

INTERIM

Ex-post evaluation of the European Union Observatory for Nanomaterials (EUON)

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Version	Changes	Date
Version 1.0	First edition sent to ECHA MB audit working group	June 2019
Version 1.1	Update to include Annex 3: EUON website statistics, removed reference to internal ECHA document on p.11	July 2019

Foreword*

The present ex-post evaluation report was prepared by the Evaluation working group of ECHA with the support of PricewaterhouseCoopers that acted as a third party evaluator. The Internal working group established the list of questions for the evaluation, prepared the survey and collected the results.

PricewaterhouseCoopers analysed these results and carried out interviews according to the methodology described in Section 2. Their conclusions were reported in the present document taking into account remarks and comments provided by the internal working group of ECHA.

The Internal working group of ECHA completed the report with relevant information and elements that could not be derived from the survey and interviews (e.g. costs, timeline etc)

For transparency reasons, the paragraphs completed by ECHA internal working group are marked with a (*) symbol.

Introduction

In 2016, the European Commission (EC) entrusted the European Chemicals Agency (ECHA) with the creation, management and maintenance of the European Union Observatory for Nanomaterials (EUON). The Observatory was established to increase the transparency and availability of information regarding nanomaterials in the European Union (EU). It is aimed at addressing the growing demand from the market, policy makers and non-governmental organisations (NGOs) for better knowledge concerning nanomaterials, products and uses¹.

The main aims of the Observatory are to give objective and reliable information on markets and safety aspects of nanomaterials in the EU market, as well as improve the business environment for EU companies and SMEs via this access to information². In order to achieve this, it was assigned the following main tasks²:

- Collection of relevant information on nanomaterials, their markets and safety from available information sources, link it to other relevant information and present it in a structured manner;
- Undertake new case studies and reviews to complement available information on nanomaterials to fill identified knowledge gaps and of particular importance and/or concern;
- Communicate the information on nanomaterials, their uses and their safety in a clear and user-friendly way to the public online, adapted to the different audiences (general, regulators, consumer/worker organisations, etc.).

¹ Dutch National Institute for Public Health and the Environment - Ministry of Health, Welfare and Sport (2017). *The European Union Observatory for Nanomaterials A step forward?*. Rijksinstituut voor Volksgezondheid en Milieu.

² European Commission (2016). *Delegation agreement - European Union Observatory for Nanomaterials and the European Union chemical legislation finder*.

Based on this foundation, the EUON was developed and launched to the public in 2017 and currently offers a web-based platform with factual and neutral content concerning nanomaterials in the EU market, targeted at a wide audience, including consumers, workers and regulators. The website currently offers information on what nanomaterials are, where they are used, related health and safety issues, research, regulatory and international activities.

1. Objective and approach

1.1. Objective

The ex-post evaluation of the ECHA EUON is aimed at assessing the observatory against the four following criteria:

- Effectiveness;
- Coherence;
- EU added-value;
- Utility.

The overarching objective is twofold. First, the evaluation aims to understand to which extent the EUON has met its main objectives and what has been the added value to its stakeholders, potential shortfalls to be addressed as well as success factors. Secondly, the analysis also aims at supporting ECHA in identifying areas where more information is needed and to determine a possible priority setting for these areas of development of the EUON in the future.

1.2. Data collection & analytical approach

The evaluation analysis presented in the report is based on data collected through a survey and interviews with stakeholders of the EUON. Both data collection tools focused on the evaluation questions presented in the following table.

Table 1 Evaluation questions & criteria

	Evaluation Question	Evaluation criterion
1	To what extent does the EUON fulfil the following objectives?	Effectiveness
2	What benefits have you experienced from using the EUON?	Effectiveness
3	To what extent is the EUON consistent with similar initiatives at national or EU level?	Coherence
4	Does the EUON influence your opinion on nanomaterials and their safety in the EU?	EU-added value
5	What would be the most likely consequences if the EUON was discontinued?	EU-added value
6	What recommendations would you make for future developments of the EUON, to ensure it becomes a recognised and trustworthy source of information on nanomaterials in the EU market?	EU-added value

7	What additional information, features or services would you like to see in the future in order to increase the usefulness of the EUON for you?	Utility
8	How likely are you to recommend the EUON?	Utility
9	How useful were the two studies published by EUON in 2018?	Utility

Survey

The survey was distributed to relevant stakeholders of the EUON over a period of approximately 6 weeks, from the 29 of January to the 8 March 2019. The targeted audience was wide, ranging from ECHA's close partners to general audiences. Specifically, the survey was distributed directly to circa 140 partner organisations³ including European associations (industry, civil society, academia), the EC and other agencies. In addition, the survey was generally promoted on several platforms, including;

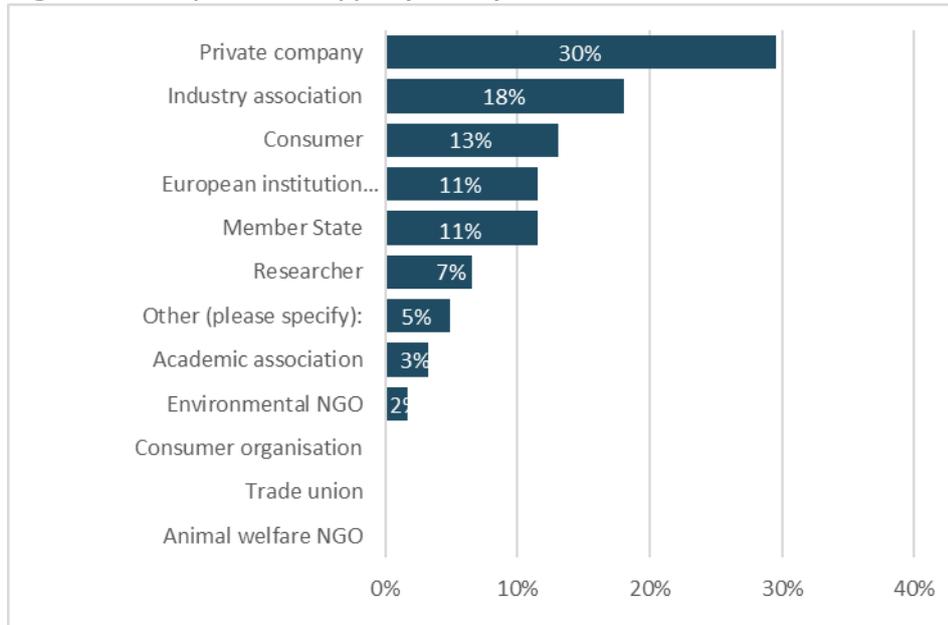
- a pop-up window on the EUON website asking visitors to respond to the survey;
- advertising in ECHA' weekly news bulletin⁴;
- ECHA social media platforms including LinkedIn and Twitter⁵.

³ List of ECHA accredited stakeholder organisations that received the questionnaire is available [here](#). In addition, the following stakeholders received a link to the questionnaire by e-mail; Umweltsbundesamt GmbH – Austria; Federal Public Service - Health, Food Chain Safety and Environment, DG Environment – Risk Management of Chemical Substances – Belgium; Institute of Catalysis, Bulgarian Academy of Sciences; Ministry of the Environment of the Czech Republic; Danish Environmental Protection Agency; National Institute of Chemical Physics and Biophysics – Estonia; Finnish Safety and Chemicals Agency (Tukes); ANSES – France; Labour Ministry of France; MSCA Germany (BAuA - Federal Office for Chemicals); REACH Helpdesk; Federal Institute for Risk Assessment (BfR) – Germany; Federal Institute of Occupational Safety and Health – Germany; German Environment Agency (UBA, Umweltbundesamt); Istituto Superiore di Sanità – Italy; National Institute for environmental protection and research – Italy; RTU FMAC (Faculty of Materials science and applied chemistry) – Latvia; Nature Research Centre, Institute of Ecology – Lithuania; Environmental Protection Agency – Lithuania; National Institute for Public Health and the Environment – Netherlands; Norwegian Environment Agency; Bureau for Chemical Substance (Technical University of Lodz) – Poland; Portuguese Environment Agency; General Directorate of Health (DGS) – Portugal; Ministry of Environment – Romania; National Laboratory of Health, Environment and Food – Slovenia; Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria - Ministry of Agriculture, Food and Environment – Spain; Swedish Chemicals Agency KEMI; Health and Safety Executive UK; UK Environment Agency; Defra UK; European Commission, DG Environment; European Commission, DG GROWTH; European Commission, Joint Research Centre; European Food Safety Authority

⁴ Sent to circa 16 000 subscribers

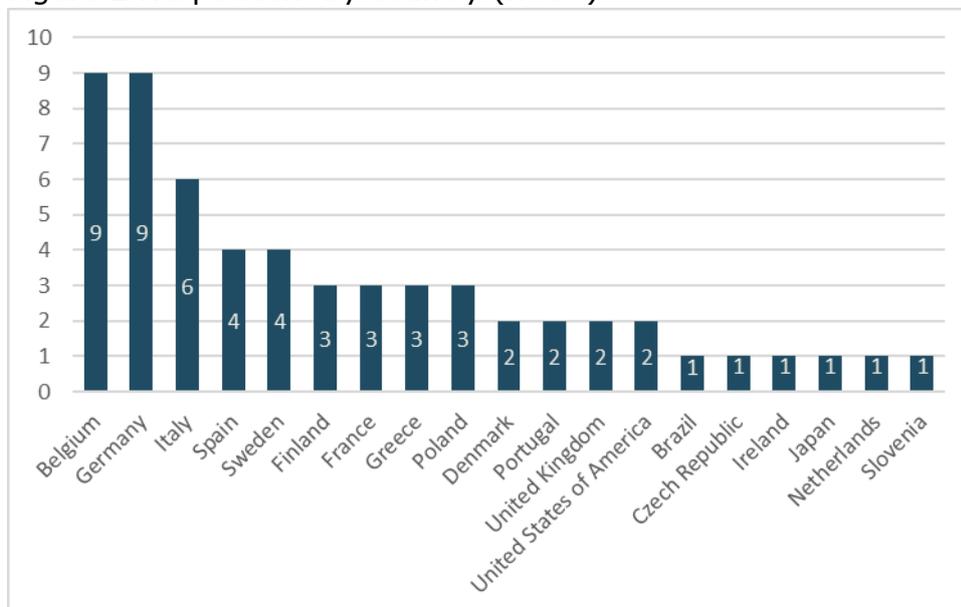
⁵ With a budget of 200 EUR

Figure 1 Respondent type (n=61)



The respondent sample totalled 61 respondents from various spheres, as can be seen. In order of magnitude, respondents represented private companies (18), industry associations (11), consumers (8), EU institutions and Member States (MS) (each 7), researchers (4), academic associations (2) and environmental NGOs (1). In addition, 3 respondents identified as "other"; 2 indicated in the open comment field that they represented industry organisations and the final identified as IT staff from ECHA.

Figure 2 Respondent by country (n=58)



In terms of the geographical distribution of respondents, as can be seen in Figure 2, 16 of the 28 EU MS are represented. In addition, there was a degree of internationalism, with 2 respondents from the United States of America (USA), and 1 representative from both Brazil and Japan. Considering the representatives

of EU institutions, the highest levels of participation were recorded in Belgium, Germany and Italy.

Based on this, it can be concluded that respondents represented a sufficiently diverse geographical scope. However, there is an underrepresentation of environmental NGOs in the survey compared to industry associations, which had the highest level of participation. Given the potential for different interests between respondent stakeholder groups, the survey analysis will stratify between their responses where necessary.

Interviews

After the survey, to obtain a deeper understanding of the users' view on the EUON, telephone interviews were organised with survey respondents to further address their comments and increase the evidence base of the findings. The interview guide template can be found in Annex 1: Interview guide. A total of 8 interviews were carried out. In terms of their geographical distribution, 4 were from Belgium, 2 from Germany, 1 from Italy and 1 from Sweden. Below is a breakdown of the type and number of users interviewed and from whom we gained tangible, actionable input:

Type of interviewee	Number of interviews
Industry Association	4
Private company	2
EU institution (Commission, agencies)	2

Analysis

The results of the survey data analysis were cross-checked with qualitative data gathered through the interviews. Additional desk research was carried out to supplement the analysis. This included a review of a previous evaluation of the EUON by the Dutch National Institute for Public Health and the Environment and a comparison with other initiatives similar to the EUON .

Nevertheless, the conclusions and recommendations of the evaluations are primarily based on stakeholder views. As such, the underrepresentation of environmental NGOs in both the survey and interviews should be noted as a limitation of the evaluation. In addition, industry associations record the highest level of representation across both the survey and interviews. The potential impact on the overall analysis of consulted stakeholder feedback should therefore be kept in mind, despite the applied stratification between survey respondent type where necessary and possible.

