



## Project Implementation Report

(1 July 2022 – 30 June 2023)

|  |  |
|--|--|
| <b>Project Title:</b>  | The Global GreenChem Innovation and Network Programme (GGCINP)                     |
| <b>GEF ID:</b>   | 10353  |
| <b>UNIDO ID:</b>   | 190313   |
| <b>GEF Replenishment Cycle:</b>                              | <a href="#">GEF-7</a>  |
| <b>Country(ies):</b>   | Global   |
| <b>Region:</b>   | <a href="#">Global</a>   |
| <b>GEF Focal Area:</b>                                       | <a href="#">Chemicals and Waste (CW)</a>   |
| <b>Integrated Approach Pilot (IAP) Programs<sup>1</sup>:</b> | N.A.   |
| <b>Stand-alone / Child Project:</b>                          | Stand Alone  |
| <b>Implementing Department/Division:</b>                     | Choose an item. <a href="#">TCS/CCM/RMC</a>  |
| <b>Co-Implementing Agency:</b>                               | N.A.   |
| <b>Executing Agency(ies):</b>                                | Yale School of the Environment<br>Center for Green Chemistry and Green Engineering |
| <b>Project Type:</b>   | <a href="#">Full-Sized Project (FSP)</a>   |
| <b>Project Duration:</b>                                     | <a href="#">72 months</a>  |
| <b>Extension(s):</b>   | <a href="#">NA</a>   |
| <b>GEF Project Financing:</b>                                | <a href="#">12,600,000</a>   |
| <b>Agency Fee:</b>   | <a href="#">1,134,000</a>  |
| <b>Co-financing Amount:</b>                                  | <a href="#">127,556,440.74</a>   |
| <b>Date of CEO Endorsement/Approval:</b>                     | <a href="#">2/19/2022</a>  |
| <b>UNIDO Approval Date:</b>                                  | <a href="#">3/18/2022</a>  |
| <b>Actual Implementation Start:</b>                          | <a href="#">4/20/2022</a>  |

<sup>1</sup> Only for **GEF-6 projects**, if applicable

|  |                  |
|--|------------------|
| Cumulative disbursement as of 30 June 2023:  | 3,942,423.09 USD |
| Mid-term Review (MTR) Date:                  | 4/20/2025        |
| Original Project Completion Date:            | 6/30/2028        |
| Project Completion Date as reported in FY22: | 4/20/2028        |
| Current SAP Completion Date:                 | 6/30/2028        |
| Expected Project Completion Date:            | 4/20/2028        |
| Expected Terminal Evaluation (TE) Date:      | 4/20/2028        |
| Expected Financial Closure Date:             | 12/31/2028       |
| UNIDO Project Manager <sup>2</sup> :         | Rodica Ella Ivan |

## I. Brief description of project and status overview

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|--|
| <b>Project Objective</b>   |
| <p>To scale up green chemistry for POPs and mercury replacement through capacity building and innovation, and creation of a global unifying green chemistry network for implementation and uptake</p> <p>The Project contributes to GEF CWW-1-1 focal area (<i>“Strengthen the sound management of industrial chemicals and their waste through better control, and reduction and/or elimination”</i>)</p> |

|  |
|--|
| <b>Baseline</b>  |
| <p>More than 200 million chemical substances have been described in the literature since the early 1800s. A recent analysis of 22 chemical inventories from different countries found over 350,000 chemicals and formulations registered for production and cleared for application and use. Of those with a Chemical Abstracts Service Number (CAS), less than 21% were registered within the past decade, or had received scrutiny concerning their safety and potential environmental hazards. This means, that close to 80% of all chemicals registered for production and use are potentially lacking thorough characterization in terms of their impact on human health and the environment.</p> <p>Predominantly, chemicals lack sufficient environmental health and safety evaluation and data, potentially leading to regrettable chemical substitutions. These substitutions take place when hazardous chemicals are replaced with substances bearing comparable or greater hazard potential as compared to the preceding chemical.</p> <p>Transnational environmental agreements, such as the Basel, Rotterdam, Stockholm, and Minamata conventions, were designed to address the problems associated with hazardous substances, waste, pesticides, Persistent Organic Pollutants (POPs), and mercury, respectively. While these agreements have shown positive impact, the chemicals continue to exist in the environment, often through unsound management or persistent industrial applications. Climate change can further amplify the imperiling effects of chemicals like mercury and</p> |

<sup>2</sup> Person responsible for report content

POPs through volatilization, potentially releasing trapped hazardous chemicals from melting ice, leading to a prolonged impact of these chemicals in the environment.

With the recent emphasis on circular economy as a key strategy for meeting SDGs, the presence of hazardous chemicals is a problem of increasing visibility. In the transition from linear to circular economy, materials are intended to remain in use at their highest quality and value for as long as possible. Materials containing hazardous chemicals will then remain in circulation as well, extending their lifetime of use, thus increasing the risk of exposure to the environment and the human population. Overall elimination of hazardous chemicals from materials is a prerequisite for circular economy to function to its fullest potential. The elimination of hazardous substances by intentional design can be achieved through the careful consideration and application of green chemistry and engineering principles.

