

## Frequently Asked Questions on the updated ENCORE knowledge base

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The purpose of this document is to help users with the most commonly asked questions about the ENCORE knowledge base.

Further information about the updated ENCORE knowledge base is provided in the Explanatory Note.

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## 1. What is ENCORE, who manages it and who developed the updated ENCORE knowledge base?

[ENCORE](#) (Exploring Natural Capital Opportunities, Risks and Exposure) is a free, online tool that helps organisations explore their exposure to nature-related risk and take the first steps to understand their dependencies and impacts on nature. It allows users to scope and identify priorities for further analysis. ENCORE is a key tool, referenced by leading corporate frameworks and standards, such as the [Taskforce on Nature-related Financial Disclosures \(TNFD\)](#), the [Science Based Targets Network \(SBTN\)](#) and the [GRI Standards](#). It is also widely used in macroeconomic studies of nature-related risks.

The ENCORE tool was developed in 2018 by Global Canopy, UNEP FI and UNEP-WCMC, who together form the ENCORE Partnership, previously known as The Natural Capital Finance Alliance (NCFA). ENCORE Partnership maintains and continually improves the ENCORE tool. The update of the ENCORE knowledge base released in Q3 2024 has been developed as part of the Horizon Europe project [“Strengthening Understanding and Strategies of Business to Assess and Integrate Nature \(SUSTAIN\)”](#). The organisations involved in the technical developments and quality assurance of the data were: UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), the Capitals Coalition, the Netherlands Environmental Assessment Agency (PBL), the International Union for the Conservation of Nature (IUCN), IUCN Europe and Eidgenoessische Technische Hochschule Zürich (ETH Zürich). Other SUSTAIN project partners include Oxford Sustainable Finance Group, WBCSD, ShareAction and Fundación Biodiversidad.

The research conducted under the SUSTAIN project enabled updating and enhancing the ENCORE knowledge base. The improvements are in line with the evolving finance-business-nature nexus and associated user needs and feedback. The enhanced knowledge base is aimed primarily at businesses, financial institutions and regulatory bodies to support their screening of potential dependencies and impacts on biodiversity and ecosystem services. As before, ENCORE covers a broad range of sectors and economic activities at the global level. The data have been updated by drawing on the latest scientific research and grey literature.

## 2. When will the updates be available on the website?

From July 2024 onwards, users will be able to download the updated ENCORE knowledge base in .csv format from the ENCORE website (see here). This includes the following materials:

- Updated ENCORE knowledge base (consisting of multiple .csv files)
- Explanatory Note
- Crosswalk tables
- FAQ (this document)

Companies and financial institutions can now access the new ENCORE knowledge base via downloadable spreadsheets – for offline analysis – with the updates set to be embedded into an enhanced version of the online platform due for release later this year.

### 3. Will the file format of the knowledge base change?

The updated ENCORE knowledge base is available for download in .csv files, similarly to the previous version.

### 4. Is the updated ENCORE knowledge base available for free?

ENCORE will remain a free, online tool that helps organisations explore their exposure to nature-related risk and take the first steps to understand their dependencies and impacts on nature. To access the entirety of the functionalities and download the data, users will be required to register a free account as they do currently.

### 5. How often will the ENCORE knowledge base be updated?

The ENCORE Partners (Global Canopy, UNEP FI and UNEP-WCMC) maintain the ENCORE tool and continually make minor improvements to the knowledge base behind it. No major changes to the natural capital knowledge base are anticipated for the foreseeable future. You can find information on current ENCORE funding and associated development priorities on the [About ENCORE](#) page.

### 6. Is the ENCORE biodiversity module also being updated?

No, this round of updates to the knowledge base only relates to the Natural Capital Module.

### 7. Can I still access the 2018-2023 version of the ENCORE knowledge base after the full launch of the updated ENCORE knowledge base?

Yes, the archived 2018-2023 version of the ENCORE knowledge base will remain available for download from the Data & Methodology section of the ENCORE website.

### 8. Who is the target audience of ENCORE and the updated knowledge base?

The ENCORE tool and updated knowledge base remain targeted towards businesses, financial institutions and regulators to help them understand their impacts and dependencies on nature.

