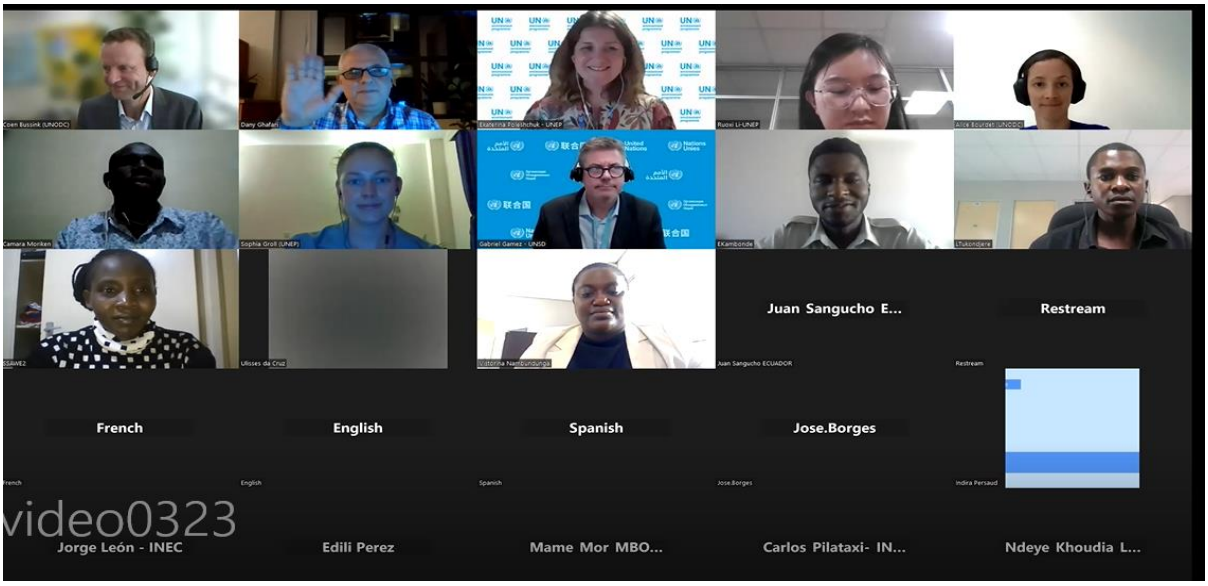
Global Webinar on Geospatial and Other Data Sources for Environment Statistics: Assessing the Impact of the Economy on the Environment

21-22-23 March 2023

WEBINAR REPORT

Image source : https://intercontinentalcry.org/yanomami-issue-goldminers-an-ultimatum/

Webinar recording link: [WS2.4 First Global Webinar on Geospatial and Other Data Sources for Environment Statistics | WESR (unep.org)]



BACKGROUND

The Global Webinar on Geospatial and Other Data Sources for Environment Statistics: Assessing the Impact of the Economy on the Environment for Africa, Latin America and Caribbean was organized as a series of online meetings on 21, 22 and 23 March 2023.

The webinar is part of the activities of workstream 2.4 "Assessing the Impact of the Economy on the Environment" of the Statistics and Data Project *"Resilient and agile National Statistical Systems to meet post-COVID-19 data needs to recover better*" under the 14th tranche of the United Nations Development Account, launched in September 2022. The Project is expected to enhance the resilience and agility of national statistical systems (NSS) of the 50 beneficiary countries[1] to respond to emerging economic, social and environmental data needs in times of crises and disasters using innovative data sources, advanced data acquisition methods and modern technologies, while ensuring a path towards the achievement of the 2030 Agenda for Sustainable Development.

The webinar was organized by the United Nations Environment Programme (UNEP) and the United Nations Office on Drugs and Crime (UNODC) in collaboration with the UN Regional Commissions, the UN Statistics Division, as well as other international and national organizations.

The **goal of the webinar** was to increase the knowledge of the beneficiary countries and other invited countries about statistics derived from geospatial and other data sources to assess the impact of the economy on the environment. The webinar consisted of the following topics:

- Impact of anthropogenic and natural processes on freshwater and marine ecosystems
- Impact of illegal economies on the environment: monitoring of illegal mineral mining
- Domestic Material Consumption as an indicator of economic pressure on the environment

The **target audience** for the webinar was national agencies that are responsible for the collection and dissemination of data and statistics on terrestrial, freshwater and marine ecosystems, as well as domestic material consumption. The participants could be from the national statistical system, ministries of environment, mineral mining and other relevant government agencies.

OVERVIEW

The webinar ran three hours a day for three consecutive days with English, Spanish, and French interpretation and included five sessions, 25 presentations from 21 different experts, two panel discussions with contributions from different UN organizations, as well as other global and regional organizations, national statistical offices, government agencies, universities, research institutes (see Annex I for the agenda). In addition to the speakers, there were 49 registered participants, including 16 women and 33 men, while more than 40 live participants were recorded for each day of the webinar. A total of 18 countries were represented, including Albania, Bhutan, Burkina Faso, Cabo Verde, Cameroon, Chile, Côte d'Ivoire, Dominican Republic, Ecuador, Georgia, Iraq, Jordan, Mexico, Namibia, Nepal, Palestine, Senegal, and Timor-Lesté.

[1] Albania, Argentina, Armenia, Bahamas, Bangladesh, Barbados, Bhutan, Burkina Faso, Burundi, Cabo Verde, Chile, Comoros, Côte d'Ivoire, Dominican Republic, Ecuador, Egypt, Eritrea, Fiji, Gabon, Georgia, Honduras, Indonesia, Iraq, Jamaica, Jordan, Kazakhstan, Lao PDR, Mexico, Moldova, Montenegro, Namibia, Nepal, Niger, North Macedonia, Pakistan, Paraguay, Senegal, South Sudan, State of Palestine, Sudan, Suriname, Timor-Leste, Tonga, Tunisia, Turkmenistan, Ukraine, Uzbekistan, Vietnam, Yemen and Zimbabwe.

All materials of the webinar, including video recording and presentations, are posted on a public UNEP website: here.

PRESENTATIONS

DAY 1 – 21 MARCH 2023

Session 1: Opening and Introduction

Welcome and Opening Addresses

Brennan Van Dyke, Chief of the Capacity Development and Innovation Branch, Early Warning and Assessment Division, UNEP in her opening address, informed on the need for more efforts at the national, regional, and global levels to collect and report data for Sustainable Development Goal (SDG) indicators. The availability of data has improved due to investment in national statistical systems. She also mentioned that the environment-related SDG indicators with sufficient data to analyze have increased from 34% in 2018 to 59% in 2022. The use of different data sources, such as Earth observation data and citizen science data, was emphasized for monitoring emerging environmental issues and assessing the impact of illegal economies on the environment. Country representatives from various national organizations were invited to discuss these topics in the global webinar.