**The Global GreenChem Innovation and Network Programme** is a collaborative effort between Yale University, the United Nations Industrial Development Organization (UNIDO), and six focus countries and their respective national cleaner production centers NCPCs: Indonesia, Serbia, Uganda, Ukraine, Peru, and Jordan. The initiative seeks to enable green chemistry capacity building to locally support innovation, development, and technology scale-up. The six-year program will create a globally unifying green chemistry network that will focus on international cooperation, communication, and adaptation of green chemistry alternatives for the productive sectors in the focus countries, including chemicals production, waste management, and manufacturing. To achieve the broad adaptation of green chemistry principles reducing or eliminating hazardous chemicals such as POPs and mercury, the program will support three main components:

1. **Functional Green Chemistry Network** – A web-based global green chemistry network/portal, which will enable anybody interested in green chemistry to take on an active role in safer chemical design and substitution of hazardous products and materials.
2. **Regional Accelerator Programs for the development, implementation and scale-up of green business ideas** - Green chemistry accelerator programs which support innovation and entrepreneurship and strengthen innovation ecosystems in emerging nations.
3. **Upscaling and implementation of successful projects and technologies representing Green Chemistry alternatives for POPs and mercury** - Projects that reduce Persistent Organic Pollutants (POPs) or mercury in industrial settings through application of technologies based on green chemistry principles.

| Overall Ratings <sup>3</sup>   | FY23                    | FY22            |
|--|-------------------------|-----------------|
| Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating | <i>Satisfactory (S)</i> | Choose an item. |
| Implementation Progress (IP) Rating  | <i>Satisfactory (S)</i> | Choose an item. |
| Overall Risk Rating  | <i>Low Risk (L)</i>     | Choose an item. |

\*FY 22 not applicable (FY 23 is 1<sup>st</sup> PYR)

## II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

| Project Strategy | KPIs/Indicators | Baseline | Target level | Progress in FY23 |
|------------------|-----------------|----------|--------------|------------------|
|------------------|-----------------|----------|--------------|------------------|

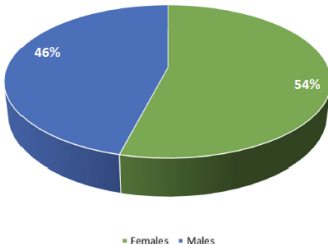
<sup>3</sup> Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

## The Global GreenChem Innovation and Network Programme (GGCINP)

|  |  |   |   |   |
|--|--|---|---|---|
| To scale up green chemistry for POPs, mercury and microplastics replacement through capacity building and innovation, and creation of a global unifying green chemistry network for implementation and uptake. | Core Indicator 9: Reduction of POPs and Hg chemicals through GC application (metric tons of toxic chemicals reduced) [ENV 2] | 0 | Mid-Term:<br>113 tons of POPs;<br>558993 tons of POPs-containing material<br><br>567 tons of POPs,<br>2,794,966 tons of POP-containing material | Effective chemicals phase-out are result of investment activities planned in the following years, in line with the approved project timeline. |
|  | Indirect Core Indicator 6: Reduction of Greenhouse Gas Emissions through GC applications (metric tons of CO2e) [ENV 1]       | 0 | Mid-Term:<br>16 200 CO2e<br><br>81 000 CO2e   |   |

### Component 1 – Green Chemistry Innovation and Inclusion Network for Capacity Building - technical assistance

#### Outcome 1.1.: Functional Green Chemistry Inclusion Network

|   |  |                   |   |  |
|---|--|-------------------|---|--|
| Output 1.1.1 Developed and provided training and awareness events | Core Indicator 11: Number of direct beneficiaries disaggregated by gender gaining awareness/knowledge on GC [KASA 1] | 0                 | 611 MTR<br><br>2865   | 179 of direct beneficiaries gaining awareness<br>12 institutions gaining awareness   |
|   | Core Indicator 11: Number of direct beneficiaries disaggregated by gender againing skills on GC [KASA 2]             | 0                 | 20 MTR<br><br>100   |  |
|   | Number of institutions gaining awareness/knowledge about GC [KASA 1]   | 0                 | 10 MTR<br><br>20  |  |
|   | # of capacity building activities related to GC provided [TCO 1]   | 0                 | 12 MTR<br><br>26  | 2 national and 1 International Kickoff Meeting<br>179 people obtained awareness raising materials (Vienna kickoff, Serbia kickoff and Ukraine kickoff)   |
|   | # of toolkits and guidelines related to GC produced [TCO 3]  | 0                 | 13 MTR<br><br>41  |  |
|   | # of people obtained GC resources (trainings, awareness raising)   | 0                 | 511 MTR<br><br>2555   | The NCPC Ukraine held a virtual kick-off meeting with > 100 participants on the 25 <sup>th</sup> of April 2023. Attendees from academia and industry learned about the program. The gender distribution of the 134 participants was reported as follows:<br><br>Gender disrtibution of participants attended |
|   | # of institutions obtained GC resources (trainings, awareness raising)   | 0                 | 10 MTR<br><br>20  |  |
| # of people trained in GC areas                                   | 0  | 20 MTR<br><br>100 |  <p>Gender disrtibution of participants attended</p> <p>46% (Males)<br/>54% (Females)</p> <p>Legend: Females (Green), Males (Blue)</p> |  |

