many stories of success, so please reach out to find out more.

> GEN is uniquely positioned to educate both public and private sector organizations on the essential role of sustainable procurement in moving markets, and driving more uptake of the credible ecolabels available to enable the process. Connecting ecolabel use to credible, real impact is essential - **Clare Hobby, TCO**

This is great but how do I use ISO 14024 ecolabels as part of your procurement solution?
Using an ecolabel to guide procurement involves incorporating the ecolabel criteria into the procurement process.
Here's a step-by-step guide on how to use an ecolabel to guide procurement:

- **Identify Relevant Ecolabels**: Research and identify credible ecolabels that align with your organization's sustainability goals and the specific product or service categories you wish to procure. Look for ecolabels based on standards like ISO 14024, as they ensure credibility and transparency in their criteria. The easiest way is to visit the GEN website and find certified products within your region.
- **Include Ecolabels in Procurement Policies**: Integrate the selected ecolabels into your organization's procurement policies and guidelines. Communicate to procurement officers that products or services bearing these ecolabels are preferred choices, provided they meet the required specifications and performance criteria.
- **Incorporate Ecolabels in Bid Specifications**: When preparing bid specifications, include references to the specific ecolabel criteria that vendors must meet to be considered. Clearly state that products or services without the ecolabel or not meeting its criteria will not be considered for procurement.
- **Request Ecolabel Information in Bids**: Include a requirement for vendors to provide information on the ecolabels their products or services hold, if applicable. Ask for evidence of ecolabel certifications, such as certificates or verification reports, as part of the bid submission. If they are not yet available, you can still specify and give them an agreed time to transition.
- **Evaluate Ecolabel Compliance:** During the evaluation process, assess whether the products or services offered by vendors meet the ecolabel criteria specified in the bid. Consider the ecolabel as one of the evaluation criteria alongside other relevant factors like price, quality, and delivery terms.

- **Verify Ecolabel Claims:** For significant procurement contracts, consider conducting a verification process to ensure that the ecolabel claims made by vendors are legitimate. This may involve seeking independent confirmation from accredited certification bodies or ecolabelling organizations. The easiest way to verify their status is to go to our website and make sure they are a true and trusted ecolabel.
- **Communicate the Importance of Ecolabels**: Educate procurement officers, stakeholders, and suppliers about the significance of the selected ecolabels and their alignment with the organization's sustainability objectives. Foster awareness and understanding of the benefits of choosing ecolabelled products and services.
- **Monitor and Report on Ecolabel Procurement:** Regularly track and report on the proportion of procurement that aligns with ecolabel criteria. Measure the environmental benefits and cost savings achieved through ecolabel-guided procurement and use this data to improve future procurement decisions.
- **Encourage Supplier Engagement**: Encourage suppliers to obtain ecolabel certifications for their products or services by informing them about the organization's preference for ecolabelled offerings. Signalling your commitment will move markets. Collaboration with suppliers can promote the availability of sustainable options in the market.
- **Periodically Review Ecolabel Selection:** As sustainability goals and market conditions evolve, periodically review the ecolabels being used to guide procurement. Ensure that the selected ecolabels remain relevant and aligned with the organization's objectives.

*Please note that several countries do not allow specification of an actual ecolabel. If this is the case, countries can specify particular technical requirements that meet the best practice of ecolabels such as GEN

By integrating ecolabels into your procurement process, you can leverage your organization's purchasing power to support environmentally responsible products and services. This contributes to your sustainability goals while encouraging businesses, governments, and consumers to adopt more sustainable practices.

> Progress is already being made in the realm of sustainability. There is a lot of talk about sustainability, and many private operators are already doing a significant effort to promote the sustainability of procurement. There is a growing need to harmonize these efforts for both private and public sectors and establish consistent practices in order to drive greater collective impact and ensure widespread adherence to sustainable procurement principles **- Nordic Swan**

This is why GEN actively promotes and supports mutual recognition within its members. This way we are moving towards a sustainable, global supply chain solution.

> **"ICLEI's experience with local governments show that ecolabels hold an important role in driving sustainability in public procurement. They can help purchasers identify sustainable products or services. Labels can also play an important role in developing technical specifications and award criteria, and in verifying compliance" - Mara Inzaina, Officer, Sustainable, Innovation and Circular Procurement - Sustainable Economy and Procurement at ICLEI - Procura+ Community Support** (www.procuraplus.org)

EXAMPLES OF BEST PRACTICES

Don't just trust us to know that ecolabelling is an easy solution for powerful procurement. See below for some of our success stories!

With the implementation of the past 17 years, the government procurement of environmental labelling products has become an important measure for promoting sustainable development and green economic development.

The China Environmental United Certification Center has enabled the amount of ecolabelled products to increase from 856 to 1 million now with 14 categories of products in the beginning to more than 100 categories now. The categories of government procurement of environmental labelling products include office equipment (computer, printer, scanner, projector, multifunctional machine and so on), office consumables (toner cartridges etc.), vehicles, building materials (water-based coatings, water-proof coatings, cement, concrete, etc.), furniture, textiles, plastic pipes, copy paper and so on.

The number of enterprises participating in government procurement has gone up from 81 to more than 4000 over the past 17 years. In 2021, government procurement of environmental labelling products reached 89.98billion RMB, accounting for 85.2% of similar product procurement. By evaluating GPP performance during 2016-2021, GPP played a positive role for pollution reduction, such as VOC emission reduction 14.9×104 ton for office furniture procurement, and CO2 emission reduction 171.9 ×104 ton for computers procurement of computers.

Green Printing Case in China

The former National Press and Publication Administration and Ministry of Environmental Protection signed the Strategic Cooperation Agreement on Implementation of Green Printing in 2010 to greatly promote green printing with environmental labelling.

Green printing has expanded from printing to editing, printing and distribution over the past few years. VOCs treatment has evolved from "end-of-pipe treatment" to "source reduction and process control", and green printing gradually has become a conscious action of the whole industry.
Up to now, more than 1200 printing enterprises have obtained environmental labelling certification. With increasing market scale, green printing has expanded from the textbooks of primary and middle, green printing also enjoys rapid development for children's books. Green printing with environmental ecolabels has been continuously driving the transformation of the printing industry and facilitating energy saving and emission reduction with good economic and social benefits.

South Korea - KEITI

The Korean ecolabel is a certification system enforced by the Ministry of Environment and KEITI (Korea Environmental Industry & Technology Institute). Since its foundation in 1992, the system has granted certifications to a wide range of eco-friendly products, which are excellent in not only environmental properties, but also in products' quality during their life cycle. For 30 years they have launched about 160 criteria covering construction materials, office equipment, furniture, personal and household goods, etc. Each standard covers verification in environmental and quality properties, such as reduction of the use of harmful substances, energy saving, resource saving, carbon neutrality, resource circulation, etc. As of June 2023, 19,689 products (in 5,057 companies) have been certified .
In Korea, "green products" are legally defined as products that minimize the input of energy, resources, greenhouse gasses , and pollutants (Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis). Green products are specified in the Act on the Promotion of Purchase of Green Products. Ecolabel products are classified as part of this.
The same law stipulates the obligations of public institutions to purchase green products. According to this Law, when public institutions intend to purchase a product, they should l purchase green products. As of 2022, 1,176 national agencies and 30,000 sub-public authorities are required to mandatory purchase green products.
Based on the Green Product Act, the purchase amounts by GPP have continued to grow, which can be confirmed by statistical data. According to Figure 1, purchase amounts by GPP increased by 4.5 times from 861.4 billion won in 2006 to 3.8 trillion won in 2021. This value is the sum of the purchase amounts by GPP under 3 certification systems. Among them, the ratio of purchase amounts from ecolabel certified products is about 81% and accounts for about 3.1 trillion won as of 2021. Therefore, it can be seen the mandatory GPP system has eased the initial barriers for entering the market for ecolabel products and contributed to the activation of certification. In addition, according to Figure 2, it can be confirmed that the number of ecolabel certifications has increased during the same period and is growing to the present day. Through these data, it can be specified that the number of ecolabel certification and the purchase amounts by GPP has grown together, forming a mutually helpful relationship.

Figure 1. Purchase Amount of Green Products

Nordic Ecolabelling

Nordic Ecolabelling show that the number of buildings certified with the Nordic Swan Ecolabel has increased by 89 % in just two years.

Around 66,000 Nordic Swan certified apartments, small houses and buildings for schools and pre-schools are now completed or under construction.

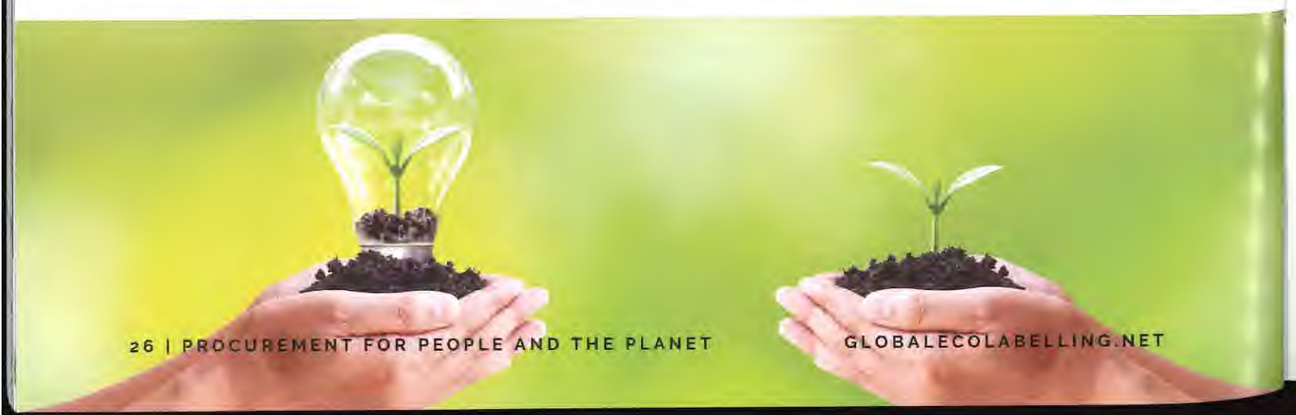
Denmark

It has been calculated that in 92 Danish municipalities, a total of 2,750 tons of work clothes undergoes washing annually. Consequently, the adoption of The Nordic Swan Ecolabel laundries could lead to a reduction of carbon dioxide emissions by up to 480 tons. In essence, opting for The Nordic Swan Ecolabel laundromat over a conventional laundromat would result in a notable 27 percent decrease in emissions associated with washing work clothes. This calculation is based on a life cycle assessment that exclusively considers carbon dioxide emissions. It is important to note that The Nordic Swan Ecolabel encompasses various other significant climate and environmental requirements, which have not been factored into this calculation. By incorporating ecolabels in their procurement decisions, purchasers can achieve positive climate impacts. Furthermore, the greater the number of companies and public purchasers that choose The Nordic Swan Ecolabel e.g. laundry for washing work clothes, the more substantial the climate benefits obtained

Find out more through our GEN Magazine – special edition on Sustainable Public Procurement to hear more about leading ecolabels paving the way to a better future.

Find out more about GEN member ecolabels doing better together.
Congratulations to Singaporean and Australian governments!
Governments can drive sustainable supply chains through connecting regionally and across the globe.
We know that purchasers need a simple solution.
https://www.dfat.gov.au/geo/singapore/singapore-australia-green-economy-agreement/singapore-australia-green-economy-agreement-propelling-our-sustainable-future

https://www.gea.gov.sg/sagea/



NEXT STEPS

What can I do day today to make a difference?

Take a look at this video - Look closer video.
Find an ecolabelling certified product on the GEN network

Identify Relevant ISO 14024 Ecolabels: The easiest way is to visit the GEN website and find certified products within your region.
www.globalecolabelling.net
Include Ecolabels in Procurement Policies
Incorporate Ecolabels in Bid Specifications When preparing bid specifications, include references to the specific ecolabel criteria that vendors must meet to be considered.
Request Ecolabel Information in Bids Include a requirement for vendors to provide information on the ecolabels their products or services hold.
Ask for evidence of ecolabel certifications, such as certificates or verification reports.

Evaluate Ecolabel Compliance
Verify Ecolabel Claims

Download the ecolabel guide - available as an app on apple and android
I would like to know more - recommended reading

Our GEN website has lots of webinars and tool kits- take a look here.

WHAT CAN I DO TOMORROW AND LONGER TERM FOR PEOPLE AND PLANET?

- Train your team to know more about ecolabels and sustainable procurement solutions.
- Utilize the ecolabelling training that was developed with GEN and UN Environment Programme and is free to use.
- Design and publish your SDG strategy
- Choose your three biggest spend products
- Set your procurement goals
- Talk to your suppliers and your nearest GEN member
- Become a GEN Affiliate member
- Specify your sustainability requirements using a GEN ecolabelled standards
- If you can't find a GEN member with the standard you need? Reach out to GEN at secretaratiat@globalecolabelling.net

FURTHER READING

- Barriers analysis report.
- The IGPN 2020 study report on GREEN PURCHASING NETWORK-A Landscape of Practice to Achieve SCP summarized the challenges of implementing green procurement practices by reviewing the cases of IGPN members.

STILL WANT TO KNOW MORE?

Reach out to the GEN website.
There are lots of tools to help you buy better.

GEN FULL MEMBERS

Country/ Region	Program Name	Logo
Australia	GECA	
Brazil	ABNT Ecolabel Hummingbird	
China	China Environmental Labelling	
China	China Environmental Friendly Certification	
Chinese Taipei	Green Mark Program	
European Union	EU Ecolabel	
Germany	Green Product Mark	
Germany	The Blue Angel Ecolabel	
Hong Kong	Hong Kong Green Label Scheme	
India	GreePro	
Indonesia	Indonesian Ecolabel	
Israel	Israeli Green Label	
Japan	Eco Mark Program	
Kazakhstan	Ecolabelling	
Korea	Korean Ecolabel Program	
Malaysia	SIRIM Ecolabelling Scheme	
Netherlands	Milieukeur	

GEN FULL MEMBERS

Country/ Region	Program Name	Logo
Netherlands	On the Way to PlanetProof	
New Zealand	Eco Choice Aotearoa	
Nordic Countries	Nordic Swan Ecolabel	
North America	Ecologo	
North America	EPEAT	
Philippines	Green Choice Philippines	
Russia	Vitality Leaf	
Singapore	Singapore Green Labelling Scheme	
South Africa	Eco-Choice	
Sri Lanka	Ecolabel Sri Lanka	
Sweden	Good Environmental Choice	
Sweden	TCO Certified	
Thailand	Green Label Thailand	
Turkey	Turkish Environment Label	
Ukraine	Green Crane	
United States	Green Seal	

GEN ASSOCIATE MEMBERS

Country/ Region	Program Name	Logo
Colombia	Sello Ambiental Colombiano	
Indonesia	Green Label Indonesia	
South Africa	EcoASA	
Spain (Catalonia)	Environmental Quality Guarantee Award	
Vietnam	Vietnam Green Label	

GEN AFFILIATE MEMBERS

Country/ Region	Program Name	Logo
Japan	International Green Purchasing Network	
Morocco	Arganeraie Biosphere Reserve Ecolabel	
North America	The ISEAL Alliance	iseal
United States	Google Inc	
United States	Sustainable Purchasing Leadership Council	SUSTAINABLE PURCHASING LEADERSHIP COUNCIL

We would like to acknowledge and thank the working group 2 on Ecolabelling of the Consumer Information Programme of the One Planet network for their contribution in the brochure.

One planet inform with care

JOIN THE GLOBAL ECOLABELLING NETWORK BY BECOMING A GEN AFFILIATE MEMBER!

Affiliate members are our supporting and partner organisations. GEN provides knowledge and information sharing with our Affiliate members in order to support their own sustainability change making.

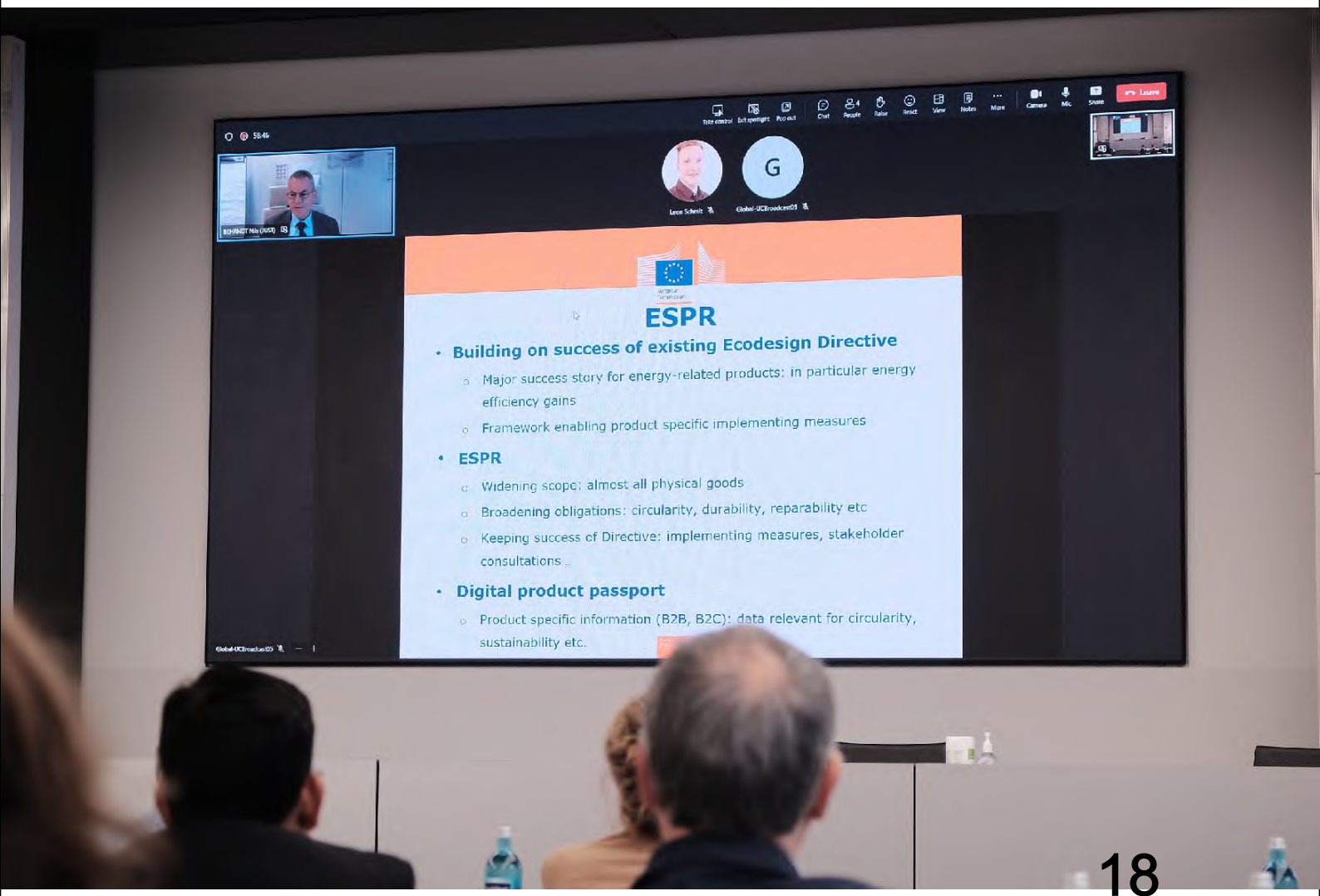
GEN supports affiliate organizations to gather regional insights regarding ecolabelling and green procurement from experts from around the globe and provides a strong platform for collaboration for engaging in activities of mutual benefit.

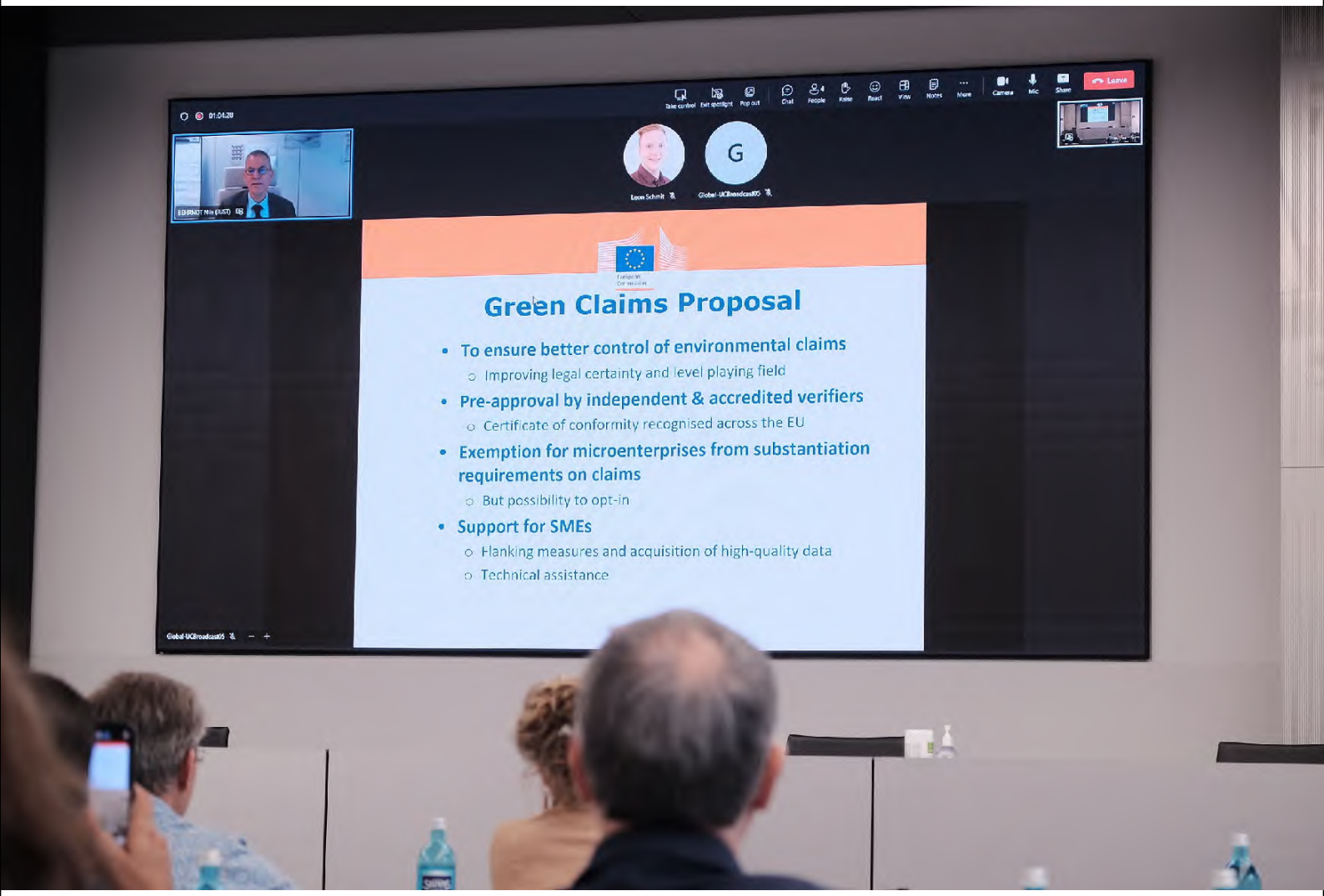
To learn, click here.