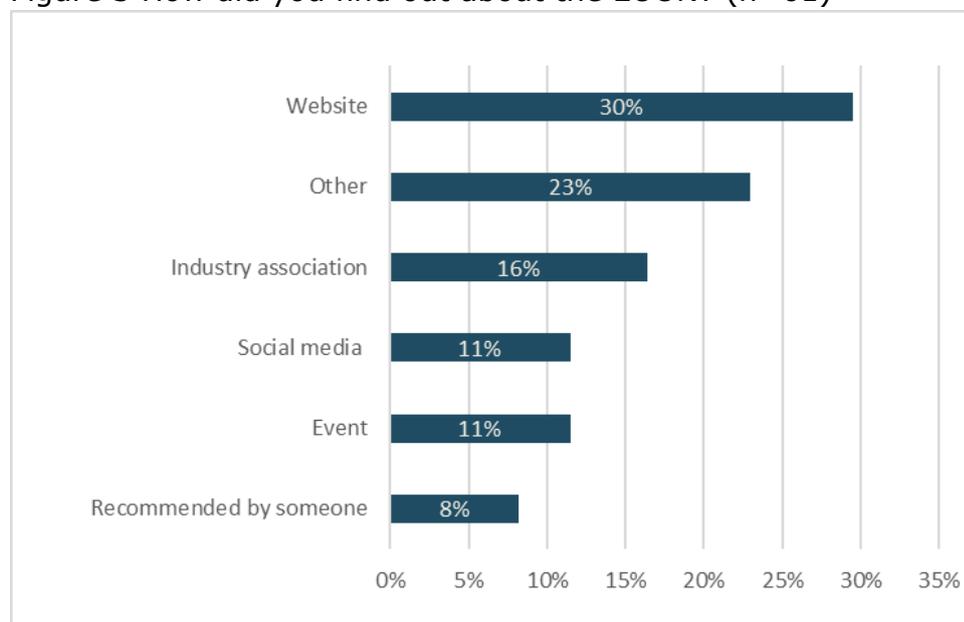
2. Evaluation findings

This section starts with an analysis of the knowledge and use of the ECHA EUON and then focuses on analysing its efficiency, relevance, coherence, EU-added value and utility. It draws from the desk research conducted, the survey distributed as well as interviews.

2.1. Knowledge and use of the EUON

This section provides an overview of respondents' awareness and use of the EUON, as well as an analysis of how awareness of the website could be increased.

Figure 3 How did you find out about the EUON? (n=61)



Of 61 respondents, 30% reported learning about the EUON through a website. An analysis of the open comment boxes shows that the majority of these respondents learned of the EUON through the ECHA website or the EUON website directly. Other websites through which respondents indicated learning about the EUON included the EU Nano Safety Cluster website⁶ and the blog of a United States (US) based law firm called "Nano and Other Emerging Chemical Technologies Blog"⁷. 7 respondents also reported learning of the EUON via social media, including LinkedIn (3), Twitter (3) and Facebook (1). Of the 7 respondents who learned about the EUON via events, 3 referenced ECHA meetings (including the launch), 2 referenced the ECHA Nanomaterials Expert Group (NMEG) event, 1 the meeting of a nanomaterial expert group and 1 a national conference in Rome, organised by the National Institute of Health (Istituto Superiore di Sanità).

⁶ <https://www.nanosafetycluster.eu/> (see section Evaluation of EU Added Value for comparison of EUON with this website)

⁷ <https://nanotech.lawbc.com/about/>

Just under a quarter of respondents indicated “other” concerning the medium through which they learned of EUON. Answers to the open comments left by these respondents indicate that the majority (9/14) learned of EUON via the ECHA newsletter or a personal contact at ECHA. Therefore, the main channel through which respondents to the survey found out about EUON are ECHA communication activities, in particular its website and newsletter.

Interviewees were asked to assess the awareness of the EUON amongst their stakeholder groups and give suggestions as to how awareness could be increased. The majority of interviewees perceived that there was a limited awareness of the EUON within their stakeholder groups. Nevertheless, they noted that this was as a result of the website being relatively new and as such that there was a lot of potential for it to grow. That being said, 3 interviewees recognised that the resources for the EUON were limited and as such, they would prioritise their allocation to improving the content before focusing them on communication and marketing of the website.

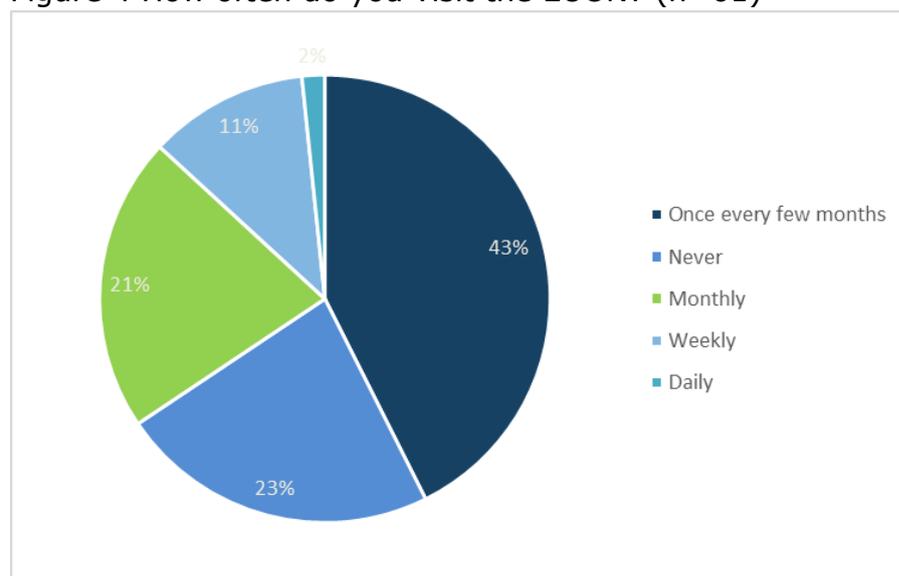
Several factors negatively influencing the awareness of the EUON amongst relevant stakeholders were identified from interviewee feedback. Firstly, half of interviewees perceived that social media channels were underused, verifying the low number of respondents who found out about the EUON via this medium (see Figure 3). In addition, as displayed in Table 5 under the evaluation of the EUON’s coherence, other similar websites have their own dedicated Twitter accounts, unlike the EUON, and record high levels of followers and activity.

Secondly, half of respondents explained that their limited visits to the EUON were as a result of their forgetting to visit it, rather than a conscious choice not to. One of these interviewees explained that they viewed the ECHA website or newsletter on a daily or weekly basis and visited the EUON without fail when advertised on either of these platforms. In parallel, 3 other interviewed stakeholders considered that there were too few links and references to the EUON on the ECHA website and the ECHA newsletter and that they would expect to see more regular material and references to the EUON.

In summary, the most common suggestions for raising awareness of the EUON were the following:

- Increasing the use of social media;
- Increasing the amount of information/references to the EUON on the ECHA website;
- Increasing the amount of information/references to the EUON on the ECHA newsletter.

Figure 4 How often do you visit the EUON? (n=61)



Concerning users' use of the EUON, as can be seen in Figure 4, respondents most frequently (43%) reported visiting the EUON once every few months and 21% reported visiting it monthly. Just under a quarter (23%) of respondents reported never visiting the EUON⁸.

This question was also addressed during the follow-up interviews with respondents. The distribution of answers by interviewees is displayed in the table below.

Table 2 Interviewee frequency of use of the EUON

Respondent type	Dail y	Weekl y	Monthl y	Once every few months	Neve r
European institution			1		1
Industry association		1	1	2	
Private company				1	1
Total	0	1	2	3	2

The 3 respondents who reported visiting the website once every few months explained that this was as a result of the low frequency of publishing of new information on the website. This can be considered a negative influencing factor, particularly due to the fact that 5/6 of the interviewees who reported using the EUON weekly, monthly or once every few months, explained that they did so in order to keep up to date on developments relevant to their field of work. In addition, the majority of interviewees emphasised that the provision of up-to-date

⁸ Of the 14 who reported "never" visiting the EUON, 4 continued to respond to the rest of the survey. It is assumed that they had previously visited the website or visited it on the occasion of receiving the survey.

information in the field of nanomaterials was particularly important due to the fast-paced developments in the industry.

Of the 2 interviewees who indicated never visiting the EUON website, both indicated having visited it once and subsequently forgetting to re-visit it. Nevertheless, both interviewees supported the added-value of the website and acknowledged that they thought it would be appreciated by others in their stakeholder group. They suggested that awareness of the website should be increasing its visibility on the ECHA website and promoting its dissemination amongst relevant associations.

The industry association representative who reported using it weekly indicated that they used it to screen for any information related to the products they manufacture and reported focusing on the news section.

In summary, survey respondents mostly learned of the EUON website via ECHA dissemination activities. Feedback suggests that stakeholders consider that there is the need for ECHA to increase its promotion of the EUON and its updates via these channels. This is both to remind existing users to visit the website, and to build further awareness amongst stakeholders.

Concerning its use, the majority of survey respondents reported visiting the EUON every few months. The perceived low frequency of promotion of EUON via ECHA mediums was identified as one reason. However, another factor identified by survey respondents related to a perception that the content of the EUON is not frequently updated, which deterred respondents from visiting it more frequently.

2.2. Evaluation of the efficiency, economy and proportionality*

The financial contribution received by the Commission for the development of the EUON from its start until 2018 has been as follows:

Year (in EUR)	2016	2017	2018	TOTAL
Commission's financial contribution	800 000	600 000	600 000	2 000 000

Similar amount of budget (EUR 600 000) is planned for the years to come (2019-2020).

As a general rule, the budget received in each of the years (N) is spent during the following year (N+1).

There is an indication from the surveys and interviews that the knowledge and awareness for the existence of EUON website is not very high, and its use is limited due to a very technical and not always up-to-date content. One of the objectives of the EUON website as stipulated in the Delegation agreement is to become a one-stop shop for information, where information is linked, summarised and interpreted to give a clear view on nanomaterials. While this objective is not yet achieved (as it can be seen from the stakeholders feedback and the websites comparison), it has to be noted that there have been limited resources spent for the development of the EUON content, and nevertheless its content has been considered mostly useful for technical audiences. It could be also derived that even if the efficiency for the stakeholders from the use of EUON has not increased (as information has remained relatively scattered among various websites and not summarised in one place), those with higher technical knowledge have benefited from its use. On the other side, the website traffic trend since its establishment in 2017 shows that the overall views of EUON content have steadily increased, exceeding its annual 10% target increase. This may be an indication of increasing interest towards the EUON content on behalf of the stakeholders. For more details, see Annex 3.

It has to be pointed out as well, that the project is relatively new, and it is normal not to have achieved all of its objectives or realised all of its foreseen benefits yet.

From the review of the project documentation it can be derived that there are no specific targets and indicators defined. It has to be noted though that there are timelines planned and the two launches of the EUON content so far have been executed on time in accordance with the initial plan, which may be an indirect indication of internal efficiency.

From the above, it could be concluded that the development of EUON and the results achieved so far have been proportionate to the cost allocated. The cost-benefit balance could be considered fair, noting that some of the foreseen benefits have not yet been realised and there is further cost investment to be incurred. The project will benefit from defining measurable targets and indicators to further track its progress in the future.

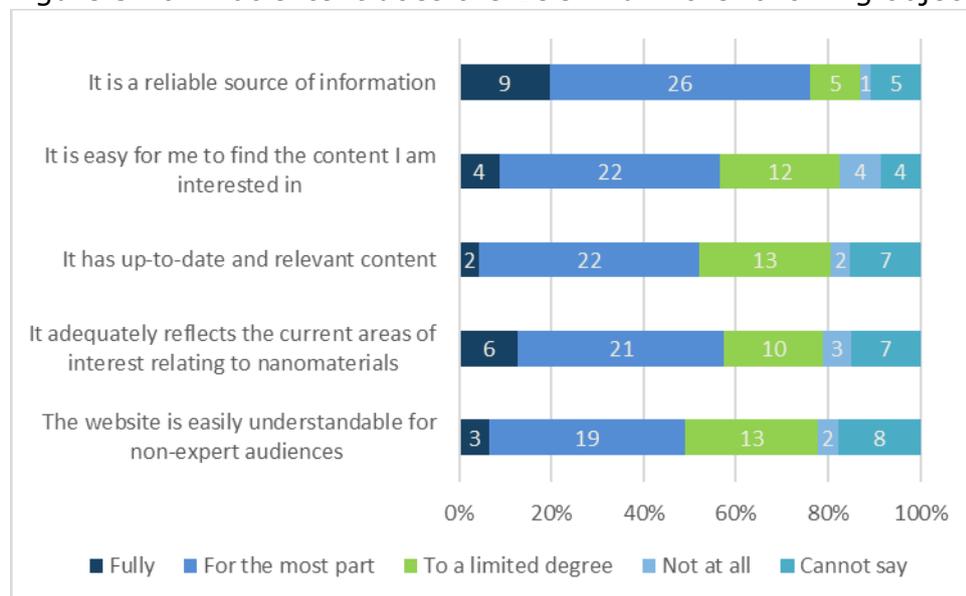
2.3. Evaluation of the effectiveness

The questions under this section aim to capture the extent to which the objectives and benefits of the EUON were achieved, together with the potential factors driving or hindering the fulfilment of said objectives and benefits.

The following objectives of the EUON were assessed:

- It is a reliable source of information;
- It is easy for me to find the content I am interested in;
- It has up-to-date and relevant content;
- It adequately reflects the current areas of interest relating to nanomaterials;
- The website is easily understandable for non-expert audiences.