National Kick off meeting for the Global GreenChem Innovation and Network Program in Serbia – May 18, 2023 – 15 participants

|   |  |   |                |   |
|---|--|---|----------------|---|
| Output 1.1.2. Networking mechanism in place through established programmatic content schedule | # of GC networking events and trainings held [CPO 1]                   | 0 | 2 MTR<br>5     | 5 GC networking events held<br>12 institutions obtained training through conferences<br><br>· Disseminated information at different conferences through presentations, banners, flyers and promotional material.<br><br>Participation of Yale project team in the 2022 International Symposium of Green Chemistry (ISGC), May 16-20, 2022 in La Rochelle, France with a talk entitled “The Global Green Chemistry Innovation and Network Programme – Connecting the global community of innovators and chemists from industry, academia and government” and a booth distributing informative material, networking with potential stakeholders. The conference was attended by 470 people, featuring 320 oral communications. Invited talks included speakers from the Max-Planck-Society, L’Oreal, University of Groningen, Clariant, IBM and ETH Zürich. ~70 people attending the talk<br><br>The Yale project team participated in the 26th Annual Green Chemistry and Engineering Conference (GC&E) held from June 6-8, 2022 in Reston, VA promoted by a talk entitled: “The Global Green Chemistry Innovation and Network Programme – A platform supporting innovation, community and learning” and a booth with informative material.<br>Attendees spanned across academia, industry, NGOs and government, including, Patagonia, University of Pennsylvania, George Washington University, Merck, and Procter & Gamble. The conference featured talks in over 40 technical sessions touching the topic area <i>Thinking in Systems: Designing for Sustainable Use</i> . Conference attended by approx.. 500 people. ~60 people attending the talk.<br><br>UNIDO – Yale Symposium organization at the 27th Annual Green Chemistry and Engineering Conference (GC&E), June 13-15, 2023, Long Beach, USA ensured involvement of participating countries representatives and project teams in the green chemistry network. The UNIDO – Yale Symposium entitled “ <i>Global sustainability – connecting nations through green chemistry</i> ” was a successful connection of participants from all over the world. Conference attended by approx.. 500 people. ~50 people attending the talk.<br><br>Participation of Yale University in the American Chemical Society Fall 2022 Conference, taking place August 21 - 25, 2022 in Chicago, USA, providing content, guidance, and program presentation. The program was promoted by a talk entitled “The Global Greenchem Innovation and Network Programme”. Conference attended by approx.. 7,900 people. ~60 people attending the talk |
|   | # GC guidelines and resources developed [TCO 3]                        | 0 | 7 MTR<br>21    |   |
|   | # of institutions obtained GC resources (trainings, awareness raising) | 0 | 100 MTR<br>310 |   |
| Output 1.1.3. Mobilized Network to support Accelerator Programme                              | # GC toolkits added to the database [TCO 3]                            | 0 | 6 MTR<br>20    | In progress   |

**Component 2 – Green Chemistry Accelerator Programme - technical assistance**

Outcome 2.1. Regional Accelerator Programmes developed and implemented for scaling and green business creation