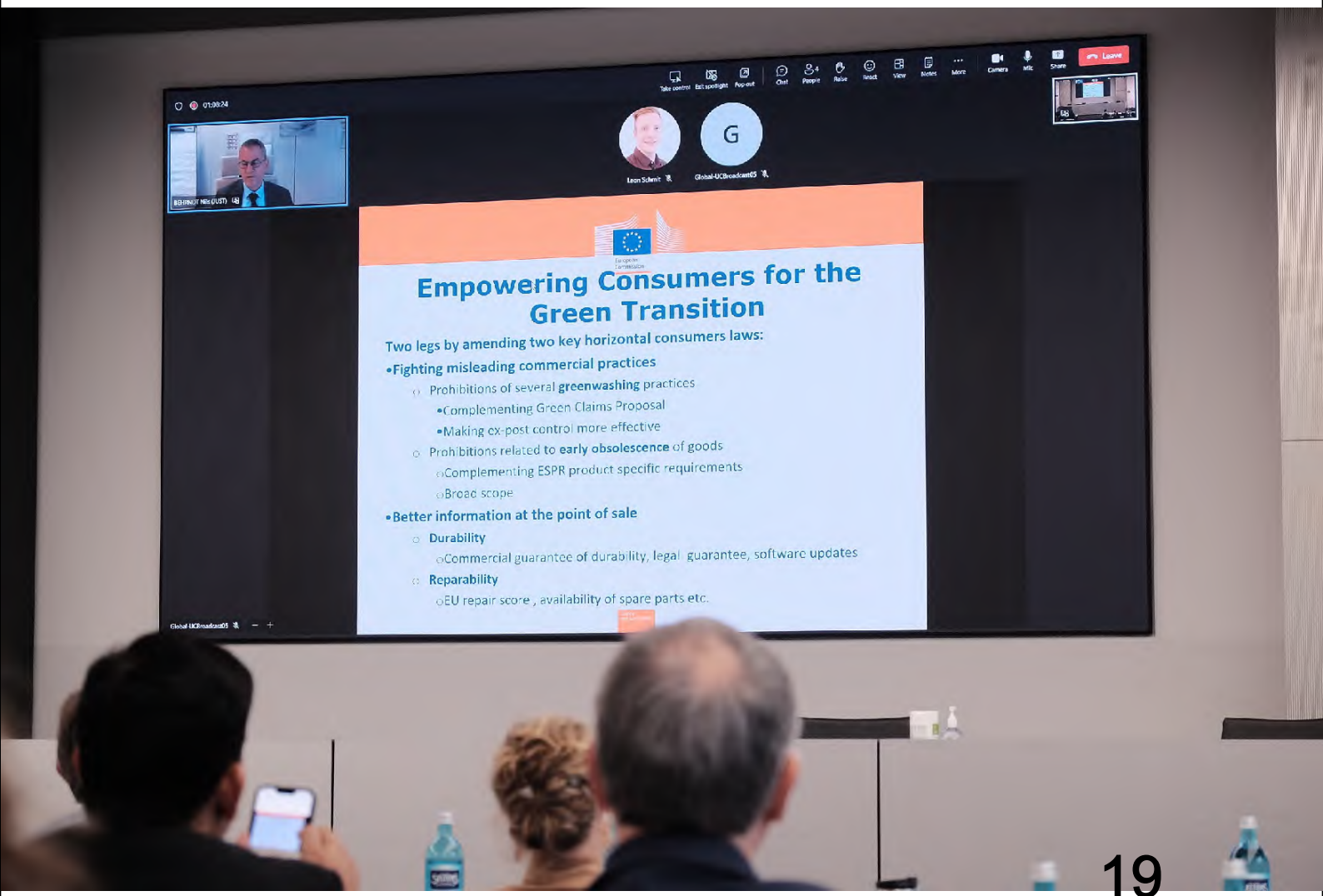

Towards a green transition for consumers and businesses
Sustainability Conference, 24 October 2023
DG Justice and Consumers
Deputy Director-General
Nils Behrndt


Why do we need a green transition?
EU carbon footprint: 7,2 tonnes per person
Mobility, housing and food most important sectors
Use of natural resources more than tripled from 1970
Only 12% of materials come from recycling
Smart phones replaced every two years
Half of the environmental claims are false or deceptive

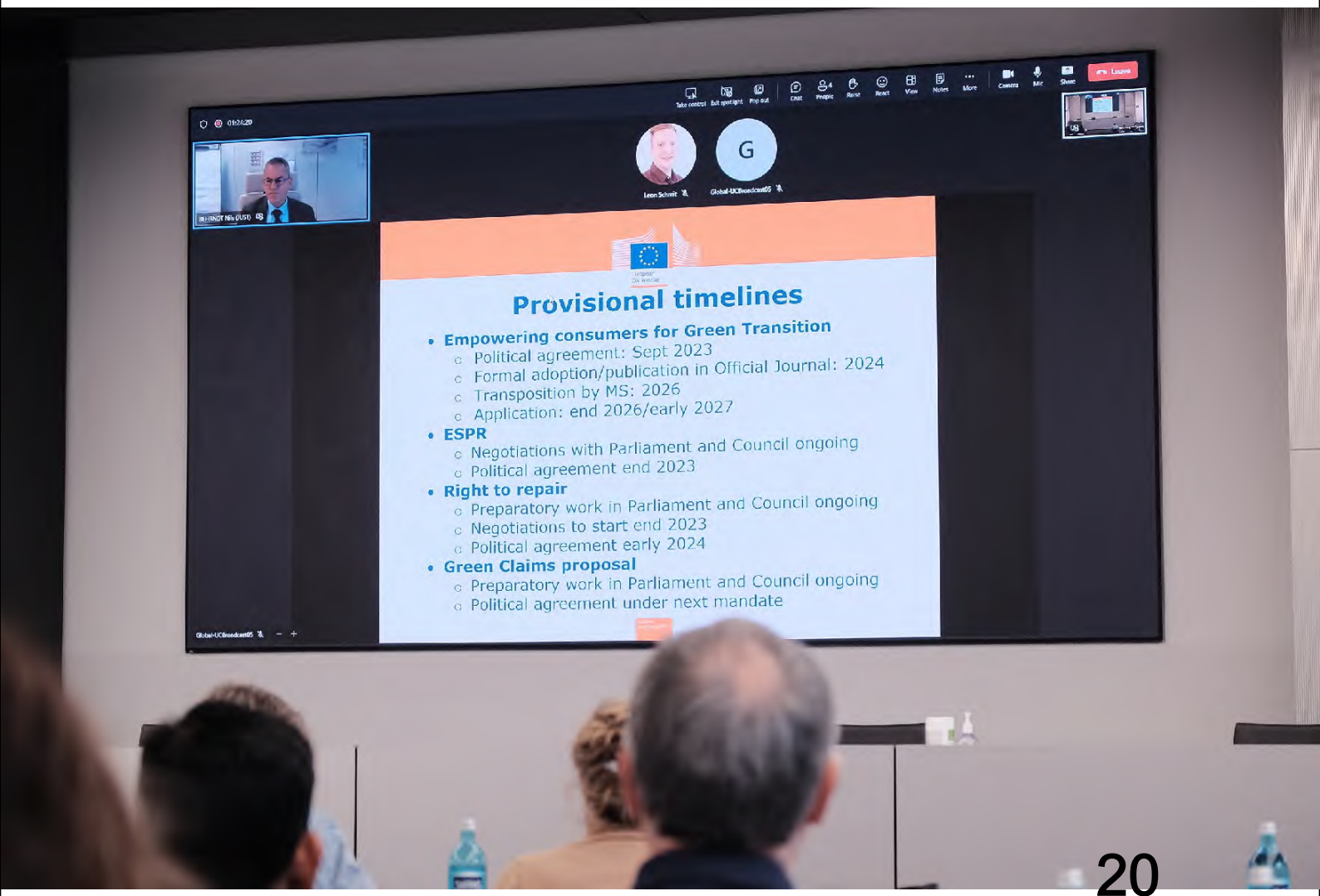

Four legal instruments
• Product requirements: Ecodesign for Sustainable Products Regulation (ESPR)
• Improving the control of green claims
• Greening horizontal EU consumer law:
○ Empowering consumers for the Green Transition
○ Right to repair

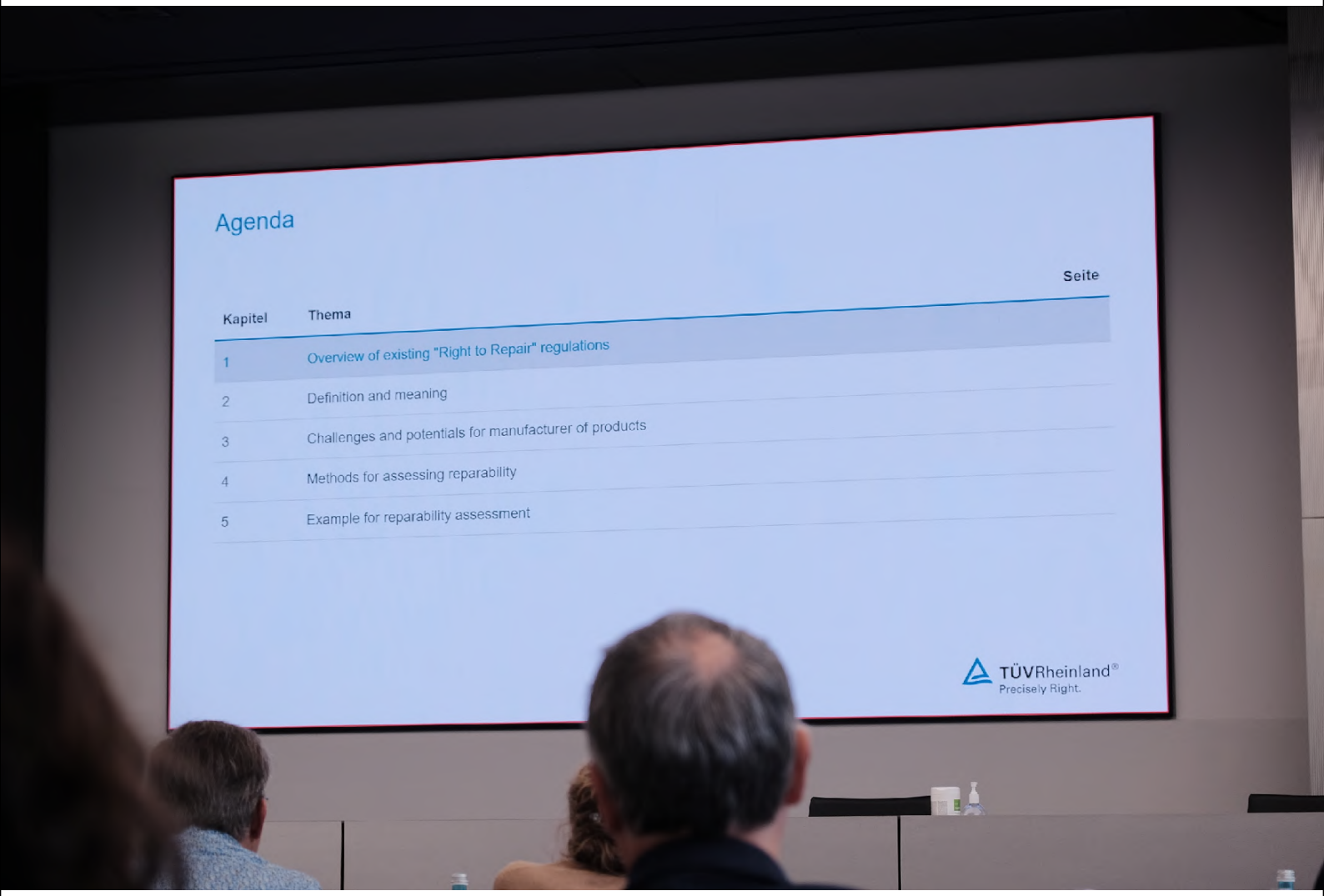

ESPR
• Building on success of existing Ecodesign Directive
○ Major success story for energy-related products: in particular energy efficiency gains
○ Framework enabling product specific implementing measures
• ESPR
○ Widening scope: almost all physical goods
○ Broadening obligations: circularity, durability, reparability etc
○ Keeping success of Directive: implementing measures, stakeholder consultations ..
• Digital product passport
○ Product specific information (B2B, B2C): data relevant for circularity, sustainability etc.


Green Claims Proposal
To ensure better control of environmental claims
Improving legal certainty and level playing field
Pre-approval by independent & accredited verifiers
Certificate of conformity recognised across the EU
Exemption for microenterprises from substantiation requirements on claims
But possibility to opt-in
Support for SMEs
Flanking measures and acquisition of high-quality data
Technical assistance


Empowering Consumers for the Green Transition
Two legs by amending two key horizontal consumers laws:
Fighting misleading commercial practices
Prohibitions of several greenwashing practices
Complementing Green Claims Proposal
Making ex-post control more effective
Prohibitions related to early obsolescence of goods
Complementing ESPR product specific requirements
Broad scope
Better information at the point of sale
Durability
Commercial guarantee of durability, legal guarantee, software updates
Reparability
EU repair score , availability of spare parts etc.


Right to repair proposal
Prolonging use phase of products
During legal guarantee
Priority to repair over replacement
Concerns seller
After legal guarantee
Obligation for producer to repair
Standardised repair information form
Online repair platform to identify local repairers


Provisional timelines
Empowering consumers for Green Transition
Political agreement: Sept 2023
Formal adoption/publication in Official Journal: 2024
Transposition by MS: 2026
Application: end 2026/early 2027
ESPR
Negotiations with Parliament and Council ongoing
Political agreement end 2023
Right to repair
Preparatory work in Parliament and Council ongoing
Negotiations to start end 2023
Political agreement early 2024
Green Claims proposal
Preparatory work in Parliament and Council ongoing
Political agreement under next mandate


Agenda
Seite
Kapitel
Thema
1
Overview of existing "Right to Repair" regulations
2
Definition and meaning
3
Challenges and potentials for manufacturer of products
4
Methods for assessing reparability
5
Example for reparability assessment
TÜVRheinland®
Precisely Right.


Right to repair – „empower consumers for the green transition"
Consumer law(s) to give Consumers the right to repair
EUROPEAN COMMISSION
Proposal for a
DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394, Directives (EU) 2019/771 and (EU) 2020/1828
Rules promoting the repair of goods,…, while providing for a high level of consumer and environmental protection.
…to reduce waste and promote a circular economy by giving consumers the right to repair.
TÜVRheinland®
Precisely Right.

Repair & design – reparability in the ESPR

Product Regulation addressing sustainable and repairable design to manufacturers

Proposal for a

EUROPEAN COMMISSION

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC

The "Ecodesign for Sustainable Products Regulation" aims to improve the circularity, and other environmental sustainability aspects of EU products.

The regulation will establish a framework to set ecodesign requirements for almost all categories of physical goods placed on the EU market, including product durability, reusability, upgradability, and reparability.

TÜVRheinland®
Precisely Right.

Reparability according to the ESPR

(12) 'life cycle' means the consecutive and interlinked stages of a product's life, consisting of raw material acquisition or generation from natural resources, pre-processing, manufacturing, storage, distribution, installation, use, maintenance, repair, upgrading, refurbishment and re-use, and end-of-life;

(b) ease of repair and maintenance as expressed through: characteristics, availability and delivery time of spare parts, modularity, compatibility with commonly available spare parts, availability of repair and maintenance instructions, number of materials and components used, use of standard components, use of component and material coding standards for the identification of components and materials, number and complexity of processes and tools needed, ease of non-destructive disassembly and re-assembly, conditions for access to product data, conditions for access to or use of hardware and software needed;

TÜVRheinland®
Precisely Right.

Reparability and application according to EN 45554

= a process in which a defective product is restored to a condition in which it can fulfil its intended use.

≠ upgrade: Process of increasing the functionality, performance, capacity or aesthetics of a product.

=> with the aim to increase the longevity of a product

TÜVRheinland®
Precisely Right.

Challenges and potentials

for a repair friendly design and verification process

Challenges

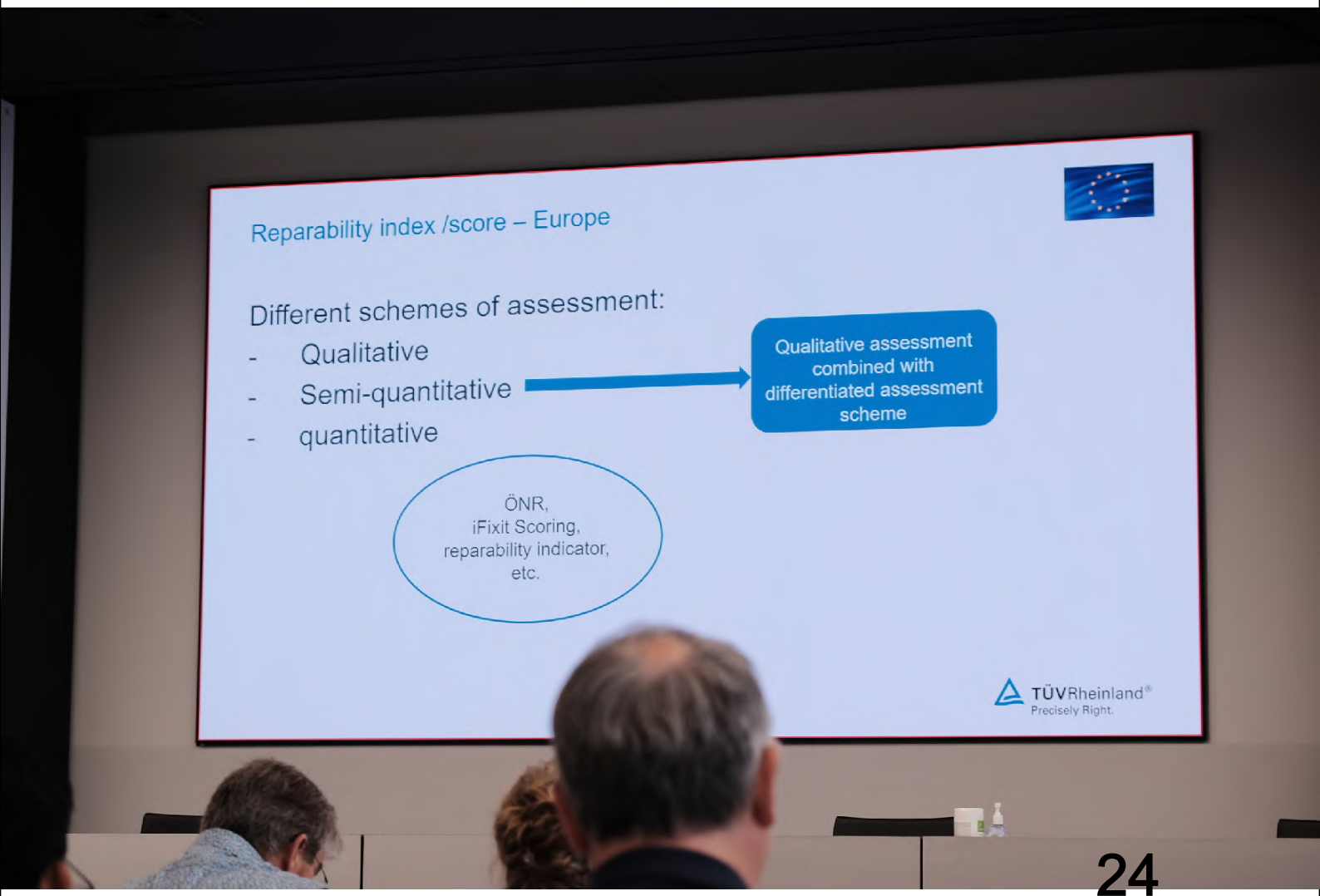
- Detailled description of repair (depth)
- Long-term availability of spare parts
- Adequate Product design

Potentials

- Conservation of resources
- Reusability of rare parts
- Necessity of repair centres (Jobs)

TÜVRheinland®
Precisely Right.


Reparability index /score – Europe
Different schemes of assessment:
- Qualitative
- Semi-quantitative
- quantitative
List of minimum requirements to a product's reparability (yes/no)
TÜVRheinland®
Precisely Right.


Reparability index /score – Europe
Different schemes of assessment:
- Qualitative
- Semi-quantitative
- quantitative
Qualitative assessment combined with differentiated assessment scheme
ÖNR,
iFixit Scoring,
reparability indicator,
etc.
TÜVRheinland®
Precisely Right.


Reparability index /score – Europe
Different schemes of assessment:
- Qualitative
- Semi-quantitative
- quantitative
Summary of single indicators (one or multidimensional) to an allover Index
U-effort, Phillips ECC
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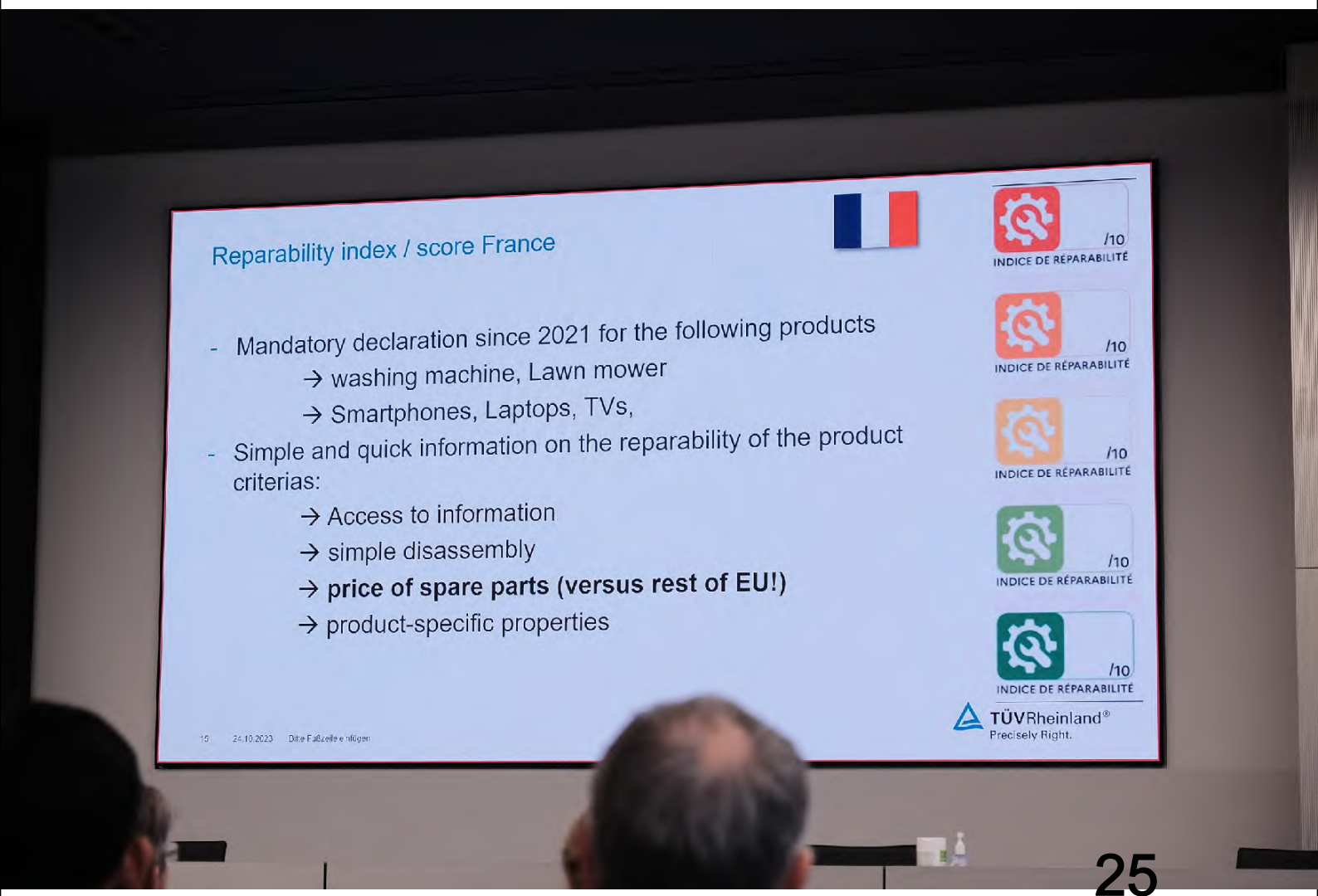
Reparability index / score France
- Mandatory declaration since 2021 for the following products
→ washing machine, Lawn mower
→ Smartphones, Laptops, TVs,
- Simple and quick information on the reparability of the product criterias:
→ Access to information
→ simple disassembly
→ price of spare parts (versus rest of EU!)
→ product-specific properties
/10 INDICE DE RÉPARABILITÉ
/10 INDICE DE RÉPARABILITÉ
/10 INDICE DE RÉPARABILITÉ
/10 INDICE DE RÉPARABILITÉ
/10 INDICE DE RÉPARABILITÉ
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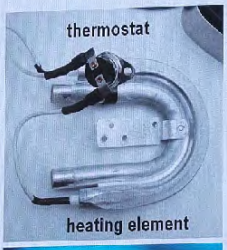
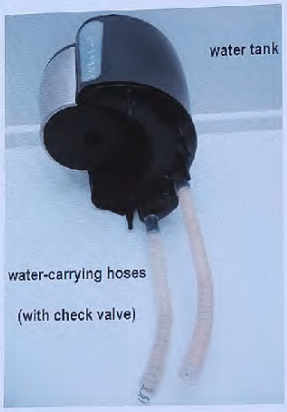
15 24.10.2023 Bitte Fußzeile einfügen

Example - Reparability assessment of filter coffee machine

1. Identifying priority components





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Example - Reparability of filter coffee machines

2. Reparability Index Calculator in support of JRC Report in accordance with EN 45554

Disassembly depth

PART LEVEL		Disassembly depth (PER PART)	Dynamic Weighting factor	Choice	Points	Score
LEVEL 1	1a			select number of steps	0	0
	1b			select number of steps	0	0
LEVEL 2	2			select number of steps	0	0
LEVEL 3	3	Filter holder	16,67%	x ≤ 2 steps	5	0,83
	3	Water tank	16,67%	10 ≥ x > 5 steps	3	0,50
	3	Water-carrying hoses	16,67%	10 ≥ x > 5 steps	3	0,50
	3	Thermostat	16,67%	5 ≥ x > 2 steps	4	0,67
	3	Overheat Protection	16,67%	5 ≥ x > 2 steps	4	0,67
	3	Heating element	16,67%	5 ≥ x > 2 steps	4	0,67
LEVEL 4	4			select number of steps	0	0
		TOTAL DISASSEMBLY DEPTH				3,83