Figure 5 To what extent does the EUON fulfil the following objectives? (n=47)



As displayed in the above figure, the results from the survey show that on average, across the objectives, 58% of respondents either “fully” agree or agree “for the most part” that these objectives were fulfilled. Within these objectives, the distribution of answers is similar with an average of 10% of respondents agreeing “fully”, around 48% agreeing “for the most part”, and around 23% agreeing “to a limited degree” or “not at all”.

The extent to which the EUON had fulfilled the objective of acting as **a reliable source of information** received the most support from respondents. On average, 77% of respondents agreed “fully” or “for the most part” that it constituted a reliable source of information, which can be considered a positive result considering that the main objective of the Observatory is to give “*objective and reliable information on markets and safety aspects of nanomaterials in the EU*”

market"⁹. The highest levels of support were recorded amongst academic associations, European institutions and consumers. Respondents who rate this objective as fulfilled only "to a limited degree" represented industry associations (2), Member States (2) and a private company (1). Only one respondent considered it had been "not at all" fulfilled, and represented a "retired industry".

Concerning the extent to which the EUON adequately **reflects current areas of interest relating to nanomaterials**, the majority (57%) of survey respondents considered it had "fully" or "for the most part" achieved this objective. Industry association representatives were the least supportive of this objective. Interviewed stakeholders representing industry associations and private companies, who had rated this objective poorly, explained that this was due to a perception that the information displayed on nanomaterials on the website was imbalanced towards negative findings related to nanomaterials, particularly concerning safety. They highlighted that a wealth of scientific studies exist with positive findings concerning their benefits and safety, which are not displayed on the website¹⁰. This was also discussed at the 2017 EUON Stakeholder Dialogue meeting¹¹, in which stakeholder feedback on key messages indicated there was a perceived lack of environmental, societal and economic benefits and potential of nanomaterials on the website.

Less support was received for the extent to which the website has **up-to-date and relevant content**. Just over half of survey respondents (52%) considered that the EUON has up-to-date and relevant content "fully" or "for the most part". Survey respondents representing academic associations and industry associations were the least supportive of the EUON having achieved this objective. Feedback from interviews indicate that this is due to the information on the website being largely static. As previously discussed under Knowledge and use of the EUON, interviewees highlighted that the need for a higher frequency of publishing/updating information, would be particularly important due to the fast-changing nature of the field of nanomaterials. As such, there was high support for the establishment of a blog on the site to allow for reference to the most recent developments. Secondly, interviewees perceived that a certain amount of the

⁹ European Commission (2016). Delegation agreement - European Union Observatory for Nanomaterials and the European Union chemical legislation finder.

¹⁰ The following studies were provided as examples by an interviewee who represented an industry association; "M. Delaval, W. Wohlleben, R. Landsiedel, A. Baeza-Squiban, S. Boland, Arch. Toxicol. 2017, 91, 163-177."; "D. M. Brown, H. J. Johnston, B. Gaiser, N. Pinna, G. Caputo, M. Culha, S. Kelestemur, M. Altunbek, V. Stone, J. Chandra Roy, J. H. Kinross, T. F. Fernandes, NanoImpact 2018, 11, 20-32."; "T. Brzicova, J. Sikorova, A. Milcova, K. Vrbova, J. Klema, P. Pikal, Z. Lubovska, V. Philimonenko, F. France, J. Topinka, R. Rossner Jr., Toxicology in Vitro 2019, 54, 178-188."; "M. Simonin, J. M. F. Martins, X. Le Roux, G. Uzu, A. Calas, A. Richaume, Nanotoxicology 2017, 11, 247-255."; "A. Spengler, L. Wanninger, S. Pflugmacher, Aquatic Toxicology 2017, 190, 32-39."; "E. Joonas, V. Aruoja, K. Olli, A. Kahru, Science of The Total Environment 2019, 647, 973-980."

¹¹ European Union Observatory for Nanomaterials (2017). Workshop Report Stakeholder Dialogue meeting European Union Observatory for Nanomaterials.

information on the website was out-dated¹². Finally, several interviewees highlighted that there were links on the website that no longer worked¹³.

Similarly, concerning the extent to which survey respondents considered it was **easy to find the content they were interested in**, 57% of respondents agreed “fully” or “for the most part”. Representatives of EU institutions, researchers and industry associations were the most supportive of the EUON having achieved this objective. The least supportive of this were consumers, with 57% only agreeing “to a limited degree” or “not at all”. An analysis of the feedback given by these respondents concerning their recommendations for improvements indicates that this is due to a perception that the website is not visually attractive, and one respondent indicated that they did not feel the website addressed issues of general public interest.

The objective that received the least support was the **extent to which the website is easily understandable for non-expert audiences**, with just under half (49%) of respondents rating it as fulfilled “fully” or “for the most part”. As can be seen in Table 3, proportionally representatives of EU institutions (100%) and consumers (71%) were the most supportive (responding “fully” or “for the most part”). The stakeholder groups who were least supportive (responding “to a limited degree” or “not at all”) represented researchers and academia (75%) and industry associations (60%). These results may seem counterintuitive considering that some of the highest levels of support were recorded amongst consumers, and the lowest amongst stakeholder groups which would be expected to have a high level of technical expertise. Feedback from interviews (discussed below) suggest that this primarily stems from the perceived imbalance of information displayed on nanomaterials on the website, previously discussed.

¹² E.g. RIVM Report 2007, “Inventory of consumer products containing nanomaterials”; the “Completed and planned REACH substance evaluations on nanomaterials” sub-section under the “Regulation” section.

¹³ E.g. “DEFRA Report 2015, “Understanding public perceptions of specific applications of nanotechnologies” under the “Uses” section

Table 3 Survey responses concerning whether the website is easily understandable for non-expert audiences by respondent type

Respondent type	Fully	For the most part	To a limited degree	Not at all	Cannot say	Total
Consumers	1	4	2			7
European institutions		3				3
Industry associations		3	5	1	1	10
Member States	1	2			4	7
Private companies	1	6	3	1	2	13
Researchers/Academia			3		1	4
Other		1				1

The latter findings were further analysed by way of feedback from interviewees. Specifically, 3 interviewees representing industry associations and private companies indicated that the information provided on the website was not suitable for consumers or non-expert audiences¹⁴. When asked to elaborate, the interviewees explained that their response was driven by a perception of an imbalance in the information provided on the website, particularly in relation to the safety of nanomaterials (as discussed above).

Two interviewees representing industry associations considered that the information on the EUON was more suited to expert audiences. This was reflected in the feedback received by one consumer survey respondent, who indicated that they did not feel the EUON website addressed topics of interest for the general public. The interviewees considered that the ECHA “chemicals in our life” website¹⁵, which includes information about nanomaterials, was more suitable for non-expert audience in terms of the type and technical level of information. This is supported by a 2017 report funded by the Dutch Ministry of, health, which indicated that EUON currently directed consumers to the very general information on nanomaterials at the ECHA website and questioned how the website would effectively direct specific information to general consumers in the future¹⁶.

*It should nevertheless be noted that the EUON is expected to cater to a wide variety of audiences. As such, some of the content is deliberately aimed not at consumers, but rather at expert audiences, or audiences with at least some prior knowledge of the field. This includes sources such as eNanoMapper as well as the NanoData knowledge base. This can be contrasted with the EUON sections of the “chemicals in our life” website, which were developed as part of the EUON

¹⁴ With the following given as examples; the eNanoMapper, the NanoData, scientific studies and articles.

¹⁵ <https://chemicalsinourlife.echa.europa.eu/>

¹⁶ Rijksinstituut voor Volksgezondheid en Milieu (2017). *The European Union Observatory for Nanomaterials – A step forward?*.

activities, but deliberately included in the separate consumer oriented “chemicals in our life” website.

In parallel, consulted stakeholders considered that the link to this website was not adequately highlighted on the EUON website. In addition, an interviewee representing a private company suggested that the link to the “NanoData” website¹⁷ and the “eNanomapper” database¹⁸ were not appropriate for non-expert audiences, and this was not conveyed in the way they were currently displayed on the website, next to the link to the “chemicals in our life” website. This was also reflected in the discussions of the 2017 Stakeholder Dialogue meeting on the EUON, in which it was recommended that EUON tailor and divide the content for different audiences¹⁹.

This feedback reflects challenges related to the website’s broad target audience, ranging from non-experts to experts. The above feedback suggests that variance in the stakeholders’ prior technical knowledge produces difficulties in clearly providing information which accommodates both experts and non-experts. Recognising this issue, one interviewee suggested that two portals be integrated into the EUON: one for non-expert audiences, which directs them to the “Chemicals in our life” website of ECHA, and another for expert audiences which directs to the EUON website.

This was also reflected in the discussions of the 2017 Stakeholder Dialogue meeting. Firstly, several participants noted that while a significant amount of information may be available, the collection of the information, its validation, and curation are sizeable tasks, compounded by the number of different audiences being targeted. As such, the cost of carrying out this task may be prohibitive. Therefore, several participants suggested focusing on a particular audience and/or sources of information.

In a second instance, the survey aimed to assess the outcomes and benefits for EUON users. Specifically, the following five key expected outcomes and benefits of the use of the EUON were tested:

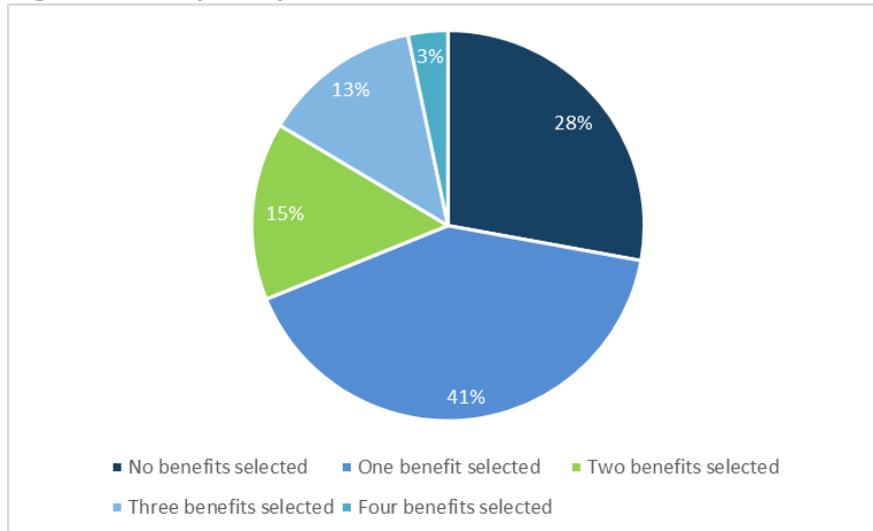
- I have learned something useful that can benefit me or my work;
- Increased transparency and availability of information on nanomaterials in the EU;
- It provides reliable, objective and up to date data on safety aspects of nanomaterials in the EU;
- One-stop-shop for information on nanomaterials.

¹⁷ <https://nanodata.echa.europa.eu/>

¹⁸ <https://euon.echa.europa.eu/enanomapper>

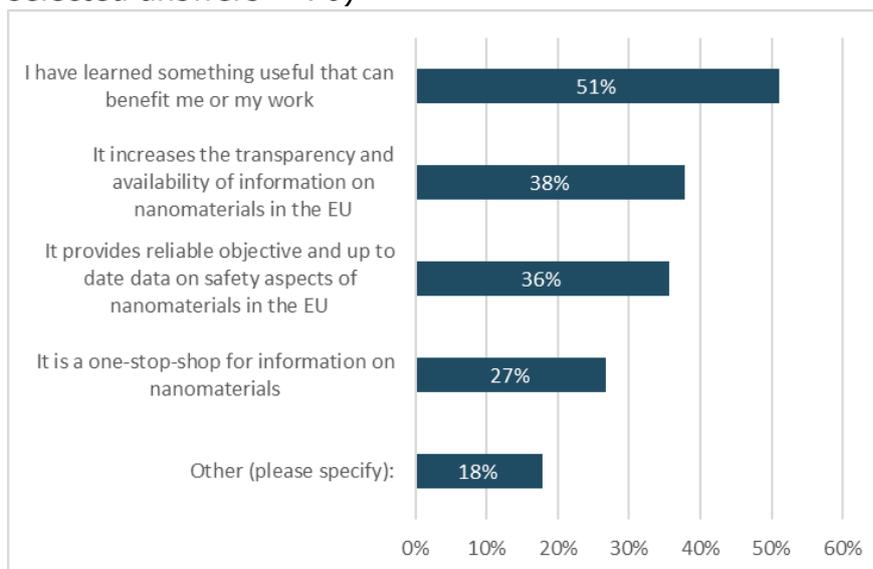
¹⁹ European Union Observatory for Nanomaterials (2017). Workshop Report Stakeholder Dialogue meeting European Union Observatory for Nanomaterials.

Figure 6 Frequency of benefits selected



As can be seen in the figure above, respondents most frequently only selected one benefit. Out of the total number of the 61 total respondents, 17 selected no benefits at all or skipped the question.