Angela Me, Chief of the Research and Trends Analysis Branch, Division for Policy Analysis and Public Affairs, UNODC introduced by providing background information on the involvement of the UNODC and UNEP in addressing environmental crimes and their impact on the economy and the environment. She highlighted the webinar as a means to further understand and address the issues, drawing on the UNODC's expertise in using remote sensing techniques. The webinar was funded by the United Nations and implemented by UNODC in collaboration with other agencies and regional commissions, she said.

Introduction of the Statistics and Data Project "Resilient and Agile National Statistical Systems to Meet Post-COVID-19 Data Needs to Recover Better" Under the 14th Tranche of the United Nations Development Account: Gabriel Gamez, UNSD the project coordinator and inter-regional adviser for the United Nations Statistics Division began his first presentation by introducing the UN Development Account 14th tranche, which aims to enhance the capability of beneficiary countries to meet COVID-19 data needs, preparedness of National Statistical Systems (NSS) to respond to emerging economic, social, and environmental needs for statistics and indicators. The implementing entities include five regional commissions and three global entities, with an initial budget of $3M for 2022-2025 and possible DA supplementary funding. The initiative has cross-cutting workstreams and statistical-domain workstreams, with the identification of 15 target countries for assistance.

Results of the Pre-webinar Survey (see Annex II): Ruoxi Li, UNEP presented the results of a pre-webinar survey conducted to assess the knowledge level of respondents on various environmental topics. The survey covered three areas: impact of illegal economies on the environment, monitoring of illegal mineral mining, and domestic material consumption as an indicator of economic pressure on the environment. Majority of the respondents were from national statistical offices and were male. The survey showed that there was little knowledge on the impact of illegal mineral mining on the environment, but some knowledge on the use of

geospatial data and techniques to detect mineral mines and to generate statistical estimates about mineral production and environmental degradation indicators. Additionally, the majority of respondents were not familiar with domestic material consumption as an indicator of economic pressure on the environment. Overall, the survey provided insights into the knowledge gaps that exist among respondents in relation to these environmental issues.

Session 2: Impact of Anthropogenic and Natural Processes on Freshwater and Marine Ecosystems

Country-Owned Official Statistics as A Source for Water Statistics: Indira Persaud, UNSD discussed the importance of understanding and incorporating water-related data into decision-making for achieving Sustainable Development Goals. The UNSD/UNEP Questionnaire on Environment Statistics[2] collects data on water and wastewater from national statistical offices and ministries of environment, as well as other sources such as research studies and citizen-generated data. The collected data is used for various purposes, such as asset accounts for water resources, physical flow accounts of water, and system of environmental-economic accounting, she informed. The questionnaire covers topics such as groundwater, water quality, accessibility, wastewater treatment, and climate change. Indira finally emphasized the need for consistent time-series data and highlighted the potential uses of water statistics in informing policy issues.

The Role of Freshwater Ecosystems in Accelerating the Implementation of Goal 6: Stuart Crane, UNEP spoke on the importance of freshwater ecosystems for tracking progress through the SDG indicator 6.6.1 for achieving SDG 6. He highlighted the impacts of human development and climate change on these ecosystems, but also the potential of "nature-based solutions" for restoring them. He stressed that water and climate are interconnected and managing water resources must consider ecosystem changes and climate impacts. The lack of quantifiable targets for restoring and protecting different freshwater[3] ecosystems types was noted, as well as the need to address untreated wastewater that pollutes rivers and lakes. Finally, Stuart emphasized the threat of climate change to freshwater ecosystems and human health, but also the potential benefits of protecting and restoring them.

Alive Demo of The Freshwater Ecosystem Explorer Reporting Data Platform: Stuart Crane, UNEP introduced an interactive tool called the Freshwater Ecosystem Explorer, which provides data on specific river basins, wetlands, and changes in freshwater ecosystems over time. He emphasized the importance of protecting and restoring wetlands as nature-based solutions for social and economic development and highlighted the relevance of the statistics for policy implications and their contribution to various frameworks such as the SDGs, global biodiversity, and climate change. The use of satellite images to detect natural and artificial water bodies and the ability to zoom in and observe specific locations on Freshwater Ecosystem Explorer were also demonstrated. Stuart mentioned the challenge of identifying different basins and provided examples of water bodies with different conditions and highlighted the ability to observe interannual changes and also provided the link[4] for further exploration of the data on the Freshwater Ecosystem Explorer.

[2] Questionnaire on Environment Statistics
[3] Find out more about UNEP's work and learn about UNEP's freshwater work
[4] Freshwater Ecosystems Explorer is accessible at https://www.sdg661.app/

Earth Observations for Marine Ecosystem Monitoring: **Emily Smail,** GEO Blue Planet Initiative, NOAA, University of Maryland presented on the use of Earth observations to monitor and assess changes in marine ecosystems, both natural and man-made. Two types of observing systems, in situ and space-based, are identified as means to collect data on ocean and coastal areas, she informed. The goal is to develop early warning systems and prevent loss of biodiversity. Overall, it was noted that Earth observations are seen as crucial to understanding and preserving marine environments.

Marine Monitoring Needs and Challenges in A Country Example: Uruguay – Virginia Fernández Ramo, Ministry of Environment, Uruguay discussed the marine monitoring needs and challenges in Uruguay and highlighted the use of geospatial and other data sources for environment statistics. The Ministry of Environment has developed a satellite image viewer for public use, which allows visualization of the satellite estimation of chlorophyll-a concentration, turbidity, and colored dissolved organic matter. In addition, the Ministry has carried out monitoring campaigns in inland waters of the Río de la Plata, with the support of the United Nations Environment Program, to obtain data for comparing water quality values measured with traditional methods and values obtained through satellite images, she informed. Virginia also presented representative statistics for different zones of the Río Negro where calculations for water quality are made.

In-Situ Data Collection for Coastal Satellite Remote Sensing Products in Uruguay: Fernanda Maciel, Facultad de Ingeniería, Universidad de la República, Uruguay discussed the advantages and limitations of using satellite remote sensing to measure coastal eutrophication, specifically focusing on chlorophyll-a levels. The limitations include the need for atmospheric correction and the optical complexity of waters. She emphasized the importance of in-situ measurements to validate existing satellite products and develop robust regional algorithms. The development and testing of semi-analytic algorithms to account for variability in optically active water constituents was also discussed. The variability of turbidity and salinity fronts, as well as physical drivers and climatic phenomena, can affect remote sensing products and statistics, highlighting the need for careful consideration when using satellite data, she said. The economic and environmental relevance of the estuary was also mentioned, including the potential effects of cyanobacteria and suspended sediments on remote sensing measurements.