Fasteners

PART LEVEL		Fasteners (type) (PER PART)	Dynamic Weighting factor	Choice	Points	Score
LEVEL 1	1a			select type of fastener	0	0
	1b			select type of fastener	0	0
LEVEL 2	2			select type of fastener	0	0
LEVEL 3	3	Filter holder	0,00%	select type of fastener	0	0,00
	3	Water tank	20,00%	Reusable	5	1,00
	3	Water-carrying hoses	20,00%	Reusable	5	1,00
	3	Thermostat	20,00%	Reusable	5	1,00
	3	Overheat Protection	20,00%	Removable	1	0,20
	3	Heating element	20,00%	Removable	1	0,20
LEVEL 4	4			select type of fastener	0	0,00
		TOTAL FASTENERS				3,40

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Example - Reparability of filter coffee machines

2. Reparability Index / score Calculator in support of JRC Report in accordance with EN 45554

Tools

PART LEVEL		Tools (type) (PER PART)	Dynamic Weighting factor	Choice	Points	Score
LEVEL 1	1a			select type of tool	0	0
	1b			select type of tool	0	0
LEVEL 2	2			select type of tool	0	0
LEVEL 3	3	Filter holder	16,67%	No tools	5	0,83
	3	Water tank	16,67%	Tools supplied with part	3	0,50
	3	Water carrying hoses	16,67%	Tools supplied with part	3	0,50
	3	Thermostat	16,67%	Tools supplied with part	3	0,50
	3	Overheat Protection	16,67%	Tools supplied with part	3	0,50
	3	Heating element	16,67%	Tools supplied with part	3	0,50
LEVEL 4	4			select type of tool	0	0,00
		TOTAL TOOLS				3,33

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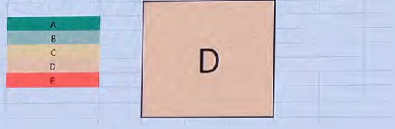
Example - Reparability of filter coffee machines

2. Reparability Index Calculator in support of JRC Report and in accordance with EN 45554

PRODUCT PARAMETERS (PRODUCT)	Weighting factor	Choice	Points	Score
Spare part (target group)	17,65%	select parts available to endusers	0	0
Software Updates (duration)	0%	select updates availability duration	0	0
Repair Information for all parts	17,65%	select target group and fee	0	0
Disassembly depth (AGGREGATED)	29,41%	SCORE TAKEN FROM G78	3,83	1,13
Fasteners (type) (AGGREGATED)	17,65%	SCORE TAKEN FROM G43	3,40	0,60
Tools (type) (AGGREGATED)	17,65%	SCORE TAKEN FROM G58	3,33	0,59
TOTAL SCORE				2,31615981

The Product's Reparability Class is:



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Example – Reparability adopted in EU DELEGATED REGULATION (EU) 2023/1669

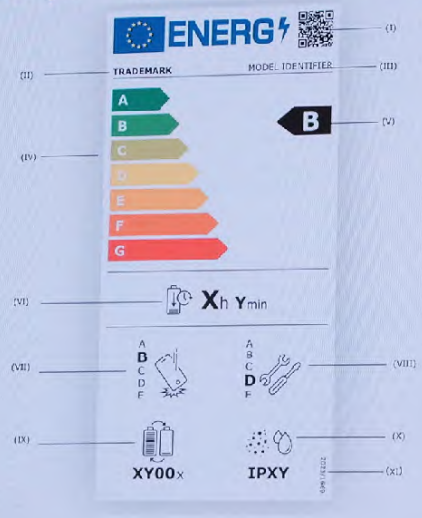

Table 4

Repairability classes of smartphones and slate tablets

Reparability Class	Reparability Index (R)
A (most repairable)	R ≥ 4,00
B	4,00 > R ≥ 3,35
C	3,35 > R ≥ 2,55
D	2,55 > R ≥ 1,75
E (least repairable)	1,75 > R ≥ 1,00

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2030 Sustainable Development Agenda: A shared vision for our future

Source: Jeffrey D. Sachs, Guillaume Lafortune, Grayson Fuller and Eamon Drumm: Implementing the SDG Stimulus. Sustainable Development Report 2023 [R]. Dublin University Press Dublin, Ireland, 2023. P24. Figure 2.1

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SDG 12: Towards sustainable consumption and production (SCP) patterns
Target 12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries
Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources
Target 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
Target 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
Target 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
Target 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities
Target 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature
Target 12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production
Target 12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products
Target 12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities
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A growing number of policies are introduced globally to support the shift to SCP
SDG 12 HUB
Policy instruments by year of adoption
Economic and fiscal 34
11 5 2 6 4 3 2 1
2002-14 Total 2015 2016 2017 2018 2019 2020 2021 2022
Macro policy 160
37 14 20 14 18 15 22 14 6
2002-14 Total 2015 2016 2017 2018 2019 2020 2021 2022
Regulatory and legal 81
38 1 5 6 9 12 5 4 1
2002-14 Total 2015 2016 2017 2018 2019 2020 2021 2022
Voluntary schemes 72
25 7 8 8 7 9 8
2002-14 Total 2015 2016 2017 2018 2019 2020
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Ecolabels are an important type of voluntary policy schemes in supporting SCP
Labels that help consumers select products and services according to specific environmental and social criteria.
Tools that protect the environment and simultaneously differentiate the products or services from competitors.
Means of promotion that boosts the sale of products and services.
Market-based instruments that are voluntary.
Sales of sustainability-marketed products grew more than twice as fast as conventionally marketed products in the past 6 years
In a recent survey in 25 countries, 64% of respondents said they wanted to reduce their personal impact on the environment and nature, and 44% felt guilty about their current impact.
Consumer preferences are changing globally, not just in developed markets – more than 35% of respondents in emerging or developing markets (versus 28% in developed markets) said they bought sustainably produced goods
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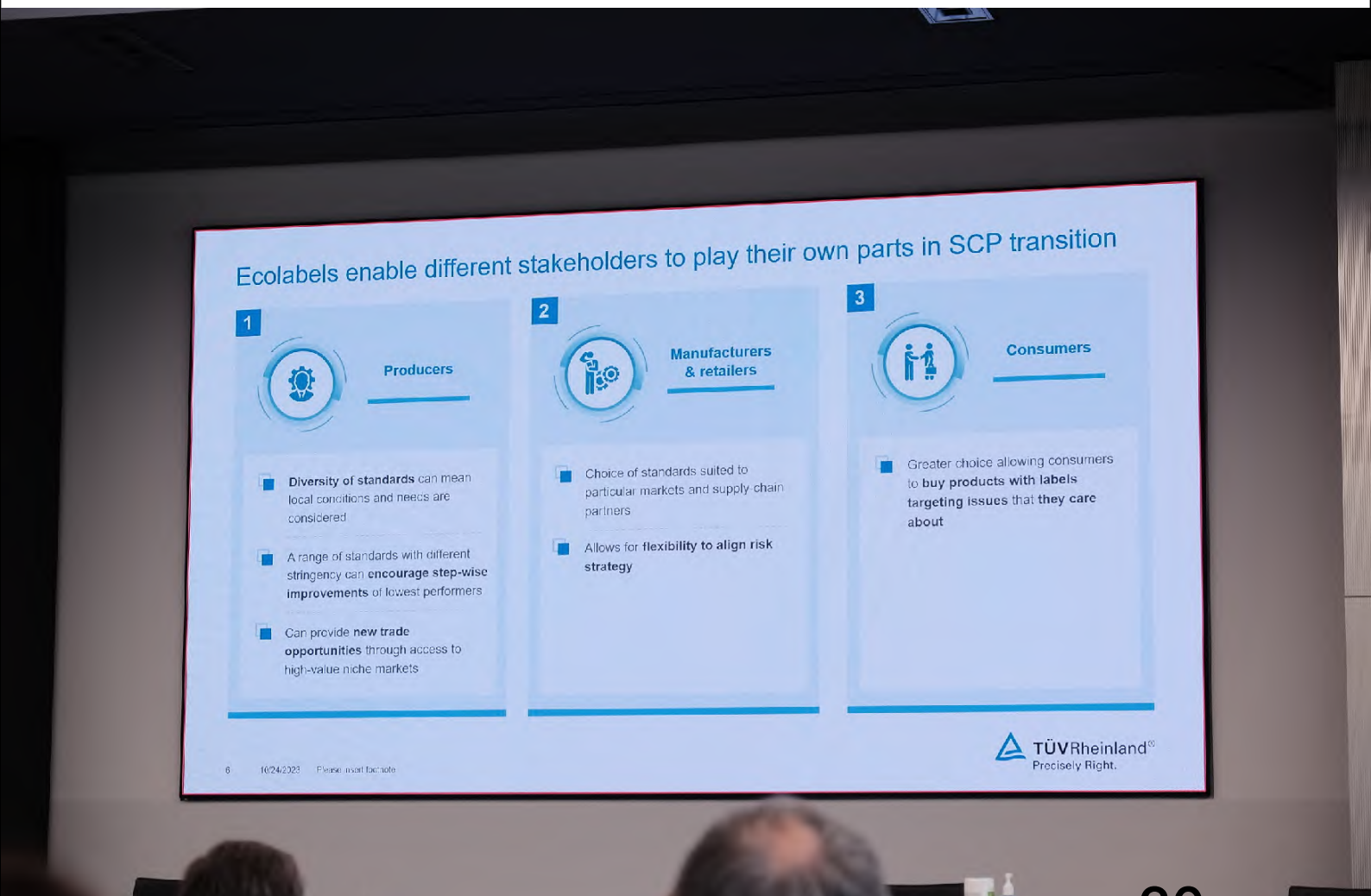
Ecolabels enable different stakeholders to play their own parts in SCP transition
1
Producers
Diversity of standards can mean local conditions and needs are considered
A range of standards with different stringency can encourage step-wise improvements of lowest performers
Can provide new trade opportunities through access to high-value niche markets
2
Manufacturers & retailers
Choice of standards suited to particular markets and supply chain partners
Allows for flexibility to align risk strategy
3
Consumers
Greater choice allowing consumers to buy products with labels targeting issues that they care about
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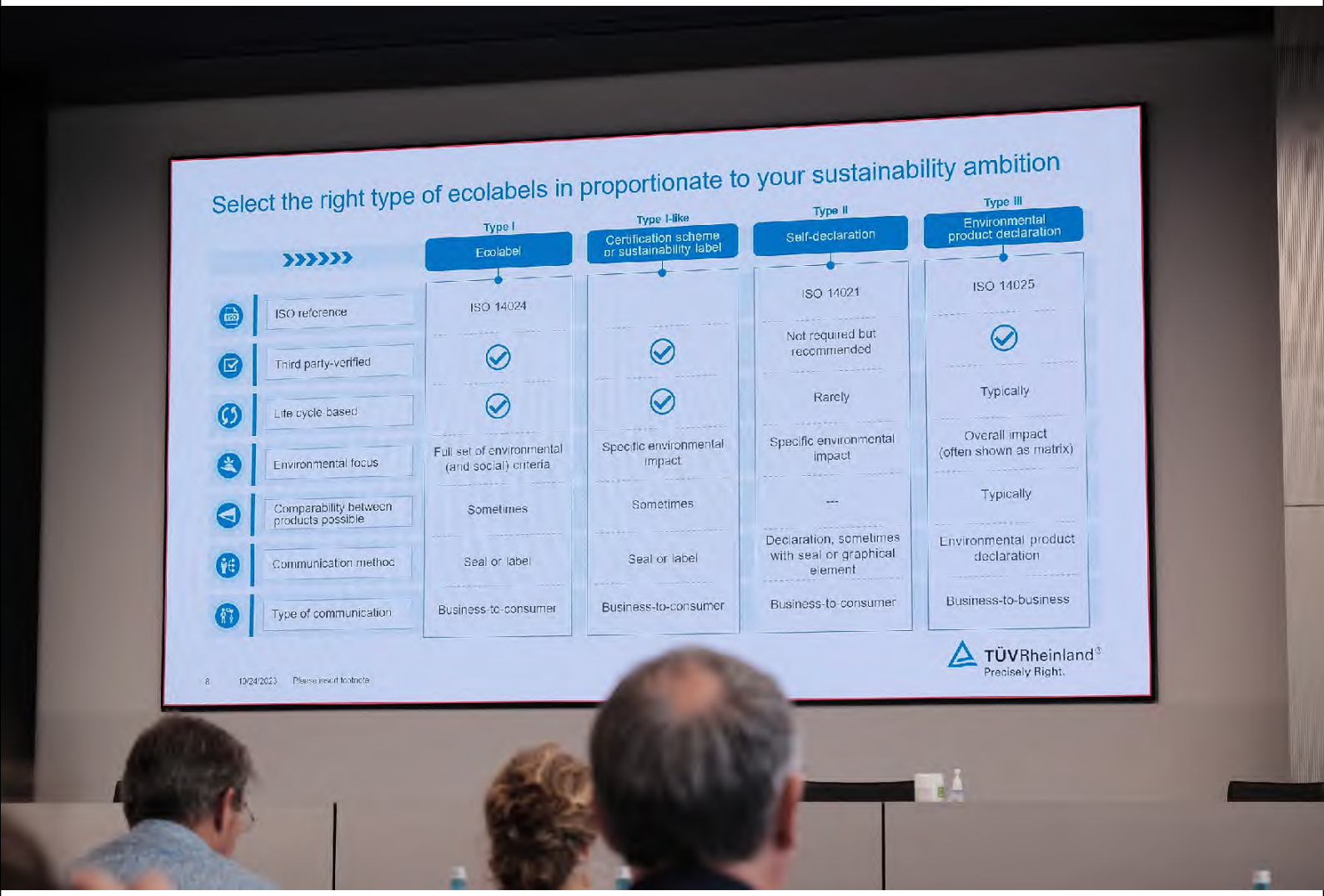
Select the right type of ecolabels in proportionate to your sustainability ambition
Type I
Ecolabel
Type I-like
Certification scheme or sustainability label
Type II
Self-declaration
Type III
Environmental product declaration
ISO reference
ISO 14024
ISO 14021
ISO 14025
Third party-verified
Life cycle-based
Environmental focus
Full set of environmental (and social) criteria
Specific environmental impact
Specific environmental impact
Overall impact (often shown as matrix)
Comparability between products possible
Sometimes
Sometimes

Typically
Communication method
Seal or label
Seal or label
Declaration, sometimes with seal or graphical element
Environmental product declaration
Type of communication
Business-to-consumer
Business-to-consumer
Business-to-consumer
Business-to-business
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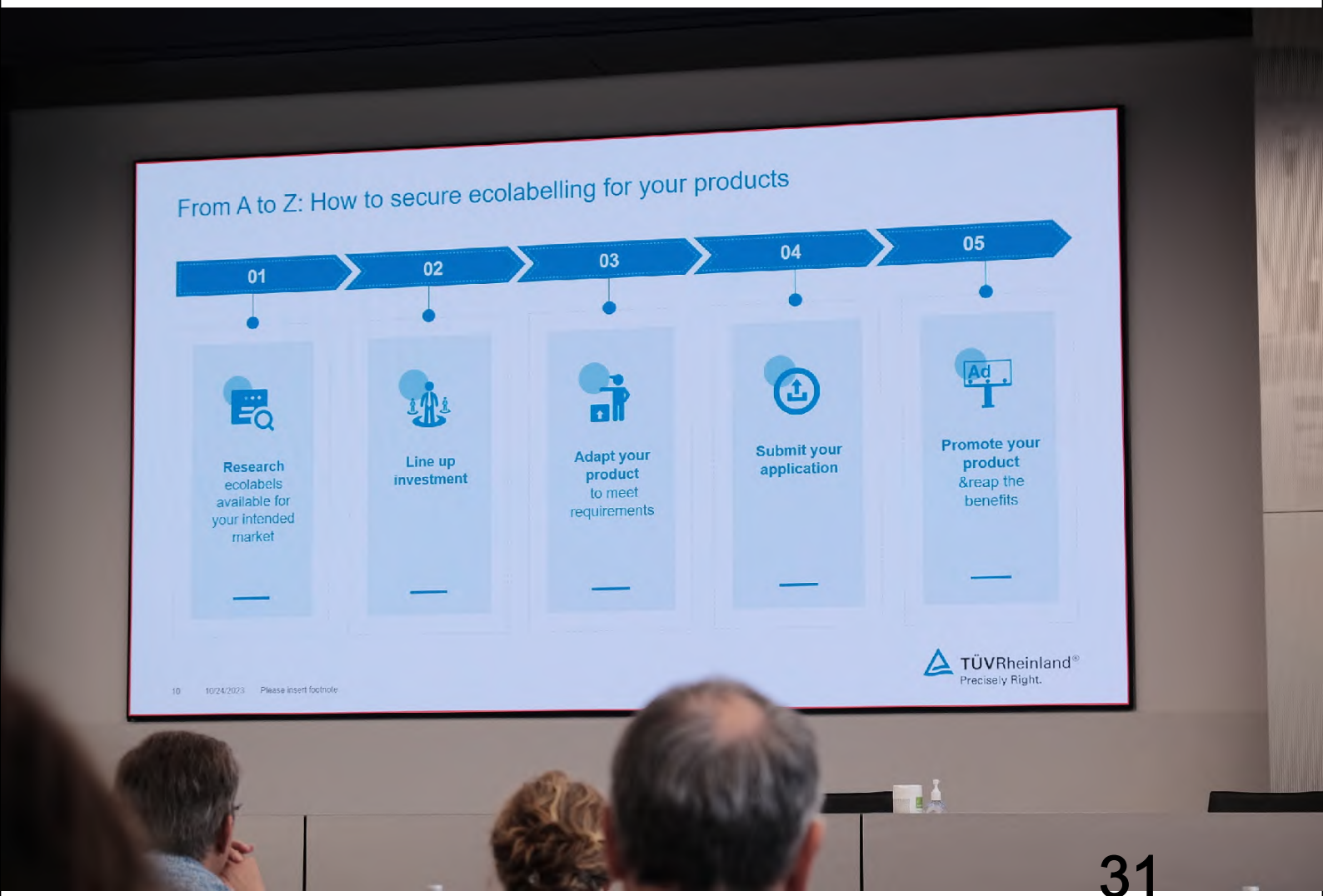
From A to Z: How to secure ecolabelling for your products
01
02
03
04
05
Research ecolabels available for your intended market
Line up investment
Adapt your product to meet requirements
Submit your application
Promote your product &reap the benefits
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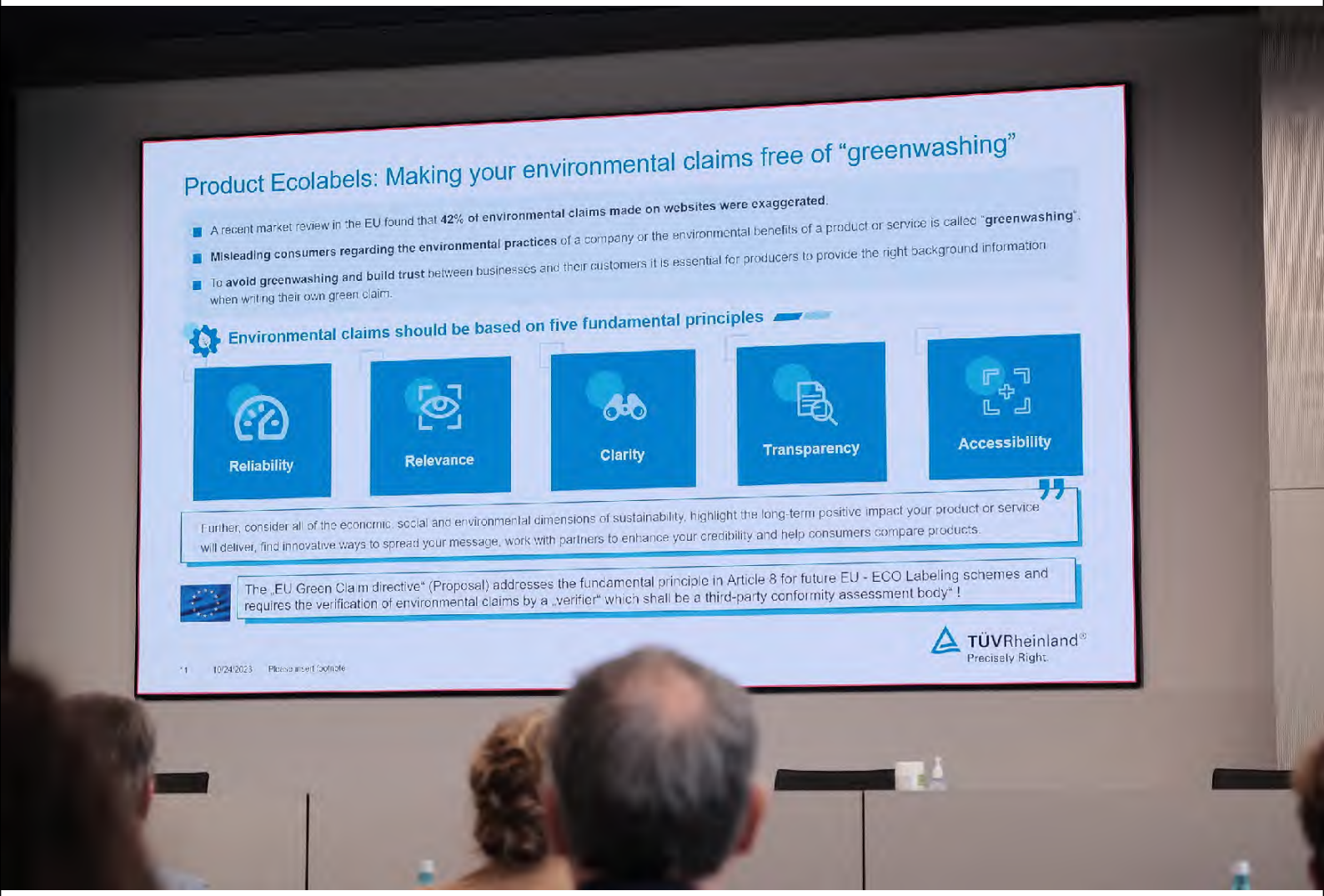
Product Ecolabels: Making your environmental claims free of “greenwashing”
A recent market review in the EU found that 42% of environmental claims made on websites were exaggerated.
Misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service is called "greenwashing".
To avoid greenwashing and build trust between businesses and their customers it is essential for producers to provide the right background information when writing their own green claim.
Environmental claims should be based on five fundamental principles
Reliability
Relevance
Clarity
Transparency
Accessibility
Further, consider all of the economic, social and environmental dimensions of sustainability, highlight the long-term positive impact your product or service will deliver, find innovative ways to spread your message, work with partners to enhance your credibility and help consumers compare products.
The „EU Green Claim directive“ (Proposal) addresses the fundamental principle in Article 8 for future EU - ECO Labeling schemes and requires the verification of environmental claims by a „verifier“ which shall be a third-party conformity assessment body“ !
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Global Ecolabelling Network: Connecting leading ecolabels around the world
Global Ecolabelling Network (GEN) is the leading network of the world’s most credible and robust ecolabels
GEN is a mission driven organization founded in 1994 setting the global benchmark for ecolabel excellence
GEN has 37 members across nearly 60 countries
GEN full members run an ISO 14024 ecolabelling scheme and have successfully completed peer review assessment
GEN associate members run an ecolabelling scheme and cover full aspects of the life cycle but have yet to complete peer review assessment
GEN affiliate members are supportive partners and organisations that believe and share in GEN mission but do not run an ecolabelling scheme themselves
GLOBAL ECOLABELLING NETWORK
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Green Product Mark: TÜV Rheinland's approach to product sustainability
A Type I ecolabel operated by TÜV Rheinland since 2012
Underpinned by the ISO 14024 operation system
A full member of Global Ecolabelling Network
Accredited by ANSI National Accreditation Board (ANAB)
Recognized by public and institutional procurers around the world
TÜVRheinland®
CERTIFIED
Green Product
www.tuv.com
ID 0100000000
Core pillars of certification criteria
Protection of environmental and human health
Conservation of energy and resources
Reduction of product carbon footprint
Social compliance of production sites
Product scope
Electrical & electronic products
Network equipment
Commercial products
Hardlines (e.g. luggage)
Softlines (e.g. toys)
...
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Business cases: Green Products certified by TÜV Rheinland
Deutsche Telekom
In Germany
Certified Green Product: W-LAN Router
Bouygues Telecom
In France
Certified Green Product: Wi-Fi 6 gateway
ALDI
In Germany
Certified Green Product: Frying Pan
TCC Global
In Netherlands
Certified Green Product: Luggage
Kenwood
In UK
Certified Green Product: Kitchenware
ZAGG
In US
Certified Green Product: Screen Protector
Midea
In China
Certified Green Product: Refrigerator-freezer
LG
In Korea
Certified Green Product: Wearable devices
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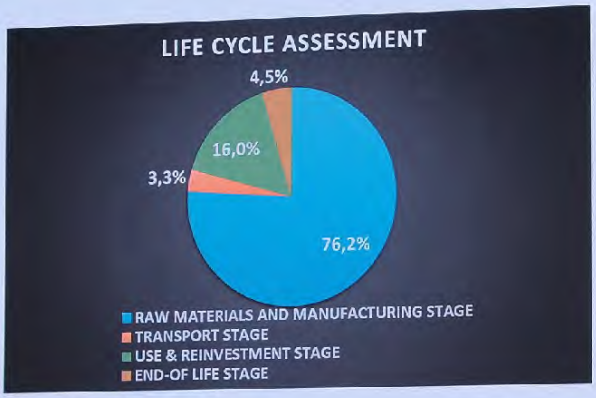
Why – significant ecological footprint of communication devices