Figure 7 What benefits have you experienced from using the EUON? (n=45, selected answers = 76)



An analysis of the answers provided by survey respondents shows that EUON's contribution to teaching respondents something useful that could benefit them or their work was the benefit most supported (51% of all respondents). Proportionally, a majority of respondents representing consumers (75%), EU institution representatives (60%) and MS representatives (57%) reported experiencing this benefit. Just under a majority of private company (46%) and industry association (40%) respondents reported experiencing this benefit. No researchers or academic associations listed this as a benefit they had experienced. Interview feedback suggests that this is because these representatives frequently have high levels of technical expertise a priori, relating to the above findings

concerning the difficulty of accommodating individuals with varying levels of technical knowledge.

The benefit that received the least support **was its role as a one-stop-shop for information** on nanomaterials. The stakeholders who most frequently reported that they had experienced this benefit from the EUON were consumers (75%) and MS representatives (57%). The stakeholders who reported experiencing this benefit the least were private company (33%) and industry association (36%) representatives. Out of the interviewed stakeholders, 2/3 had not marked this as a benefit. The majority explained that this was a result of the factors listed previously, i.e. outdated/static information, outdated links and a perceived imbalance of the scientific information provided. Secondly, multiple interviewees highlighted that links to relevant information were missing e.g. to Horizon 2020 nanomaterial projects, relevant OECD and EC documentation.

Concerning the respondents who responded "other", examples of the reported benefits included its contribution to raising awareness of nanomaterials and facilitating the public's understanding of the complex field.

In summary, based on consulted stakeholder feedback, the EUON can be considered to have achieved its purpose of acting as an objective and reliable source of information on markets and safety aspects of nanomaterials in the EU market for the most part. Although strong support was received for its reliability, stakeholders representing industry associations and private companies perceived an imbalance in the information on nanomaterials' safety on the website, with insufficient information about evidence of their safety compared to information about the risks.

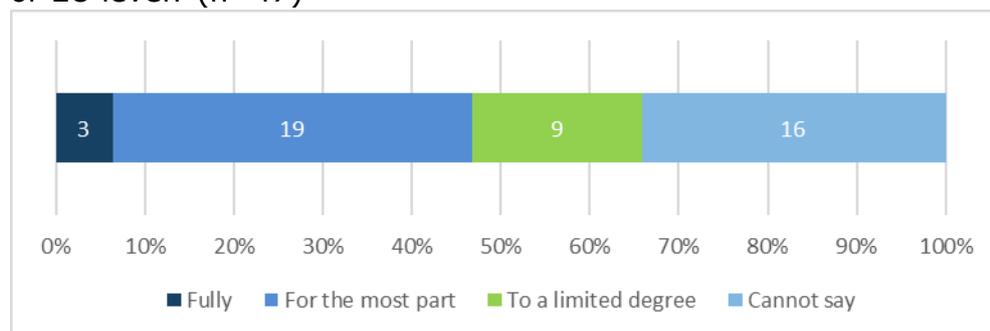
Nevertheless, issues with EUON's relevance emerged related to the diverse backgrounds and level of prior technical knowledge of the website's target audience. Specifically, feedback from industry associations suggested that a majority did not consider that the website's content is suitable for non-expert audiences, and that ECHA's "Chemicals in our life" website would be a more suitable alternative. This was also supported by survey feedback from one consumer respondent.

Supporting this, the benefits derived from the information on the website appear to vary across the different stakeholder groups. Stakeholders with a lower level of prior technical knowledge appear to derive more benefits from the information in terms of learning something useful that can benefit them or their work. In contrast, those with higher levels of prior technical knowledge tend to use the website to keep up to date on relevant developments in the field of nanomaterials. Relating to this last point, there is evidence that the EUON could improve its effectiveness by ensuring more frequent publishing of new information on the website and that the material on the website is up-to-date and relevant.

2.4. Evaluation of the coherence

This section aims to assess the extent to which they considered EUON is coherent with other initiatives at the national and/or EU level, i.e. whether the website is working well (e.g. to achieve common objectives) with other initiatives in MS, or at the EU-level²⁰, without unnecessary overlaps or duplication of work.

Figure 8 To what extent is the EUON consistent with similar initiatives at national or EU level? (n=47)



As shown in the above Figure 8, just under half of respondents (47%) considered “fully” or “for the most part” that the EUON was consistent with similar initiatives at national or EU level. However, this rises to 71% when excluding the respondents who answered “cannot say”. In addition, feedback from interviewees who had responded “for the most part” or “to a limited degree” did not consider that there were any similar initiatives at national or EU level with which the EUON was overlapping. They explained that their responses stemmed from a perception that it was difficult for the EUON to be consistent with EU level initiatives, due to a general lack of progress concerning nanomaterials at the EU level, e.g. concerning the revision of the nanomaterials definition and the updating of the REACH annexes. This is confirmed by documentary evidence from the proceedings of the 2017 Stakeholder Dialogue meeting, in which the review of the REACH annexes, review of the nanomaterials definition and the EUON were identified as linked, and the lack of progress on revising REACH annexes identified as a factor hampering the implementation of the EUON’s tasks and objectives²¹.

An analysis of the availability of content on EUON related to other EU and national initiatives that cover nanomaterials was carried out.²² As can be seen from the following table, EUON contains references to all the initiatives selected for the analysis, but in most cases EUON merely provides links to the websites of these initiatives and does not contain any content explaining their relevance, role or the type of information that can be found there. Notably, EUON contains little

²⁰ European Commission (2017). *COMMISSION STAFF WORKING DOCUMENT Better Regulation Guidelines*. Brussels.

²¹ Holmqvist, J. (2017). EUON – Stakeholder Dialogue Background 1st Launch.

²² Analysis of search results for key terms generated through the EUON search tool. The analysis did not include in-depth content review of information published on EUON. Therefore, potential cases where EUON does summarise / interpret information generated under other initiatives but does not specifically indicate them as the sources are not captured by the analysis.

information specifically about the outputs and results of research projects under FP7 and Horizon 2020. As such, EUON fulfils partly the objective laid down in its Delegation agreement to link, summarise and interpret information in order to give a clear view on nanomaterials, their uses and applications as well as risks.

* It is worth noting that the EUON is currently developing a dedicated search tool that will allow users to easily find information notified on nanomaterials under other EU and national initiatives, including searching nanomaterials in the French and Belgian national inventories on nanomaterials, as well as nanomaterials notified under the EU's Cosmetics Products Notification Portal (CPNP), and connecting the user to the data found in ECHA's dissemination websites. However, this work is expected to be completed by end of June 2019, and as such was not available to the survey respondents/the public yet.

Table 4 EUON references to other relevant initiatives

Other nanomaterials-related initiatives	Mentions on EUON
European Commission's 7th Research and Innovation Framework Programme projects on nanomaterials	<p>EUON links to relevant FP7 projects are available on EUON, including:</p> <ul style="list-style-type: none"> - Sustainable Nanotechnologies (SUN) project - Managing Risks of Nanomaterials – MARINA project - iNTeg-Risk - Early Recognition, Monitoring and Integrated Management of Emerging, New Technology related Risks <p>One of the reports commissioned by EUON reflects on the results of the NANEX, MARINA, GUIDEnano and SUN projects.²³</p>
Horizon 2020 research projects on nanomaterials	<p>EUON includes news items about H2020 calls for proposals as well as information about the role played by NanoSafety Cluster in coordinating the funding of research projects at the European level. However, out of the 20 projects listed on NanoSafety Cluster,²⁴ EUON includes specific references only to 4 and does not include any information about the outputs of completed or ongoing H2020-funded projects.</p>
Other EU Agencies	<p>EUON provides links to the nanomaterials-related content of the following EU agencies:</p> <ul style="list-style-type: none"> - European Agency for Safety and Health at Work (EU-OSHA) - European Food Safety Authority (EFSA) - European Medicines Agency (EMA)
Cosmetics Notification Portal	<p>EUON includes a link to the Cosmetic Products Notification Portal (CPNP) under its section on nanomaterials in cosmetics</p> <p>*In addition, the EUON includes a cross match of the nanomaterials found under the CPNP to ECHA's registration database,</p>

²³ EUON (2018) Literature study on the uses and risks of nanomaterials as pigments in the European Union

²⁴ We looked for mentions of the projects listed on the NanoSafety Cluster website. www.nanosafetycluster.eu/eu-nanosafety-cluster-projects/horizon-2020-projects

Other nanomaterials-related initiatives	Mentions on EUON	allowing the EUON user easy access to the data held by ECHA/EUON on these substances.
National schemes	notification	EUON has a section dedicated to national notification schemes, which includes a comparative table of the schemes in France, Belgium, Denmark, Norway and Sweden.
Nanomaterial registry by RTI International		EUON does not contain any references to the nanomaterial registry run by RTI International.
National websites on nanomaterials	on	<p>EUON contains links to the following national websites on nanomaterials:</p> <ul style="list-style-type: none"> - DaNa Wissensplattform (Germany) - Nano-Portal: Safe Handling of Nanomaterials by DGUV German Social Accident Insurance - SweNanoSafe – Swedish National Platform for Nanosafety <p>In addition, information about other national initiatives is provided in one of the publications commissioned by EUON.²⁵</p>

To further analyse EUON’s coherence with national and EU-level initiatives, we compared the website with other similar websites from the EU and national level, which were mentioned by consulted stakeholders elsewhere in the evaluation (see Knowledge and use of the EUON). The results are displayed in the table below.

²⁵ EUON (2018) Critical review of the relevance and reliability of data sources, methods, parameters and determining factors to produce market studies on manufactured, nanomaterials on the EU market

Table 5 Nanomaterial websites comparison

	EUON	DaNa²⁶	JRCNanomaterials Repository²⁷	EU Nano Safety Cluster²⁸
Objective	To give objective and reliable information on markets and safety aspects of nanomaterials in the EU market, as well as improve the business environment for EU companies and SMEs via this access to information	To provide a non-biased, quality-approved and up-to-date knowledge base for more transparency.	To respond to an increasing demand for representative nanomaterials for testing. The facility serves the scientific community active in nanotechnology, environmental-health-and-safety and regulatory research, by distributing subsamples of test nanomaterials.	To maximise the synergies between European-level projects addressing the safety of materials and technologies enabled by the use of nanoparticles. The studied aspects include toxicology, ecotoxicology, exposure assessment, mechanisms of interaction, risk assessment and standardisation.
Level of initiative	EU-level	National level	EU-level	EU-level
Sponsor	European Commission	The German Federal Ministry of Education and Research	European Commission	European Commission
Target audience	Experts and non-experts	Experts and non-experts	Scientific community	Experts
Twitter	No dedicated Twitter account	Dedicated Twitter page since 2011 Tweets: 1383 Followers: 391 ²⁹ .	No dedicated Twitter account	Dedicated Twitter page since 2011 Tweets: 598 Followers: 2 252 ²⁶

²⁶ nanoobjects.info

²⁷ <https://ec.europa.eu/jrc/en/scientific-tool/jrc-nanomaterials-repository>

²⁸ <https://www.nanosafetycluster.eu/>

²⁹ Source: Twitter. Numbers as of 25 April 2019

LinkedIn

Yes

No

No

Yes

The table above indicates coherence between EUON and the other EU-level initiatives analysed. Specifically, EUON's objectives can be considered distinct from those of the JRC Nanomaterials repository and the EU Nano Safety Cluster. Where the EUON was set-up to increase the provision of objective and reliable information in the EU, the JRC website was set up to serve the scientific community and intends to provide representative test materials for research. This is reflected in the websites' lay outs; the JRC provides no general information concerning nanomaterials, with more of a focus on technical information including databases, JRC scientific publications and information on patents and technologies.

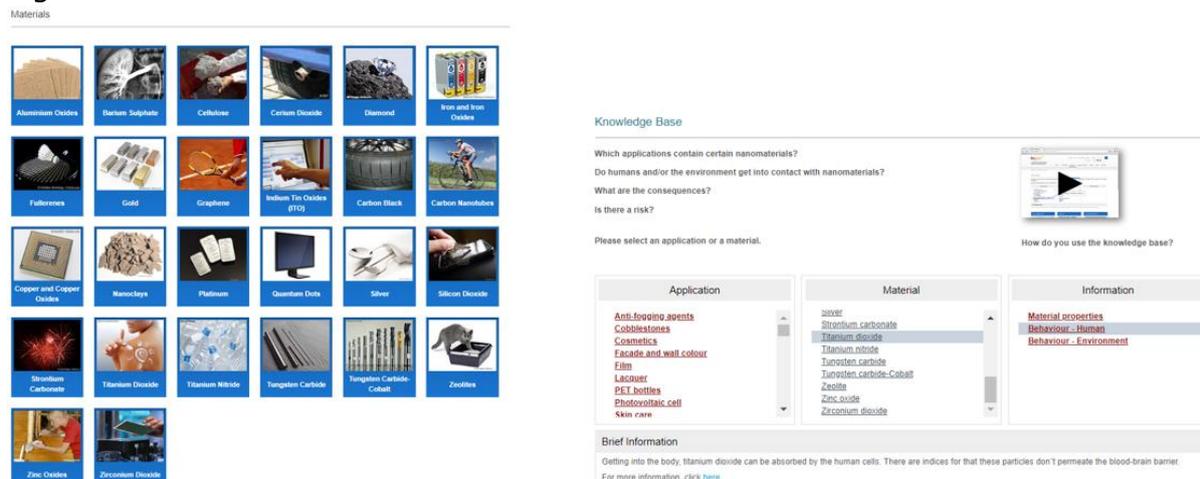
The EUON can also be considered to be coherent with the EU Nano Safety Cluster website, which is targeted at increasing the synergies between European-level projects addressing the safety of materials and technologies. As such, it is targeted at expert audiences and therefore, unlike EUON, does not provide general information concerning nanomaterials targeting the general public, information concerning their safety or regulatory developments.