### 9. What is changing and what is new?

There are seven main improvements into the updated ENCORE knowledge base, more information can be found in the Explanatory Note. These are:

- **Added granularity for economic sectors.** The previous knowledge base offered 92 production processes within 152 sub-industries, based on the [Global Industry Classification Standard \(GICS®\)](#), while the updated version will provide dependencies and impacts for 270 economic activities, based on the [International Standard Industrial Classification for All Economic Activities \(ISIC\)](#).
- **An updated and expanded list of ecosystem services.** The previous ecosystem services were drawn from the [Common International Classification of Ecosystem Services \(CICES\)](#). The improved version includes the ecosystem services of Level 1 of the [System of Environmental-Economic Accounting – Ecosystem Accounting \(SEEA-EA\)](#). This also includes the addition of the Cultural Ecosystem Services (CES), which the previous version did not have.
- **Improved clarity on the structure of the impact pathway.** “Impact drivers” and “Drivers of environmental change” were renamed to “Pressures” and “Mechanisms of

change in state" to be in line with the [Driver-Pressure-State-Impact-Response](#) framework. What falls under "Pressures" (e.g. GHG emissions, area of freshwater use, generation and release of solid waste) and "Mechanisms of change in state" (e.g., diseases, flooding, pollutants concentration change) was revised to ensure different potential impact pathways are captured and to reduce duplication. The two-step process was maintained, to enable more detail to be captured in the knowledge base structure (e.g., one pressure can exacerbate multiple mechanisms). The pressures (previously 'Impact drivers') are a measurable quantity of substances (i.e., emissions), physical and biological agents, use of resources and use of land that are associated with inputs or outputs of an economic activity. The pressures then trigger the mechanisms, which cause changes in the state of ecosystems and their components. This may in turn result in changes to the capacity of nature (natural capital) to provide social and economic benefits.

- **Added detail on the biodiversity aspects of the knowledge base.** The previous knowledge base had links with natural capital assets (i.e., habitats, atmosphere, minerals, etc). The improved knowledge base includes links with ecosystem components (i.e., species populations, land geomorphology, structural and biotic integrity, etc.), and ecosystem types (e.g., desert and semi-deserts, palustrine wetlands, marine shelves).
- **Updated information on dependencies and impacts,** drawing on the latest scientific research and grey literature, totalling over 10,000 links across the whole knowledge base.
- **Inclusion of quantitative data to underpin the materiality ratings.** The improved knowledge base includes dependency materiality ratings and pressure materiality ratings, which are based on quantitative data and comparable across sectors, to the extent possible with existing data. The current version of ENCORE offers materiality ratings that are based on a qualitative assessment only.
- **Coverage of value chain links.** The improved knowledge base offers two levels upstream and two levels downstream of the value chain for each of the 271 direct economic activities.

Table 1. Summary of the changes between the 2018-2023 version of the ENCORE knowledge base and the updated knowledge base.

	2018-2023 version of the ENCORE knowledge base	Updated ENCORE knowledge base
1	<a href="#">GICS®</a> Industry Classification	ISIC Industry Classification
2	Ecosystem services from CICES	Ecosystem services from SEEA-EA Level 1 (including cultural ecosystem services)
3	Impact drivers Drivers of environmental change	Pressures Mechanisms of change in state
4	No biome-specific information	Natural capital divided into ecosystem types (biomes) and ecosystem components
5	Qualitative links drawing on literature available in 2018	All qualitative links in the knowledge base have been updated using latest scientific research and grey literature
6	All materiality ratings based on qualitative assessment only, with limited comparability of ratings across sectors	Comparability of materiality ratings across sectors, some pressures materiality ratings draw on quantitative indicators to the extent possible
7	Direct potential dependencies and impacts only	Inclusion of downstream and upstream value chain links

## 10. Why is the ENCORE knowledge base undergoing an update?

The previous version of the ENCORE knowledge base was developed between 2015 and 2018. New research on dependencies and impacts of economic activities has since become available. The updated ENCORE knowledge reflects this latest data, academic literature and grey literature (see the Intro section of the Explanatory Note for more information).