Some Key Points of the Presentations on 21 March 2023

- The webinar, provided within the DA14 project on Statistics and Data, aimed to increase the knowledge of the beneficiary countries and other invited countries about statistics derived from geospatial and other data sources to assess the impact of the economy on the environment.
- The pre-webinar survey conducted revealed knowledge gaps among respondents in relation to environment statistics and indicators.
- Within the thematic session on the Impact of Anthropogenic and Natural Processes on Freshwater and Marine Ecosystems:
    - The presentations discussed the importance of monitoring water resources considering water-related ecosystem changes and climate impacts.

- UNEP presented alive demo of the Freshwater Ecosystem Explorer reporting data platform covering countries from around the world.
- The use of observing systems, both in situ and space-based, was highlighted as a means to collect data on ocean and coastal areas.
- Earth observations are crucial for monitoring and preserving inland water and marine environment, as emphasized by various speakers.

If you have any questions about SDG indicators 6.6.1 and 14.1.1, please contact UNEP: Stuart Crain (stuart.crane@un.org), Ekaterina Poleshchuk (ekaterina.poleshchuk@un.org), Dany Ghafari (dany.ghafari@un.org), and the SDG and Environment Statistics Unit of UNEP (unep-ewad-sdgs@un.org).

DAY 2 – 22 MARCH 2023

Session 3: The Impact of Illegal Economies on the Environment: Monitoring of Illegal Mineral Mining

Response Framework on Illegal Mining: Leonardo Correa, UNODC informed on the increase in criminal offenses related to trafficking in precious metals and the need to combat transnational organized crime and illegal mining[5]. The importance of technical assistance and capacity building in preventing, detecting, investigating, and prosecuting organized crime was emphasized. The UNODC promotes justice and the rule of law and works towards making the world safer from drugs, crime, corruption, and terrorism. Targets, goals, and indicators related to crime and drugs that challenge the achievement of SDGs were mentioned. The Kyoto Declaration and UN conventions and resolutions were discussed as efforts to prevent and combat crimes that affect the environment. The importance of international cooperation among law enforcement and judicial practitioners was highlighted. Policy guidance was suggested based on adherence to human rights. Find more on the Response Framework on Illegal Mining and the Illicit Trafficking in Precious Metals.

Measuring Illicit Financial Flows in The Mining Sector: The SDG Framework, Bilateral Trade Asymmetries and Its Link to Remote Sensing – Carlotta Schuster, UNCTAD explored the issue of Illicit Financial Flows (IFFs) and their impact on national security and domestic resources, with a particular focus on IFFs linked to illegal mining. The United Nations has developed a definition and framework for measuring IFFs, with UNCTAD and UNODC acting as co-custodians of SDG Indicator 16.4.1. She highlighted the importance of remote sensing and bilateral trade gaps in understanding the generation of IFFs, especially in the context of transnational organized crime related to valuable commodities. However, Carlotta also acknowledged the importance of informal mining for employment and livelihoods, and suggested improving workers' and environmental conditions as a means of reducing poverty. Useful links to relevant reports and guidelines were also provided, e.g. Illicit Financial Flows | UNCTAD.

[5] Find more on the Response Framework on Illegal Mining and the Illicit Trafficking in Precious Metals

Remote Sensing for Monitoring Artisanal and Small-scale Mining: The Central African Republic – Jessica DeWitt, USGS presentation focused on the use of remote sensing for monitoring artisanal and small-scale mining in the Central African Republic (CAR), particularly in diamond mining sites. It included on-the-ground examples of diamond mining sites and maps of diamond occurrences with deposit information. Jessica also estimated diamond production within subprefectures using factors such as volume of excavated material, average number of days per year a miner mines for diamonds, and number of miners working within the subprefecture. She provided resource potential and production capacity assessments on a country scale and included current production estimates for subprefectures and the entire country. Finally, she provided official Kimberley Process (KP) production statistics for CAR from 2003-2012.

Burkina Faso, Mining Detection and Uptake of the Data: Placide Some, National Institute of Statistics and Demography and **Daouda Kalaga,** National Agency for the Supervision of Artisanal and Semi-Mechanized Mines, in their presentation, described the methodology and objectives for mapping artisanal gold mining sites in Burkina Faso as part of the country's efforts to better manage the social and environmental impacts of this industry. They informed that the mapping project was initiated under the Project to Support the Development of the Mining Sector (PADSEM) and involved four phases of work: preparatory work, fieldwork and laboratory analysis, integrated analysis and cartographic production, and results presentation. The project aimed to collect reliable technical data on the socio-economic and environmental impacts of artisanal gold mining in specific sites across Burkina Faso. The mapping data is intended to help in regulating and formalizing the artisanal gold mining sector, informing decision-making, and supporting further research and activities by NGOs and other actors, they said. It was also noted that the challenges in implementing the project included the dynamic nature of the sector, lack of technical and financial resources, and administrative difficulties.

Senegal, Detection of Mining and Its Impact on The Environment: Ndeye Marame Ngom, Technical Advisor to the Ministry of Mines and Geology discussed the importance of artisanal and small-scale gold mining as an economic activity in developing countries with gold resources, but also highlighted the negative impacts of this activity on the environment, health, and society. Governments in countries such as Ghana, Côte d'Ivoire, and Senegal have taken steps to promote legal and best practices for gold mining, while also monitoring and controlling illegal mining sites. She informed that remote sensing technology is being used to monitor and assess the impact of mining sites on the environment, but there are challenges due to the constant evolution of gold panning activities and difficulty in monitoring ongoing activity. Ndeye emphasized the need for governance that takes into account social and ethical aspects of gold mining and promotes access to information and knowledge across levels of government.

Colombia, Monitoring of Alluvial Gold Mining and The Use of Its Data: Nohora Ordoñez, Vice-Ministry of Mining outlined the efforts of the Vice ministry of Mines to prevent and control illegal mining in Colombia. They prioritize the formalization of small-scale traditional gold mining with the support of communities where mining takes place. The methodology for detecting areas with evidence of alluvial gold exploitation (EVOA) includes interpretation and verification of information through geographic information systems and the use of geographic viewers. The study focuses on detecting illegal EVOAs and controlling inputs such as fuel that may be diverted for illicit activities. Nohora emphasized adherence to legal restrictions and permits regarding mining activities and included strategies such as consolidation and reporting of information for

early warning systems to prevent unauthorized mining. Overall, Nohora highlighted the importance of integrating and coordinating efforts to combat illegal mining.