Out of the above websites, the most similarities can be drawn between EUON and the German website "DaNa". The website is the result of a project called DaNa 2.0, sponsored by the German Federal Ministry of Education and Research and run by an interdisciplinary team of experts, with backgrounds in different research areas covering all aspects of nanosafety research (human and environmental toxicology, biology, physics, chemistry and pharmacy). Similarly to the EUON, the stated purpose of the DaNa 2.0 project is to provide a non-biased, quality-approved and up-to-date knowledge base for more transparency³⁰. An analysis of the two different websites shows similar interfaces, with several common categories of information accessible through the homepage. Specifically, both websites contain similar types of content with basic information concerning nanomaterials, more technical studies, relevant upcoming events and links to other relevant initiatives. However, the DaNa 2.0 website appears to be somewhat more conducive to targeting non-expert audiences, both in terms of the language used and the presentation of information. For instance, as seen in the images below, the website contains interactive, visual databases which might be easier for consumers to navigate and to search for relevant information concerning nanomaterials encountered in their everyday life, including their safety. This should be considered in relation to the stakeholder feedback received under the evaluation of EUON's effectiveness, which showed a perception amongst some consulted stakeholders that some of the information on EUON was too technical for non-expert audiences, as well as the EC and ECHA's aim to make the EUON as useful for consumers as possible³¹.

³⁰ <https://nanopartikel.info/en/about-us>

³¹ EC, Press MEMO: Nanomaterials: Commission signs agreement with the European Chemicals Agency to set up an EU Observatory for Nanomaterials (EU-ON). 2016, European Commission: Brussels.

Figure 9 DaNa databases³²



In summary, EUON’s coherence with other similar initiatives at the national and EU level received strong support amongst survey respondents. A comparison of the EUON with 2 other EU-level websites also found coherence between its objectives and targeted audiences. Specifically, EUON was the only one of the three which was offering more general information concerning nanomaterials, their safety and regulatory developments, where the other websites were further targeted at experts.

The most similarities were found between EUON and a website DaNa, funded by the German Federal Ministry of Education and Research. The German website contains databases which appear more user-friendly for non-expert audiences.

However, EUON could provide more information about other initiatives on its website, in particular about the outputs and results of EU-funded research projects.

2.5. Evaluation of the EU-added value

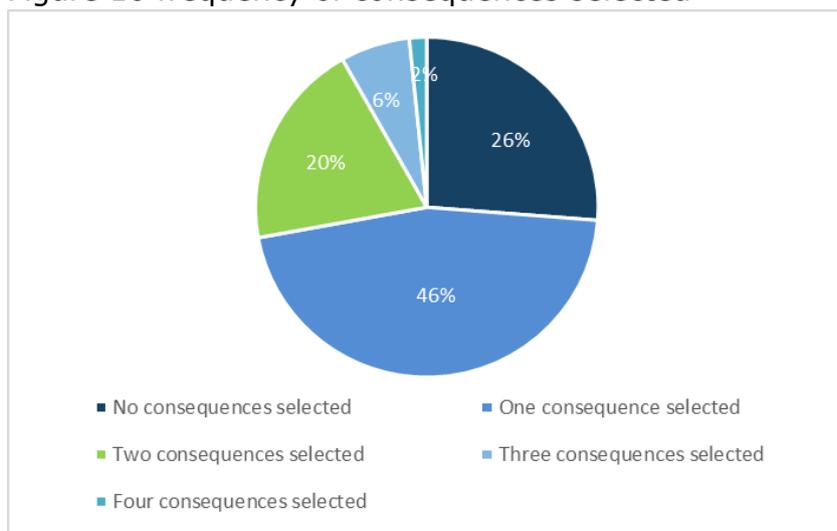
The questions under this section focus on understanding the additional value and improvements brought by the EUON, which are caused by the intervention being implemented at the EU level rather than at national and/or regional level. In essence, they look for evidence that the benefits of the EUON could not have been attained through national action alone.

To assess this, survey respondents were asked to assess the added value of the EUON by considering the most likely impacts of its abolishment.

- Lack of a reliable source of information on nanomaterials;
- Reduced transparency of information on nanomaterials;
- Limited visibility on the risks and benefits of nanomaterials.

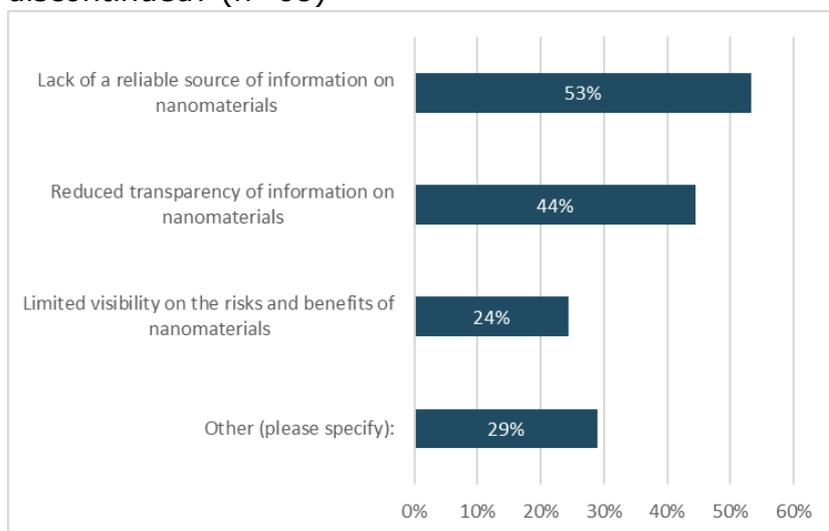
³² nanoobjects.info

Figure 10 frequency of consequences selected



As can be seen in the above figure, respondents most frequently only selected one consequence. Out of the total number of the 61 total respondents, 16 selected no consequences at all or skipped the question and a quarter of these 16 were the same respondents who had also selected no benefits.

Figure 11 What would be the most likely consequences if the EUON was discontinued? (n=68)



The results can be seen in the figure above. Over half of respondents considered that if EUON was discontinued there would be a lack of a reliable source of information on nanomaterials, in line with the findings under the evaluation of EUON's effectiveness. The second impact rated by respondents as resulting from its abolishment was a reduced transparency of information on nanomaterials (44%). The impact which received the least support was a limited visibility on the risks and benefits of nanomaterials. This potentially stems from the consulted stakeholder feedback discussed under Figure 4. Specifically, that some stakeholders perceive an imbalance of the information on the risks and benefits of nanomaterials in the "Safety" section of the EUON, in favour of the risks.

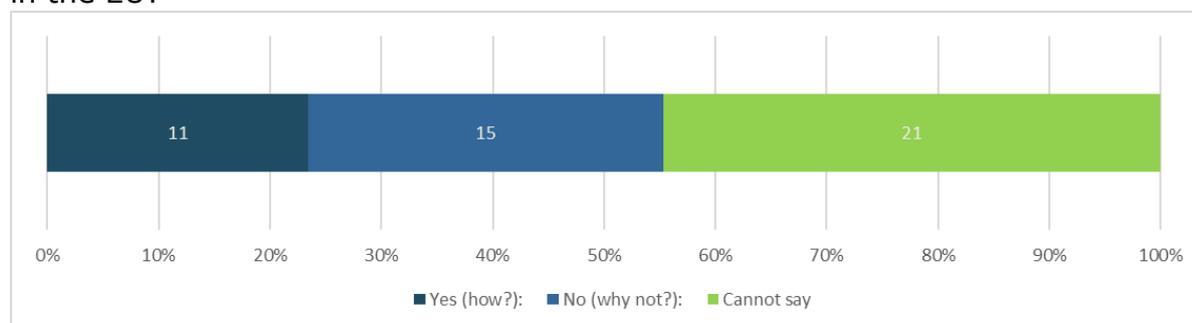
Under this question, 13 respondents chose “other” and offered the following alternative impacts; an increased lack of transparency from EU authorities towards the general public, a reduced level of confidence in nanomaterials and a lack of a reliable inventory of nanomaterials in the EU. Finally, 4 out of the 13 respondents considered that there would be no impact if it were discontinued. One of these respondents made reference to another portal, “DaNa”, a website sponsored by the German Federal Ministry of Education and Research with the aim to provide non-biased, quality-approved and up-to-date knowledge base for more transparency (see Table 5 under the Evaluation of the coherence)³³.

There was a consensus amongst interviewed stakeholders concerning the added value of EUON. Despite highlighting multiple areas of improvement for the website, all interviewees expressed **support for the need of the initiative at EU level.**

Firstly, it was highlighted that the field of nanomaterials was underdeveloped at the EU level and there was a high degree of national fragmentation across Member States. As such, the creation of the EUON was considered to represent an important step forward for the development of the field.

Secondly, the majority of interviewed stakeholders highlighted the importance of EUON in strengthening the transparency of information on nanomaterials in the EU, especially for consumers and workers, and in line with the demand stemming from the market, policy makers and NGOs.

Figure 12 Does the EUON influence your opinion on nanomaterials and their safety in the EU?



Secondly, survey respondents were asked to assess whether they considered the EUON had influenced their opinion on nanomaterials and their safety in the EU. As shown in the figure above, out of 47 responses, 15 said no (32%), 11 (23%) said yes and 21 (45%) reported not being able to say. Consumers, industry associations and private companies were the stakeholder groups most represented out of those who positively assessed that the EUON had influenced their opinion on nanomaterials and their safety in the EU. Comments from these respondents show that the majority responded this way as they considered that the website had enriched their knowledge on nanomaterials. 2 respondents indicated that it had developed their “basic knowledge” and that they had “learned

³³ www.nanoobjects.info

some grounds about nanomaterials". This supports the findings under the evaluation of the EUON's effectiveness, which suggests that the benefit of learning something new from the EUON is more relevant for non-expert audiences.

Member State representatives, European institutions and academic associations were the stakeholder groups who were the least supportive that the EUON had influenced their opinion on nanomaterials and their safety in the EU. An analysis of the open comments suggests that this is due to a perception that the topic of nanomaterials' safety is not adequately addressed within the EUON, both in terms of the quantity and quality of information. This is primarily due to external factors, as outlined in a 2017 report by the Dutch Ministry of Health. Specifically, that the EUON is limited in the extent of information that it can provide on safety aspects of nanomaterials given the voluntary nature of contributions to its data, its dependence on the data management and control in the underlying sources, and the limited resources provided by the EC to collect data and maintain the EUON, both of which could hamper quality control³⁴.

The latter point was also raised more generally in a Stakeholder Dialogue meeting on the EUON in 2017. A recommendation which was given by participants suggested setting up a body responsible for collecting the data/information needed for the EUON. Such a body could have two functions: 1) to liaise with different stakeholders/organisations in order to encourage the stakeholders to submit their data, and 2) to provide a system for controlling the quality of the information/data that is disseminated through the observatory³⁵.

Concerning other stakeholders' feedback, the open comment boxes mostly referred to the arguments previously discussed under the evaluation of EUON's effectiveness and knowledge and use. Specifically, several comments referred to the extent to which information on the EUON website is kept up to date, and new information is published on the website. In addition, concerning the perceived imbalance in the information displayed in the "Safety" section of the website towards the risks of nanomaterials, highlighted primarily by industry association and private company representatives.

Concerning interview findings, one respondent explained that, coming from a scientific background, they have a broader overview of the field and a priori opinions, and were therefore not influenced by the website. Similarly, interviewees representing private companies, and with extensive professional experience relating to nanomaterials, reported that they did not consider the intention of the EUON website was to teach them something new and influence their opinion. They rather visited the EUON website in order to stay informed on relevant safety and use aspects, as well as regulatory developments in the field of nanomaterials, in line with the feedback received under the evaluation of the knowledge and use of

³⁴ Rijksinstituut voor Volksgezondheid en Milieu (2017). *The European Union Observatory for Nanomaterials – A step forward?*.

³⁵ European Union Observatory for Nanomaterials (2017). Workshop Report Stakeholder Dialogue meeting European Union Observatory for Nanomaterials.

EUON. Therefore, this constitutes added value of EUON in disseminating relevant information on nanomaterials, although this may not influence stakeholders' opinions. In addition, concerning the feedback from private company interviewees, this can be considered evidence that the EUON is fulfilling its objective of improving the business environment for EU companies and SMEs, by improving access to information on the use and safety of nanomaterials³⁶.