Since the previous version of the ENCORE knowledge base was developed, new categorizations have also been proposed by the scientific community for applications by business and economic research. For example, the UN System of Environmental Economic Accounting – Ecosystem Accounting (SEEA-EA) proposed a new categorization for ecosystem services. This has been adopted by other frameworks and methodologies for use by business and finance and is now integrated into the updated ENCORE knowledge base as well (see Section 2.2 of the Explanatory Note for more information).

The updates also respond to the feedback received from users throughout the years since ENCORE was first launched. All the improvements have been made to address users' concerns. For example, the previous version of the ENCORE knowledge base used GICS® for the categorisation of sectors and sub-industries. The GICS® sub-industries were further broken down into production processes, which were defined for the purpose of building the ENCORE knowledge base. As the production processes were based on a custom list and did not draw on a systematic industry classification, users were not always sure which production process was relevant for a given company. The change to ISIC will allow financial institutions, businesses, and regulators to more accurately screen their potential impacts and

dependencies on nature users, with both greater standardization and added granularity (see Section 2.1 of the Explanatory Note for more information).

Another common comment received is the lack of information on value chain links, which is of great interest to many users. The upstream and downstream value chain links to the knowledge base respond to this feedback (see Section 2.7 of the Explanatory Note for more information).

Another frequent point of feedback from users is a request to access more detailed information on species and habitats. The addition of ecosystem types and components to the knowledge base respond to this to help the ENCORE users' to further understand the differences in impacts and dependencies between different types of ecosystems (see Section 2.4 of the Explanatory Note for more information).

## **11. I was already using ENCORE, how do I convert from the categorizations used in the 2018-2023 version of the ENCORE to the updated ENCORE knowledge base?**

As part of the files available for download with the updated ENCORE knowledge base, crosswalk tables are provided that will help match the categorizations used in the 2018-2023 version of the ENCORE knowledge base and the 2024 version of the ENCORE knowledge base. These include:

- Crosswalk between GICS® industry classification (including ENCORE's tailored production processes) and ISIC industry classification.
- Crosswalk between ecosystem services categorization used in the 2018-2023 version of ENCORE (based on CICES 4.3) and ecosystem services categorization used in the 2024 version of the ENCORE knowledge base (based on SEEA-EA Level 1).
- Crosswalk between the list of impact drivers used in the 2018-2023 version of ENCORE knowledge base and the list of pressures used in the 2024 version of the ENCORE knowledge base.

Please note that you will need to be logged in to access the download link. Creating an account on the ENCORE website is free.

## 12. What are the new concepts and how do they differ from the previous version?

Table 2 below provides definitions of the key terms used in the updated ENCORE knowledge base.

Table 2. The list of key concepts and definitions for use in the improved knowledge base.

Key concept	Definition for use in ENCORE's improved knowledge base	References
Dependencies	Aspects of ecosystem services that an organization or other actor relies on to function. This includes ecosystems' ability to regulate water flow, water quality, and hazards like fires and floods; provide a suitable habitat for pollinators; sequester carbon and other services provided by ecosystems.	Adapted from: Science Based Targets Network (2023). <i>SBTN Glossary of Terms</i> as referenced in Taskforce on Nature-related Financial Disclosure (2023). <i>Glossary</i> . Available at: <a href="https://tnfd.global/publication/glossary/">https://tnfd.global/publication/glossary/</a>
Ecosystem service	The contributions of ecosystems to the benefits that are used in economic and other human activity.	System of Environmental- Economic Accounting (2021). <i>System of Environmental-Economic Accounting—Ecosystem Accounting</i> . Available at: <a href="https://seea.un.org/sites/seea.un.org/files/documents/EA/seea_ea_white_cover_final.pdf">https://seea.un.org/sites/seea.un.org/files/documents/EA/seea_ea_white_cover_final.pdf</a>  Taskforce on Nature-related Financial Disclosure (2023). <i>Glossary</i> . Available at: <a href="https://tnfd.global/publication/glossary/">https://tnfd.global/publication/glossary/</a>
Ecosystem type	Categorization of ecosystems that reflects a distinct set of abiotic and biotic components and their interactions.	Adapted from: System of Environmental- Economic Accounting (2021). <i>System of Environmental-Economic Accounting—Ecosystem Accounting</i> . Available at: <a href="https://seea.un.org/sites/seea.un.org/files/documents/EA/seea_ea_white_cover_final.pdf">https://seea.un.org/sites/seea.un.org/files/documents/EA/seea_ea_white_cover_final.pdf</a>
Impacts	Changes in the state of nature (natural capital), which may result in changes to the capacity of nature (natural capital) to provide social and economic benefits. Impacts can be positive or negative. They can be the result of an organisation's or another party's actions and can be direct, indirect or cumulative.	Adapted from: Science Based Targets Network (2023). <i>SBTN Glossary of Terms</i> , Climate Disclosure Standards Board (2021). <i>Application guidance for Biodiversity- related Disclosures</i> . As referenced in Taskforce on Nature-related Financial Disclosure (2023). <i>Glossary</i> . Available at: <a href="https://tnfd.global/publication/glossary/">https://tnfd.global/publication/glossary/</a>
Materiality	An impact or dependency on natural capital is material if consideration of its value, as part of the set of information used for decision making, has the potential to alter that decision.	Natural Capital Coalition (2016). <i>Natural Capital Protocol</i> . Available at: <a href="https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwf_filter_tabs=guide_supplement">https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwf_filter_tabs=guide_supplement</a>
Mechanism of change in state	Mechanism causing change in state of ecosystems and their components (natural capital).	Definition developed for the purpose of the updated ENCORE knowledge base.