Guyana, Geospatial Data Integration for Monitoring Mining and The Impact on The Environment in Guyana: Rehana Thomas, Ministry of Natural Resources presented on the geospatial data integration for monitoring mining activities and their impact on the environment in Guyana. She informed that Guyana's landscape features tropical forests, mountain ranges, savannahs, wetlands, and waterways. Mining is a major economic activity in Guyana, and the mining sector is regulated by the Guyana Geology and mines commission (GGMC). Rehana also indicated that despite mining extraction, Guyana has maintained a low deforestation rate. Guyana's Monitoring Reporting and Verification System (MRVS) is a national system developed to monitor, report and verify forest carbon emissions resulting from deforestation and degradation. The MRVS data is generated from a combination of datasets from various sources, including the Guyana Geology and Mines Commission, the Guyana Forestry Commission, and the Ministry of Natural Resources. This data is used to inform policies to ensure low-impact mining, she said.

Panel Discussion on The Use of Geospatial Data for Illegal Mining: For approximately 30 minutes, the panelists discussed on the importance of using remote sensing techniques to monitor mining activities and their impact on the environment. They highlighted the need for statistical offices to have technical knowledge and capacity in interpreting geospatial data obtained from remote sensing. They also emphasized the importance of accountability, privacy, and confidentiality in handling official information. Challenges in integrating data from administrative information systems and national statistical systems were mentioned, as well as the need for clear communication and interpretation of the information. There was a focus on the timing and accuracy of the data, as well as the challenges in integrating different technologies and datasets. They concluded that remote sensing techniques, along with statistical analysis and interpretation, are crucial for monitoring mining activities and informing appropriate actions to control their impact.

Some Key Points of the Presentations on 22 March 2023

- Several use cases demonstrate the utility of satellite images, but complementary field data is essential; security in the field can hamper field data collection.
- Mapping of mines helps to locate environmental issues like mercury spills, deforestation.
- The legal status of artisanal/informal and illegal mining differs per country where geographical information plays an important role (corridors, concessions/permits)
- Continuing monitoring is required to differentiate active/non-active, real-time monitoring; increasing availability of satellite data facilitates this but sustainable technical capacity is needed.
- There is strong international interest, capacity, and cooperation on the topic of illegal mining and dealing with the environmental impact (UNODC response framework, legislative practices guide, MINAMATA)

If you have any questions about illegal mining monitoring, please contact UNODC: Coen Bussink (coen.bussink@un.org).

DAY 3 – 23 MARCH 2023

Session 4: Domestic Material Consumption as An Indicator of Economic Pressure on the Environment

Domestic Material Consumption (DMC) as an Important Policy Indicator: Stephan Moll, Eurostat spoke about DMC as an indicator on the impact of the economy on the environment and the need for responsible production and consumption. According to him, the EU aims to decouple economic growth from negative environmental impacts and increase resource productivity. One way to achieve this goal is to increase the circularity of materials in the economy, which would reduce the need for resource extraction and waste. The European Green Deal, a political strategy for the EU, aims to make Europe the first climate-neutral continent by becoming a modern, resource-efficient economy. Stephan also mentioned such indicators as the Circular Material Use rate (CMU) and Material Footprint.

Available Tools to Support the Calculation of DMC at the Country Level: General Overview – Ekaterina Poleshchuk, UNEP provided general overview about the international statistical standards that support calculation of the indicator on Domestic Material Consumption (DMC). DMC is a Material Flow Accounting (MFA) indicator that reports the apparent consumption of materials in a national economy, including biomass, metal ores, non-metallic minerals, and fossil fuels. DMC is calculated based on agriculture, forestry, fisheries, mining, energy, and trade statistics, using available tools to support the calculation at the country level. The umbrella statistical standard for calculation of DMC is the System of Environmental-Economic Accounting-Central Framework (SEEA CF). Eurostat and UNEP are the main players at the global level in the field of EW-MFA methodology and data collection.

Eurostat Guidelines and Questionnaires: Stephan Moll, Eurostat provided information about the importance of seeking permission from respective right holders for the use or reproduction of elements not owned by the EU. He also highlighted the Domestic Material Consumption (DMC) indicator and the Economy-Wide Material Flow Accounts (EW-MFA)[6] accounting framework as key measures for evaluating material accumulation and flow in the economy. The EW-MFA record material flows into and out of the economy and derived indicators such as Direct Material Input (DMI) and Raw Material Input (RMI) are used as input indicators, while Direct Material Consumption (DMC) and Raw Material Consumption (RMC) serve as consumption indicators. Eurostat guidelines and questionnaires are provided as compilation tools for carrying out the above measurements. Stephan also highlighted the voluntary and mandatory EU legal requirements for data collection and the compilation tools available in the Eurostat EW-MFA questionnaire. All Eurostat materials are available online.

The Global MFA Manual The Use of Natural Resources in the Economy: A Global Manual on Economy Wide Material Flow Accounting – Sophia Leticia Groll, UNEP introduced the Global Manual on Economy-Wide Material Flow Accounts (EW-MFA)[7], which provides guidance

[6] Important document to explore: Economy-wide material flow accounts
[7] The Use of Natural Resources in the Economy: A Global Manual on Economy Wide Material Flow Accounting

for national statistical offices and other relevant organizations to compile direct material flow accounts. It builds on the experience of Eurostat accounting guidelines and extends it to a global level. The objective is to build capacity for EW-MFA at the national level and report progress towards the Sustainable Development Goals targets 8.4 and 12.2. She ended with a call for a live simulation.

Online Course on Domestic Extraction for EW-MFA: Sophia Leticia Groll, UNEP presented the Online Training on Economy-Wide Material Flow Accounting (EW-MFA) available on UNEP's eLearning Platform (https://elearning.unep.org/). The training is designed to support national statistical offices and relevant organizations in building Economy-Wide Material Flow Accounts. It includes video tutorials and training materials on Domestic Extraction (DE) and uses a global manual on EW-MFA. The training covers topics such as Domestic Material Consumption (DMC) as an indicator of economic pressure on the environment and the impact of the economy on the environment. Overall, she highlighted the availability and usefulness of the online training as a resource for understanding and managing material flows in the economy.

EW-MFA Compiler: Ekaterina Poleshchuk, UNEP presented the EW-MFA Compiler, a tool that supports countries in building Economy-Wide Material Flow Accounts by providing the basic structure and simple calculation tools for some material categories. The methodology involves using the EW-MFA Compiler in conjunction with reading the global manual on EW-MFA provided by UNEP in 2021. You can download the EW-MFA Compiler from the UNEP website: click here.