This was supported both by interviewed private company and industry association representatives, the majority of whom considered that EUON was not intended to influence stakeholders' opinions on nanomaterials. Rather, they saw its role as acting as a conduit for information on nanomaterials and thereby contributing to building a common understanding of what nanomaterials are and how they are used. This was also supported by the findings of a 2017 report funded by the Dutch Ministry of Health, which found that the EUON's main added value would be its provision of a more complete overview of all available information, which makes it easier to find, inspect and analyse the data and thereby save time compared to consulting the different sources separately²⁷. Therefore, it can be considered that the website's added-value is not solely derived from the extent to which users' opinions are influenced and the extent to which they learn something new on nanomaterials but also in terms of its filling the need for information on a variety of aspects related to nanomaterials.

Finally, the survey respondents were asked to provide recommendations for the future development of the EUON so it can be recognised as a trustworthy source of information about nanomaterials on the EU market. In total, 20 responses were received under this question. The comments can generally be separated into points concerning the EUON's content (13 references) and functionalities (8 references). Concerning recommendations on the platform's content, comments received by respondents related to keeping the information currently on the website up to date and providing additional information. The recommendations were cross-checked with interviewees and the ones which received support are displayed in the table below.

Table 6 Consulted stakeholders recommendations for the future development of EUON

Comment type	Recommendation
Keeping information up to date	<ul style="list-style-type: none"> • updating data in the "nanodata" database; • updating articles and data to keep pace with technical advances (through, for instance, more collaboration with industry).
Additional information	<ul style="list-style-type: none"> • more information from the ECHA Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) database; • expanding the access to the data of databases other than the ones already covered;

³⁶ European Commission (2016). *Delegation agreement - European Union Observatory for Nanomaterials and the European Union chemical legislation finder*.

	<ul style="list-style-type: none"> • include an inventory of nanomaterials on the EU market: types, amounts, uses, commercial products containing these materials³⁷; • Links to MS' national inventories of nanomaterials³⁸; • the toxicity of nanomaterials; • a scientific road map for research and protocol development; • more policy-oriented information; • information on groups of nanoforms; • information on the EU's nanomaterial framework and the associated timelines.
Functionalities	<ul style="list-style-type: none"> • further integration / links with the REACH data and ECHA website; • investing in a common data source; • implementation of "nanonavigator" (e.g. as on the ECHA website), to help companies understand their role and law requirements in relation to nanomaterials; • developing a mobile app; • improving the website's search engine optimisation (SEO).

In summary, there was a high degree of support for the added value of EUON amongst consulted stakeholders. Specifically, it was considered that in its absence there would be a lack of a reliable source of information on nanomaterials in the EU and a reduced transparency of information on nanomaterials in the EU. Less support was received concerning the extent to which there would be a reduced level of visibility the risks and benefits of nanomaterials, primarily due to the perception that there was an imbalance of information on the website in favour of the risks of nanomaterials, as discussed under the evaluation of effectiveness.

The extent to which the EUON had influenced survey respondents' opinion on nanomaterials and their safety was low and varied depending on their level of prior technical knowledge. Nevertheless, feedback suggests that this does not directly reflect an accurate assessment of its added value. Specifically, consulted stakeholder feedback suggests that the EUON's added value can primarily be found in its role as a conduit for the dissemination of neutral and objective information on nanomaterials, which can keep experts updated on developments in the field, and the general public to develop their knowledge of nanomaterials.

That being said, consulted stakeholders representing Member States, European institutions and academic associations were the least

³⁷ It was recognised and noted by multiple interviewees that although an EU-level inventory of nanomaterials would be of high added-value, that the resources for the EUON would need to be increased in order to make this feasible.

³⁸ Secondly, the majority of interviewed stakeholders did not support the idea of linking the EUON to existing national inventories. One interviewee representing a private company explained that they had experienced previous difficulties in efforts to share the data between the Belgian and French nano registries, and therefore considered this would also present a problem if the EUON were to try and link with national registries. Another interviewee considered there would be difficulties related to discrepancies between the way products are registered in different national registries.

supportive of the extent to which the EUON had influenced their opinion on nanomaterials and their safety in the EU. Survey respondent and interviewee feedback, as well as documentary evidence suggests that this is due to a perception that the topic of nanomaterials' safety is not adequately addressed within the EUON, both in terms of the quantity and quality of information. In addition, that this is primarily due to external factors. Specifically, EUON is limited in the extent of information that it can provide on safety aspects of nanomaterials given the voluntary nature of contributions to its data, its dependence on the data management and control in the underlying sources, and its limited resources.

Recommendations from consulted stakeholders for the future development of the EUON related mostly to keeping the information on the website up-to-date, suggestions for additional information to be included on the website and additional functionalities.

2.6. Evaluation of the utility

The survey questions under this section aim to assess the extent to which the EUON is satisfying stakeholders' needs. To gauge this, respondents were asked to rate the utility of the two studies commissioned by EUON to date, as well as the likelihood with which they would recommend the platform.

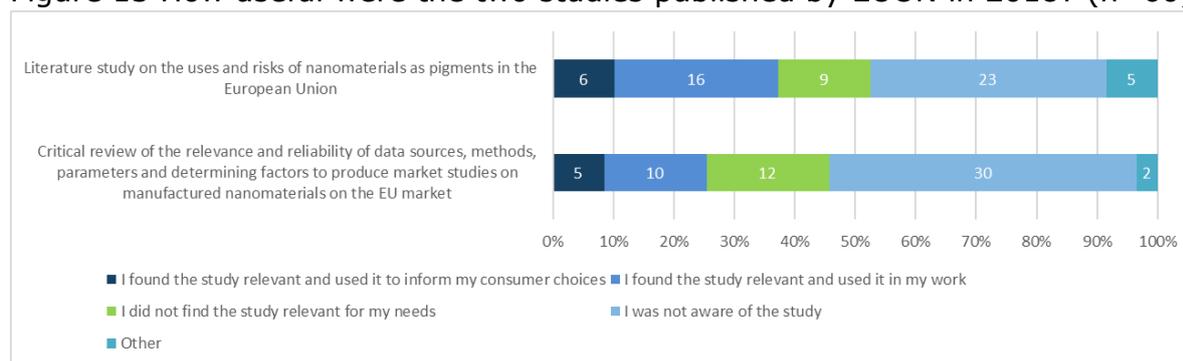
In 2018, the EUON commissioned and published two scientific studies, one review of the methodologies used to produce market studies on manufactured nanomaterials³⁹ and a literature study on the uses and risks of certain nanomaterials in the EU⁴⁰. This is in line with its objective to undertake new case studies and reviews to complement available information on nanomaterials to fill identified knowledge gaps and of particular importance and/or concern⁴¹. Survey respondents were asked to assess the extent of utility of each of these studies and the results are shown in the Figure below.

³⁹https://euon.echa.europa.eu/documents/23168237/24095696/170718_critical_review_of_market_studies_nanomaterials_final_report_en.pdf/ec77f39e-0918-5984-d7b1-654e3b1f14da

⁴⁰https://euon.echa.europa.eu/documents/23168237/24095696/070918_euon_nanopigments_literature_study_report_en.pdf/58977ab1-1059-4b41-f003-18ae9d7a157c

⁴¹ European Commission (2016). *Delegation agreement - European Union Observatory for Nanomaterials and the European Union chemical legislation finder.*

Figure 13 How useful were the two studies published by EUON in 2018? (n=60)



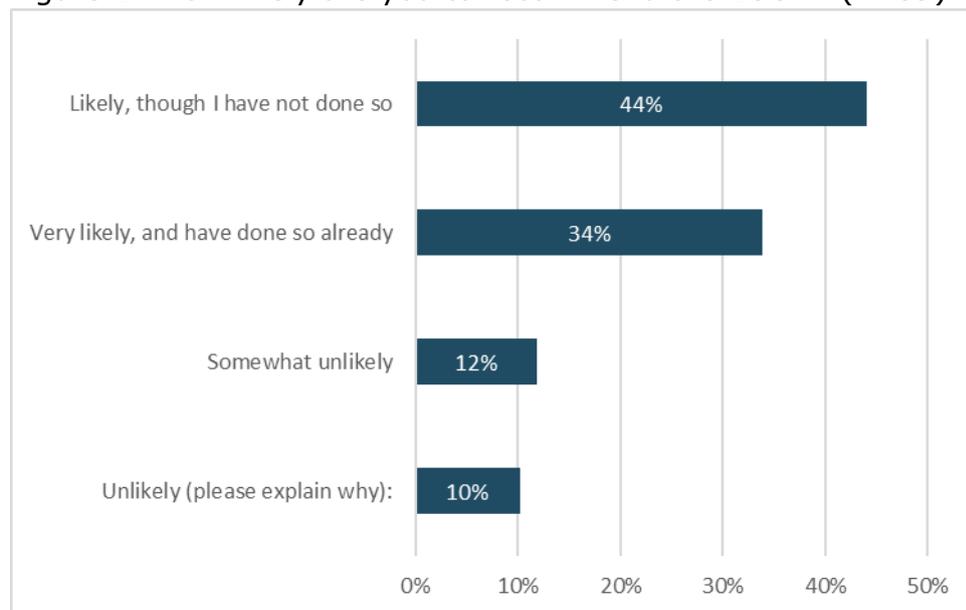
The results show that the literature study was both more well-known by respondents and considered more useful than the review. Specifically, 37% of respondents indicated that they had found the literature study relevant and used it to inform either their consumer choices or their work, compared to 26% for the critical review report. 15% reported not finding the literature study relevant and 20% concerning the critical review. Concerning awareness of the studies, 39% of respondents were not aware of the literature study and 51% were not aware of the critical review report.

Concerning consumers, out of the 5 who were aware of the critical review, 2 found it useful and used it to inform their consumer choices, whereas 3 did not find it relevant for their needs. In contrast, 4 out of the 5 consumers who were aware of the literature review reported finding it relevant and used it to inform their consumer choices. In addition, consumers constituted 2/3 of the respondents who reported using the literature review to inform their consumer choices.

Concerning respondents who used the studies in their work, private company representatives were those who most frequently reported using both in their work. This stakeholder group represented half of the respondents who reported finding the critical review helpful and used it in their work, and a third for the literature review. This constitutes evidence that the EUON has contributed towards its objective of improving the business environment for EU companies and SMEs via access to information⁴².

⁴² European Commission (2016). *Delegation agreement - European Union Observatory for Nanomaterials and the European Union chemical legislation finder.*

Figure 14 How likely are you to recommend the EUON? (n=59)



As can be seen in the figure above, 78% of respondents reported that they would likely recommend the EUON and 34% of these had already done so. Comments received by the 10% of respondents who stated that it was unlikely they would recommend the EUON cited the reasons discussed in the previous sections of the report and relating to the perceived imbalance in information, a lack of/outdated information on the website.

Finally, survey respondents were asked what additional information, features or services they would like to see in the future in order to increase EUON's usefulness for them. A total of 18 responses were received and the strong majority related to keeping the content on the website up to date, as well as additional content they would like to be contained on the EUON website. In line with the feedback received under the evaluation of EUON's effectiveness (see Figure 7), the majority of comments concerned increasing EUON's exhaustiveness and developing it into a one-stop-shop for information on nanomaterials by providing more links to other relevant information.

All recommendations received within the open comment boxes of the current survey, as well as the recommendations received under the survey administered by ECHA and targeted to ECHA staff on the ECHAnet⁴³, were assigned to a section of the EUON webpage and the results are displayed in a table found in Annex 2: EUON ex-post evaluation and ECHA staff survey: feedback on recommendations for improvement. The most frequently mentioned recommendations which also received support from interviewees are listed below;

- Additional links to relevant information (see Figure 4 and Annex 2: EUON ex-post evaluation and ECHA staff survey: feedback on recommendations for improvement);
- Additional information on risk assessments;

⁴³ The survey sample consisted of 7 respondents

- Additional information on regulatory developments, within the EU/EEA and internationally;
- Establish a blog to ensure the dynamism and relevance of the website's information;
- Increase communication activities, especially via social media and the ECHA website and newsletter;
- More information/studies demonstrating the benefits of nanomaterials;
- Include a list (as well as additional information) of products registered on the market, which contain nanomaterials, especially those frequently used by consumers⁴⁴;
- Additional guidance for non-experts, especially workers e.g. databases and brief profiles of nanomaterials similar to ECHA services.

The evaluation also found that the question of EUON integrating of national inventories was a topic raised by consulted stakeholders and other fora. For instance, in a 2018 Stakeholder Dialogue meeting on EUON, the Dutch representative highlighted that they did not establish a national inventory, as they preferred a solution where this information would be collected at EU level, as this would facilitate EU-level harmonisation⁴⁵. Nevertheless, a fifth of the interviewees who gave an opinion on this matter did not support linking national databases to the EUON. One interviewee representing a private company explained that they had experienced previous difficulties in efforts to share the data between the Belgian and French nano registries, and therefore considered this would also present a problem if the EUON were to try and link with national registries. This was supported by evidence from the discussions in the 2018 Stakeholder Dialogue, in which the representative from France explained that limited access was afforded to their national registry due to confidentiality concerns. Another interviewee considered there would be difficulties related to discrepancies between the way products are registered in different national registries, which was also a point raised during the 2018 Stakeholder Dialogue meeting. As such, there was more support, both within the Stakeholder Dialogue meeting and from consulted stakeholders, for priority to be placed on integrating the data on nanomaterials submitted to REACH, once information requirements are updated.