|   |  |   |                |                                  |
|---|--|---|----------------|----------------------------------|
|   | Core Indicator 11: Number of direct beneficiaries disaggregated by gender gaining skills on GC [KASA 2]  | 0 | 30 MTR<br>1725 | Initiated and in progress        |
|   | # of GC stakeholders engaged in the GC accelerator programme [REA 2]   | 0 | 170 MTR<br>540 |                                  |
|   | # of GC technologies developed or adapted [TEC 1]  | 0 | 0 MTR<br>28    |                                  |
|   | # of businesses operational after the competitions held [BUS 3]  | 0 | 0 MTR<br>6     |                                  |
| Output 2.1.1 Accelerators established with completed curriculum training for Judges, Mentors and Administrators     | # GC information and guidelines developed [TCO 3]  | 0 | 1 MTR<br>1     | In progress                      |
|   | # experts trainings implemented [CPO 1]  | 0 | 1 MTR<br>2     |                                  |
|   | # of developed GC interventions [TCO 4]  | 0 | 0 MTR<br>6     |                                  |
|   | # of people trained in GC areas  | 0 | 30 MTR<br>1245 |                                  |
|   | # of people engaged in GC trainings, including accelerator trainees  | 0 | 170 MTR<br>540 |                                  |
| Output 2.1.2 Business competitions held (“Innovation Challenges”)   | # of people trained during the GC business competition (hackathon participants)  | 0 | 0 MTR<br>480   | Not planned in the current year  |
| Output 2.1.3 Global winners connected to further technical resources, investors, and commercial partners            | # of capacity building activities related to GC provided [TCO 1]   | 0 | 3              | Not planned in the current year  |
|   | # of new GC applications developed   | 0 | 28             |                                  |
|   | # of people trained after final winner selection, including registrants for national judging days and Global Green Chemistry accelerator competition registrants | 0 | 1125           |                                  |
|   | # new businesses developed and operational   | 0 | 6              |                                  |
| <b>Component 3 – Green Chemistry alternatives for POPs for upscale and replication - Investment</b>                 |  |   |                |                                  |
| <b>Outcome 3.1: Green Chemistry alternatives for POPs implementation and upscaling of successful demonstrations</b> |  |   |                |                                  |
| Output 3.1.1. Green Chemistry alternatives for POPs, mercury and microplastics implemented                          | # of the GC demonstration projects implemented   | 0 | 2 MTR<br>6     | Not planned in the current year. |

|  |  |   |   |  |
|--|--|---|---|--|
|  | Indirect Core Indicator 6: Reduced CO2e through the GC demonstration projects (metric tons of CO2e)  | 0 | MTR: 16 200 CO2e<br>81 000 CO2e   | Preparatory work for identifying pilot sites has been initiated with national counterparts to ensure implementation start in 2024. |
|  | Core Indicator 9. Reduced POPS through GC alternatives implementation in the pilot projects (metric tons of toxic chemicals reduced)             | 0 | MTR: 113 tons of POPS; 558993 tons of POPS-containing material<br>567 tons of POPS, 2,794,966 tons of POP-containing material |  |
| Output 3.1.2: Replication mechanisms of green chemistry alternatives for national, regional and global level up-take developed and implemented | # Case studies developed, which include replicable and templated implementation procedures from the pilot demonstrations (1 per country) [TCO 3] | 0 | MTR: 2<br>6   | Not planned in the current year  |
|  | # of GC replications implemented   | 0 | 10  |  |

**Component 4 – Monitoring and evaluation – technical assistance**

**Outcome 4.1.: Project monitoring and evaluation**

|  |                  |   |      |          |
|--|------------------|---|------|----------|
| Output 4.1.1 Project monitoring and evaluation plan designed and implemented | Active PMU       | 0 | 1    | Achieved |
| Output 4.1.2 Mid-term evaluation   | MTR organization | 0 | 2025 | 2025     |
| Output 4.1.3: Terminal project evaluation                                    | TE               | 0 | 2028 | 2028     |

### III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

|   | (i) Risks at CEO stage                          | (i) Risk level FY 22 | (i) Risk level FY 23   | (i) Mitigation measures  | (ii) Progress to-date   | New defined risk <sup>4</sup> |
|---|---|----------------------|--|--|---|-------------------------------|
| 1 | Poor institutional coordination - Medium at CEO | M                    | M<br>Any project involving 6 nations (from 3 continents) including institutions of higher learning from geographically different regions who are at different developmental stages is envisaged to have coordination risks | UNIDO has set in place a coordination team with Yale University and local implementing agencies (NCPCs). Building on other projects, such as Chemical Leasing), UNIDO could reach out to a growing network of national and international partners, particularly in the private sector, while the Yale University ensures their connections with higher education institutions. Technical meetings are taking place regularly (at least | Implementation is progressing in line with CEO mitigation measure | <input type="checkbox"/>      |

<sup>4</sup> New risk added in reporting period. Check only if applicable.