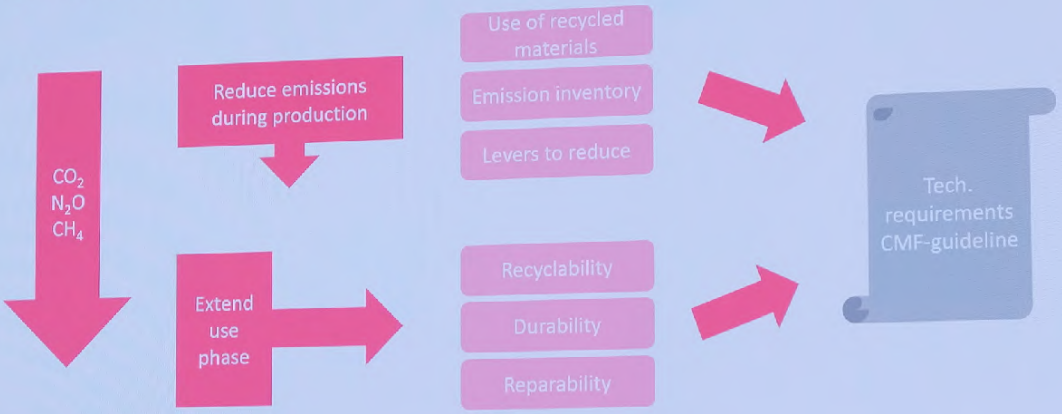


Example: typical Smartphone

- 1.2 Bill. annual Smartphone production worldwide (2022, source: Statista)
- 100kg CO_2eq emissions for one Smartphone (source: https://blog.oeko.de/digitaler-co2-fussabdruck/)
- This is a very large amount of Greenhouse Gases (GHG) each year
- Consumption of large amounts of raw materials is also connected to it
- At least for Smartphones, ca. 80% is allotted to the manufacturing phase
- Even risk of growing emissions due to a trend towards larger memory sizes
- Climate protection constitutes an urgent need to reduce the emissions and resource consumption

2

How – two supplemental strategies to reduce emissions



3

Objectives of DTAG technical sustainability requirements

- Motivate partners in the supply chain to design devices conscious of emissions and ecology helping DT to fulfill its own sustainability targets
- Preempt the requirements of the directive 2023/1670, and even exceed those in parts
- Guide partners in the supply chain to fulfill those legal requirements
- Reduce the amount and hazard potential of hazardous substances used to produce communication devices – establish a hazardous substance management system at our partners (insofar as not yet existing)

4

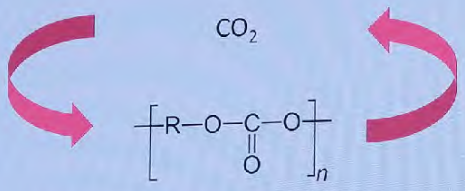
Think circularity from both ends

- Secondary raw materials need a market otherwise there is no incentive to recycle
- Secondary raw materials need to substitute primary ones to reduce emissions and resource consumption
- Secondary raw materials are also increasingly needed to secure supply against growing demand

- Recyclability is governed by the WEEE directive
- Recyclability and recoverability targets therein are not very ambitious
- Aspiration should be to exceed the WEEE targets considerably
- The balance to 100% is waste to landfill or to combustion which should be avoided

5

Quick win – circular plastic solutions

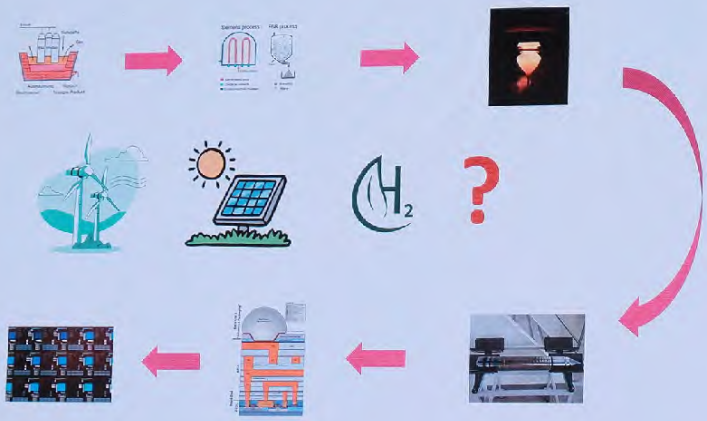


Cycle carbon that is already in the atmosphere or on the earth surface, avoid tapping fossil carbon sources

- A large mass percentage of communication devices consists of plastics (20-50% in case of a Smartphone depending on design)
- Think circularity here not only from a material perspective, but also on a molecular level, i. e., use carbon atoms that are already in the atmosphere or on the earth surface
- Compliant solutions already on the market
  - Mechanically recycled plastic
  - Biobased plastic
  - Chemcycled plastic (in test-size scale)
- Challenges
  - Limitations in mechanics and cosmetics (but true only for mechanically recycled plastic)
  - Lack of knowledge of availability
  - Price

6

Semiconductors – big lever, but a challenge to tackle



- Semiconductors (integrated circuits) are the largest single contributor to emissions (at least for Smartphones)
- Emission reductions in this area require a controlled use of integrated circuits in the device design and efforts in emission reductions during semiconductor production
- The latter requires a concerted effort along the supply chain
- We would like to learn more about concepts in the semiconductor industry starting from the reduction of quartz to elementary silicon

7


Longer use – a sure-fire success if operators only change their business model?
①
Stays intact over lifetime
Robustness to tolerate rough handling
Reliability against defects
Long software update periods
High IP ratings
②
If nevertheless defect, repair is preferred over new purchase
Easy to repair
Long availability of spare parts
Attractive repair conditions
③
After a very long life.....
Recyclability (exceeding WEEE quotas)
Recycling needs to be economically viable
⇒Longer use has technical prerequisites
8


What is needed from the supply chain – longevity and durability
Design goals
Very low propensity to defects
Able to absorb a certain degree of rough handling
Avoid premature obsolescence
Consequential specs and proof for accomplishment
MTBF calculation to select components for reliability
Drop and tumble tests acc. to IEC 60068
Scratch resistance acc. to EN 15771 (to Mohs hardness 4 as in 2023/1670)
IP55 or better to avoid water damages
Battery cycling robustness acc. to EN 61960: 800 cycles until 80% of the original capacity
Software updates until at least 5 years after the latest placement on the market (as in 2023/1670)
Challenges
MTBF calculations not mastered by everybody
Passing drop and tumble tests is difficult when not mastering the FE simulation of mechanical properties
9

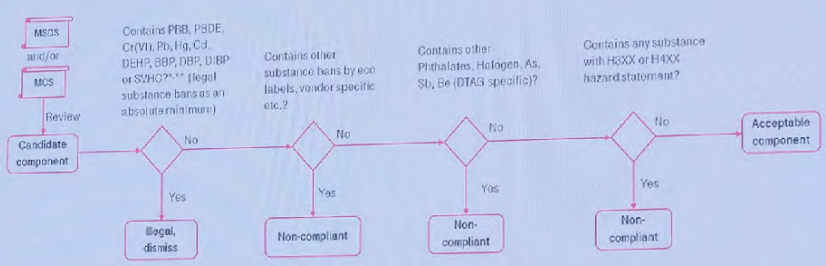
Harmful substances in devices – a problem in the supply chain

- It is too short-sighted to think harmful substances just from their danger potential when inside devices
- These need to be handled along a long supply chain before getting into devices which starts with mining and implies the risk of pollution causing harm to the health and the environment
- The same risk applies when devices are finally recycled at end-of-life
- If harmful substances are limited from the end of the supply chain, the need to handle those is reduced or removed along its entire length
- The legislator already regulates some of these harmful substances (RoHS, REACH, POP) but by far not all that may occur
- An active harmful management system is required to avoid harmful substances or, if technically not feasible, select constituents in way that the risk potential is reduced to the inevitable minimum
- This is now of relevance to the German Supply Chain Act (LkSG) as handling of harmful substances requires adequate worker protection measures

11

Required process how to control harmful substances in components

MTR 33796 & 33798: AVOIDANCE OF HARMFUL SUBSTANCES



*SVHC: Substances of Very High Concern according to REACH

**save exemptions according to Annex III RoHS but DTAG strongly discourages from their use

LIFE IS FOR SHARING.

3/1/2023 11

12

Walking the talk with own branded devices

Routers and repeaters should do one thing first and foremost: ensure good WLAN reception. Our Speedport Smart 4 and Speed Home WLAN do just that – and protect the environment at the same time. Because both are consistently planned and developed with a focus on sustainability. This protects our environment by using significantly fewer resources, saving CO_2 emissions, and avoiding plastic waste.

In concrete terms, this means that the housing of the devices itself is made of at least 90% fully recycled plastic. After use in the rental model, Telekom refurbishes the devices and uses them again.

The packaging is not only completely plastic-free and compostable, but also uses 30% less cardboard. Environmentally friendly, plant-based ink is used for printing. Environmentally friendly, plant-based ink is used for printing.

#GREEN MAGENTA
GEHÄUSE AUS 90% RECYCLING-KUNSTSTOFF

#GREEN MAGENTA
MÜLL VERMEIDEN DURCH PLASTIKFREIE VERPACKUNG

13

The new Ecodesign Regulation – under legislation

Ecodesign for Sustainable Products Regulations (ESPR)

will introduce more extensive ecodesign requirements for many more product groups

- Durability, reusability, retrofittability and repairability of products
- Substances that inhibit the ability of circulation
- the presence of substances of concern in products; tracking of all substances of concern throughout the life cycle of products,
- Energy and resource efficiency (→ Reduction of primary energy demand 1027 TWh/p.a. to ~ 1500 TWh/p.a.)
- Recycled content
- Reprocessing and recycling
- **CO_2 - and environmental footprint**
- and Information requirements, including a digital product passport

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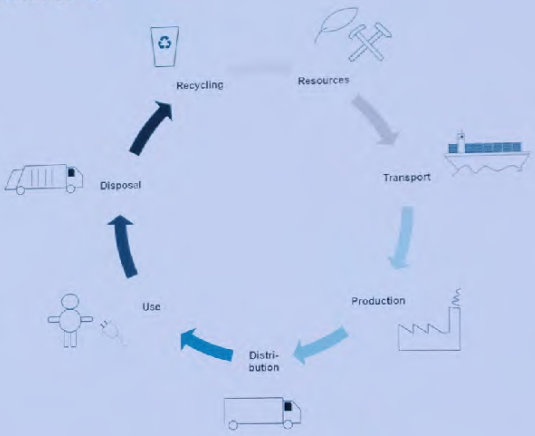
Life Cycle Assessment (LCA) and Product Carbon Footprint (PCF)

LCAs/ PCFs serve the purpose of innovation, sustainable transformation of products and processes as well as differentiation from competitors and a science-based marketing.

- A life cycle assessment is used to determine environmental impacts over the entire life cycle of a product.
- Environmental impacts are, for example, the influence on climate change, fossil resource consumption or acidification.
- With the help of LCAs and PCFs, companies can identify product and process optimization potential as well as climate related production hot spots.



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Life Cycle Assessments according to ISO 14040 and 14044 or Product Carbon Footprint according ISO 14067

Overview

Application into market

- Documentation of ecological aspects of the products
- Proof of sustainability commitment for consumer
- Innovative product and eco design
- Reduction of environmental impact

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Life Cycle Assessment – Environmental Impacts

Relation between LCA and PCF

Product Carbon Footprint:
involves determining the total amount of CO_2 and other greenhouse gases generated along the entire value chain of a product.

Climate change	Global warming because of greenhouse gases in the atmosphere
Eutrophication	Increased human-induced nutrient inputs to environmental systems
Acidification	Reduction of the pH value of soil and water bodies due to acid input
Resource use	Consumption of fossil and elemental resources
Summer smog	Air pollution due to high concentration of ozone and photo-oxidants

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Example: Office Chair 1/3

Source: Data (environdec.com)

- **Functional Unit:** One chair in use for 8 hours a day, 5 days a week, for 15 years. (Production location Spain)

Upstream
- Components/ Raw Materials extraction
- Manufacturing Process

Core
- Raw materials/ components transportation
- Product manufacturing processes
- Waste treatment
- Electricity, Natural Gas, Water
- Maintenance

Downstream
- Distribution
- Maintenance
- Product use
- Product and packaging end of life

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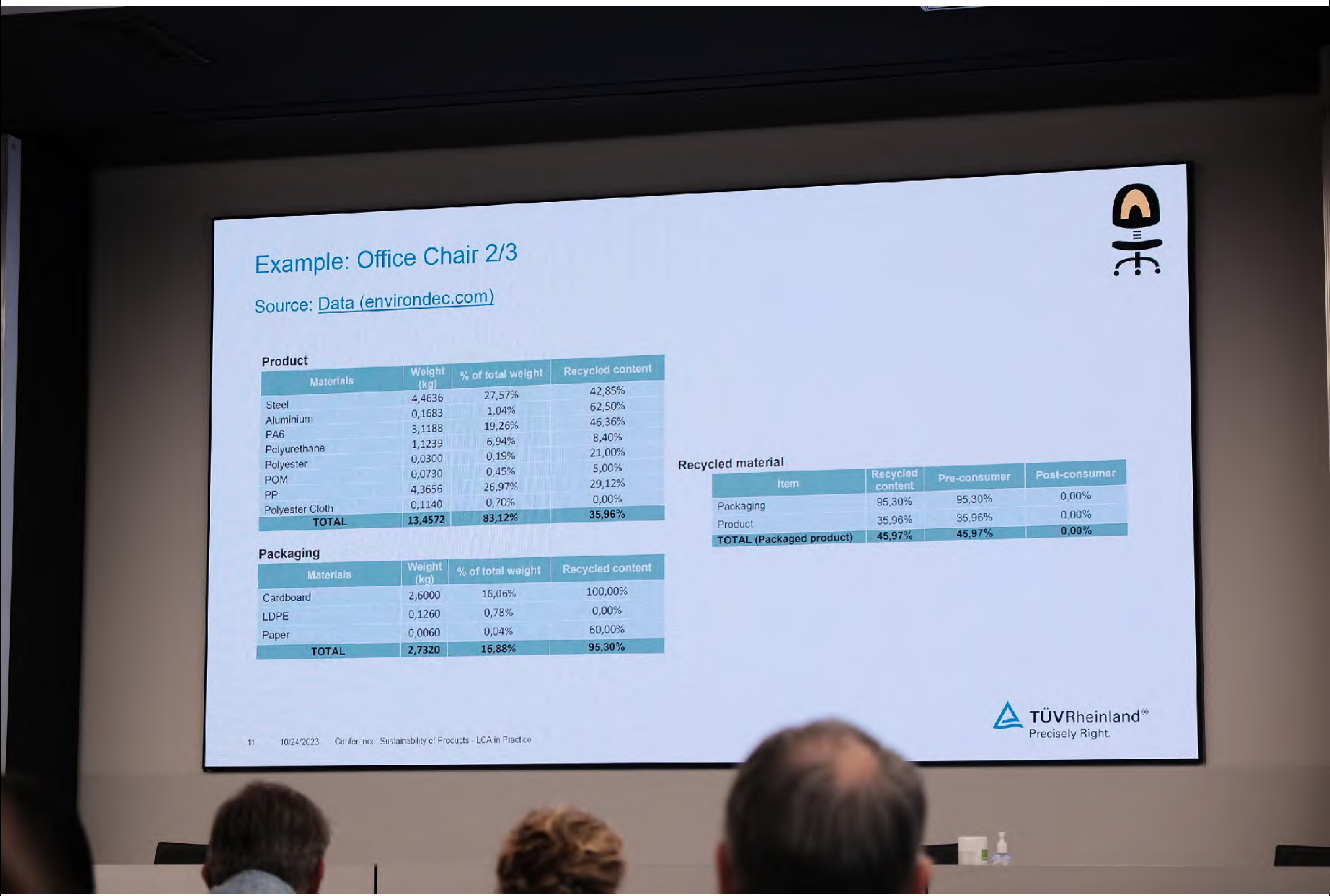
Example: Office Chair 2/3
Source: Data (environdec.com)
Product
Materials | Weight (kg) | % of total weight | Recycled content
Steel | 4,4636 | 27,57% | 42,85%
Aluminium | 0,1683 | 1,04% | 62,50%
PA6 | 3,1188 | 19,26% | 46,36%
Polyurethane | 1,1239 | 6,94% | 8,40%
Polyester | 0,0300 | 0,19% | 21,00%
POM | 0,0730 | 0,45% | 5,00%
PP | 4,3656 | 26,97% | 29,12%
Polyester Cloth | 0,1140 | 0,70% | 0,00%
TOTAL | 13,4572 | 83,12% | 35,96%
Packaging
Materials | Weight (kg) | % of total weight | Recycled content
Cardboard | 2,6000 | 16,06% | 100,00%
LDPE | 0,1260 | 0,78% | 0,00%
Paper | 0,0060 | 0,04% | 60,00%
TOTAL | 2,7320 | 16,88% | 95,30%
Recycled material
Item | Recycled content | Pre-consumer | Post-consumer
Packaging | 95,30% | 95,30% | 0,00%
Product | 35,96% | 35,96% | 0,00%
TOTAL (Packaged product) | 45,97% | 45,97% | 0,00%
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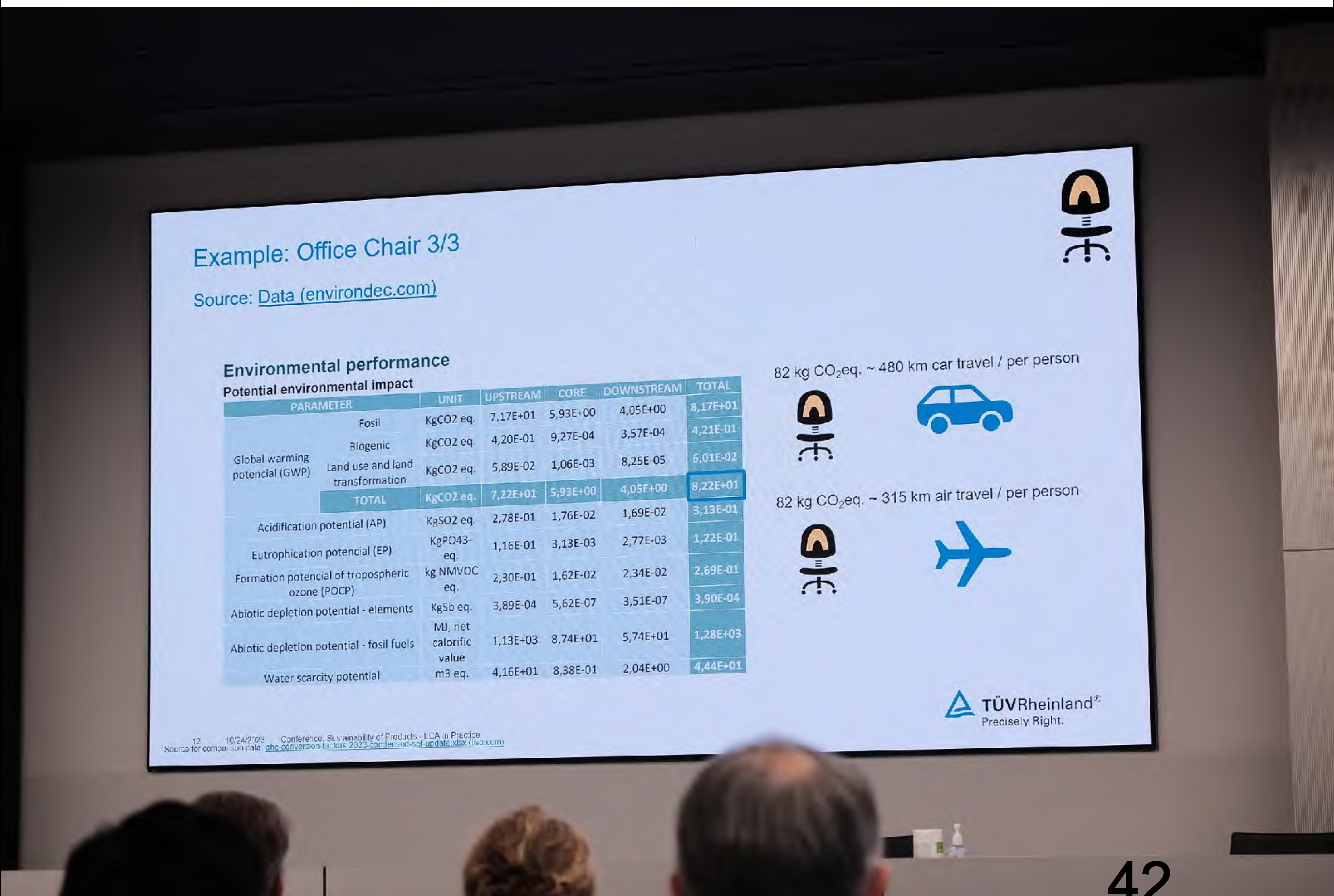
Example: Office Chair 3/3
Source: Data (environdec.com)
Environmental performance
Potential environmental impact
PARAMETER | UNIT | UPSTREAM | CORE | DOWNSTREAM | TOTAL
Global warming potencial (GWP) Fosil | KgCO2 eq. | 7,17E+01 | 5,93E+00 | 4,05E+00 | 8,17E+01
Biogenic | KgCO2 eq. | 4,20E-01 | 9,27E-04 | 3,57E-04 | 4,21E-01
Land use and land transformation | KgCO2 eq. | 5,89E-02 | 1,06E-03 | 8,25E-05 | 6,01E-02
TOTAL | KgCO2 eq. | 7,22E+01 | 5,93E+00 | 4,05E+00 | 8,22E+01
Acidification potential (AP) | KgSO2 eq. | 2,78E-01 | 1,76E-02 | 1,69E-02 | 3,13E-01
Eutrophication potencial (EP) | KgPO43- eq. | 1,16E-01 | 3,13E-03 | 2,77E-03 | 1,22E-01
Formation potencial of tropospheric ozone (POCP) | kg NMVOC eq. | 2,30E-01 | 1,62E-02 | 2,34E-02 | 2,69E-01
Abiotic depletion potential - elements | KgSb eq. | 3,89E-04 | 5,62E-07 | 3,51E-07 | 3,90E-04
Abiotic depletion potential - fosil fuels | MJ, net calorific value | 1,13E+03 | 8,74E+01 | 5,74E+01 | 1,28E+03
Water scarcity potential | m3 eq. | 4,16E+01 | 8,38E-01 | 2,04E+00 | 4,44E+01
82 kg CO2eq. ~ 480 km car travel / per person
82 kg CO2eq. ~ 315 km air travel / per person
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Example: Coffee Machine 1/2

Source: coffee-machine-slca.pdf (wordpress.com)

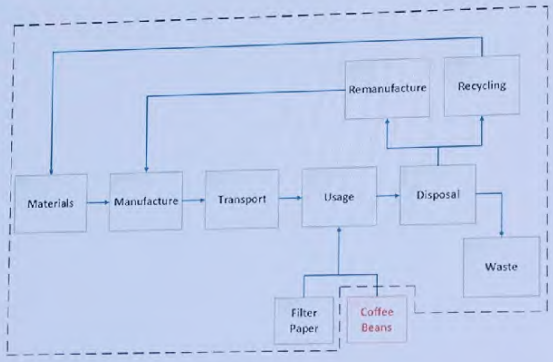

Table 1 Material and Process Energy Demand

Component	Material	Process	Mass kg	Material Energy MJ	Process Energy MJ	Total Production Energy MJ
Housing	Polypropylene	Polymer moulding	0.91	85.54	7.826	93.36
Small steel parts	Steel	Def. Processing	0.12	9.72	0.408	10.13
Small Aluminium parts	Aluminium	Def. Processing	0.08	16.8	0.208	17
Glass Jug	Glass (Pyrex)	Moulded	0.33	8.25	2.706	10.96
Heating element	Ni-Cr alloy	Def. Processing	0.026	3.38	0.0676	3.45
Electronics & LED	Electronics	Assembled	0.007	21	0.91	21.91
Cable sheath, 1m	PVC	Polymer extrusion	0.12	7.92	0.912	8.83
Cable core, 1m	Copper	Def. Processing	0.035	2.485	0.07	2.55
Plug body	Phenolic	Polymer moulding	0.037	3.33	0.481	3.81
Plug Pins	Brass	Def. processing	0.03	2.16	0.069	2.23
Packaging, Padding	Polymer foam	Polymer moulding	0.015	1.65	0.165	1.82
Packaging, box	Cardboard	Construction	0.125	3.5	0.0625	3.56
Other materials	Proxy material: Polycarbonate	Polymer moulding	0.04	4.4	0.44	4.84
TOTAL			1.875	170.135	14.33	184.45

Each use cycle also consumes a filter paper, weighing approximately 2 grams. Over 5 years 1,625 of them (3.65kg of paper) are used.