In summary, the utility of the EUON can be considered positive, although there remain areas for improvement. There was low awareness of the two scientific studies published by EUON amongst survey respondents, although the majority of those familiar with the reports considered them to have been relevant and useful. Higher support overall was recorded for the literature study. The literature review proved particularly relevant for consumers and was used to inform their consumer choices. Private company representatives were the stakeholder group who most frequently used both studies in their work, constituting evidence that the

⁴⁴ Although, as previously discussed, it was acknowledged that the feasibility of this would be dependent on the resources available to the EUON.

⁴⁵ European Union Observatory for Nanomaterials (2018). Workshop Report Stakeholder Dialogue meeting European Union Observatory for Nanomaterials.

EUON has contributed towards its objective of improving the business environment for EU companies and SMEs via access to information.

There was a positive consensus amongst consulted stakeholders that they would recommend the EUON website, and a large number already had.

Finally, consulted stakeholders were asked what additional information, features or services they would like to see in the future in order to increase EUON's usefulness for them. In line with the previous findings of the evaluation, the majority of recommendations related to additional information, publishing more information and ensuring the information on the website was kept up to date. There is evidence that integrating data from national registries has been a recent topic of interest. Nevertheless, documentary evidence and consulted stakeholder feedback suggests that the medium-term priority should be on integrating the data received via REACH into the EUON.

3. Conclusions

Knowledge and use

The knowledge and use of EUON were assessed on the basis of feedback from the stakeholders consulted for the evaluation. Most survey respondents found out about the website via ECHA dissemination activities, including via the ECHA website, newsletter, or direct interactions with ECHA / ECHA's staff. Feedback suggests that stakeholders consider that the promotion of the EUON and its updates via these channels has been insufficient. More promotion via these channels could act as a reminder to both existing users to visit the website, and raise awareness amongst other potential stakeholders.

Concerning its use, the majority users who responded to the survey reported visiting the observatory website once every few months or on a monthly basis. They shared a perception that the content of the EUON is not updated frequently, which can be linked to the irregular rate of visiting the website.

Effectiveness

Based on consulted stakeholders' feedback, the EUON can be considered to have achieved its objective of acting as a reliable source of information on markets and safety aspects of nanomaterials in the EU market. Nevertheless, concerning its objectivity, stakeholders representing industry associations and private companies considered that there EUON does not include sufficient information on the safety of nanomaterials, compared to the amount of information on the risks of their use. Secondly, feedback from consulted stakeholders suggests that the effectiveness of the EUON could be strengthened by ensuring more frequent publication of new information on the website and that the material on the website is up to date and relevant, due to a current impression that the information on the EUON is static, with several outdated/defunct information sections/links.

Another factor identified as negatively influencing EUON's effectiveness related to the diverse backgrounds and level of prior technical knowledge of the website's target audience, and the limits of its capacity to address this. Specifically, feedback from industry associations suggested that a majority did not consider that the observatory's content is suitable for non-expert audiences, and that ECHA's "Chemicals in our life" website would be a more suitable alternative. This was also supported by survey feedback from one respondent who identified as a consumer.

*As the chemicals in our life sections on nanomaterials were developed by the EUON, they are effectively part of the EUON work covered by the review. Nevertheless, it appears these are separate entities in the minds of the survey respondents, despite the presence of EUON logos/branding on the relevant pages in chemicals in our life. Strengthening the link between these two entities should be also part of the actions to be taken.

Supporting the effectiveness of the EUON in acting as a reliable source of information on nanomaterials, the variety of consulted stakeholders reported deriving benefits from the website, despite a variation in the benefits experienced across the different stakeholder groups. Stakeholders with a lower level of prior technical knowledge appear to derive more benefits from the information in terms of learning something useful that can benefit them or their work. In contrast, those with higher levels of prior technical knowledge tend to use the website to keep up to date on relevant developments in the field of nanomaterials.

Finally, evidence from throughout the evaluation indicates that consulted stakeholders representing private companies, and industry associations to a lesser extent, are using the EUON to stay informed on aspects of nanomaterials which are relevant to them. This constitutes evidence that the EUON is also fulfilling its objective to improve the business environment for EU companies and SMEs by disseminating such information.

Efficiency, economy, proportionality*

*There is a fair proportionality between the funds allocated to the EUON and its development. It has to be pointed out as well, that the project is relatively new, and it is normal not to have achieved all of its objectives or realised all of its foreseen benefits yet. The cost-benefit balance could be considered fair, noting that some of the foreseen benefits have not yet been realised and there is further cost investment to be incurred.

The project will benefit from defining measurable targets and indicators (for example, relating to cost, speed and quality) to further track its progress in the future and support assessment of the efficiency and cost-effectiveness.

Coherence

EUON's coherence with other similar initiatives at the national and EU level received strong support amongst survey respondents. A comparison of the EUON with two other EU-level websites (JRC Nanomaterials Repository and the EU Nano Safety Cluster) also found coherence between its objectives and targeted audiences. Specifically, EUON was the only one of the three websites which was offering more general and non-specific information concerning nanomaterials, and which was targeting non-expert audiences.

The most similarities were found between EUON and a website DaNa, funded by the German Federal Ministry of Education and Research. A comparison between the two websites indicated that the German website contained databases which appear more user-friendly for non-expert audiences.

A review of the extent to which EUON includes information from other relevant initiatives in the area of nanomaterials showed that EUON contains little information specifically about the outputs and results of research projects under FP7 and Horizon 2020. As such, EUON fulfils partly the objective laid down in its

Delegation agreement to link, summarise and interpret information in order to give a clear view on nanomaterials, their uses and applications, as well as risks.

EU added value

There was a high degree of support for the added value of EUON amongst consulted stakeholders. In line with the findings under effectiveness, it was considered that in its absence there would be a lack of a reliable source of information on nanomaterials in the EU and a reduced transparency of information on nanomaterials in the EU. Less support was received concerning the extent to which there would be a reduced level of visibility the risks and benefits of nanomaterials due to two reasons. Firstly, as discussed in a 2017 report commissioned by the Dutch Ministry of Health, the EUON is limited in the information it can provide on the safety aspects of nanomaterials due to external factors such as its dependence on voluntary contributions of information, the data management and control in the underlying sources, and limited resources. Secondly, due to the perception amongst a number of consulted stakeholders that there was an imbalance of information on the website in favour of the risks of nanomaterials, as discussed under the evaluation of effectiveness.

The extent to which the EUON had influenced survey respondents' opinion on nanomaterials was low and varied depending on their level of prior technical knowledge. Nevertheless, feedback suggests that this does not directly reflect an accurate assessment of its added value. Specifically, consulted stakeholder feedback suggests that the EUON's added value can primarily be found in its role as a conduit for the dissemination of neutral and objective information on nanomaterials, which can keep experts updated on developments in the field, and the general public to develop their knowledge of nanomaterials. This is in line with the conclusions of a 2017 report commissioned by the Dutch Ministry of Health, which foresaw the added value of the EUON's role in improving the transparency of information on nanomaterials by summarising and communicating validated information that consumers and workers can use.

Utility

The utility of the EUON can be considered positive, although there are areas for improvement. In line with its objective to undertake new case studies and reviews to complement available information on nanomaterials to fill identified knowledge gaps and of particular importance and/or concern, EUON has published two scientific studies since its inception: a critical review and a literature study. Although there was low awareness of the two studies amongst survey respondents, the majority of those familiar with the reports considered them to have been relevant and useful, with higher overall support recorded for the literature study. The literature review proved particularly relevant for the consulted consumers who were aware of it, and was used to inform their consumer choices. Private company representatives were the stakeholder group who most frequently used both studies in their work, which is in line with EUON's objective

to improve the business environment for EU companies and SMEs via access to information.

Secondly, evidence of EUON's utility can be found in the positive consensus amongst consulted stakeholders that they would recommend the EUON website, and that they have already done so.

Feedback from the consulted stakeholders indicate that the observatory's usefulness could increase, if it published more information more frequently and ensured the information on the website is up-to-date. Although integrating data from national registries has been a recent topic of interest, documentary evidence and consulted stakeholder feedback suggests that the medium-term priority for EUON should be on integrating data received via REACH.

4. Recommendations

4.1. Specific: related to the ECHA EUON

Recommendations by the external evaluators⁴⁶

1. Increase the effectiveness and relevance of the information on EUON by providing additional information and increasing the frequency of publishing new information. More specifically;

(i) ensure the information and studies displayed on the website are up-to-date and relevant;

(ii) ensure a wide and balanced range of studies are displayed, especially under the 'Safety' section;

(iii) increase the flow of new information by, e.g. establishing a blog;

(iv) include more links to and interpretation/synthesis of content from other relevant initiatives (e.g. EC Horizon 2020 projects);

(v) increasing the use of social media channels;

(vi) develop an inventory of products registered on the market, which contain nanomaterials, especially those frequently used by consumers;

(vii) over the medium-term, prioritise integrating the data received on nanomaterials via the REACH database into the EUON;

(viii) further explore how the issues relating to integration with national nanomaterials registries could be addressed;

(ix) provide additional information on regulatory developments and risk assessments;

(x) Address maintenance issues highlighted by users in the survey, i.e. remove/update defunct links on the EUON website.

2. Increase the effectiveness of the EUON by increasing its user-friendliness for non-expert audiences. Specifically;

(i) make information targeted at non-expert audiences more prominent;

(ii) more clearly segregate the information targeted at non-expert and expert audiences;

iii) streamline the provision of information to the general public between EUON and ECHA's "Chemicals in our life" webpage. The option of having the objective of provision of information to the general public addressed predominantly via the latter could be considered.

3. Increase awareness of the EUON amongst stakeholders, as a secondary priority

⁴⁶ It should be noted that the implementation of these recommendations are dependent on the future budget of the EUON

Recommendations by the external evaluators⁴⁶

to improving and consolidating the website content. Awareness could most effectively be increased by

(i) increasing the promotion of the website / new material on the website on the ECHA newsletter;

(ii) increasing the promotion of the EUON / new material on the EUON website on the ECHA website;

(iii) increasing the use of social media channels.

Recommendations by the internal evaluators

Develop measurable indicators and targets to track the progress of the project. Consider developing and monitoring indicators relating to cost, speed and quality of the relevant milestones to facilitate the assessment of both its effectiveness and efficiency

***ECHA Internal Working Group reflections on the above recommendations**

Recommendation	Actions	Comments
Increase the visibility of the link to the consumer content	To review the current site structure To make consumer content more visually explicit - add "are you a consumer" link instead of current banner; To highlight nanoappartment more prominently	Following a customer insight and revamp of the EUON website in 2020, the consumer content will be made more prominent on the EUON front page.
Organisation by topic was highlighted as beneficial for a user who is discovering a nanomaterial, but that an alternative layout would be more beneficial for an individual who is looking for specific information on a particular nanomaterial	Search for nanomaterials provides the means for users looking for specific information on particular nanomaterials.	This will roll-out with the "search for nanomaterials" feature that will be ready in June.
Make available a search for nanomaterials/chemicals on the front page, as with the ECHA main page.	To roll out the search for nanomaterials in summer 2019.	This will roll-out with the "search for nanomaterials" feature that will be ready in June. Search will not be integrated exactly as on ECHA website but will feature in the top navigation. Core team will investigate if a dedicated front page search can be added as part of subsequent web contracts.
Add a section dedicated to news alerts/articles	-	Already exists: https://euon.echa.europa.eu/news
Add a section for databases for users to search for information about specific materials or substances	-	Already exists: https://euon.echa.europa.eu/information-about-nanomaterials
Add links to relevant information, turning the EUON into a "one-stop-shop" for information on nanomaterials	To analyse other than the existing means towards achieving this objectives	Constantly ongoing. Once new relevant links are identified, they are added to the EUON. The "search for nanomaterials" feature will also contribute to the EUON as a "one-stop-shop" for nanomaterials.
Additional guidance for non-experts, e.g. databases and brief profiles of nanomaterials similar to ECHA services	In brief guides for using databases (NanoData, eNanoMapper).	Additional guidance needs to be discussed and agreed. More concrete examples needed. All registered nanomaterials have a brief profile through dissemination. Already accessible at: https://echa.europa.eu/en/advanced-search-for-chemicals?p_p_id=dissadvancedsearch_WAR_dissearchportlet&p_p_lifecycle=0&_dissadvancedsearch_WAR_dissearchportlet_searchOccurred=true&substance_sHasNanoform=1

***ECHA Internal Working Group reflections on the above recommendations**

Recommendation	Actions	Comments
More information on the benefits of nanomaterials.	To use more case studies, social media posts, web pages	The EUON already highlights many of the benefits of using nanos (ref. Environment, medicine, food and other products). Need to remain balanced between civil society and industry interests. The soon to be launched blog will give a means to highlight case studies and opinions also on the benefits.
Consider aligning with and/or exploiting synergies with the NanoData sectors (i.e. health, energy, manufacturing, etc.) as well as cross-linking information in the NanoData with information on the EUON products page	To investigate the creation of synergies in the core group as part of updating or creating new content.	Cross-linking with relevant nanodata sectors and EUON web pages to be done in 2019.
Create a dedicated section for cosmetics with sub-sections on tattoo ink and sun cream in particular	Create sub sections on tattoo inks and sun cream	Dedicated cosmetics section exists: https://euon.echa.europa.eu/cosmetics Additional sub sections on tattoo inks and sun cream under discussion
Move "the use of nanomaterials at the workplace" sub-section to the "Safety" section.	Propose to move under "safety". To be decided among core group.	
Include quantitative data on the use of nanomaterials across the EU	To investigate what data could best be used for EUON	Quantitative data may start coming in with registration data.
Include a list (as well as additional information) of products registered on the market, which contain nanomaterials, especially those frequently used by consumers	Check WFD work and see if some of this information could be retrieved from there. Check synergies with products listed in NanoData and the update of the nanodata data. Explore possibility of creating a voluntary products database.	Feasibility of obtaining such information is difficult as there are no EU wide mandates to provide this type of information.
Increase the technical level of the information provided by, e.g. giving the international nomenclature (INCI) or scientific names of the most commonly found nanomaterials in a specific area	To decide on the best way to further address it	Partly addressed with new search for nanomaterials. However, "most commonly used" nanomaterials may not always be included and the volume information will not be present.
Additional information and/or studies about intended manufactured nanomaterial vs other nanomaterials.		Can be included as a proposal for the next round of studies commissioned by the EUON.