|   |   |   |  |   |  |                          |
|---|---|---|--|---|--|--------------------------|
|   |   |   | stemming from over diversity.  | monthly). The project's web-based portal will build in functions to facilitate sharing of documents, news, and in-time online conversation among partners across countries. Lessons learned from previous GEF-UNIDO implemented projects on POPs in each participating country are taken into account.  |  |                          |
| 2 | Possible re-instatement of COVID-19 containment measures limits available capacity or effectiveness of project execution / implementation<br><br>H at CEO | H | M<br>New variants outbreaks and slow vaccination rollout would lead to new or prolonged national lockdowns, travel barriers, or social distancing measures, which would delay the implementation phase, limit the possibility to conduct some activities, and/or lower their impacts.  | The GreenChem project has designed all of the project activities with the pandemic as a constant threat in the context. The core activities of this project, including events and training, can be revised to take place on online platforms or in-person at the reduced capacity following local COVID-19 guidelines. Integration of tools supporting virtual collaboration has been made to engage with all stakeholders so far and it is envisaged to be the same situation in the first years of the project. | COVID-19 CEO identified potential risks did not generate relevant impact on the project implementation during the period July 2022 – June 2023 | <input type="checkbox"/> |
| 3 | Gender gaps and inequalities further exacerbated by the project activities<br><br>Low at CEO  | L | L<br>Low number of female participants in project activities (awareness raising events, training, networking, network of practitioners (Leadership Committee, Innovation and Inclusion Network), and business competition).<br><br>Curriculum and guidebook, experts, mentors, and judges in the Accelerate or Programme are not gender-sensitive or responsive to the specific needs of female entrepreneurs. | The project has paid special attention to mainstream gender perspectives in the project design and will regularly review the situation to identify potential issues during the implementation phase. The project will build on the results of the gender analysis conducted in all participating countries and formulate a Gender Action Plan taking into account the national differences.   | The implementation to date take into account all mitigation measures identified at CEO, and the risk remain low for the reporting period       | <input type="checkbox"/> |
| 4 | National stakeholders involvement in implementation<br>Low at CEO   | L | L<br>The project teams in participating G GNIP countries are envisaged to encounter objection from chemical producing industries (textiles, PFOs, POP -PBDEs). National stakeholders in country specific sector as part of the program requires training and information regarding socio-economic  | To mitigate this risk, provision is made for national workshops, awareness campaigns and discussions fora opened to consultatively set and agree, national plans as part of the program and implementation actions in each nation the GGNI P project is ongoing.<br><br>The dissemination of information on clean production and consumption of chemicals to industries, SMEs, ministries of environment triggers   | Stakeholders are responsive and supportive to the project and the identified risk remains low during the implementation period                 | <input type="checkbox"/> |



|   |   |   |   |   |   |                                     |
|---|---|---|---|---|---|-------------------------------------|
|   |   |   | benefits of green chemistry   | stakeholder's involvement in the execution of the program nationally  |   |                                     |
| 5 | Coordination among the components and especially among the six participating countries might be challenging<br>Low at CEO | L | L<br>There are 6 participating countries and due to different technical, administrative capacity, different regulation s/approval processes etc. some countries might advance faster than others. This would led to complications in monitoring of outputs and simultaneously | As part the execution contract, Yale University is closely monitoring, technically advising and supporting the national executing project entities in execution of national activities. | Close monitoring and technical assistance requirements are embedded in the execution agreement between UNIDO and Yale, to ensure the risk mitigation over entire project duration.  | <input type="checkbox"/>            |
| 6 | Administrative procedures related risk  | L | M<br>National execution arrangements are bind by specific national legal procedures that is different from country to country and may affect the legal subcontracting arrangements  | Adaptive management was identified by the CEO document And considered during current reporting period   | Difficulties in concluding national sub-contracting execution arrangements due to specific national legal requirements applicable to the national executing entity in Indonesia (government institution) were encountered.<br>The solution identified jointly with Ministry of Industry in Indonesia and taken into consideration for execution is delegation of sub-contractual obligation of Ministry of Industry to Pertamina University, with the objective to overcome delay that could be generated by time consuming legal clearances procedures in Indonesia. | <input checked="" type="checkbox"/> |

2. If the project received a sub-optimal risk rating (H, S) in the previous reporting period, please state the actions taken since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

Not applicable

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

COVID-19 CEO identified potential risks did not generate relevant impact on the project implementation during the period July 2022 – June 2023.

4. Please clarify if the project is facing delays and is expected to request an **extension**.

Not applicable

5. Please provide the **main findings and recommendations of completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

Not applicable

## IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

Category A project

**Category B project**

Category C project

|   |
|---|
| Not applicable  |
| Component 3 of the project, to which ESS risks associate, was classified under Category B based on UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP)  |
| Component 3 is planned to be executed in the 2025, and ESS will be addressed during respective PIR and with the MTR of the Project. All ESS measures as per the ESMP will be comprehensively reported upon starting from the PIR for FY 2024/2025 |
|   |

## V. Stakeholder Engagement

Yale University as main executing entity is leading the interaction with the stakeholders identified by CEO for each of the project components. The selection and appointment of the advisory board and leadership committee was initiated during the first quarter of 2023. Final appointment letters with signatures and in-kind contribution estimates are expected for Q4 2023.

Of main relevance for the current reporting period are:

- the interaction of project team with the national stakeholders in the participating countries, in view of mobilization of the national expertise for reaching relevant participation in the project, in line with CEO stakeholder's engagement plan.
- mobilization of international stakeholders and network expansion ensured by the project team through presence and side-events organization at the main international green chemistry global events

The Global Kick-off Meeting held 13 -14 march 2023 ensured mobilization of national coordination teams of National Cleaner Production Centres (NCPCs) of Ukraine, Serbia, Peru, Uganda and Jordan and Ministry of Industry of Indonesia, as well as private stakeholders and academia, members of the Green Chemistry Network.  
<https://environment.yale.edu/canopy/2023/feature/scaling-green-chemistry-globally-sustainable-future>

The National Kick-off meetings were conducted in Serbia (May 18) and Ukraine (April 25). 149 people participated in both events. See attached files.