SDG Indicator 8.4.2/12.2.2 and UNEP Questionnaire On EW-MFA for these SDG Indicators: Dany Ghafari, UNEP informed about the Sustainable Development Goals (SDGs) indicators 8.4.2/12.2.2 and 8.4.1/12.2.1[8] as indicators that are used to track progress towards sustainable resource management and pollution prevention. The International Resource Panel (IRP) produces Environmental Material Flow Analysis (EW-MFA) for all countries, with data available from 1970 to 2019 for Domestic Material Consumption (DMC) and Material Footprint (MF). DMC is reported for 17 different raw materials and the total, and is available in tons, Kg per capita, and KG per constant USD for all countries, regional and global disaggregated. MF is reported at the global level in tons, KG per capita, and KG per constant USD. Dany also informed about a pre-filled EW-MFA questionnaire with estimated data for SDG indicators 8.4.1/12.2.1 and 8.4.2/12.2.2 that was sent to countries by UNEP for the first time in 2022 for the compilation of national data for these indicators.

Global Estimation Provided for Countries: The Basis for Domestic Material Consumption Accounts in the Global MFA Databases – James West, CSIRO Land and Water, Sustainability Pathways Program, Australia spoke on the need for additional input from national statistical agencies in creating global Material Flow Accounts, particularly for categories such as domestic material consumption, domestic extraction, and physical imports and exports. He provided information on major primary categories for data quality, including biomass, fossil fuels, metal ores, and non-metallic minerals. However, he noted that some subcategories, particularly non-metallic minerals, are largely modeled and based on assumptions due to limited data availability. James highlighted the Global EW-MFA manual as a resource for national statistical offices to improve their national accounts. He also mentioned specific data sources and methods used for

[8] For more information, download the PowerPoint Presentation (unep.org)

certain categories, such as the combination of metals data from various sources for non-ferrous ores.

Validating the Economy-Wide Material Flow Accounts (EW-MFA) in Namibia: Vistorina M.M Nambundunga, Namibia Statistic Agency (NSA) informed on the usefulness of trade data based on HS codes for identifying relevant products and described how the National Statistics Agency (NSA) collects actual trade data at different points of entry in Namibia on a monthly basis, which is then processed and analyzed before being made available to the public. She recommended a hands-on approach in acquiring information from questionnaires and expressed their appreciation for the work of the UNEP in establishing a robust structure of statistics within the environmental sphere to enable analysis that influences policy makers to ensure the safety of the environment. They acknowledge that trade data is subject to change due to trade policies, negotiations, and agreements, and emphasize the importance of advanced validation in explaining outliers. The UNEP questionnaire outlines different products to consider when populating various material categories.

Panel Discussion on the Advantages and Disadvantages of the DMC Methodology: Stephan Moll (Eurostat), **Sophia Leticia Groll** (UNEP), **Ezekiel N. Kambonde** (Namibia Statistic Agency) participated in a panel discussion about Domestic Material Consumption (DMC) and Material Footprint moderated by **Ekaterina Poleshchuk** (UNEP). The speakers mentioned that the difference between DMC and Material Footprint depends on factors like the size of the economy, integration into global value chains, and availability of resources. Ekaterina expressed gratitude towards the panelists for their insights and noted that there was often consensus among them. They emphasized the importance of these indicators for both national industries and the nation as a whole. They highlighted that the Material Footprint and DMC have a similar development in Europe and suggested analyzing these indicators at regional and global levels. Ekaterina invited the participants to react on the questions and comments from the chat, mentioning the difference between DMC and Material Footprint in specific countries. They also mentioned the challenge of recording informally traded commodities in these indicators. She appreciated the feedback and posed a question about recommendations for countries that have just started calculating DMC. The discussion included responses from the participants, who suggested starting with the accounts and revising them later, analyzing international methodologies and experiences, improving data quality, and reporting changes in methodology. One participant mentioned the importance of monitoring resources in developing countries. Illegal activities and their inclusion in the indicators were also mentioned as an area of interest.

Session 5: Conclusions

Importance of Institutional Cooperation and Governance: Gabriel Gamez, UNSD highlighted the importance of institutional cooperation and governance in assessing the impact of the economy on the environment. He emphasized the advantages of a coordinated National Statistical System (NSS), which include efficiency, effectiveness, quality, coherence, comparability, and accessibility of official statistics, as well as the development of a corporate identity and trust in Official Statistics. The definition of Official Statistics was also provided, along with explanatory notes. Overall, Gabriel underlined the need for sound governance and coordination to produce timely and accurate statistics that can inform decision-making and policymaking related to the environment and the economy.

Some Key Points of the Presentations on 23 March 2023

- Domestic Material Consumption (DMC) was highlighted as an indicator of the impact of the economy on the environment and the need for responsible production and consumption.
- Eurostat and UNEP are the main players at the global level in the field of EW-MFA methodology and data collection.
- The System of Environmental-Economic Accounting-Central Framework (SEEA CF) is the umbrella international statistical standard for building EW-MFA and calculating DMC. Available global EW-MFA methodologies from Eurostat and UNEP are based on SEEA CF.
- A lot of useful information about the development of EW-MFA and DMC is available online on the websites of Eurostat and UNEP: manuals, questionnaires, EW-MFA compiler, e-learning course.
- Institutional cooperation and governance are important in assessing the impact of the economy on the environment.

If you have any questions about Material Flow Accounts and Domestic Material Consumption, please contact UNEP: Ekaterina Poleshchuk (ekaterina.poleshchuk@un.org), Dany Ghafari (dany.ghafari@un.org), and the SDG and Environment Statistics Unit of UNEP (unep-ewad-sdgs@un.org).

POST-WEBINAR SURVEY

From the participating organizations, 34 participants including 13 women took part in the Post-Webinar Survey with questions about capacity building, the use of geospatial data to monitor water-related ecosystems, illegal mineral mining, and the calculation of Domestic Material Consumption (DMC) at the national level. According to the survey results, almost all respondents indicated that their knowledge of these topics increased after the webinar. However, many of the respondents are unsure about certain aspects or do not have the necessary capacity to work with geospatial data or calculate DMC. Some respondents expressed interest in expanding their capacity in these areas, while others stated that it is not within their mandate or that they do not have access to the necessary technology. Almost all participants found the webinar informative and expressed an interest in future webinars. Overall, the survey results highlighted varying levels of capacity and interest in monitoring illegal mining and calculating domestic material consumption among the respondents.

ANNEXES

ANNEX I. WEBINAR AGENDA

Global Webinar on Geospatial and Other Data Sources for Environment Statistics:

Assessing the Impact of the Economy on the Environment

Online meeting[9], 21-23 March 2023

Agenda (version of 20 March 2023)

Note: Times are in Greenwich Mean Time / Universal Coordinated Time (GMT/UTC).