Natural capital	The stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people.	<p>Taskforce on Nature-related Financial Disclosure (2023). <i>Glossary</i>. Available at: <a href="https://tnfd.global/publication/glossary/">https://tnfd.global/publication/glossary/</a></p> <p>Natural Capital Coalition, Natural Capital Finance Alliance, VBDO (2018). <i>Connecting Finance and Natural Capital: A Supplement to the Natural Capital Protocol</i>. Available at: <a href="http://www.naturalcapitalcoalition.org">www.naturalcapitalcoalition.org</a></p> <p>The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2020). <i>Annex I: Glossary of the Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services</i>. Available at: <a href="https://zenodo.org/record/5657079#Y-4G4cfP1PY">https://zenodo.org/record/5657079#Y-4G4cfP1PY</a></p>
Pressure	<p>In line with the Driver-Pressure-State-Impact-Response (DPSIR) framework, the ENCORE knowledge base defines the term pressure as the use of a measurable quantity of a natural resource or release of measurable quantity of substances, physical and biological agents. The pressures trigger the mechanisms causing change in state of ecosystems and their components. In ENCORE, these are all assumed to be negative, leading to potential risks. Some initiatives, such as the Taskforce on Nature-related Financial Disclosures (TNFD) or the Natural Capital Protocol, refer to pressures as “impact drivers” as it implies that “impact drivers” can lead to either negative or positive impacts.</p>	<p>Adapted from: Science Based Targets Network (2023). <i>SBTN Glossary of Terms</i> as referenced in Taskforce on Nature-related Financial Disclosure (2023). <i>Glossary</i>. Available at: <a href="https://tnfd.global/publication/glossary/">https://tnfd.global/publication/glossary/</a></p>



### 13. Why was ISIC selected as the industry classification for ENCORE?

The updates included reviewing the approach to categorising economic activities. The feedback received from users was that the use of GICS<sup>®</sup> sub-industries along with bespoke production processes in ENCORE was challenging. This was for two reasons: 1) the production processes were not formally part of GICS<sup>®</sup>, meaning the data often had to be aggregated to GICS<sup>®</sup> sub-industry level; and 2) at the same time, the GICS<sup>®</sup> sub-industries were not detailed enough for some users and were difficult to translate to other industry classifications. A classification was needed that was more detailed, required less bespoke elements to be added to it, and that could more easily be translated to other industry classifications.

The transition from GICS<sup>®</sup> to ISIC was a decision made after assessing the strengths and limitations of several available industry classifications. In consultation with the SUSTAIN consortium partners, as well as Global Canopy and UNEP FI, the following rationale was agreed for selecting [ISIC](#) as the industry classification for the improved ENCORE knowledge base:

- **Recognition and usability:** The target users of ENCORE are businesses, financial institutions and regulators. ISIC was developed by the United Nations and is widely recognised by stakeholders from private and public sectors, including ENCORE's target audiences. ISIC is commonly used as the basis for national industry classifications, for the development of tools and frameworks, and for statistical data collection/reporting. For example, it was used as the basis for the NACE industry classification framework developed by the EU. In addition, ISIC is also clear and easy to use. Finally, SBTN have moved to ISIC as well, which helps with consistency across the screening/target-setting/measurement landscape.
- **Global range:** Some industry classifications are country or region-focused. ISIC is intended to be used globally, which aligns with ENCORE's need of offering screening of potential impacts and dependencies for all economies across the world.
- **Conversion:** There are crosswalks available between ISIC and a large number of other industry classifications (see [here](#)).
- **To address users' concerns:** As noted above, the current version of ENCORE uses GICS<sup>®</sup> for the categorisation of sectors and sub-industries. However, the sub-industries are further broken down into production processes, which were defined for the purposes of the current ENCORE knowledge base. This has been pointed out as a weakness of the current ENCORE knowledge base by users in the past as the production processes are not formally part of GICS<sup>®</sup> and they are not seen as extensive enough. Additionally, there is no description for each production process, only the description of GICS<sup>®</sup> sub-industries. This is not a challenge with ISIC since it already has a description for each economic activity detailing what it includes and sometimes also what that activity excludes.
- **Additional level of granularity:** ISIC is a comprehensive and robust classification, and its levels provide further detail on economic activities to users. That way, users can not only find their desired economic activities more accurately within ISIC, but also the dependencies and impacts can include meaningful information with more granularity. For instance, current ENCORE has 92 production processes, the updated ENCORE knowledge base covers 270 economic activities in ISIC.
- **Alignment with MRIO:** The new version of the ENCORE knowledge base includes indirect dependencies and impacts on nature (as opposed to only direct ones in the current version of ENCORE). To do this, data from an Environmentally-Extended Multi-

Regional Input-Output database developed by ETH Zurich was used. ISIC aligns or can be converted to the industry classification used in the MRIO database.

#### 14. What does it mean that the updated ENCORE knowledge base shows only "key" value chain links?

The updated ENCORE knowledge base provides data on key value chain links for the different economic activities. This includes only the top value chain links based on their value added. For example, for the direct operation of *Construction of buildings*, the following first tier upstream value chain links are shown: *Civil engineering*, *Construction of buildings*, *Land transport and transport via pipeline*, *Specialized construction activities*, *Manufacture of fabricated metal products, except machinery and equipment*. These have provided the highest value added to the economic activity of *Construction of buildings*. Data on the value chain links and their value added is taken from the EE-MRIO database. More information about this can be found in Section 2.7 of the Explanatory note.

#### 15. Which materiality ratings were assessed using quantitative indicators and which were assessed using the qualitative methodology?

See Tables 6 and 7 in Section 2.6 of the Explanatory Note.

#### 16. Why are the updated materiality ratings different from the previous ones?

The materiality ratings of the updated knowledge base are designed to be comparable across sectors and economic activities, which was not the case in the previous iteration of the knowledge base. Please consider that the ratings indicate materiality of dependencies and pressures at the global and broad economic activity level. As such, they should only serve to inform initial screening. This should be followed by spatially explicit and company-specific assessments to understand the actual dependencies and pressures of the given company.

The difference in materiality ratings between the old and new versions of the ENCORE knowledge base result from one or more of the following reasons.

- **Due to changes in materiality rating methodologies** – In the previous version of the ENCORE knowledge base, all materiality ratings were assigned based on qualitative assessment only. The questions that were used for the assessment can be found in the materiality ratings files of the 2018-2023 version of the ENCORE knowledge base, available to download in the Archive box. In the updated ENCORE knowledge base, the materiality ratings were assigned based on quantitative data where possible. Where a qualitative assessment was used, this was based on an updated set of guiding questions. The first reason for updating the guiding questions was to ensure that the new materiality ratings enable comparisons across economic activities and sectors. The second reason for updating the guiding questions was to clarify that the pressure materiality ratings reflect the significance of the pressures exerted by the economic activity, not the resulting impacts to which these pressures are likely to lead. More information on the updated materiality rating methodologies can be found in Section 2.6 of the Explanatory Note.
- **Due to the change in the industry classification** – In some cases, the materiality rating is different because the updated ENCORE knowledge base uses a list of economic activities based on ISIC Level 3 and 4 instead of the production processes used in the previous version of the ENCORE knowledge base. This includes situations where:
  - An economic activity is defined in a more detailed way as the list of economic activities based on ISIC Level 3 and 4 is significantly more granular than the

ENCORE production processes. For example, the production process of *Large-scale irrigated arable crops* in GICS® is now divided into different ISIC economic activities such as *Growing of rice*, *Growing of cereals*, *Growing of sugar cane*, *Growing of tobacco*, *Growing of vegetables*, etc.