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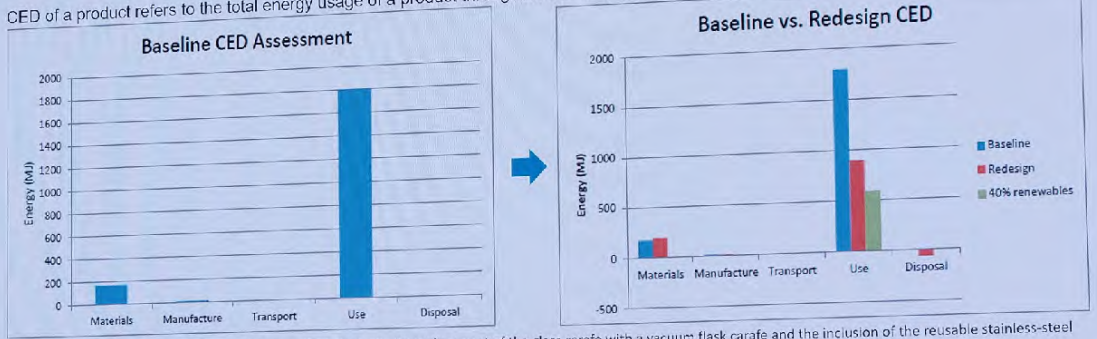
Example: Coffee Machine 2/2

Source: coffee-machine-slca.pdf (wordpress.com)

- **Functional Unit:** This coffee machine (640-watt) used once a day over a lifespan of 5 years, the total electrical power consumed is 194kWh (location: Ireland).

CED of a product refers to the total energy usage of a product throughout its life cycle.



The two redesign changes which impact the production stage are the replacement of the glass carafe with a vacuum flask carafe and the inclusion of the reusable stainless-steel filter.

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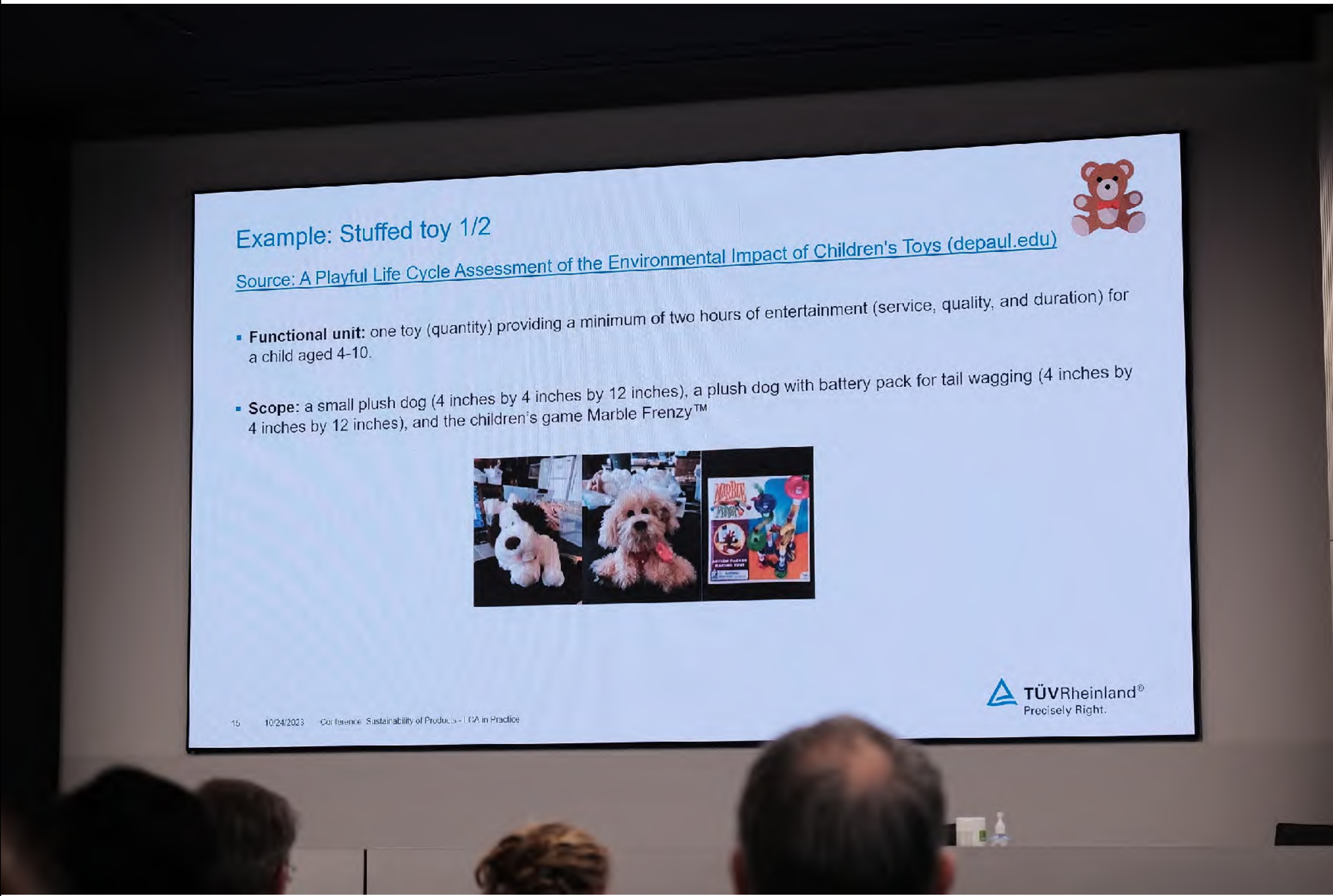
Example: Stuffed toy 1/2
Source: A Playful Life Cycle Assessment of the Environmental Impact of Children's Toys (depaul.edu)
Functional unit: one toy (quantity) providing a minimum of two hours of entertainment (service, quality, and duration) for a child aged 4-10.
Scope: a small plush dog (4 inches by 4 inches by 12 inches), a plush dog with battery pack for tail wagging (4 inches by 4 inches by 12 inches), and the children's game Marble Frenzy™
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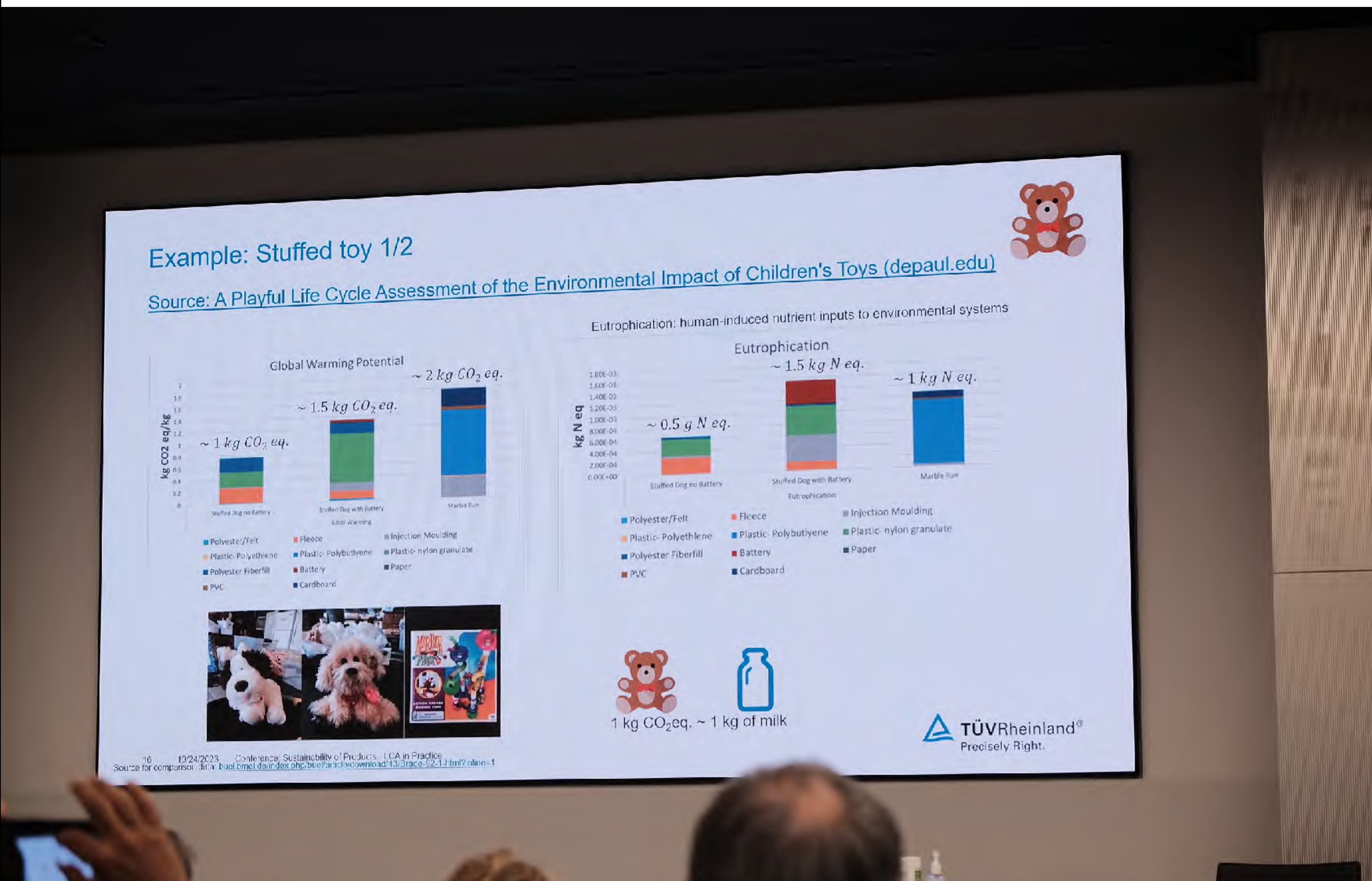
Example: Stuffed toy 1/2
Source: A Playful Life Cycle Assessment of the Environmental Impact of Children's Toys (depaul.edu)
Eutrophication: human-induced nutrient inputs to environmental systems
Global Warming Potential
~ 1 kg CO2 eq.
~ 1.5 kg CO2 eq.
~ 2 kg CO2 eq.
kg CO2 eq/kg
Eutrophication
~ 0.5 g N eq.
~ 1.5 kg N eq.
~ 1 kg N eq.
kg N eq
Polyester/Felt
Fleece
Injection Moulding
Plastic- Polyethlene
Plastic- Polybutiyene
Plastic- nylon granulate
Polyester Fiberfill
Battery
Paper
PVC
Cardboard
1 kg CO2eq. ~ 1 kg of milk
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Summary – LCA and PCF in ESPR

	Lifecycle Assessment (LCA)	Product Carbon Footprint (PCF)
Data background	Raw materials, processing, transport data, use, end of life	Raw materials, processing, transport data, use, end of life
Advantages	- **Different** environmental impacts are considered - Scientifically accepted methodology - Standard based - Holistic approach that identifies hotspots for optimization	- Compared to LCA, it is limited to a **single environmental category** (climate change) - Regarding communication possibilities, currently the most **"popular"** and often the most relevant in LCAs.
ISO Standards	ISO 14040 ISO 14044	ISO 14040 ISO 14044 ISO 14067
Complexity	high	medium

- Life cycle assessment is an **ecodesign requirement** and addresses:
  - Transparent presentation of the environmental characteristics at the product level, and derivable **product / process optimizations**
  - Realization of optimization potentials e.g. **Saving resources, reducing energy consumption, which helps to reduce greenhouse gases**
  - **Competitive advantages** through differentiation in the competitive environment and therefore **intended to be published by manufacturers in the Digital Product Passport under the ESPR**
- There are always greenhouse gas emissions that can be avoided, e.g. through product and process optimization, but there is also **always a part that is unavoidable**, which can then be offset accordingly with high-quality recognized climate protection projects to achieve a product without greenhouse emissions.

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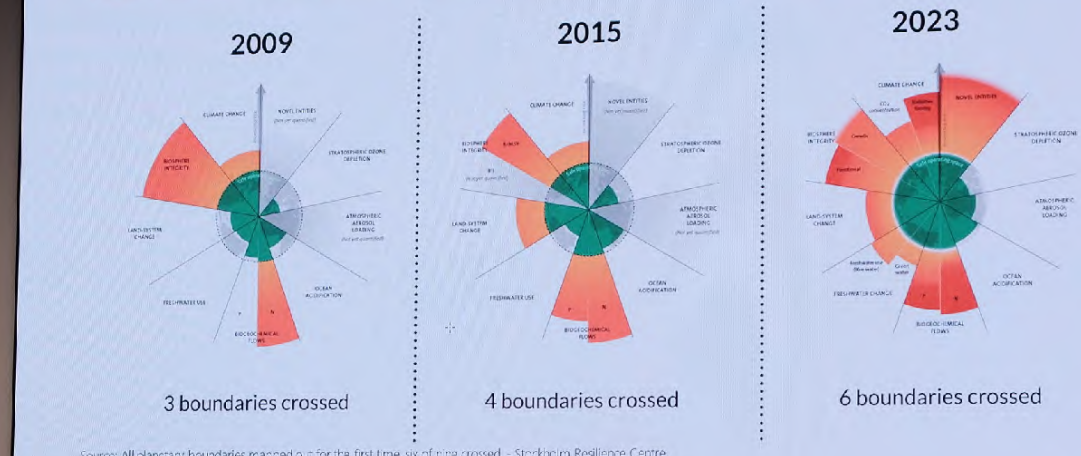
Background

THE PROBLEM IS BIGGER THAN CLIMATE CHANGE ... AND IT'S INCREASING.



Source: All planetary boundaries mapped out for the first time; six of nine crossed - Stockholm Resilience Centre

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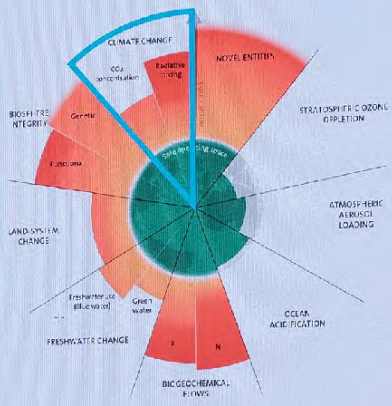
Background

CLIMATE CHANGE IS JUST ONE PART.



Source: All planetary boundaries mapped out for the first time, six of nine crossed - Stockholm Resilience Centre

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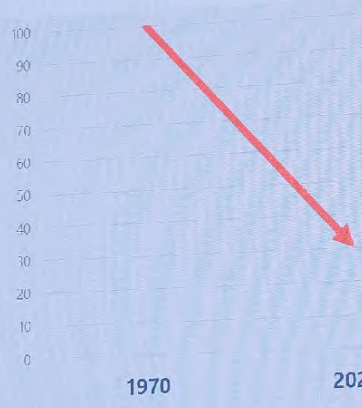
Challenge

THE MOST IMPORTANT ISSUE IS THE LOSS IN BIODIVERSITY.



The basis of our existence is threatened by global destruction of the environment.

Without comprehensive, active measures the viability of the biosphere is put into question already in the next decades.

As a consequence of the overutilization since 1970 - i.e. a little more than 50 years - almost

70%

of insects, mammals, birds, fish, reptiles and amphibians has been lost.

Source: Living Planet Index 1970 = 100% WWF / ZSI 2022

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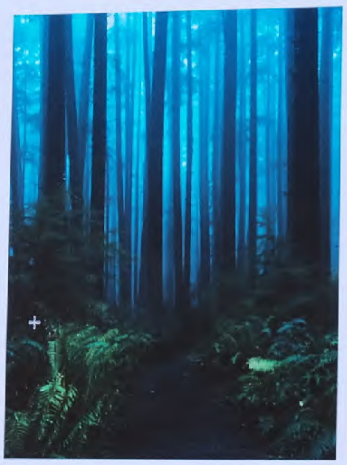
Conventional vs. Comprehensive Compensation

PLANTING TREES IS OF LIMITED HELP.

- **CO2 Removal Process:**
  - Final removal of CO2 necessitates it becoming abiotic.
  - This transformation takes millennia.
- **Challenges in Tree-Based Solutions:**
  - CO2 retention in newly planted trees is gradual and faces risks like fire, forest clearing, and dry conditions.
- **Biodiversity Concerns:**
  - Monocultures contradict the biodiversity concept.
- **Limited Scope of Consideration:**
  - Other impact categories (acidification, eutrophication, water usage) are not accounted for.



- **Exclusion of 1:1 Offset:**
  - In other impact categories, a 1:1 offset is excluded for natural scientific reasons.
- **Shift in Goal:**
  - The goal is not material restitution but achieving an even balance between environmental damage and environmental value.
- **Alignment with Global Initiatives:**
  - This approach aligns with the United Nations' Decade for Biodiversity.
  - It supports the EU-Naturschutzgesetz from 2023.

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GREENZERO Approach: Combination of established Concepts

ECOLOGICAL AND ECONOMIC PROCESSES

LIFE CYCLE ASSESSMENT

Results cover the life cycle and several environmental impact categories

=

ENVIRON-MENTAL COSTS

According to CE Delft Environmental Prices

REDUCTION

Optimization of Eco-Design while preventing burden shifting

INVESTMENT IN COMPEN-SATION

Amount equals the remaining environmental costs

=

ENVIRON-MENTAL VALUE

Ecosystem performance produces a balance: environmental value

greenzero-standard.de

GREENZERO Approach

COMPREHENSIVE COMPENSATION: BEYOND MATERIAL OFFSETTING

Analysis and reduction of environmental impacts of products, organizations or quarters based on LCA principles:

Establishes damages to health, biodiversity and infrastructure

Compensation by investing in biodiversity:

Strengthening ecosystems.

Expert led upgrading of degraded or devastated areas to biotopes and living spaces with improved conditions for biodiversity, health and infrastructure.

Environmental Costs as bottom line for these consequences

Investment in **Environmental Value** as a compensation for environmental costs.

Life Cycle Assessment → **Monetization** (Environmental Costs) → **Reduction** → **Investment in Environmental Value** → **Creation of Environmental Value** (Renaturation and ecologic upgrading with a diversity in biotopes, species and genes)

8

GREENZERO Approach

INTERNALIZATION OF ENVIRONMENTAL COSTS

Journal of Environmental Management 329 (2023) 117068

Contents lists available at ScienceDirect

Journal of Environmental Management

journal homepage: www.elsevier.com/locate/jenvman

Research article

Offsetting environmental impacts beyond climate change: the Circular Ecosystem Compensation approach

Daniel Moore [a,*], Vanessa Bach [a], Matthias Finkbeiner [a], Theresa Honkomp [b,c], Heinz Ahn [b], Madlen Sprenger [c], Linda Froese [c], Dirk Gratzel [c]

[a] Chair of Sustainable Engineering, Technische Universität Berlin, Straße des 17. Juni 135, 10623, Berlin, Germany
[b] Innovationsgesellschaft der Technischen Universität Braunschweig MbH, Wilhelmstrasse 3, 38160, Braunschweig, Germany
[c] HeinzERBE GmbH, Im Welterbe 1-8, 45141, Essen, Germany

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GREENZERO Approach

INTERNALIZATION OF ENVIRONMENTAL COSTS

The overall goal is to integrate environmental costs into economic considerations, fostering accountability and encouraging practices that are environmentally responsible.

1. Monetization of LCA Results:
   Environmental impacts across different categories are converted into a single monetary unit

2. Determining Total Environmental Costs:
   By monetizing LCA results, the total environmental costs can be calculated for a broad set of impact categories.

3. Attribution of Responsibility:
   The sum of environmental costs, expressed as a single monetary value, enables the attribution of responsibility for environmental impacts to the polluter.

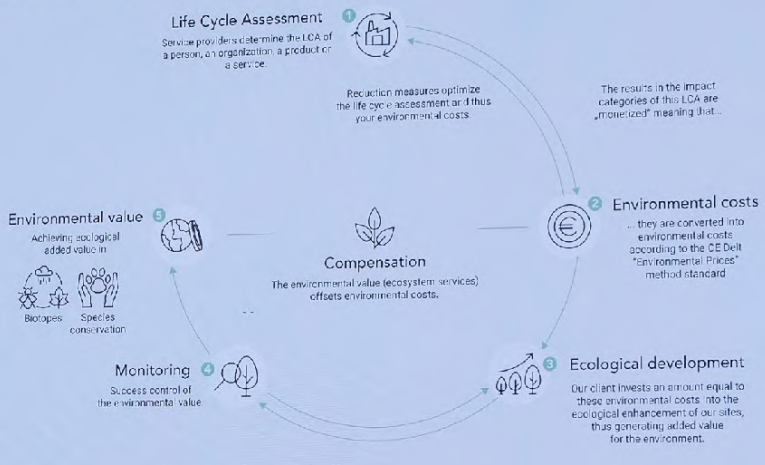
4. Compensation by the Polluter:
   The polluter is expected to compensate for the environmental impacts based on the determined costs.

5. Contributing to Environmental Solutions:
   This internalization of environmental costs, coupled with compensation, aims to address urgent environmental issues like climate change and biodiversity loss.