International Stakeholders were reached through the participation of the project team at relevant academia events as mentioned in Section II. Targeted results.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

Uganda and Jordan project teams (NCPCs) contributed with relevant information on potential pilot cases studies, supporting additionally the development of the updated version of a technology compendium, representing a resource for examples of successful technologies considering green chemistry.

Mr. Thomas Jakl, former chair of the European Chemicals Agency ECHA held a complimentary collaborative presentation at the kick-off event in Austria. Austria Ministry of Environment launched a new initiative on green chemistry involving Academia, and synergies between this project and Austria programme are looked into.

**3. Please provide any relevant stakeholder consultation documents.**

- Inception Report of the Yale University (containing membership of the Advisory Board and Leadership Committee)
- Global Kick-off Meeting Agenda\_ 13-14 March 2023
- Global kick-off meeting participant list
- LAUNCHING THE GLOBAL GREENCHEM INNOVATION AND NETWORK (Report on Ukraine's kick-off meeting)

## **VI. Gender Mainstreaming**

The project has paid special attention to mainstream gender perspectives in the project design and will regularly review the situation to identify potential issues during the implementation phase. The project will build on the results of the gender analysis conducted in all participating countries and formulate a Gender Action Plan considering the national differences.

The implementation takes into account all mitigation measures identified at CEO, and the risk remains low for the reporting period.

The Mid-Term review will include progress on implementation of gender-responsive measures against gender-sensitive indicators.

## **VII. Knowledge Management**

Using the previous reporting period as a basis, please elaborate on any **knowledge management activities / products**, as documented at CEO Endorsement / Approval.

Knowledge management (KM) is the critical component of the programme and is being established through the web-based Green Chemistry Global Innovation and Inclusion Network. The portal (under development) captures all knowledge generated through the programme on the national and global level and will act as a knowledge repository for all project documents and products. Specific web platform functionality is described below:

The web platform will be used to manage general green chemistry education and knowledge material (together with partners ACS and Beyond Benign). The network will host a section dedicated to the management of accelerator-related processes in Indonesia, Jordan, Peru, Uganda, Ukraine and Serbia. It will act as a repository for reports, updates, innovations and announcements. The accelerator Guidebook, training tools and materials will be also available through the website and be hosted here. The website will also showcase accelerator winners to highlight winning green chemistry technologies. The web platform enables communication between different stakeholders around the globe interested in green chemistry

and innovation. It will build a community of practice between entrepreneurs, educators, industry and investors. Networking and exchanging ideas through the network will be encouraged.

The platform will host established and novel green chemistry resources such as videos, interviews, short courses to make it a hub to learn and educate humanity about green chemistry.

The platform will be used to collect various data over the full length of the programme and beyond. Each country will track and record their own metrics to assess the impact of the programme.

Collected information will be extracted by the main executing agency and used for promotional purposes to further promote the programme. Materials can include brochures, infographics, reports and briefs that can be shared with relevant stakeholders.

<https://www.globalgreenchem.com/> placeholder project website has been launched during current reporting period and will then be phased out after the final network platform is rolled out (expected for Q4 2023).

In addition, the output 3..2.. Replication mechanisms of green chemistry alternatives specifically included a knowledge management strategy development for national, regional and global level; this will serve as the centralized repository for case studies and templates which can be easily adopted and transferred to other regions. Progress on this specific component will follow in line with the project planning, as this component starts its implementation in 2024.

## 2. Please list any **relevant knowledge management mechanisms / tools** that the project has generated.

<https://www.globalgreenchem.com/>

<https://gctlc.org/yale-unido-green-chemistry-university-course-syllabus>

## VIII. Implementation progress

### 1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

First year implementation work plan and its activities (of technical assistance nature) were focused on setting functional project structure, completing execution arrangements between UNIDO and Yale University and subsequent national execution arrangements with target countries, inception at global level and in each participating country, training activities, network expansion and awareness activities.

PMU was set-up upon conclusion of the Agreement between UNIDO and Yale University, project executing entity. PMU is operational and fully staffed.

<https://environment.yale.edu/canopy/2023/feature/scaling-green-chemistry-globally-sustainable-future>

Global Inception Kick-off Meeting was organized in Vienna at UNIDO HQ premises March 13-14, 2023, with physical participation of the 6 national project teams of Jordan, Indonesia, Ukraine, Serbia, Peru and Uganda and virtual participation of the green chem. Network key stakeholders representatives.

The appointment of the advisory board and leadership committee has been initiated and is in progress under leadership of the Yale University, and it is expected all nomination letter to be received until 30 September 2023.