- An economic activity is defined differently in ISIC than what the name of the previous production process implied. For example, the production process *Natural fibre production* is now captured by the ISIC Group *Spinning, weaving and finishing of textiles*.
- The definition of the economic activity, provided by the ISIC industry classification, makes it clearer what is included in the economic activity. For example, the production process *Alcoholic fermentation and distilling* implied a focus on the fermenting and distilling the wine. In the ISIC industry classification, *Manufacture of wines* is more clearly defined as including the entire manufacturing process of wines, e.g., including blending of wines.
- **Due to changes in the categorization of ecosystem services** – Some dependency materiality ratings changed because the updated ENCORE knowledge base uses ecosystem services categorization based on SEEA EA Level 1, whereas the previous version of the ENCORE knowledge base used the CICES 4.3 categorization. There are differences between the ecosystem service definitions used by this categorization. For instance, the new *Soil and sediment retention* ecosystem service includes *Buffering and attenuation of mass flows* and *Mass stabilisation and erosion control*. Therefore, what before was split into two ratings for two different ecosystem services, is now covered by the rating for one ecosystem service. For more information on the alignment between the old and new ecosystem service categorizations, see Section 2.2 of the Explanatory Note and the crosswalk included in the package of files for download.
- **Due to integration of new qualitative research** – During the review of the qualitative links between economic activities and ecosystem services, and economic activities and pressures, new or updated sources or evidence were found. Some economic activities, which in the previous version of the ENCORE knowledge base were not linked to a given ecosystem service or pressure, have now been linked to the given ecosystem service or pressure and a materiality rating has been added. More information on the updates to the qualitative links can be found in Section 2.5 of the Explanatory Note.
- **Due to the changes from impact drivers to pressures** – The previous version of the ENCORE knowledge base provided impact materiality ratings. These were specified for each production process - impact driver combination, but they were determined by the severity and frequency of impact, not the significance of the impact driver. This caused confusion among ENCORE users. Some pressure materiality ratings also changed because the list of pressures (impact drivers) has been updated. For example, the previous version of the ENCORE knowledge base differentiated between *Soil pollutants* and *Water pollutants* as two different impact drivers. In the updated ENCORE knowledge base, these have been redefined as *Emissions of nutrient pollutants to water and soil*, and *Emissions of toxic pollutants to water and soil*. This is because, in practice, soil pollutant emissions often become water pollutants and vice versa, but it is useful to differentiate between nutrient and toxic pollutants as they lead to different impacts. As a result of these changes in the pressure categories, some economic activities will have different materiality ratings than in the previous version of the knowledge base. More information about the change from impact drivers to pressures can be found in Section 2.3 of the Explanatory Note.
- **Due to the use of per 1 EUR of output values in quantitative assessment** – The materiality ratings methodology has been improved to enable comparison of the

ratings across economic activities and sectors. In ISIC, similarly to other industry classifications, the economic activities are not defined to be equivalent in size. To enable comparison of materiality between different economic activities, the quantitative materiality ratings were assigned based on 'per 1 EUR of output' values rather than total (absolute) values. The qualitative assessment used to assign the qualitative materiality ratings also considered the significance of the dependency or pressure relative to the size of the economic activity. More information about the use of per 1 EUR output values can be found in Section 2.6 of the Explanatory Note. Table 3 below illustrates that the total amount of GHG emissions varies between different agricultural activities also due to the different sizes of these activities in terms of total financial output.

Table 3. Examples of activities and their financial output (in millions of Euros).