10

Overview

ENVIRONMENTAL VALUE ENABLES A NEW BALANCE OF ECONOMY AND ECOLOGY



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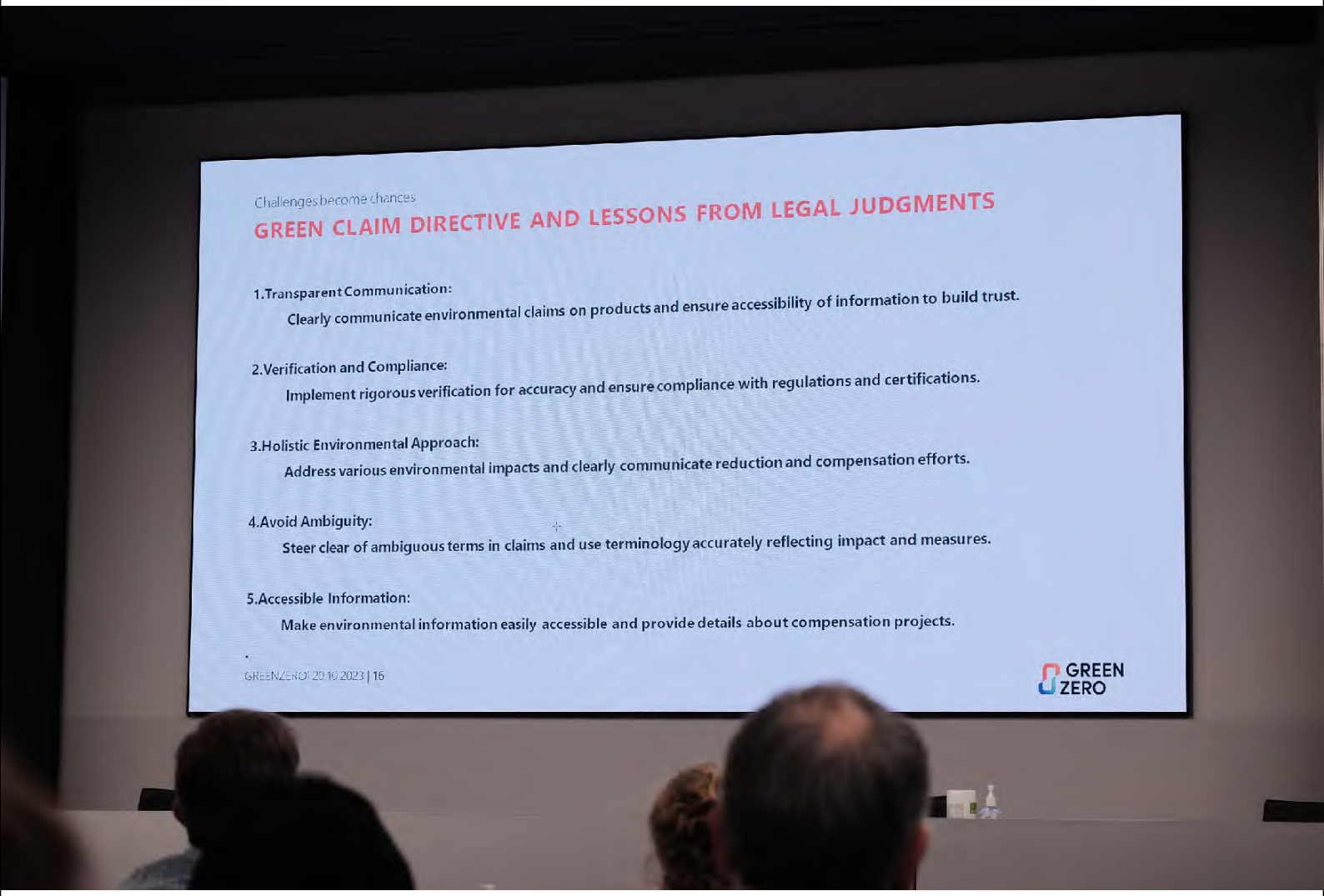
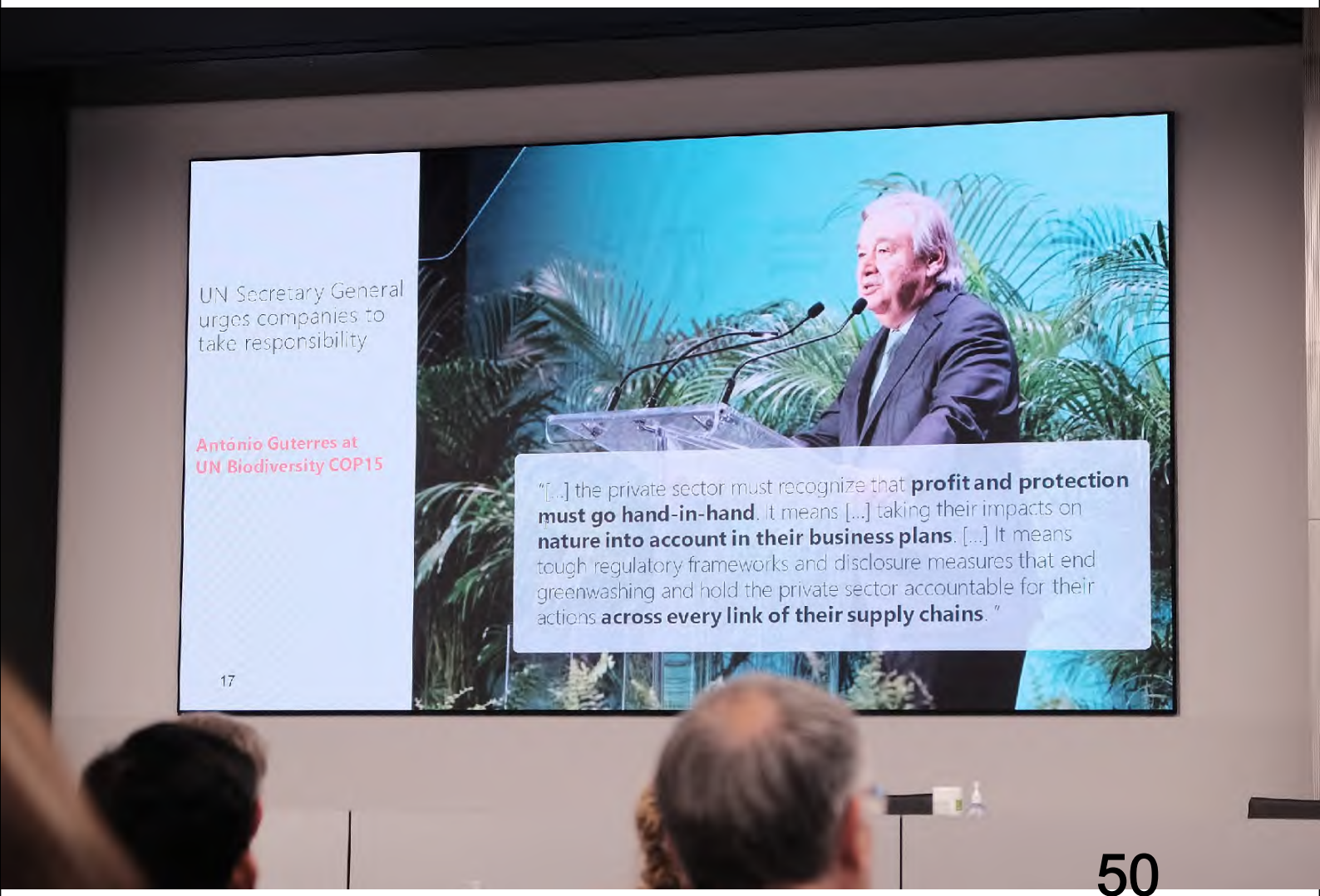
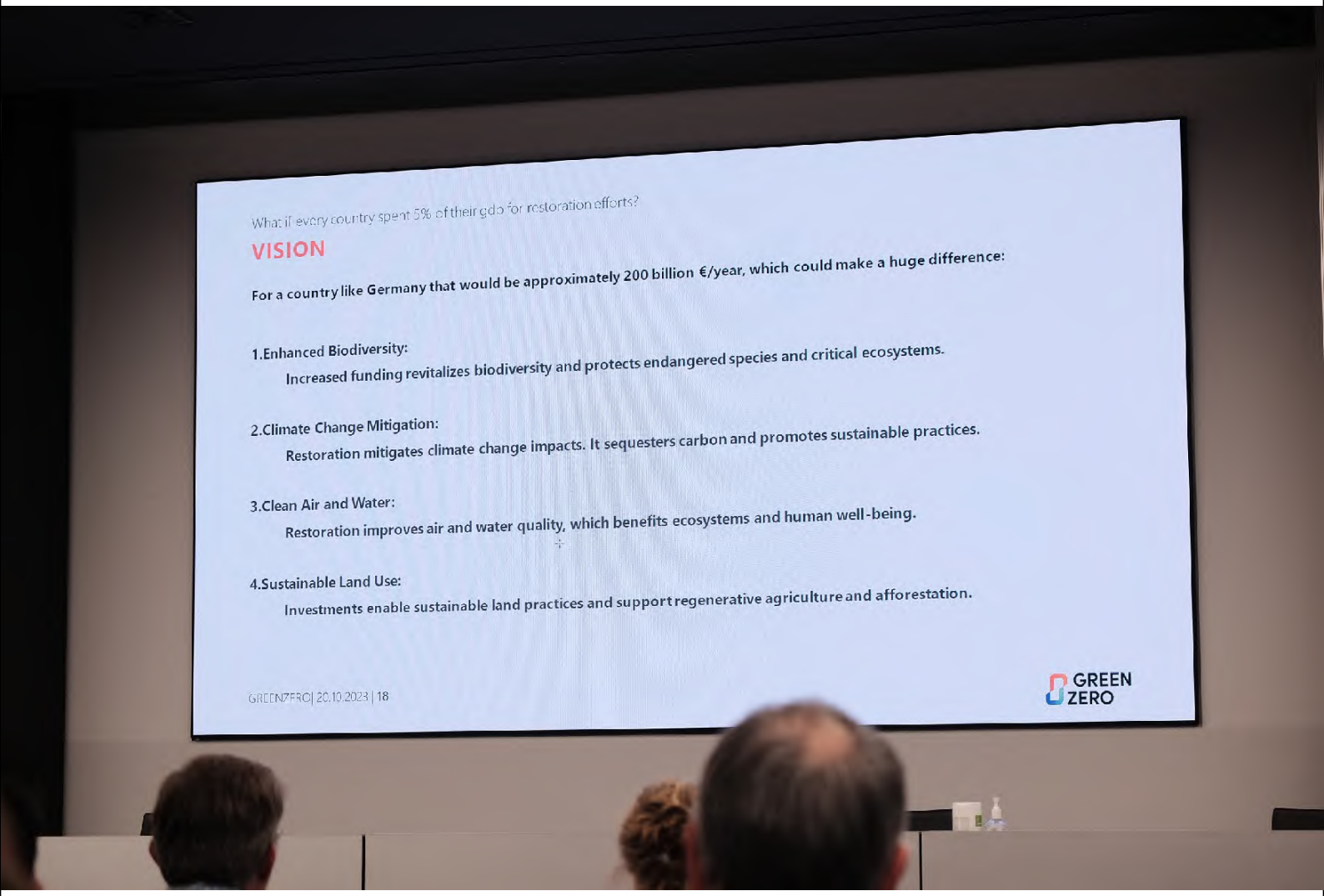
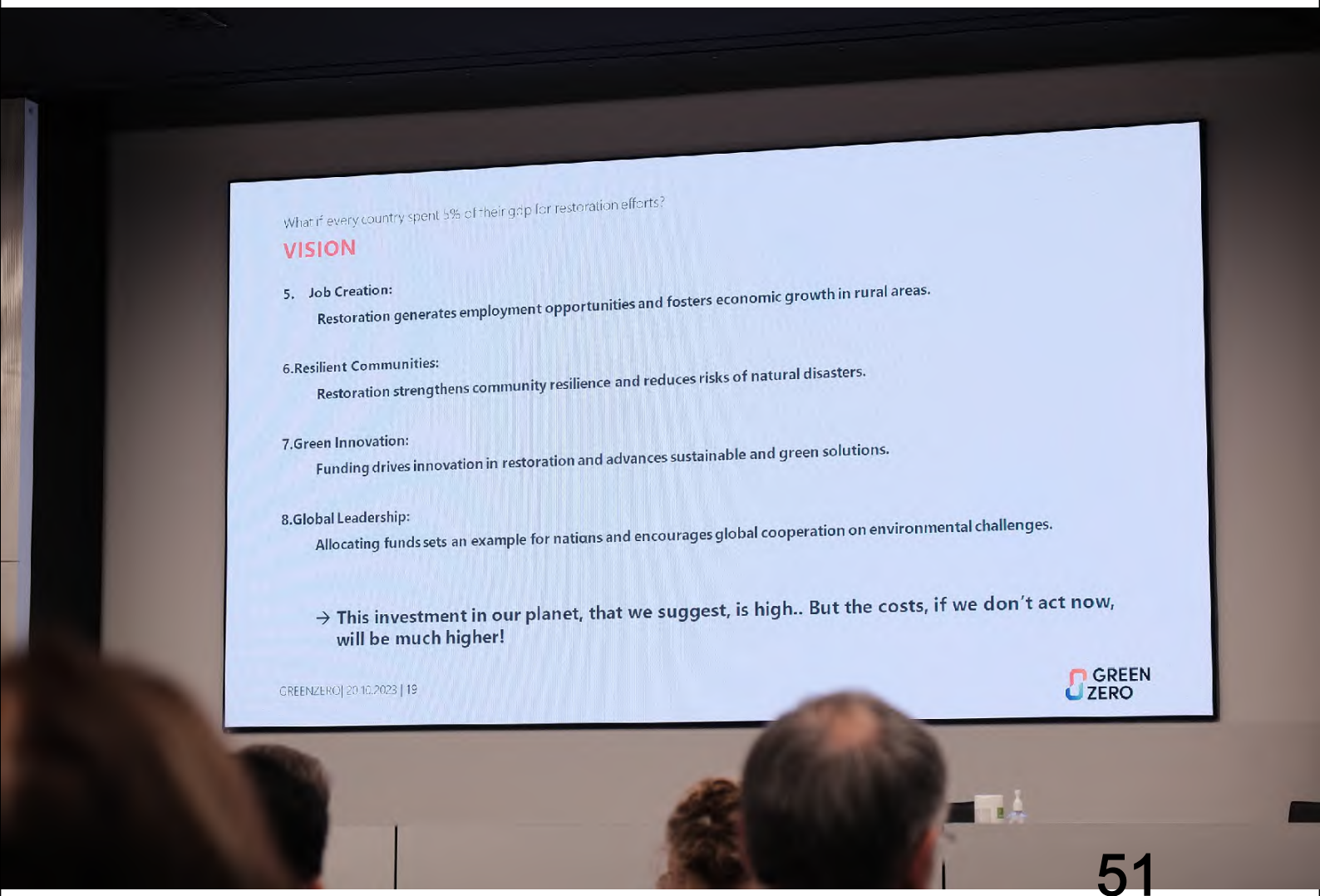
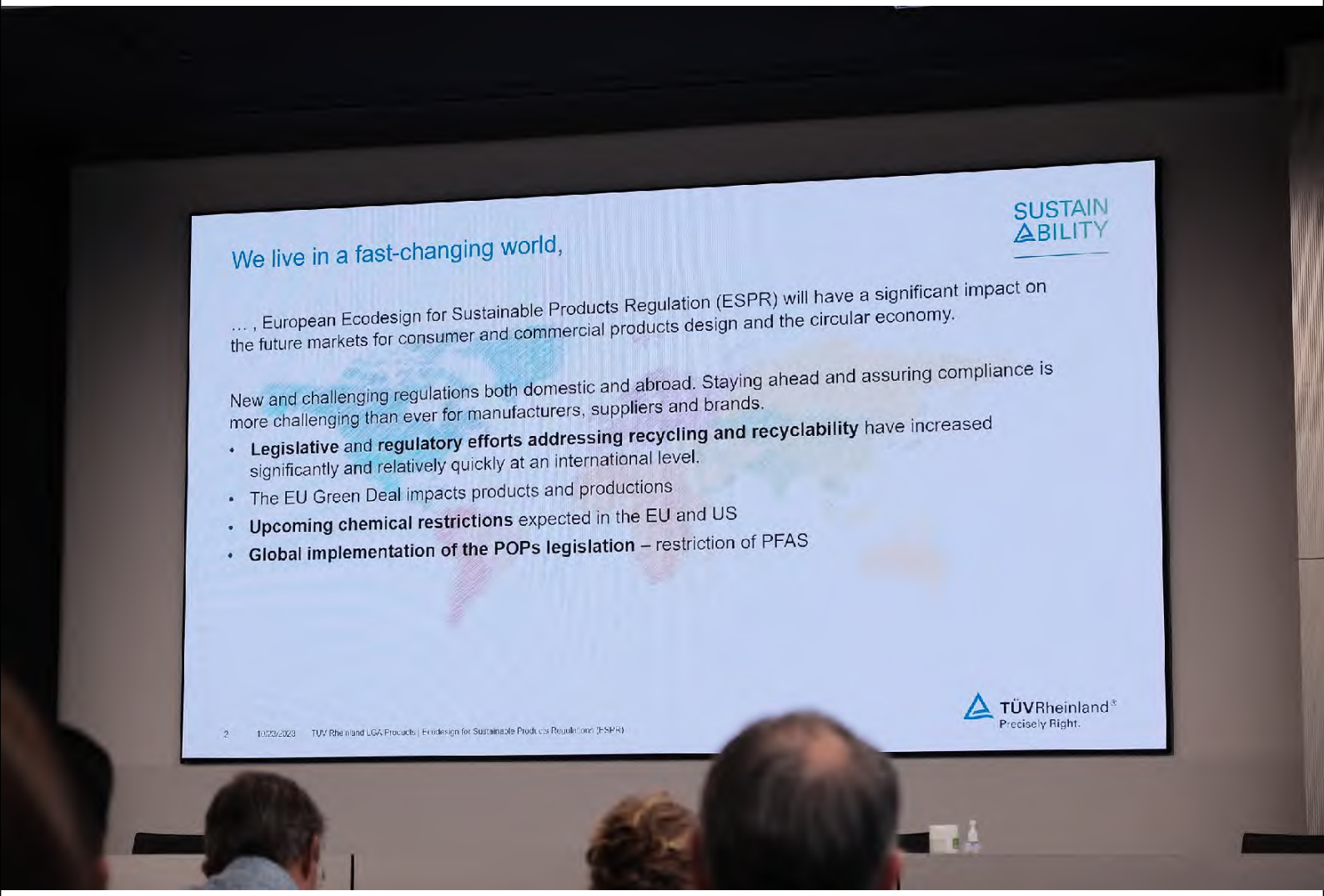

Challenges become chances
GREEN CLAIM DIRECTIVE AND LESSONS FROM LEGAL JUDGMENTS
1.Transparent Communication:
Clearly communicate environmental claims on products and ensure accessibility of information to build trust.
2.Verification and Compliance:
Implement rigorous verification for accuracy and ensure compliance with regulations and certifications.
3.Holistic Environmental Approach:
Address various environmental impacts and clearly communicate reduction and compensation efforts.
4.Avoid Ambiguity:
Steer clear of ambiguous terms in claims and use terminology accurately reflecting impact and measures.
5.Accessible Information:
Make environmental information easily accessible and provide details about compensation projects.
GREENZERO! 20.10.2023 | 16
GREEN ZERO


UN Secretary General urges companies to take responsibility
António Guterres at UN Biodiversity COP15
"[...] the private sector must recognize that **profit and protection must go hand-in-hand**. It means [...] taking their impacts on **nature into account in their business plans**. [...] It means tough regulatory frameworks and disclosure measures that end greenwashing and hold the private sector accountable for their actions **across every link of their supply chains**."
17


What if every country spent 5% of their gdp for restoration efforts?
VISION
For a country like Germany that would be approximately 200 billion €/year, which could make a huge difference:
1.Enhanced Biodiversity:
Increased funding revitalizes biodiversity and protects endangered species and critical ecosystems.
2.Climate Change Mitigation:
Restoration mitigates climate change impacts. It sequesters carbon and promotes sustainable practices.
3.Clean Air and Water:
Restoration improves air and water quality, which benefits ecosystems and human well-being.
4.Sustainable Land Use:
Investments enable sustainable land practices and support regenerative agriculture and afforestation.
GREENZERO| 20.10.2023 | 18
GREEN ZERO


What if every country spent 5% of their gdp for restoration efforts?
VISION
5. Job Creation:
Restoration generates employment opportunities and fosters economic growth in rural areas.
6.Resilient Communities:
Restoration strengthens community resilience and reduces risks of natural disasters.
7.Green Innovation:
Funding drives innovation in restoration and advances sustainable and green solutions.
8.Global Leadership:
Allocating funds sets an example for nations and encourages global cooperation on environmental challenges.
→ This investment in our planet, that we suggest, is high.. But the costs, if we don't act now, will be much higher!
GREENZERO| 20.10.2023 | 19
GREEN ZERO


We live in a fast-changing world,
SUSTAIN ABILITY
… , European Ecodesign for Sustainable Products Regulation (ESPR) will have a significant impact on the future markets for consumer and commercial products design and the circular economy.
New and challenging regulations both domestic and abroad. Staying ahead and assuring compliance is more challenging than ever for manufacturers, suppliers and brands.
• Legislative and regulatory efforts addressing recycling and recyclability have increased significantly and relatively quickly at an international level.
• The EU Green Deal impacts products and productions
• Upcoming chemical restrictions expected in the EU and US
• Global implementation of the POPs legislation – restriction of PFAS
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2 10/23/2023 TÜV Rheinland LGA Products | Ecodesign for Sustainable Products Regulations (ESPR)


Recycling materials requirements for the circular economy
SUSTAIN ABILITY
Recycling materials requirements for the circular economy
Aim of the ESPR is to promote the production and consumption of sustainable products that are efficient in use, last longer, are based on recycled materials rather than primary raw materials, and are marketed using circular business models.
In a circular economy, secondary materials are valuable materials and not waste.
Circular economy requires quality-assured recycling
The European WFD defines criteria, the fulfillment of which allows a waste to be released from the waste regime under the producer's own responsibility:
• Material is intended for a specific purpose;
• There is a market or demand for the substance or object;
• Meets the technical requirements for the intended use and complies with legislations and product standards;
• Use of the material or product does not result in overall adverse effects on the environment or health.
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3 10/23/2023 TÜV Rheinland LGA Products | Ecodesign for Sustainable Products Regulations (ESPR)

Available standards for recycling, marking and traceability

SUSTAIN ABILITY

Recycling materials requirements for the circular economy

Recyclability of a product means that it can be

- collected,
- separated,
- otherwise recovered from the waste stream for reuse or
- use in manufacturing or assembling another item.

… is an important component of this and must already be taken into account during development.

- Existing sorting and recycling infrastructure for the respective product → ensuring high-quality mechanical recycling.
- **Products/Materials** must **be designed** in such a way that it is **sortable** in terms of the proportion
- **Recycling incompatibilities are to be excluded** so that the recycling process cannot be disrupted and recycling success is guaranteed in practice

Existing Standards

EN 15343 „**Traceability**"
Proof of the quality of the regranulate

- EN 15342: Polystyrene (PS)
- EN 15344: Polyethylene (PE)
- EN 15345: Polypropylene (PP)
- EN 15346: Polyvinyl chloride (PVC)
- EN 15347: Plastic waste
- EN 15348: Polyethylene terephthalate (PVC)

EN 45555 „**Recyclability**"
DIN EN ISO 14021 "Environmental claims"
ISO 11469 "**Markings**"
…

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Material cycles need to be closed through recycling and reuse of recycled materials to move towards the ideal of a circular economy. Upcycling, Recycling and Downcycling have become part of our language and industry, but their meanings are not always clear.

Recycling

Upcycling

Downcycling

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Recycled plastic intended to come into contact with foods

SUSTAIN ABILITY

Recycling materials requirements for the circular economy on plastics

EU Commission adopted in 2018 a strategy for plastics in a circular economy to **increase recycled content in packaging**.

Food packaging holds a large proportion of plastic packaging, therefore the policy can only achieve its objectives if also the recycled plastic content in food packaging increases.

Safety and **quality of recycled plastic materials** and articles, rules are laid down in **Regulation (EU) 2022/1616**.

Key aspects

Individual batches of recycled plastic and of recycled plastic materials and articles must be accompanied by

- A single document or **record regarding their quality**,
- Including a **declaration of compliance** (DoC),
- **Instructions** to the converters and final users **regarding its use**,
- Shall be identified by a **unique number** and the name of the manufacturing stage from which they originate.

GKV BDE bvse

NEW RULES FOR PLASTIC RECYCLATES IN CONTACT WITH FOOD

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Recycled plastic intended to come into contact with foods

SUSTAIN ABILITY

Recycling materials requirements for the circular economy on plastics

Recycling facilities are complex. Installations and operation depend on many parameters and procedures.

Decontamination facility must have

- documents that summarize the operation,
- **control** and **monitoring** of this facility and
- the **recycling facility** to which it belongs in a standardized form **such that compliance with this Regulation is demonstrated.**

... compliance monitoring by the recyclers themselves and **efficient audits** as part of official inspections.