***ECHA Internal Working Group reflections on the above recommendations**

Recommendation	Actions	Comments
Display the factsheet more clearly by, e.g. including a link to the factsheet in the text and renaming the document "factsheet"	To rename the link to "factsheet"	Rename link (DONE) ECHA web practice does not allow having links in the body text (due to translations mainly) Will also include it under the "publications" section. Content needs to be revised and updated.
Add information under the "Exposure to nanomaterials" sub-section, e.g. how one may be exposed (perhaps to be combined with "the use of nanomaterials at the workplace" sub-section, currently under the "Uses" section	To relocate worker section under "Safety" and consider combining exposure sub pages.	Proposal to move section to be discussed and agreed with core group.
Include links to relevant documents	Core group to review links and approve	Relevant documents: E.g. Information or research on Occupational Exposure Limits (OEL); https://www.cdc.gov/niosh/index.htm ; https://www.iom-world.org/ ; http://www.oecd.org/science/nanosafety/ ; WHO Guidelines on Nanomaterials and Worker's Health, United Nations (UN) ; FAO: Food safety and quality – Nanotechnologies ; Woodrow Wilson International Center for Scholars: - Project on Emerging Nanotechnologies – an inventory of current research involving nanotechnology health and environmental implications.
Update and/or create additional factsheets	To decide on the topics and if needed	
Add information on risks and/or risk assessments.	To determine if more is needed. To discuss whether safety section needs further work.	Already exists: https://euon.echa.europa.eu/documents/23168237/24095644/nano_in_brief_en.pdf/295c5f46-0f1e-4ad5-72a5-81c44b45bdd5
Add information on global nanomaterial regulations (e.g. Switzerland, USA)	Discuss the scoping of what can be added	To be considered if such information can be added in collaboration with our international partners.
Increase information on nanomedicines	To determine if more is needed	A lot exists: https://euon.echa.europa.eu/medical-devices ; https://euon.echa.europa.eu/medicine . Already promoted in social media campaigns.
Harmonise the structure of the "International activities" sub-sections with the other sections'	To move under regulation and create sub pages from the content that is currently in expandable panels (OECD,	Plan to move this section under regulation to make room for "search for nanomaterials" main navigation tab. Harmonisation of sub sections to take place at the same time.

***ECHA Internal Working Group reflections on the above recommendations**

Recommendation	Actions	Comments
	WHO, UNITAR/UNEP, SAICM).	
Increase amount and scope of information on other, international countries' state of progress on nanomaterials, including activities, definitions& regulations on nanomaterials	Discuss the scoping of what can be added	To determine how much the EUON should do on this topic as an EU initiative. Similar to recommendation 26.
Additional information concerning the activities under EU/US dialogue (e.g. bridging nanoEHS research)	Discuss the scoping of what can be added	To be added under international activities. Abdel to provide info.
Additional information concerning the activities of other relevant organisations, e.g. the OECD and WHO	Discuss the scoping of what can be added	Some info already exists: https://euon.echa.europa.eu/international-activities Consider if more is needed or if something is outdated.
Add information related to the work of the European Committee for Standardization and the International Organisation for Standardization	https://www.cen.eu/work/areas/nanotech/Pages/default.aspx ; https://www.iso.org/committee/381983.html	To discuss level of detail. Just add links or more elaborate pages required? Worker standard page exists (https://euon.echa.europa.eu/standards)
Develop a timeline image depicting the evolution of the international activities over time	To determine if needed	Initial reflection: could be done as an infographic but will get outdated soon with projects completing. Also, not core mandate of EUON
Add links to publications, research and international discussions concerning nanomaterials	To be discussed with core group	Potentially easy to collect and compile from ECHA's international activities work.
More information related to future materials and products.	To discuss the best means to address it	Advanced nanomaterials study outcome can be linked here. Potentially also a new dedicated web page on these materials.

General reflections: related to future evaluations

Finally, the following **recommendations and lessons learned on the evaluation approach** have been identified as a reference for future ex-post evaluation of IT solutions:

- During the survey design, follow-up open comment boxes should be provided for each evaluation question;
- To strengthen the robustness of the survey results, respondents who indicate not knowing the tool in question should be automatically directed to the end of the survey and provided with an explanation along the lines of the following wording "This questionnaire is aimed at audiences who are familiar with XXX. Please either go back to the previous question and change your response or click "end of survey" below";
- Survey respondents who confirm their willingness to be contacted for further input should be required to provide an e-mail as well as phone number (i.e. both of these questions should be non-optional).

Annex 1: Interview guide

The following interview guide was used for the follow-up interviews with survey respondents who agreed to be contacted for clarifications on their responses to the survey. The questions were tailored further to each respondent depending on the specifics of their survey response.

#	Criterion	Question
1.	Knowledge	Do you have examples of how the EUON has informed/influenced on consumers choice, policy decisions and market trust for industry?
		How can awareness of the EUON be increased among the group of stakeholders you are a part of?
2.	Effectiveness	How can EUON's contribution be improved for the objectives and benefits you gave a low rating to?
3.	EU added-value	In the absence of the EUON, how would the benefits you previously noted be generated? (For respondents who did not select any negative consequences of the termination of EUON)
4.	Utility	Is there any additional information in particular that you feel is missing within the EUON (under each of the different sections and overall)?
		Can you provide any specific examples ⁴⁷ and suggestions for improving the usefulness of the information on the EUON?
		Are there functionalities of the EUON that you feel are missing or would increase the utility of the EUON?

⁴⁷ Examples from previous interview and survey responses were provided, for the interviewee to build on.

Annex 2: EUON ex-post evaluation and ECHA staff survey: feedback on recommendations for improvement of different EUON sections

The following table is compiled of recommendations received from survey respondents and interviewees of the current evaluation, as well as recommendations received under the survey administered by ECHA and targeted to ECHA staff on the ECHAnet⁴⁸. The recommendations are organised by sections of the EUON webpage.

Table 7 Recommendations for improvement of EUON by webpage section

Section	Comment
Main navigation	Structure <ul style="list-style-type: none"> • Increase the visibility of the link to the consumer content; • Organisation by topic was highlighted as beneficial for a user who is discovering a nanomaterial, but that an alternative layout would be more beneficial for an individual who is looking for specific information on a particular nanomaterial⁴⁹; • Add a section dedicated to news alerts/articles; • Make available a search for nanomaterials/chemicals on the front page, as with the ECHA main page.
	Information <ul style="list-style-type: none"> • Add a section for databases for users to search for information about specific materials or substances; • Add links to relevant information, turning the EUON into a “one-stop-shop” for information on nanomaterials;
General information	Information <ul style="list-style-type: none"> • Additional guidance for non-experts, e.g. databases and brief profiles of nanomaterials similar to ECHA services; • More information on the benefits of nanomaterials.
Uses	Structure <ul style="list-style-type: none"> • Consider aligning with and/or exploiting synergies with the NanoData sectors (i.e. health, energy, manufacturing, etc.) as well as cross-linking information in the NanoData with information on the EUON products page;

⁴⁸ The survey sample consisted of 7 respondents

⁴⁹ Highlighting the previously discussed element concerning the variation in the EUON’s added value across different stakeholder groups depending on their prior level of technical expertise.

Section	Comment
	<ul style="list-style-type: none"> • Create a dedicated section for cosmetics with sub-sections on tattoo ink and sun cream in particular; • Move “the use of nanomaterials at the workplace” sub-section to the “Safety” section.
	<p>Information</p> <ul style="list-style-type: none"> • Include quantitative data on the use of nanomaterials across the EU; • Include a list (as well as additional information) of products registered on the market, which contain nanomaterials, especially those frequently used by consumers; • Increase the technical level of the information provided by, e.g. giving the international nomenclature (INCI) or scientific names of the most commonly found nanomaterials in a specific area; • Additional information and/or studies about intended manufactured nanomaterial vs other nanomaterials.
Safety	<p>Structure</p> <ul style="list-style-type: none"> • Move “the use of nanomaterials at the workplace” sub-section from the “Uses” section; • Display the factsheet more clearly by, e.g. including a link to the factsheet in the text and renaming the document “factsheet”; <p>Information</p> <ul style="list-style-type: none"> • Add information under the “Exposure to nanomaterials” sub-section, e.g. how one may be exposed (perhaps to be combined with “the use of nanomaterials at the workplace” sub-section, currently under the “Uses” section); • Include links to relevant documents⁵⁰ • Update and/or create additional factsheets; • Add information on risks and/or risk assessments.
Regulation	<p>Information</p> <ul style="list-style-type: none"> • Add information on global nanomaterial regulations (e.g. Switzerland, USA);

⁵⁰ E.g. Information or research on Occupational Exposure Limits (OEL); <https://www.cdc.gov/niosh/index.htm>; <https://www.iom-world.org/>; <http://www.oecd.org/science/nanosafety/>; WHO Guidelines on Nanomaterials and Worker’s Health, United Nations (UN); FAO: Food safety and quality – Nanotechnologies; Woodrow Wilson International Center for Scholars: - Project on Emerging Nanotechnologies – an inventory of current research involving nanotechnology health and environmental implications.

Section	Comment
International Activities	<ul style="list-style-type: none"> <li data-bbox="660 271 1362 300">• Increase the information on nanomedicines. <hr/> <ul style="list-style-type: none"> <li data-bbox="660 331 1385 443">• Harmonise the structure of the “International activities” sub-sections with the other sections’; <hr/> <ul style="list-style-type: none"> <li data-bbox="454 465 1385 1301"> <p data-bbox="454 465 632 495">Information</p> <ul style="list-style-type: none"> <li data-bbox="660 465 1385 689">• Increase amount and scope of information on other, international countries’ state of progress on nanomaterials, including e.g.; <ul style="list-style-type: none"> <li data-bbox="756 584 1206 613">○ Activities on nanomaterials <li data-bbox="756 622 1222 651">○ Definitions of nanomaterials <li data-bbox="756 660 1246 689">○ Regulations on nanomaterials <li data-bbox="660 698 1267 810">• Additional information concerning the activities under EU/US dialogue (e.g. bridging nanoEHS research); <li data-bbox="660 819 1385 931">• Additional information concerning the activities of other relevant organisations, e.g. the OECD and WHO; <li data-bbox="660 940 1337 1077">• Add information related to the work of the European Committee for Standardization⁵¹ and the International Organisation for Standardization⁵²; <li data-bbox="660 1086 1358 1198">• Develop a timeline image depicting the evolution of the international activities over time, along with on going projects; <li data-bbox="660 1207 1283 1301">• Add links to publications, research and international discussions concerning nanomaterials.
Research & innovation	<ul style="list-style-type: none"> <li data-bbox="660 1335 1362 1402">• More information related to future materials and products.

⁵¹ <https://www.cen.eu/work/areas/nanotech/Pages/default.aspx>

⁵² <https://www.iso.org/committee/381983.html>

Annex 3: EUON website statistics *

The section below presents statistics for the EUON website since its inception.

Overview

Period	Number of users	Number of page views	Number of countries visiting
June 2017 - June 2018	25 827	71 310	117
June 2018 - June 2019	45 566	106 120	152
Total period June 2017 - June 2019	71 393	177 430	156

Visits by country

Period (June 1 2017 - June 1 2019)

Country	Percentage of users
Romania	11%
United States	8%
France	6%
Italy	5%
Spain	5%
Other	65%

Most viewed pages

Page	Number of visits
Uses	9001
Why are nanomaterials important	7273
General information	6842
Nanomaterials in our life	6759
What kind of products contain nanomaterials	5954
Regulation	5509
Future of nanotechnology	4674
Safety	4308
Catalogue of cosmetic ingredients	3638
Research and innovation	3674