Tuesday, 21 March 2023	
Session 1: Opening and Introduction Moderator: Ekaterina Poleshchuk, UNEP	
13:00 – 13:15	**Housekeeping items** – *Ekaterina Poleshchuk, UNEP* **Welcome and opening addresses** • Brennan Van Dyke Chief of the Capacity Development and Innovation Branch, Early Warning and Assessment Division, UNEP • Angela Me, Chief of the Research and Trends Analysis Branch, Division for Policy Analysis and Public Affairs, UNODC
13:15 – 13:20	**Introduction of the Statistics and Data Project "Resilient and agile National Statistical Systems to meet post-COVID-19 data needs to recover better" under the 14th tranche of the United Nations Development Account** – *Gabriel Gamez, UNSD*
13:20 – 13:25	**Results of the pre-webinar survey** – *Ruoxi Li, UNEP*
13:25 – 13:35	**Q&A**
Session 2: Impact of anthropogenic and natural processes on freshwater and marine ecosystems Moderator: Ekaterina Poleshchuk, UNEP	
13:35 – 13:40	**Introduction** – *Ekaterina Poleshchuk, UNEP*
13:40 – 13:55	**Country-owned official statistics as a source for water statistics** – *Indira Persaud, UNSD* **Q&A**

[9] The meeting was held with PLATFORM with English, French and Spanish interpretation.

13:55 – 14:50	**Freshwater Ecosystems:** • **Policy introduction** – *Stuart Crane, UNEP (5 mins)* • **Alive demo of the Freshwater Ecosystem Explorer reporting data platform** – *Stuart Crane, UNEP (15 mins)* **Q&A** *(10 mins)*
	Country presentations on using SDG 6.6.1 data application for national planning: • **Kenya** – *Andrew Kinyua, Water Quality Monitoring at the Ministry of Water, Sanitation, and Irrigation of Kenya (15 mins)* **Q&A** *(10 mins)*
14:50 – 15:00	*Break*
15:00 – 15:55	**Marine Ecosystems:** • **Introduction** – *Emily Smail, GEO Blue Planet Initiative, NOAA, University of Maryland (5 mins)* • **Marine monitoring needs and challenges in a country example: Uruguay** – *Virginia Fernández Ramo, Ministry of Environment, Uruguay (10 mins)* • **Earth observations for marine ecosystem monitoring** – *Emily Smail (15 mins)* • **In-situ data collection for coastal satellite remote sensing products in Uruguay** – *Fernanda Maciel, Facultad de Ingeniería, Universidad de la República, Uruguay (10 mins)* **Q&A** *(10 mins)*
15:55 – 16:00	**Closing remarks** – *Ekaterina Poleshchuk, UNEP*
Wednesday, 22 March 2023	
Session 3: The impact of illegal economies on the environment: monitoring of illegal mineral mining Moderator: Coen Bussink, UNODC	
13:00 – 13:05	**Introduction** – *Coen Bussink, UNODC*
13:05 – 13:55	**Overview:** • **Response Framework on illegal mining** – *Leonardo Correa, UNODC (10 mins)* • **Measuring Illicit financial flows in the mining sector: The SDG framework, bilateral trade asymmetries and its link to remote sensing** – *Carlotta Schuster, UNCTAD (15 mins)* • **Remote sensing to monitor mineral mining** – *Jessica DeWitt, USGS (15 mins)* **Q&A** *(10 mins)*

13:55 – 14:35	**Use cases in West Africa:** • **Burkina Faso, Mining detection and uptake of the data** – *Placide Some (National Institute of Statistics and Demography), Daouda Kalaga (National Agency for the Supervision of Artisanal and Semi-Mechanized Mines) – 15 mins* • **Senegal, Detection of mining and its impact on the environment** *Ndeye Marame Ngom (Minister of Industry and Mines) – 15 mins* **Q&A** *(10 mins)*
14:35 – 14:45	Break
14:45 – 15:25	**Use cases in South America:** • **Colombia, Monitoring of alluvial gold mining and the use of its data** –*Nohora Ordoñez (Vice-Ministry of Mining) – 15 mins*
	• **Guyana, Geospatial data integration for monitoring mining and the impact on the environment in Guyana** – *Rehana Thomas (Ministry of Natural Resources) – 15 mins* **Q&A** *(10 mins)*
15:25 – 15:55	**Panel discussion** on the use of geospatial data for illegal mining *Moderation: UNODC – 30 mins*
15:55 – 16:00	**Closing remarks** – *Coen Bussink, UNODC*
Thursday, 23 March 2023	
Session 4: Domestic Material Consumption as an indicator of economic pressure on the environment Moderator: Ekaterina Poleshchuk, UNEP	
13:00 – 13:05	**Introduction** – *Ekaterina Poleshchuk, UNEP*
13:05 – 13:20	**Domestic Material Consumption (DMC) as an important policy indicator** – *Stephan Moll, Eurostat* **Q&A**

13:20 – 14:10	**Available tools to support the calculation of DMC at the country level:** • **General overview** – *Ekaterina Poleshchuk, UNEP (5 mins)* • **Eurostat guidelines and questionnaires** – *Stephan Moll, Eurostat (10 mins)* • **The Global MFA Manual *The Use of Natural Resources in the Economy: A Global Manual on Economy Wide Material Flow Accounting*** – *Sophia Leticia Groll, UNEP (5 mins)* • **Online course on Domestic Extraction for EW-MFA** – *Sophia Leticia Groll, UNEP (5 mins)* • **EW-MFA Compiler** – *Ekaterina Poleshchuk, UNEP (10 mins)* **Q&A** *(15 mins)*
14:10 – 14:20	*Break*
14:20 – 14:35	**SDG indicator 8.4.2/12.2.2 and UNEP Questionnaire on EW-MFA for these SDG indicators** – *Dany Ghafari, UNEP* **Q&A**
14:35 – 15:05	**Calculation of DMC using EW-MFA at the country level:** • **Global estimation provided for countries** – *James West, CSIRO Land and Water, Sustainability Pathways Program, Australia (10 mins)* • **Validating the Economy-wide Material Flow Accounts (EW-MFA) in Namibia** – *Vistorina M.M Nambundunga, Namibia Statistic Agency (10 mins)* **Q&A** *(10 mins)*
15:05 – 15:40	**Panel discussion** on the advantages and disadvantages of the DMC methodology – *Stephan Moll (Eurostat)*, *Sophia Leticia Groll (UNEP)*, *Ezekiel N. Kambonde (Namibia Statistic Agency)* **Open discussion**
15:40 – 15:45	**Closing remarks** – *Ekaterina Poleshchuk, UNEP*
Session 5: Conclusions Moderators: Ekaterina Poleshchuk from UNEP, and Coen Bussink from UNODC	
15:45 – 16:00	• **Importance of Institutional Cooperation and Governance** – *Gabriel Gamez, UNSD (8 mins)* • **Main conclusions** – *Ekaterina Poleshchuk (UNEP) and Coen Bussink (UNODC)* **Closing of the Webinar**