Business operators shall reflect the following points

- DoC are different from FCM law,
- DoC does not contain details about substances, which are subject to limitations
- Migration tests need to be executed in a sensible way.
- Test should include all common monomers and additives for the specific material, and
  - NIAS testing should be considered.
- More available once the guidance document is public


TÜV Rheinland Group – Customer Information
Business Stream Products

Recycled Food Contact Materials
Regulation (EU) 2022/1616

TÜV Rheinland LCA Products - Information

October 2022

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Electrical and Electronic Equipment (EEE)

SUSTAIN ABILITY

Recycling materials requirements for the circular economy

Material requirements for plastics used in electrical and electronic equipment include, largely irrespective of whether they are primary plastics or PCR:

- **Odor**
- **Aesthetic requirements**, e.g. color, gloss, and yellowing index.
- **Recycled content**, specified as % and PCR **(Post-Consumer Recyclate)** or PIR (**Post-Industrial Recyclate)** content
- **Chemical requirement** - RoHS, REACH and POP
- **Physical requirements** - density, adhesion strength
- **Mechanical requirements** - tensile modulus and strength, tensile elongation, etc.
- **Thermal requirements** - softening temperature or melting temperature.
- **Flame resistance**, according to UL 94 or ASTM D 3874.
- **Purity** and **chemical properties**, e.g., filler content, bromine content, impurities.
- … **UV stability** (ban on certain UV-stabilizer)

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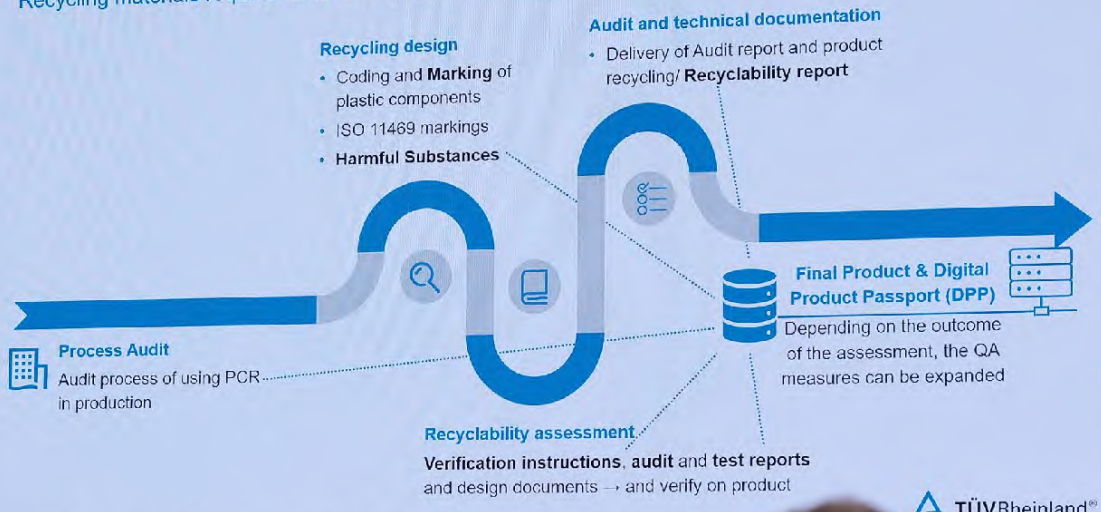
Process chain and Information obligations

SUSTAIN ABILITY

Recycling materials requirements for the circular economy - Transparency



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Toys and Childcare Products (Made of Polyester)
Polyester is a synthetic polymer that is very easy to recycle, if it is available in large quantities, sorted by type and with only minor contamination (exclusion of materials from household waste stream).
Mechanical recycling
Plastic is melted to make new yarn. This process can only be done a few times before the fiber loses its quality.
Chemical recycling
involves breaking down the plastic molecules and reforming them into yarn.
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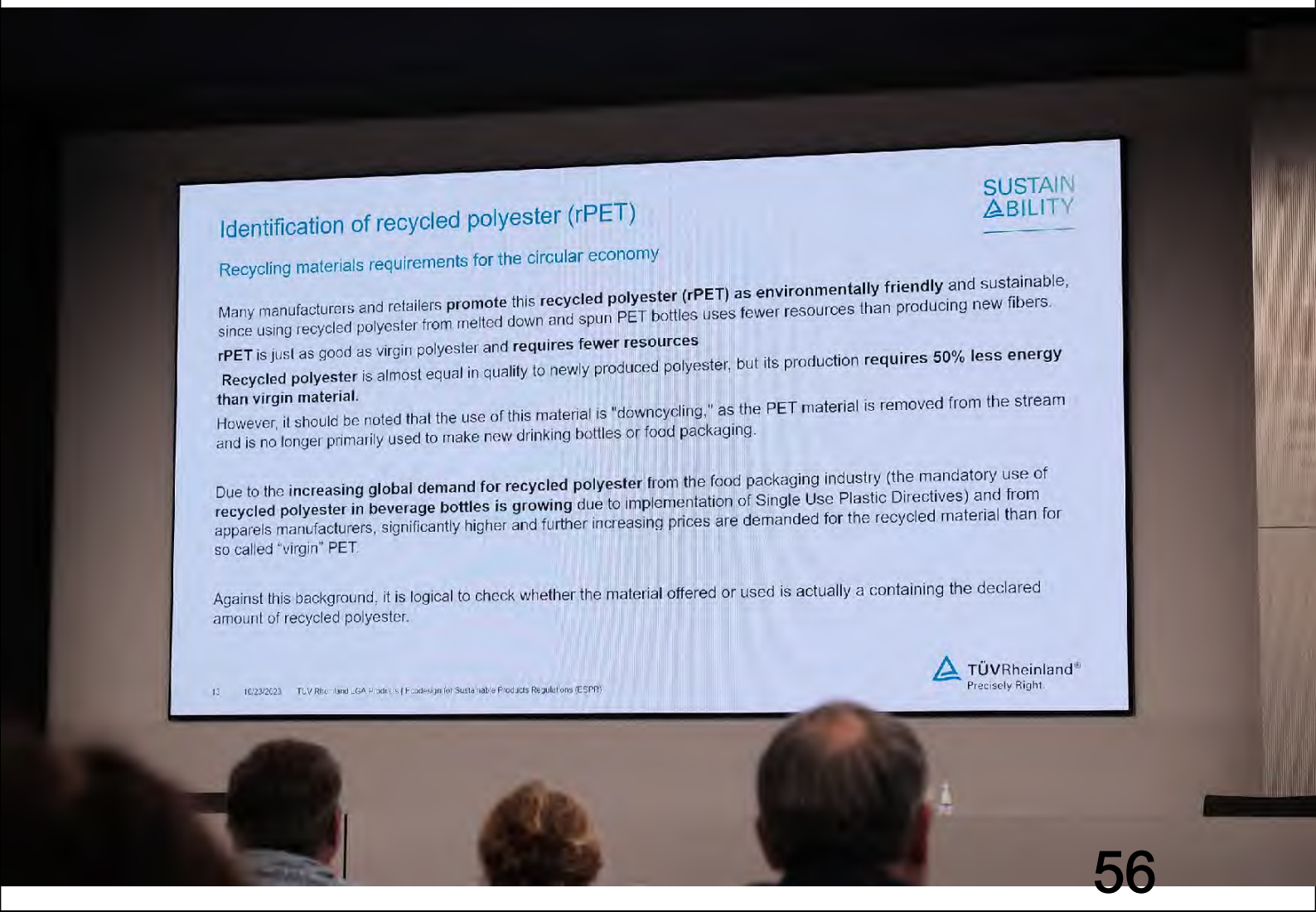
Identification of recycled polyester (rPET)
SUSTAIN ABILITY
Recycling materials requirements for the circular economy
Many manufacturers and retailers promote this recycled polyester (rPET) as environmentally friendly and sustainable, since using recycled polyester from melted down and spun PET bottles uses fewer resources than producing new fibers.
rPET is just as good as virgin polyester and requires fewer resources
Recycled polyester is almost equal in quality to newly produced polyester, but its production requires 50% less energy than virgin material.
However, it should be noted that the use of this material is "downcycling," as the PET material is removed from the stream and is no longer primarily used to make new drinking bottles or food packaging.
Due to the increasing global demand for recycled polyester from the food packaging industry (the mandatory use of recycled polyester in beverage bottles is growing due to implementation of Single Use Plastic Directives) and from apparels manufacturers, significantly higher and further increasing prices are demanded for the recycled material than for so called "virgin" PET.
Against this background, it is logical to check whether the material offered or used is actually a containing the declared amount of recycled polyester.
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Conclusions
Recycling materials requirements for the circular economy

Coordinated recycled material use rates to avoid cannibalization of functioning recycling streams.

Reliable and verifiable standards, means

- Clear classification of plastic waste according to material flow and degree of recycling (post-consumer, post-industrial/pre-consumer, post-commercial, etc.)
- (minimum) qualities depending on the intended use of the recyclate
- Labeling of the recycled content and type of recyclate
- Handling of plastic waste and recyclates (collection, sampling, processing, etc.)

Documentation & Information

- Reports on verified Recycle design, Recyclability and Harmful Substances form a part of the sustainable product performance and belong to the DPP

Digital product passport (DPP) as game changer for product standards*

Regulator

- Increase envionmental sustainability of products
- Encourage market surveillance authorities to step up digitalisation of product inspections and data collection
- Promote circularity by enabling new ecosystems through data (e.g.: refurbish, repair, recycle)

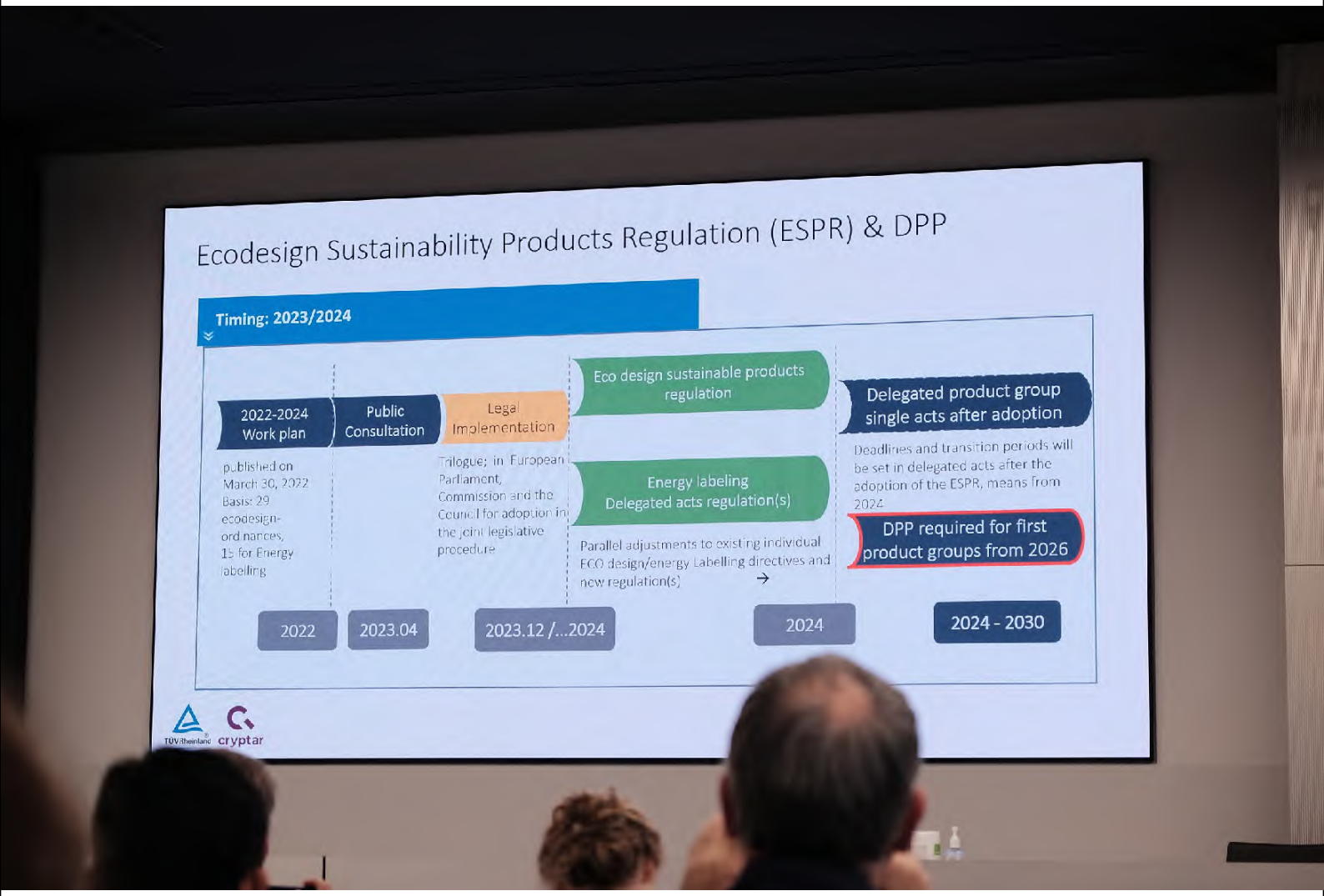
Manufacturer

- Better informed choices to increase product quality and sustainability
- Support the establishment of cross-sectoral value chains, opening up new markets
- Enable automated predictive and prescriptive resource efficiency strategies

Consumer

- Better informed decisions by taking environmental impact into consideration
- Increase trust through transparency like repair guides, re-use, carbon footprint, lifecycle
- Protection from counterfeit or dangerous products

*https://circulareconomy.europa.eu/pl digital_products_passport_report_v6.pdf


Ecodesign Sustainability Products Regulation (ESPR) & DPP
Timing: 2023/2024
2022-2024 Work plan
Public Consultation
Legal Implementation
Eco design sustainable products regulation
Delegated product group single acts after adoption
published on March 30, 2022 Basis: 29 ecodesign-ordinances, 15 for Energy labelling
Trilogue; in European Parliament, Commission and the Council for adoption in the joint legislative procedure
Energy labeling Delegated acts regulation(s)
Deadlines and transition periods will be set in delegated acts after the adoption of the ESPR, means from 2024
DPP required for first product groups from 2026
Parallel adjustments to existing individual ECO design/energy Labelling directives and new regulation(s)
2022
2023.04
2023.12 /...2024
2024
2024 - 2030
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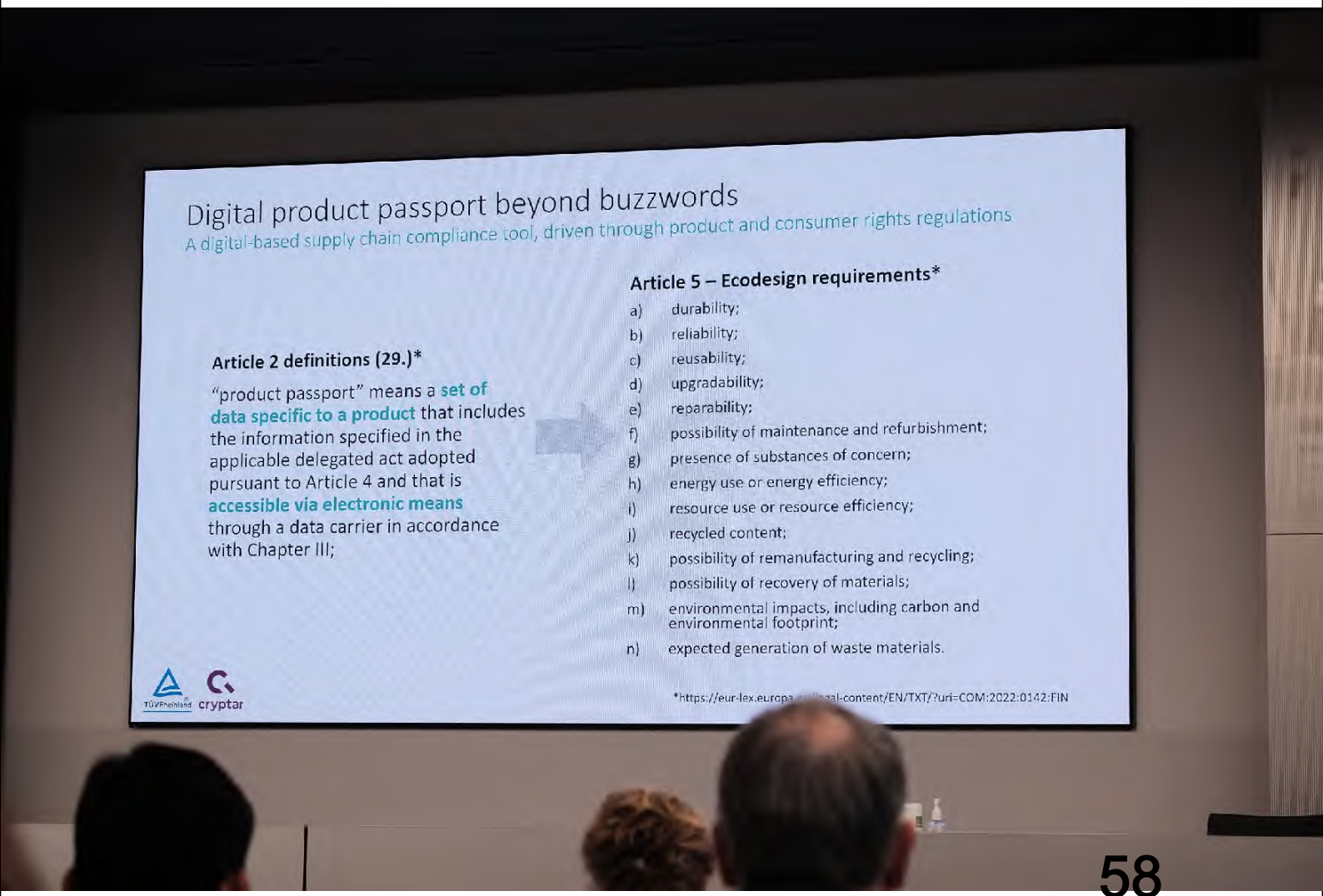
Digital product passport beyond buzzwords
A digital-based supply chain compliance tool, driven through product and consumer rights regulations
Article 2 definitions (29.)*
"product passport" means a set of data specific to a product that includes the information specified in the applicable delegated act adopted pursuant to Article 4 and that is accessible via electronic means through a data carrier in accordance with Chapter III;
Article 5 – Ecodesign requirements*
a) durability;
b) reliability;
c) reusability;
d) upgradability;
e) reparability;
f) possibility of maintenance and refurbishment;
g) presence of substances of concern;
h) energy use or energy efficiency;
i) resource use or resource efficiency;
j) recycled content;
k) possibility of remanufacturing and recycling;
l) possibility of recovery of materials;
m) environmental impacts, including carbon and environmental footprint;
n) expected generation of waste materials.
*https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2022:0142:FIN
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Current considerations for designing the digital product passport
accessible via electronic means through a data carrier in accordance with Chapter III
Offline dataset
Online dataset
Control dataset
Central Registry
All data carriers
All product unique identifiers
The information that allows the verification of the authenticity of the DPP
Hash Function
DPP
Public data
Restricted data
Scan DPP
Basic Data Elements
Links to DPP data
Control Data Elements
Online counterfeiting info
Data Carrier
European Commission
https://ec.europa.eu/docsroom/documents/54874/attachments/1/translations/en/renditions/native
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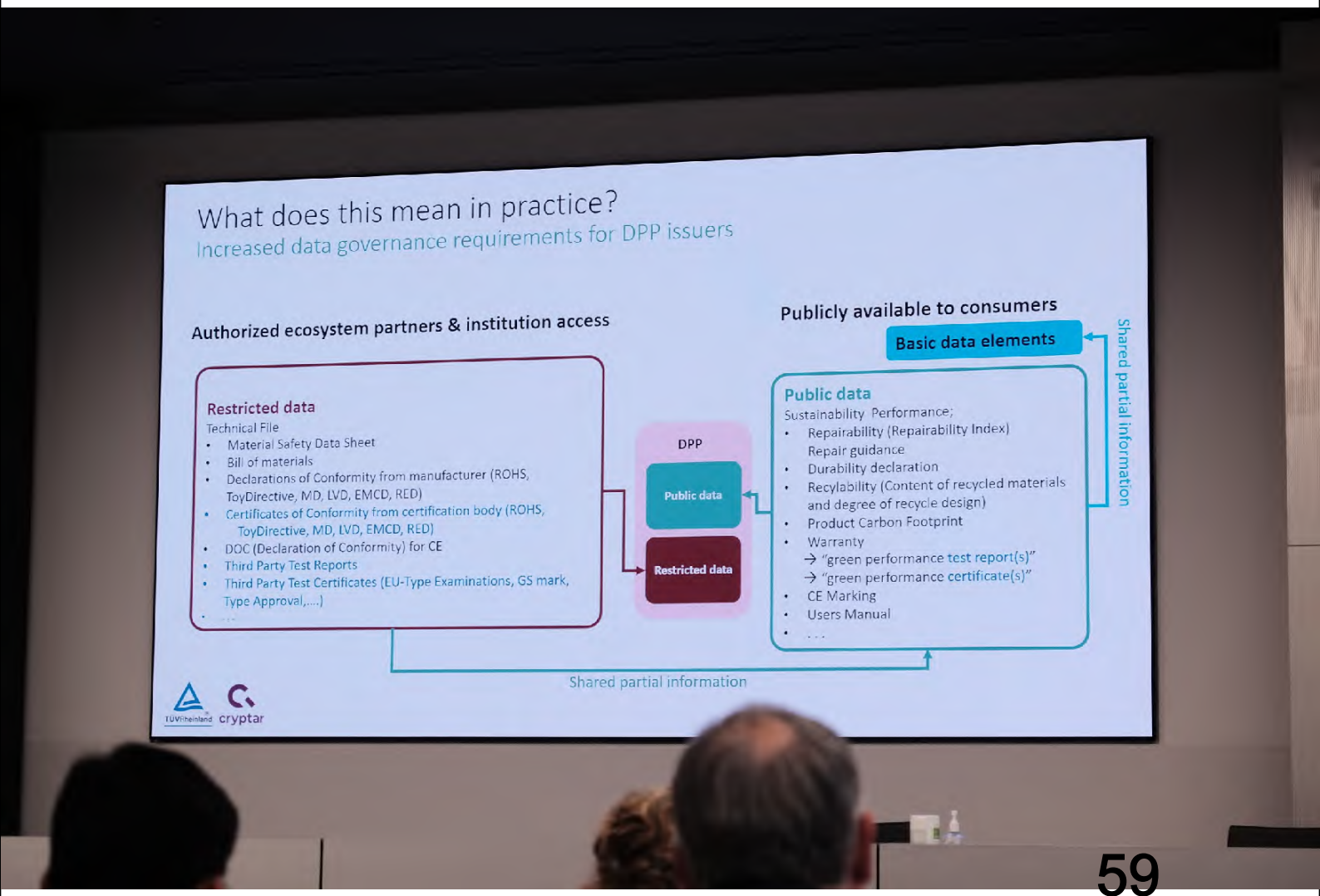
What does this mean in practice?
Increased data governance requirements for DPP issuers
Authorized ecosystem partners & institution access
Publicly available to consumers
Basic data elements
Shared partial information
Restricted data
Technical File
• Material Safety Data Sheet
• Bill of materials
• Declarations of Conformity from manufacturer (ROHS, ToyDirective, MD, LVD, EMCD, RED)
• Certificates of Conformity from certification body (ROHS, ToyDirective, MD, LVD, EMCD, RED)
• DOC (Declaration of Conformity) for CE
• Third Party Test Reports
• Third Party Test Certificates (EU-Type Examinations, GS mark, Type Approval,....)
• ...
DPP
Public data
Restricted data
Public data
Sustainability Performance;
• Repairability (Repairability Index)
Repair guidance
• Durability declaration
• Recylability (Content of recycled materials and degree of recycle design)
• Product Carbon Footprint
• Warranty
→ "green performance test report(s)"
→ "green performance certificate(s)"
• CE Marking
• Users Manual
• ...
Shared partial information
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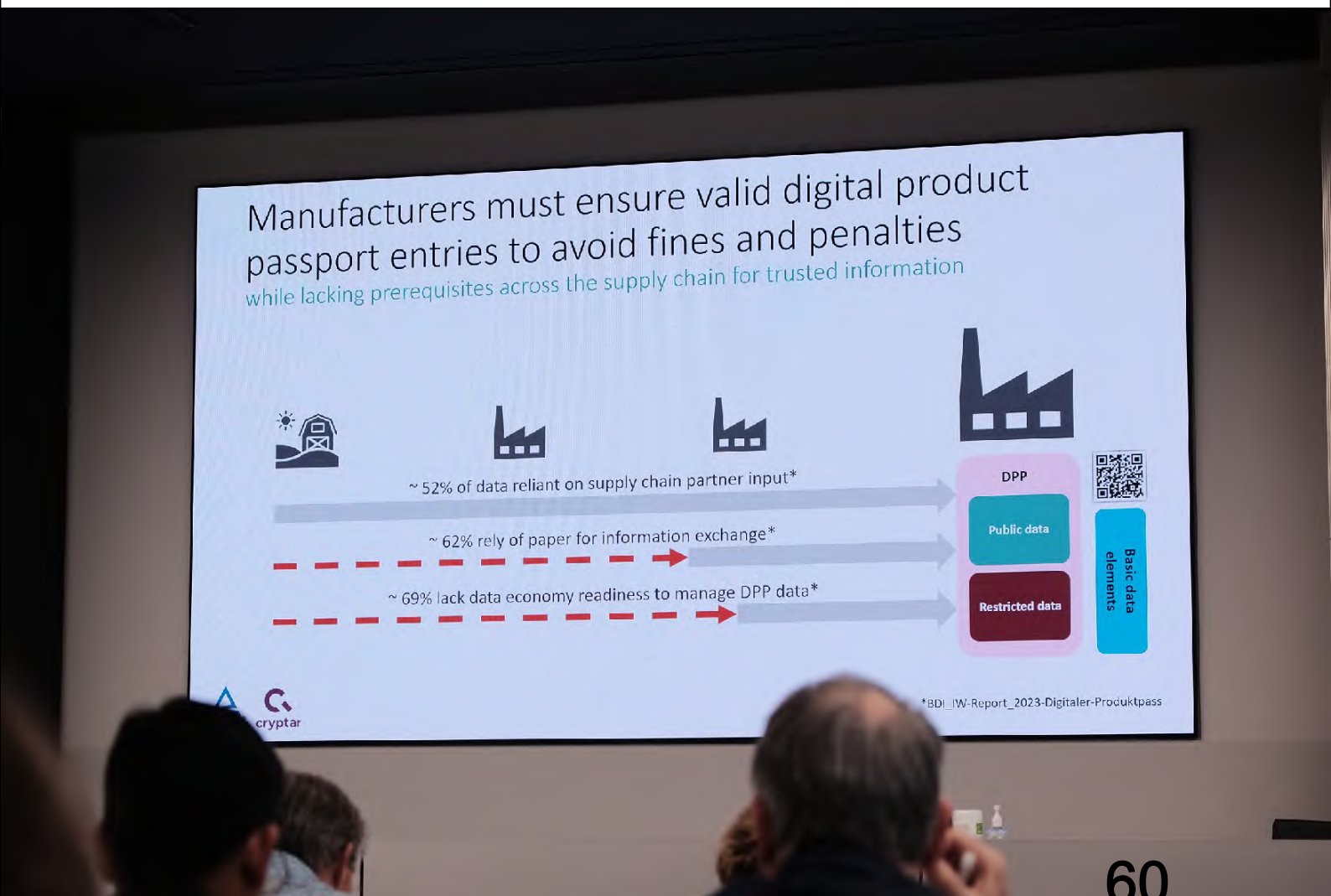
Status quo of provided product information in industry
Regulator
Manufacturer
Consumer
• 27% banned cotton from chinese forced labour region despite regulation in the USA*1
• 40% of claims have no supporting evidence*4
• 9% lost revenue due to interorganisational fraud *2
• 79% of organisations DO NOT share product data with others as of 2022*3
• 53% of green claims give vague, misleading or unfounded information*4
• 75% of consumers DO NOT trust claims about environmental practices in the fast-moving consumer goods industry*5
cryptar