Economic activity	Total output (in millions of EUR)	Amount of GHG emitted (kg CO2e)	Amount of GHG emitted per 1 EUR of output (kg CO2e)
Cultivation of paddy rice	275,354	4,071,777	14.787*10 <sup>-6</sup>
Cultivation of wheat	195,159	377,358	1.933*10 <sup>-6</sup>
Cultivation of cereal grains nec	316,878	377,358	1.190*10 <sup>-6</sup>
Cultivation of vegetables, fruit, nuts	1,311,684	230,340	0.175*10 <sup>-6</sup>
Cultivation of oil seeds	205,303	377,358	1.838*10 <sup>-6</sup>
Cultivation of sugar cane, sugar beet	79,946	834,907	10.443*10 <sup>-6</sup>
Cultivation of plant-based fibers	87,819	350,072	3.986*10 <sup>-6</sup>

Source: Financial output and GHG emissions data are based on the Environmentally-Extended Multi-Regional Input-Output (EE-MRIO) database developed by ETH Zurich.

As part of the full launch in the second half of 2024, access to the absolute total output and per 1 EUR of output values will be included. This will allow users to understand how the ratings were derived. Those interested in materiality based on the total pressure exerted rather than per 1 EUR of output values will be able to calculate it themselves.

Some examples of all the cases above can be found in the table below.

Table 4. Examples of differences between materiality ratings and the rationale behind it

Economic activity (ISIC Level 3 or 4)	Equivalent production process used in previous ENCORE knowledge base	Pressures or Ecosystem services		Question related to the differences between the previous ENCORE knowledge base rating and the updated ENCORE knowledge base rating	Detailed explanation
		Previous ENCORE	Updated ENCORE		
Growing of rice	Large-scale irrigated arable crops	Pollination	Pollination	Why has the rating changed from H in the previous ENCORE knowledge base to VL in the updated ENCORE knowledge base?	The previous version of the ENCORE knowledge base differentiated between <i>Large scale irrigated arable crops</i> , <i>Large scale rainfed arable crops</i> , <i>Small scale irrigated arable crops</i> and <i>Small scale rainfed arable crops</i> . In the updated ENCORE knowledge base, the 'Growing of crops' activities are divided into more than eight economic activities at ISIC Level 4, including <i>Growing of rice</i> , <i>Growing of cereal</i> , <i>Growing of sugar cane</i> etc. The updated materiality ratings can therefore reflect the differences in materiality of the dependency for the specific type of crop. Both large and small-scale companies are included within each crop category.
Mining of hard coal	Mining	Water quality	Water purification	Why has the rating changed from N/A in the previous ENCORE knowledge base to VH in the updated ENCORE knowledge base?	In the desk review of the latest scientific and grey literature, it was found that mining of coal may require a "washing" process involving water and chemicals to remove sulphur and impurities. This requires purified water.
Extraction of crude petroleum	Integrated oil and gas  Oil and gas exploration surveys	Soil pollutants	Emissions of nutrient pollutants to water and soil	Why has the rating changed from H in the previous ENCORE knowledge base to N/A in the updated ENCORE knowledge base?	The previous ENCORE knowledge base used the impact driver <i>Soil pollutants</i> . In the updated ENCORE knowledge base, this is split into <i>Emissions of toxic pollutants to water and soil</i> and <i>Emissions of nutrient pollutants to water and soil</i> . The research found that this economic activity does not emit nutrient pollutants. You will, however, notice that the materiality rating for the pressure <i>Emissions of toxic pollutants to water and soil</i> is VH because the activity does indeed emit toxic pollutants.