ANNEX II. RESULTS OF THE PRE-WEBINAR SURVEY

Results of the Pre-Webinar Survey

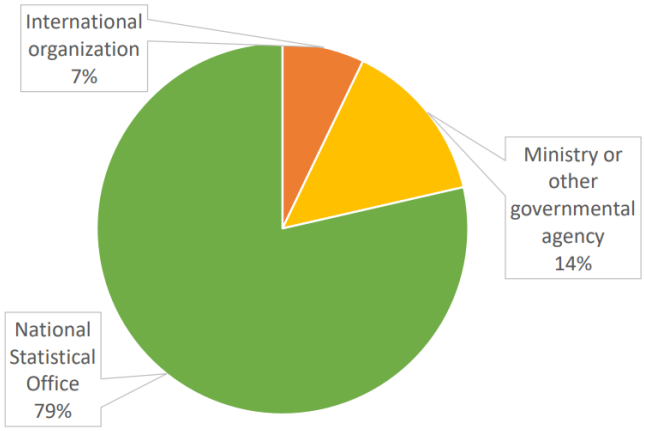
Global Webinar on Geospatial and Other Data Sources for Environment Statistics: Assessing the Impact of the Economy on the Environment

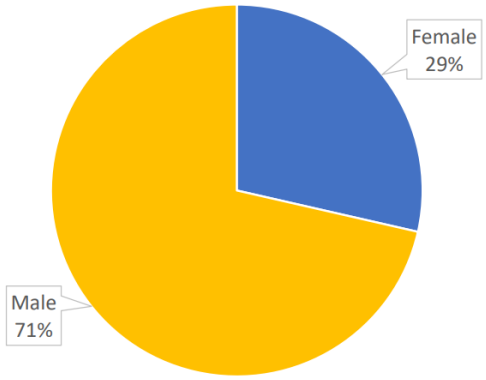
Ruoxi Li / 21 March, 2023

UN environment programme

UNODC United Nations Office on Drugs and Crime

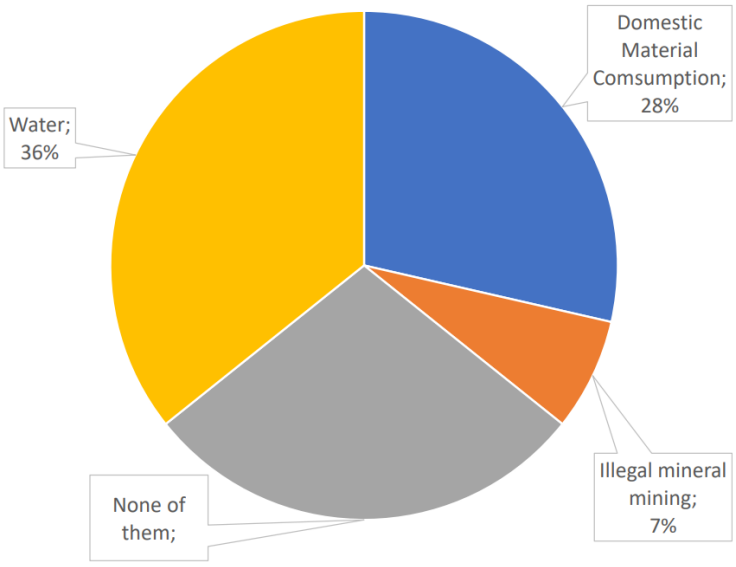
Respondent Portrait





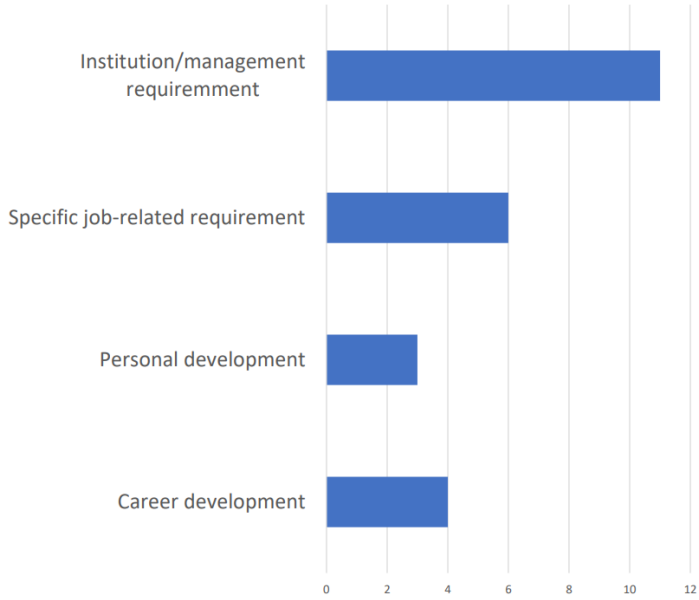
Respondent Portrait

- In which of the three webinar session areas do you have most expertise?



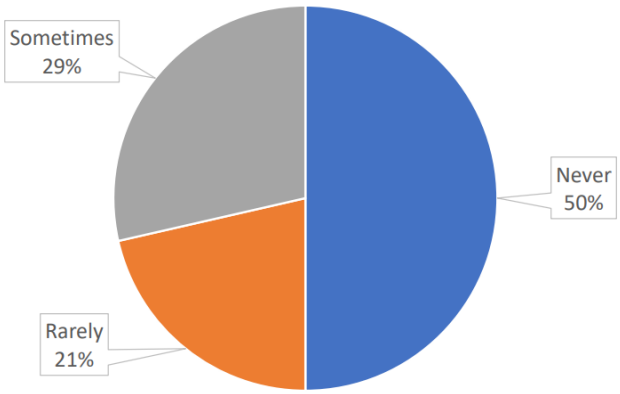
Respondent Portrait

- Why did you choose to attend the webinar?