The NCPK Ukraine held an official virtual kick-off meeting with > 100 participants on the 25<sup>th</sup> of April 2023. Attendees from academia and industry learned about the program.

National Kick off meeting for the Global GreenChem Innovation and Network Program in Serbia was held May 18, 2023 involving the key stakeholders of the project

### **Outcome 1.1.: Functional Green Chemistry Inclusion Network :**

#### 1.1.1 Activities envisaged creating the framework for the Green Chemistry Innovation and Inclusion Network

The Yale project team specifically developed outreach materials which are designed to introduce the Programme and its

mission to the larger Green Chemistry & Green Engineering community. The aforementioned materials include banners, flyers and selected promotional articles, a temporary website <https://www.globalgreenchem.com/> stating the projects mission and potential impact has been launched. Social media channels for awareness raising activities have been

launched on the LinkedIn- and Instagram-platforms respectively. Maximization of engagement to the younger research

community interested in sustainability is envisioned.

A survey funneling into the webpage has been developed and is already online: The survey is designed to underpin the exact strategy development for the professional network generation, defining potential user interests, roles and opportunities, while at the same time starting the engagement through data collection.

The Yale School of the Environment communications office developed a press release about the project mission and goals, which was disseminated to a broader audience through Yale's and other media channels and outlets.

Orientation meetings with potential partners for the global network established:

ACS Green Chemistry Institute <https://www.acs.org/greenchemistry.html>;

Beyond Benign <https://www.beyondbenign.org/>

Output:1.1.2 Materials developed:

- Developed the Global GreenChem Innovation and Network Programme logo.
- Developed standing banner, flyers and other promotional material for the distribution at various outreach events.
- Built a temporary website (landing page) for the Programme and blocked the Domain: [www.globalgreenchem.com](http://www.globalgreenchem.com)
- Created social media profiles on Instagram and LinkedIn respectively
- Designed a specific survey supporting program strategy development.

In Progress:

☑ Contacts to potential service providers and web-developers established, a contract with [www.skvare.com](http://www.skvare.com) is ongoing; the design agencies <https://www.barkmediaco.com/> are in last rounds of conversation before signature.

Output 1.1.2. Disseminated information at different conferences through presentations, banners, flyers and promotional material.

Participation of Yale project team in the 2022 International Symposium of Green Chemistry (ISGC), May 16-20, 2022 in La Rochelle, France with a talk entitled "The Global Green Chemistry Innovation and Network Programme – Connecting the global community of innovators and chemists from industry, academia and government" and a booth distributing informative material, networking with potential stakeholders. The conference was attended by 470 people, featuring 320 oral communications. Invited talks included speakers from the Max-Planck-Society, L'Oreal, University of Groningen, Clariant, IBM and ETH Zürich. ~70 people attending the talk

The Yale project team participated in the 26th Annual Green Chemistry and Engineering Conference (GC&E) held from June 6-8, 2022 in Reston, VA promoted by a talk entitled: "The Global Green Chemistry Innovation and Network Programme – A platform supporting innovation, community and learning" and a booth with informative material.

Attendees spanned across academia, industry, NGOs and government, including, Patagonia, University of Pennsylvania, George Washington University, Merck, and Procter & Gamble. The conference featured talks in over 40 technical sessions touching the topic area *Thinking in Systems: Designing for Sustainable Use*. Conference attended by approx.. 500 people.~60 people attending the talk.

UNIDO – Yale Symposium organization at the 27th Annual Green Chemistry and Engineering Conference (GC&E), June 13-15, 2023, Long Beach, USA ensured involvement of participating countries representatives and project teams in the green chemistry network.

The UNIDO – Yale Symposium entitled “*Global sustainability – connecting nations through green chemistry*” was a successful connection of participants from all over the world. Conference attended by approx.. 500 people. ~50 people attending the talk.

#### Output 1.1.3

The Yale team generated a survey to get an overview about the startup and accelerator communities in the participating countries.

Generation of an updated version of a technology compendium, representing a resource for examples of successful technologies considering green chemistry was initiated and it is on-going. The technology compendium will be integrated into the global network in form of a searchable database.

#### Component 2 – Green Chemistry Accelerator Programme: Activities were initiated and are in progress

Selection criteria and conditions for participating in the programme were discussed with national counterparts in the targeted countries during the kick-off meeting held in Vienna in March 2023, taking into consideration specific national conditions.

The programme is lead at national level by the national executing entities, NCPCs and University Pertamina identified by Ministry of Industry in Indonesia.

Output 2.1.1. - Survey to assess the entrepreneurial ecosystem developed and distributed to national executing agencies on 4/27. Information from the survey is the baseline information for curriculum development and guidebook preparation.

A draft version of the guidebook is expected for divulgation to all participants in Q4 of 2023.