Mining of iron ores	Mining	Volume of water use	Water use	Why has the rating changed from VH in the previous version of the ENCORE knowledge base to L in the updated ENCORE knowledge base?	<p>In the previous version of the ENCORE knowledge base, the materiality rating was based on qualitative assessment only. It used a methodology that considered the severity, frequency, and speed of onset of the impact.</p> <p>In the updated ENCORE knowledge base, the materiality rating for this pressure is assessed using a quantitative methodology. The updated materiality rating methodology also focuses on the significance of the pressure, meaning that the materiality rating reflects how water-intense the economic activity is. It does not reflect the severity of the impact that the activity's water consumption could lead to, which could vary from location to location.</p> <p>A few other methodological changes contribute to the change in the rating:</p> <ul style="list-style-type: none"> <li>• The data on volume of water use, taken from EE-MRIO database developed by ETH Zurich, includes only water that is consumed (i.e., not returned into the ecosystem). Water needed for cooling, for example, that is returned to the ecosystem, would not be included in the values underlying this materiality rating (it is considered in the Water supply dependency materiality rating).</li> <li>• The rating is assigned based on per 1 EUR of output values. While <i>Mining of iron ores</i> may use significant amounts of water, the average amount of water used per 1 EUR of output is much lower than for other economic activities (e.g., <i>Growing of cereals</i>). The ratings are assigned using per 1 EUR of output values to enable comparison across economic activities and sectors – without this would be impossible to make comparisons across different economic activities.</li> <li>• The updated materiality rating methodology is designed to ensure that the materiality ratings reflect the relative differences in materiality between the different economic activities and sectors. An economic activity with water use pressure materiality rating of Low, may still use significant amounts of water. But as it is compared to other economic activities, and falls substantially below the mean on the distribution of values, it is assigned a Low materiality rating. If all economic activities received a High or Very High materiality rating, the ratings would have limited information value for users.</li> </ul>
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Construction of buildings	Construction	Area of land use	Terrestrial ecosystem use	Why has the rating changed from VH in the previous version of the ENCORE knowledge base to L in the updated ENCORE knowledge base?	<p>In the previous version of the ENCORE knowledge base, the materiality rating was based on qualitative assessment only. It used a methodology that considered the severity, frequency and speed of onset of the impact.</p> <p>In the updated ENCORE knowledge base, the materiality rating for this pressure is assessed using a quantitative methodology. The updated materiality rating methodology also focuses on the significance of the pressure, meaning that the materiality rating reflects the activity's land use, it does not reflect the severity of the impact that the activity's land use could lead to, which could vary from location to location.</p> <p>A few other methodological changes contribute to the change in the rating:</p> <ul style="list-style-type: none"> <li>• The updated ENCORE knowledge base captures only the direct pressures exerted by a given economic activity. For construction, that means thinking only about the size of the area where construction activities take place in an average year, not all buildings that the construction companies have built to date. As soon as the construction of a building is completed, for example, the pressure is "transferred" onto the activity that uses the building and surrounding infrastructure.</li> <li>• This pressure materiality rating is based only on the quantitative data on the size of the land area used. The intensity of land use is not considered. This has been noted as a limitation in the methodology, and it will be important for users to be aware of this when they interpret the ratings.</li> <li>• The updated materiality rating methodology is designed to ensure that the materiality ratings reflect the relative differences in materiality between the different economic activities and sectors. An economic activity with area of land use pressure materiality rating of Low, may still use significant amounts of land. But as it is compared to other economic activities, and falls substantially below the mean on the distribution of values, it is assigned a Low materiality rating. If all economic activities received a High or Very High materiality rating, the ratings would have limited information value for users.</li> </ul>
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## **17. I want to design/develop a tool based on the improved ENCORE's knowledge base, what are the licence requirements to use it?**

The improved ENCORE knowledge base has the same licensing as the previous iteration. ENCORE is made available under the [Creative Commons Attribution-ShareAlike 4.0 International \(CC BY-SA 4.0\)](#) licence. This licence allows for commercial use provided under two conditions: 1) anything you build that integrates ENCORE is made publicly available under the same license (CC BY-SA 4.0); and 2) any use of ENCORE is attributed to the ENCORE Partners (please see attribution text on the [Terms and Conditions](#) page).

Users are encouraged to review the terms of the CC BY-SA 4.0 license with their legal team to determine whether the envisaged use case is compatible with the license. Further information about the scope and rights can be found within the ENCORE website in "[Terms and Conditions](#)".

## **18. How does the updated ENCORE knowledge base relate to the SBTN Materiality Screening Tool?**

The SBTN Materiality Screening Tool (MST) uses the direct operations data from the 2018-2023 version of the ENCORE knowledge base.

UNEP-WCMC contributed to the development of the May 2023 version of the MST, which covered only direct operations, alongside SBTN, BCG and SEI York. The July 2024 version of the SBTN MST was developed by SBTN. It does not yet include the updated ENCORE knowledge base. More information about the July 2024 version of the SBTN MST can be found on the [SBTN website](#).

ENCORE Partners are working with SBTN to explore how the updated ENCORE knowledge base can be integrated into the next version of the SBTN MST.