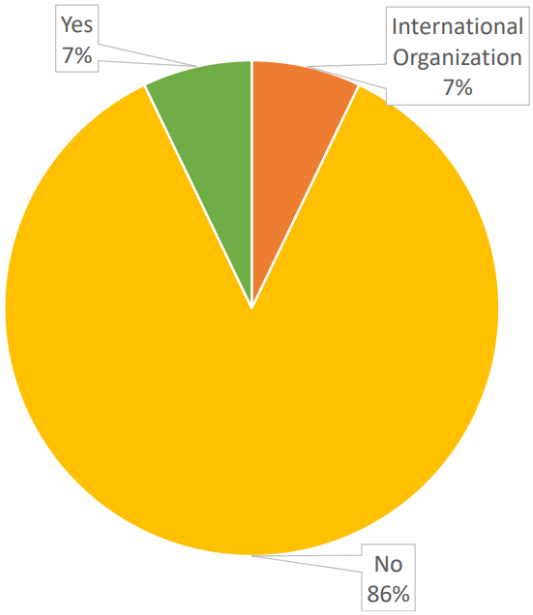
Impact of anthropogenic and natural processes on freshwater and marine ecosystems

- Please rate your current use of geospatial data to provide indicators on fresh water-related ecosystems for planning policy and decision-making



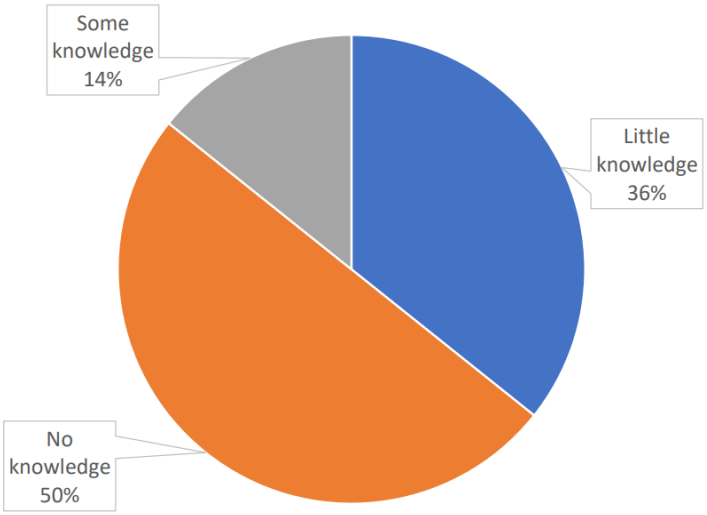
Impact of anthropogenic and natural processes on freshwater and marine ecosystems

- Do you know if data on chlorophyll-a are collected in your country?



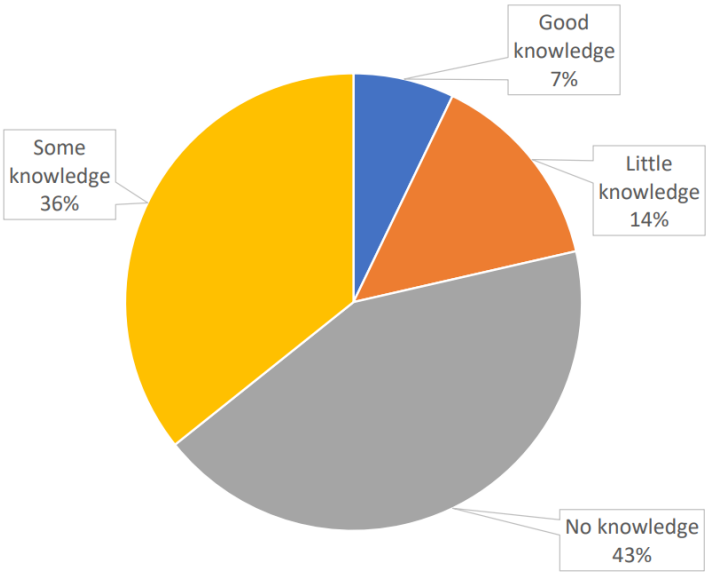
Impact of illegal economies on the environment: monitoring of illegal mineral mining

- Please rate your level of knowledge on the use of geospatial data and techniques to detect mineral mines and to generate statistical estimates about mineral production and environmental degradation indicators



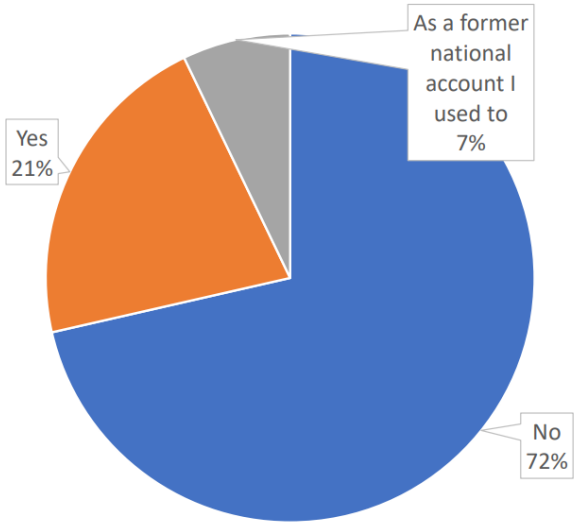
Impact of illegal economies on the environment: monitoring of illegal mineral mining

- Please rate your level of knowledge in the impact of illegal mineral mining on the environment



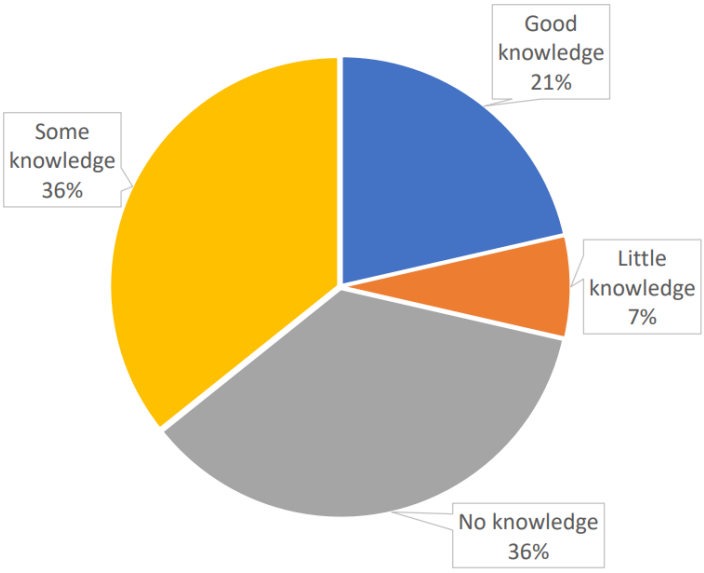
Domestic Material Consumption as an indicator of economic pressure on the environment

- Are you familiar with Domestic Material Consumption as an indicator of economic pressure on the environment



Domestic Material Consumption as an indicator of economic pressure on the environment

- Please rate your level of knowledge of the calculation of Domestic Material Consumption at the national level



Conclusion

I am Male
From National Statistical Office
I attend this webinar for the Institution Requirement

I am not familiar with illegal mineral mining or water, but I have some knowledge with Domestic Material Consumption.

UN environment programme

UNODC
United Nations Office on Drugs and Crime