**2. Please briefly elaborate on any **minor amendments**<sup>5</sup> to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).**

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

|                                     |   |   |
|-------------------------------------|---|---|
| <input type="checkbox"/>            | Results Framework                             |   |
| <input type="checkbox"/>            | Components and Cost                           |   |
| <input type="checkbox"/>            | Institutional and Implementation Arrangements |   |
| <input type="checkbox"/>            | Financial Management                          |   |
| <input checked="" type="checkbox"/> | Implementation Schedule                       | Project Implementation timeline was up-dated at the date of issuing of the execution Agreement between UNIDO and Yale (see attachment 10353_2023_PIR_Annex1_Workplan). The effective starting date of the execution agreement was delayed 6 months due to administrative legal clearances |

<sup>5</sup> As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.

|                          |  |   |
|--------------------------|--|---|
|                          |  | procedures, however, the delay did not significantly impact the project execution. The Yale University executing agency utilized in-kind and co-financing resources to initiate the project, until the execution arrangements were in place and project disbursement was effectively initiated. |
| <input type="checkbox"/> | Executing Entity                           |   |
| <input type="checkbox"/> | Executing Entity Category                  |   |
| <input type="checkbox"/> | Minor Project Objective Change             |   |
| <input type="checkbox"/> | Safeguards                                 |   |
| <input type="checkbox"/> | Risk Analysis                              |   |
| <input type="checkbox"/> | Increase of GEF Project Financing Up to 5% |   |
| <input type="checkbox"/> | Co-Financing                               |   |
| <input type="checkbox"/> | Location of Project Activities             |   |
| <input type="checkbox"/> | Others                                     |   |

### 3. Please provide progress related to the **financial implementation** of the project.

UNIDO financial report and the financial report of the executing entity (Yale University) are attached as annexes Co-financing funds mobilization and the related implications for project implementation are to be assessed at Mid Term Review and at the Terminal Evaluation, in line with the CEO document.

## IX. Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

**Up-dated workplan and activities time-lines is available as Annex 1.**

## X. Synergies

1. **Synergies** achieved:

Ongoing cooperations of Yale University with other Green Chemistry Stakeholders from Latin America will synergistically raise awareness about the program. Due to participations at national and international conferences various stakeholders are aware of the program and their potential upcoming roles in the Green Chemistry network or the accelerator program in Year 2 and onward.

3. **Stories to be shared** (Optional)

The NCPC in Ukraine, despite all the difficulties, held a very successful kick-off-Event on the 25<sup>th</sup> of April 2023, with more than 100 participants and stakeholders from industry and academia.

The Global Greenchem Innovation and Network Programme was the central anchor topic for a symposium held at the 27th Annual Green Chemistry and Engineering Conference (GC&E), June 13-15, 2023, Long Beach, CA, USA entitled “Global sustainability – connecting nations through green chemistry”. The symposium connected researchers from different continents, including a collaborator from the NCPC in Uganda.

## XI. GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate.

Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com>

Geo location related information will be provided with the selection of the pilots, during execution of the component 3 planned to be initiated in 2024 and executed starting with the year 2025



## EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2022 – 30 June 2023.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

| Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings |   |
|---|---|
| <b>Highly Satisfactory (HS)</b>   | Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.  |
| <b>Satisfactory (S)</b>   | Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.  |
| <b>Moderately Satisfactory (MS)</b>   | Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits. |
| <b>Moderately Unsatisfactory (MU)</b>   | Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.  |
| <b>Unsatisfactory (U)</b>   | Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.  |
| <b>Highly Unsatisfactory (HU)</b>   | The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.   |

| Implementation Progress (IP)          |   |
|---------------------------------------|---|
| <b>Highly Satisfactory (HS)</b>       | Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”. |
| <b>Satisfactory (S)</b>               | Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.                        |
| <b>Moderately Satisfactory (MS)</b>   | Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.                                 |
| <b>Moderately Unsatisfactory (MU)</b> | Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.                      |
| <b>Unsatisfactory (U)</b>             | Implementation of <u>most</u> components in <u>not</u> in substantial compliance with the original/formally revised plan.   |
| <b>Highly Unsatisfactory (HU)</b>     | Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.   |

| Risk ratings   |   |
|--|---|
| Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale: |   |
| <b>High Risk (H)</b>   | There is a probability of greater than <b>75%</b> that assumptions may fail to hold or materialize, and/or the project may face high risks.                   |
| <b>Substantial Risk (S)</b>  | There is a probability of between <b>51%</b> and <b>75%</b> that assumptions may fail to hold or materialize, and/or the project may face substantial risks.  |
| <b>Moderate Risk (M)</b>   | There is a probability of between <b>26%</b> and <b>50%</b> that assumptions may fail to hold or materialize, and/or the project may face only moderate risk. |

**Low Risk (L)**

There is a probability of up to **25%** that assumptions may fail to hold or materialize, and/or the project may face only low risks.