Manufacturers must ensure valid digital product passport entries to avoid fines and penalties
while lacking prerequisites across the supply chain for trusted information
~ 52% of data reliant on supply chain partner input*
~ 62% rely of paper for information exchange*
~ 69% lack data economy readiness to manage DPP data*
DPP
Public data
Restricted data
Basic data elements
cryptar
*BDI_IW-Report_2023-Digitaler-Produktpass


Implications of status quo to digital product passport implementation
Regulator
Official digital product passport documentation lacking foundation for content validation
Limited technical enforcability due to „phygital" setup with manual control mechanisms
Focus on legal leverage with requirement to make an example of initial misbehaviour
Manufacturer
Costly (manual) but mission critical „phygital" information governance and verification processes required
High level of remaining 3rd party risk for brand reputation impacting sourcing strategies
Requirement to proof sufficient risk mitigation efforts to avoid fines in case of legal disputes
Consumer
Lack of justification for increased trust-level compared to current manufacturer trust seals
„Informed decisions" based on wealth of information provided rather than verified accuracy
Reliance on sample testing and enforcement of policies drives public interest in making examples
cryptar


How to establish digital product passport ready information?
Enabling reliable control mechanisms and value creation beyond regulatory burden
Consistent data governance and data source validation needed
to manage accountability for digital product passport compliancy
Paper must become machine-readable and secured where it cannot be replaced
to protect against forgery and ensure information authenticity
Information integrity and authenticity verification should be automated
to scale without driving costs and risk through manual processes
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Establishing trusted digital product passport documents
for entries with reduced 3rd party risk and automated compliance controls
TÜVRheinland
• Officially recognized validator for product information
• Touches already a large percentage of documents in supply chains
• Deep expertise in regulations, standards and conformity requirements and assessments
cryptar
• Novel protocol for evidential cryptographic data lifecycle documentation
• Establishing trusted documents and datasets that
• are tamper-proof
• contain version control mechanisms
• enable secure „phygital" processes (machine-readable)
• allow need-to-know sharing (partial data copies)
• detect 3rd party signature abuse
• enable integration of on- and offline validity checks
• Enabling infrastructure independent integration for data verification and validity controls
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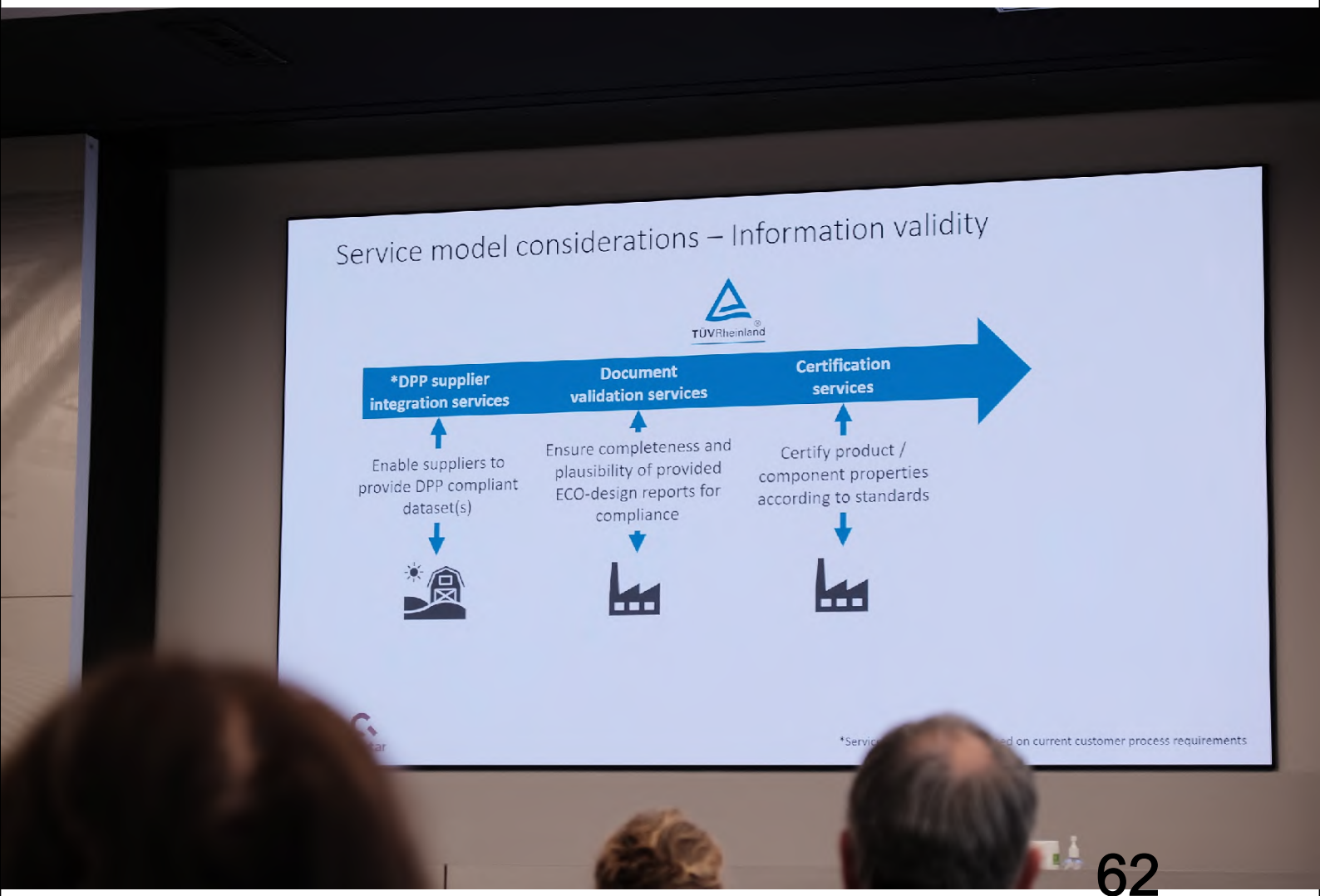
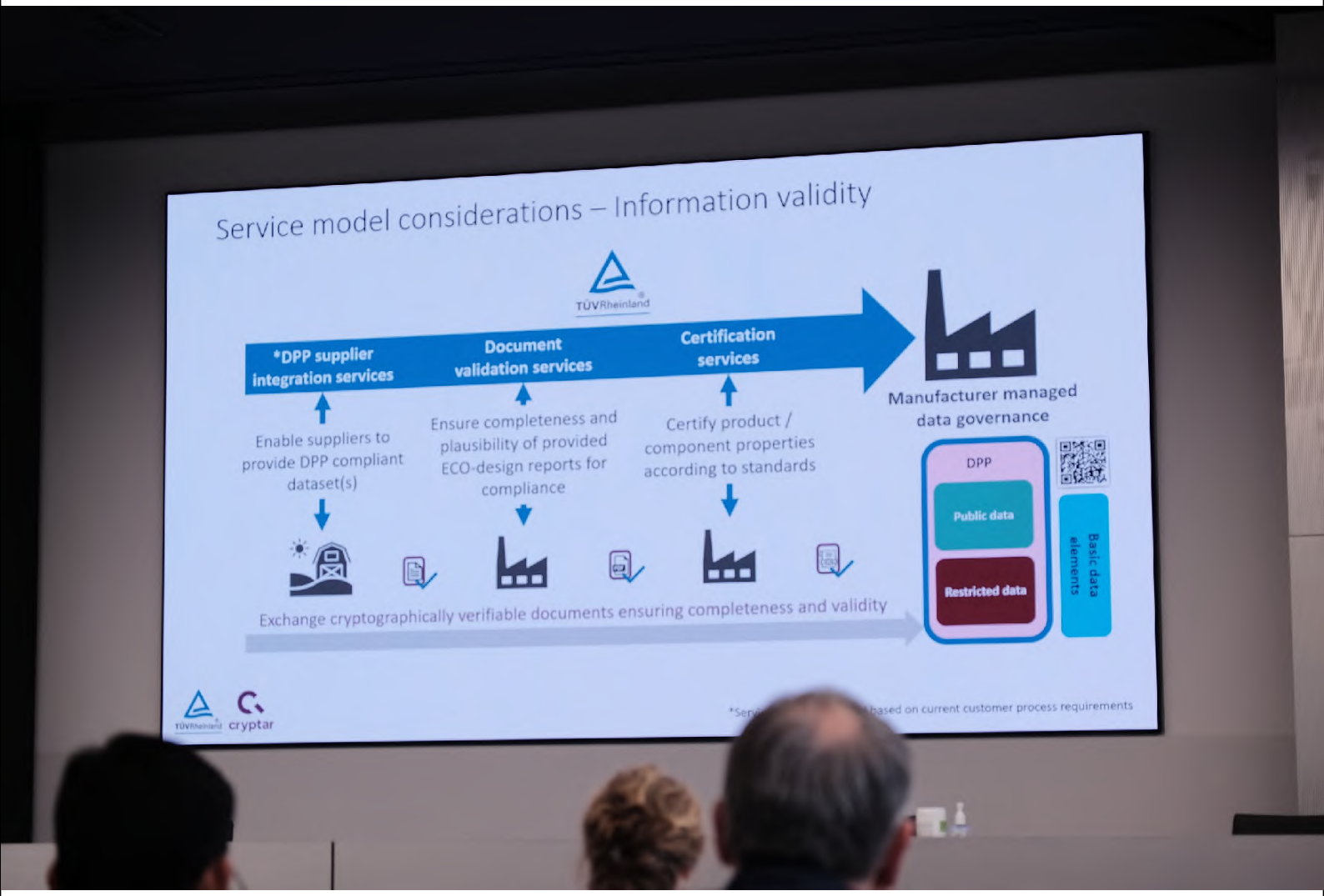
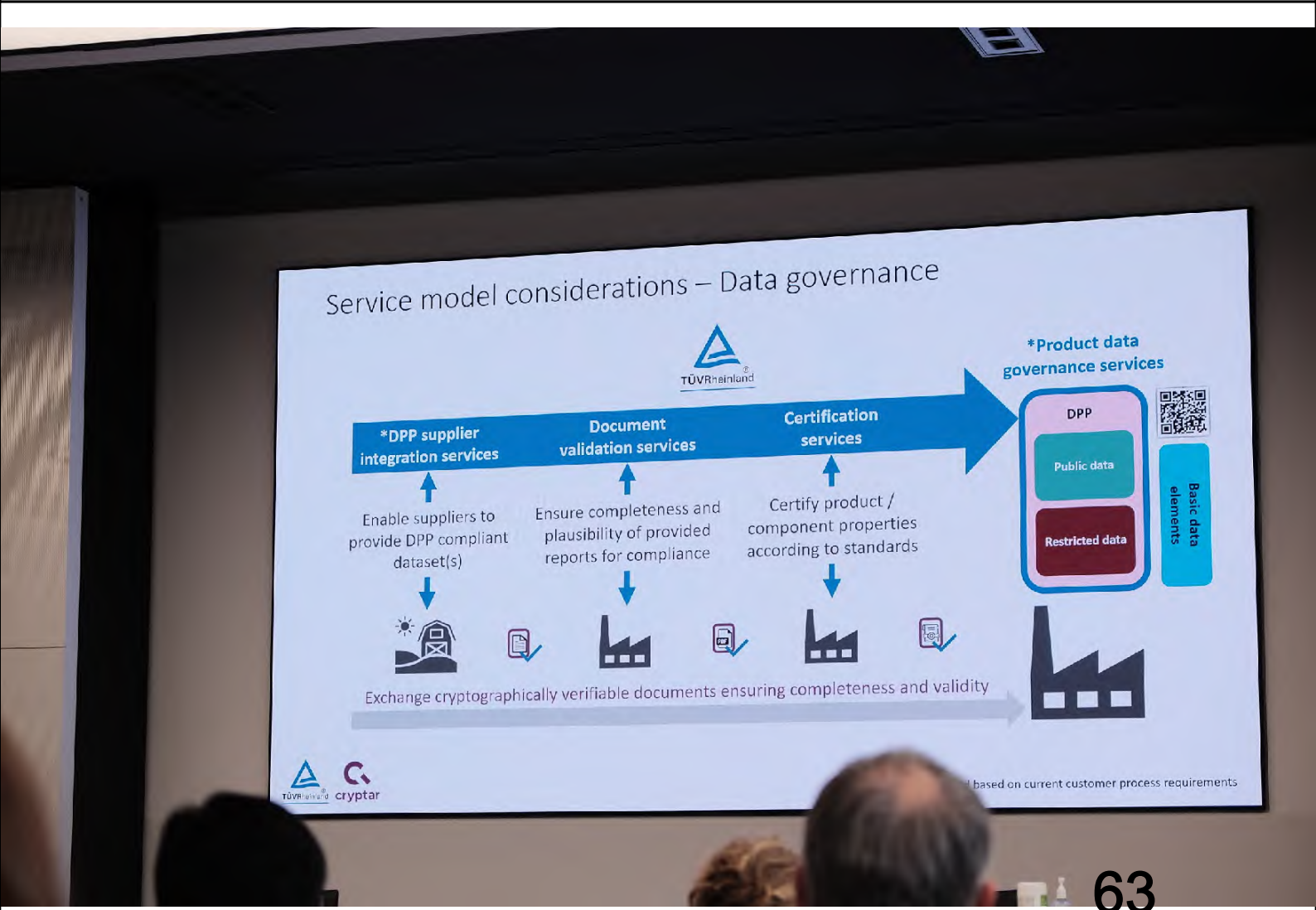

Service model considerations – Information validity
TÜVRheinland
*DPP supplier integration services
Document validation services
Certification services
Enable suppliers to provide DPP compliant dataset(s)
Ensure completeness and plausibility of provided ECO-design reports for compliance
Certify product / component properties according to standards
on current customer process requirements


Service model considerations – Information validity
TÜVRheinland
*DPP supplier integration services
Document validation services
Certification services
Manufacturer managed data governance
Enable suppliers to provide DPP compliant dataset(s)
Ensure completeness and plausibility of provided ECO-design reports for compliance
Certify product / component properties according to standards
DPP
Public data
Restricted data
Basic data elements
Exchange cryptographically verifiable documents ensuring completeness and validity
cryptar
based on current customer process requirements


Service model considerations – Data governance
TÜVRheinland
*Product data governance services
*DPP supplier integration services
Document validation services
Certification services
DPP
Public data
Restricted data
Basic data elements
Enable suppliers to provide DPP compliant dataset(s)
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cryptar
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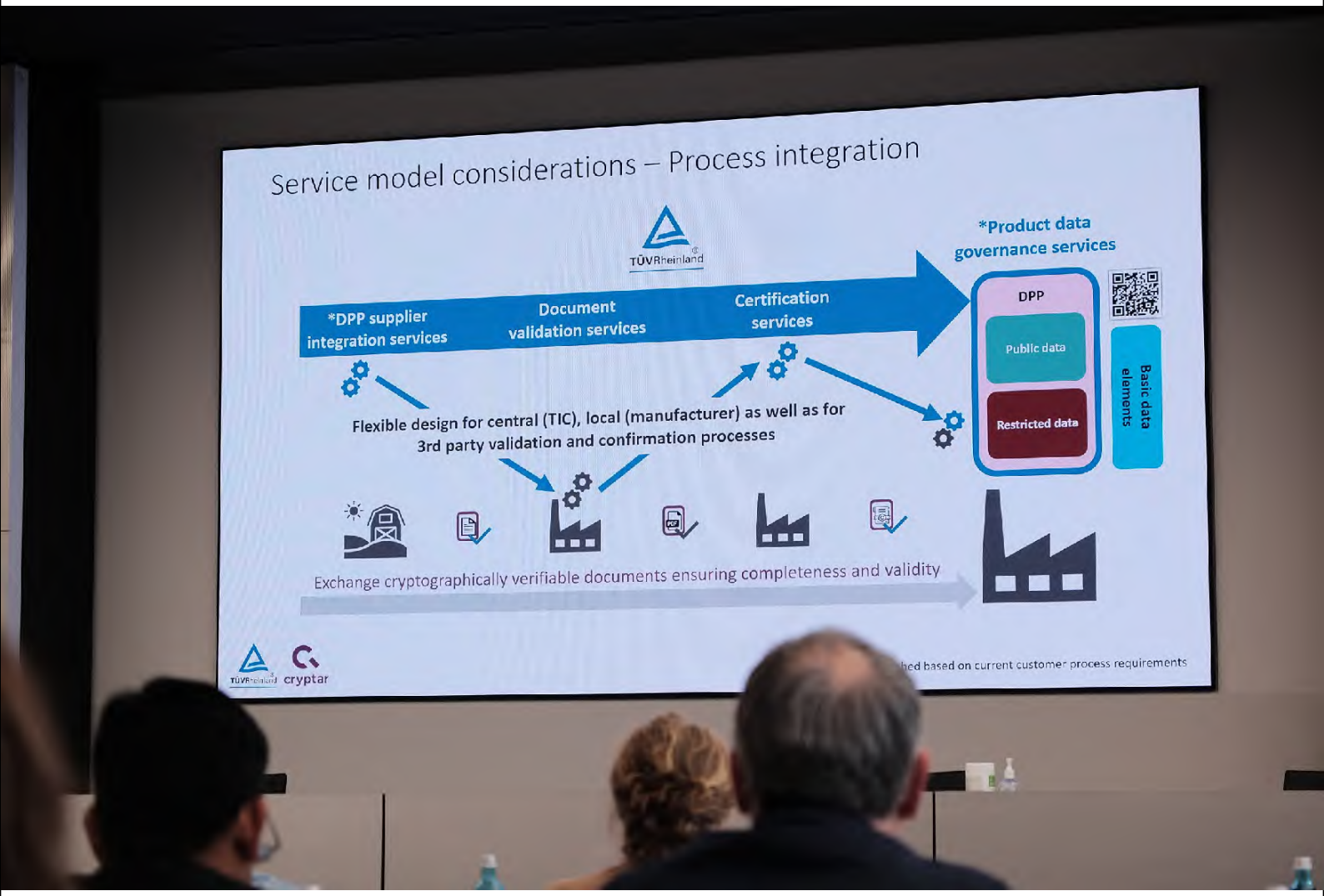
Service model considerations – Process integration
TÜVRheinland
*DPP supplier integration services
Document validation services
Certification services
*Product data governance services
DPP
Public data
Restricted data
Basic data elements
Flexible design for central (TIC), local (manufacturer) as well as for 3rd party validation and confirmation processes
Exchange cryptographically verifiable documents ensuring completeness and validity
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Advantages of verified digital product passport entry documentation
Government
Automated validity controls for critical product passport content through specialized TIC industry
Understand origin of potential misinformation to address root-cause of dangerous products
Focus on data patterns to remove fraudsters and enable synergies across sectors
Manufacturer
Minimize costs through automated digital product passport compliancy verifications
Reduce 3rd party risk through DPP certified components and officially documented supplier claims
Demonstrate certification and quality assurance efforts to consumers & authorities
Consumer
Increase trust levels through transparent information sources and official certifications
Informed decisions based on verified information accuracy
Improved product safety through traceable certifications and automated validity controls
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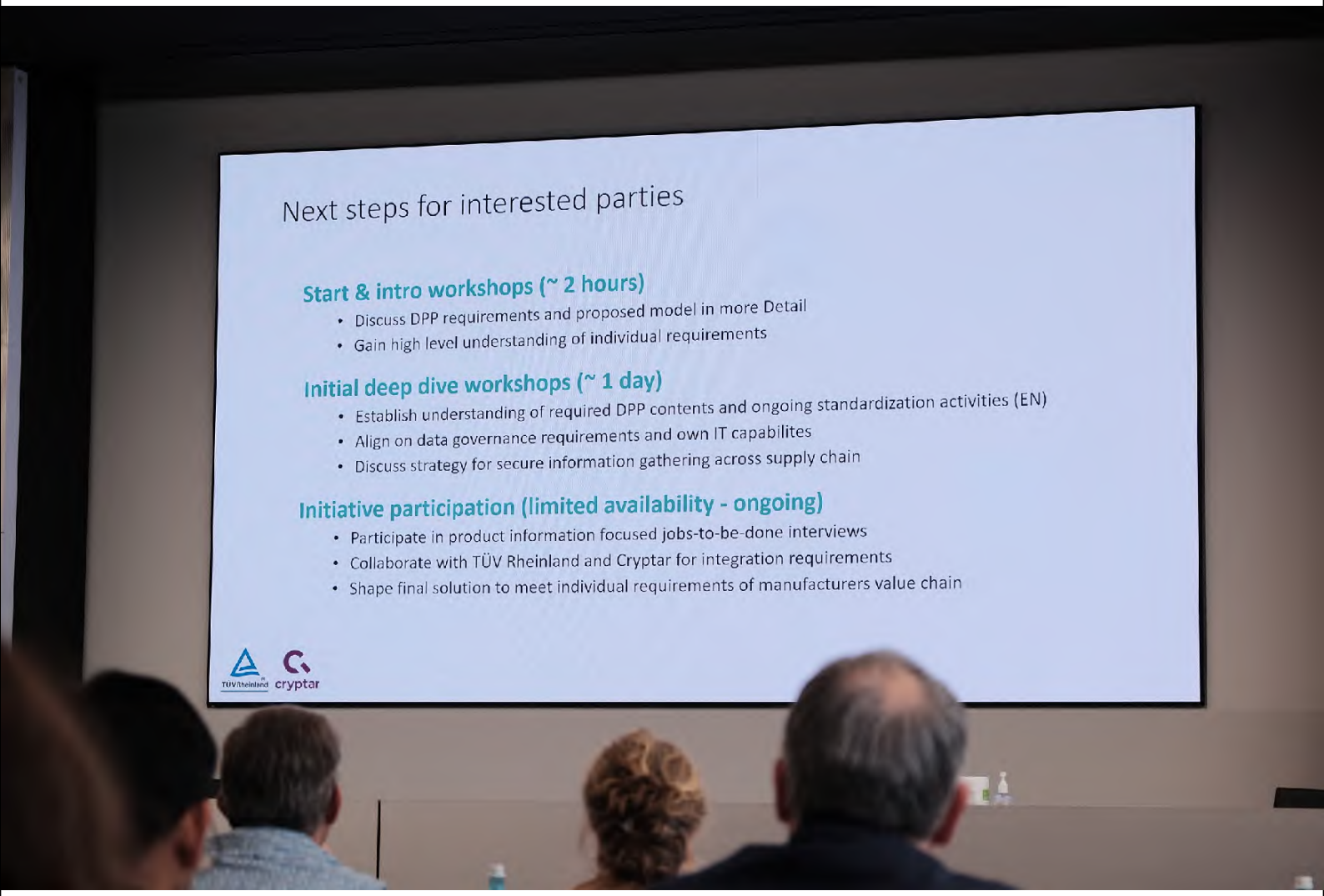
Next steps for interested parties
Start & intro workshops (~ 2 hours)
• Discuss DPP requirements and proposed model in more Detail
• Gain high level understanding of individual requirements
Initial deep dive workshops (~ 1 day)
• Establish understanding of required DPP contents and ongoing standardization activities (EN)
• Align on data governance requirements and own IT capabilites
• Discuss strategy for secure information gathering across supply chain
Initiative participation (limited availability - ongoing)
• Participate in product information focused jobs-to-be-done interviews
• Collaborate with TÜV Rheinland and Cryptar for integration requirements
• Shape final solution to meet individual requirements of manufacturers value chain
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GEN Member

エコマークは、環境保全に役立つと認められる商品につけられるマークであり、当協会の登録商標です。

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Resouce Efficient and Cleaner Production (RECP*net*)