



Project Implementation Report

(1 July 2022 – 30 June 2023)

Project Title:	Strategic Platform to promote sustainable energy technology innovation, industrial development and entrepreneurship in Barbados
GEF ID:	9648
UNIDO ID:	150123
GEF Replenishment Cycle:	GEF-6
Country(ies):	Barbados
Region:	CARICOM
GEF Focal Area:	Climate Change
Integrated Approach Pilot (IAP) Programs¹:	Not applicable
Stand-alone / Child Project:	Not applicable
Implementing Department/Division:	EAE/ENE/ESI
Co-Implementing Agency:	Not applicable
Executing Agency(ies):	Ministry of Industry, Innovation, Science, and Technology (MIST) (previously Ministry of International Business & Industry) and Export Barbados (BIDC) (previously Barbados Investment and Development Corporation)
Project Type:	Medium-Sized Project (MSP)
Duration:	48 months
Extension(s):	2 extensions
GEF Project Financing:	US\$ 1,776,484
Agency Fee:	US\$ 168,766
Co-financing Amount:	US\$ 12,910,000
Date of CEO Endorsement/Approval:	04-10-2018
UNIDO Approval Date:	04-25-2018
Actual Implementation Start:	06-05-2018
Cumulative disbursement as of 30 June 2023:	US\$ 1,684,416.77
Mid-term Review (MTR) Date:	01-08-2022

¹ Only for GEF-6 projects, if applicable

Original Project Completion Date:	06-05-2022
Project Completion Date as reported in FY22:	06-05-2023 (project extended to 30-06-2024)
Current SAP Completion Date:	06-30-2024
Expected Project Completion Date:	06-30-2024
Expected Terminal Evaluation (TE) Date:	Q1-2024
Expected Financial Closure Date:	01-12-2024
UNIDO Project Manager²:	Martin LUGMAYR

I. Brief description of project and status overview

Project Objective
<p>The Ministry of Industry, Innovation, Science, and Technology (MIST), the United Nations Industrial Development Organization (UNIDO) and Export Barbados (BIDC) are jointly implementing the Global Environment Facility (GEF) funded project “Strategic platform to promote sustainable energy technology innovation, industrial development and entrepreneurship in Barbados”. The project contributes to the implementation of the National Strategic Plan 2005-2025, which aims at making Barbados a “green circular economy” and the “most environmentally advanced green country in Latin America and the Caribbean”.</p> <p>The realisation of this vision depends on a rapid transformation of the energy system from fossil fuels to renewable energy and energy efficiency, as well as the shift towards cleaner production, resource efficiency and circularity. The uptake of a “cleantech market” in Barbados requires an equilibrium between demand for and quality supply of green and sustainable energy products and services. Most of the current public and international support is focused on creating demand through enabling policies, incentives, and concessional finance. However, there is only limited support for the creation of an enabling environment for green businesses and entrepreneurs. Therefore, the GEF Project focuses particularly on the strengthening the supplier-side and the development of respective value chains and business models.</p> <p>In business-as-usual scenarios, Barbadian cleantech businesses and start-ups will continue to face barriers related to policy and regulatory frameworks, knowledge, capacity, access to R&D, quality infrastructure and finance. Moreover, there exists only very limited coordination and cooperation within the sector. Therefore, the GEF project will strengthen private sector capacities in sustainable energy technology areas with high GHG emission, market, and value creation potential. It will contribute to make the clean-tech industry an important value-creating pillar of the industrialisation and modernisation aspirations of the Government. Particularly, the project will:</p> <ul style="list-style-type: none"> • establish a public-private platform for regular policy dialogue to promote coherent demand and supplier oriented cross-sectoral policies, regulations and incentives; • establish the BLOOM Clean Tech Cluster, a physical sustainable energy and climate hub, which provides businesses with communication and networking space, start-up support (e.g. co-working and maker space, incubation services, common marketing/branding), as well as capacity building; • strengthen the cluster members by establishing a funding window which provides grants and concessional loans for the commercialization innovative business ideas and industrial up-grading; • promote networking and joint ventures between the cluster members and entrepreneurs, investors, venture capitalists, financiers in the Caribbean, other SIDS, internationally (incl. the diaspora); • contribute to the creation of qualification and certification frameworks for personal, equipment and services and provide targeted training to current and future members of the cluster; • replicate the BLOOM cluster model in other countries. <p>In this regard, the core indicators of the project are as follows:</p>

² Person responsible for report content

Project part	Expected at Endorsement
Outcome 1.1	5% annual demand increase for SEC services and technologies in key economic sectors (e.g. generation and distribution of power and energy services, construction, fisheries and agro-processing, tourism, transport, waste management, as well as water/desalination)
Outcome 1.1	Satisfaction of the SECs industry with the adapted policy, regulatory and incentive framework after 5 years
Outcome 2.1	5% increase of annual investments in sustainable energy and climate technology businesses by project end
Outcome 3.1	Reported accelerated implementation of SE support programs through improved private sector capacities after five (5) years/
Outcome 3.1	Annual 3% increase in the use of domestic contractors, services and content throughout the value chain of SE investments /
Outcome 3.1	At least 3 SE patents submitted after five (5) years

Baseline

Despite promising and pioneering developments, the sustainable energy and climate technology industry in Barbados has still not reached the required economies of scale and is facing various barriers for further uptake. Barbados has a small sustainable energy manufacturing and servicing industry, which comprises mainly SMEs in the areas of solar-thermal (SWH), PV, LED lighting and electric vehicles. The undertaken Sustainable Energy Industry Market Assessment estimates the current employment in the sustainable energy industry at about 200 full time equivalents (FTE).

Most of the domestic industrial activities are limited to services (e.g. installation, design) and only a few assembling/manufacturing businesses are ongoing. In some traditional sectors, the industry seems to have lost its initial innovation capacity (e.g. solar thermal). There is a lack of capacities in some promising growth areas (e.g. energy efficient and climate (hurricane) resilient buildings and appliances, solar-thermal cooling). The small market, high cost of labour and shipping costs (40% higher than in Trinidad and Tobago) remain a limiting factor.

In the Business as Usual (BAU) scenario, the uptake of sustainable energy and climate technology markets in Barbados will continue to be hindered by the weak innovation and productive capacity of the local sustainable energy industry. Under this scenario, the attainment of the set sustainable energy, climate and green economy objectives would remain very uncertain. This would jeopardize the vision of the Government to transform into a green circular economy. The local value and job creation effects along the value chain of sustainable energy investments would remain limited. Equipment and services would continue to be imported.

In the best scenario, national energy policy 2030 will open significant market opportunities for the local supplier and project developers. Barbados wants to be the first carbon-free small island economy by 2030 and it has a plan to increase 600 MW renewable energy capacity by 2030. New energy policy will open many business opportunities for Solar PV, bioenergy and wind energy project developers and IPPs.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY23. Please also provide a short justification for the selected ratings for FY23.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management³, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e. FY22, in the last column.

Overall Ratings⁴	FY23	FY22
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Highly Satisfactory (HS)</i>
<p>The Barbados Clean Tech Tracking Framework and Industry Report, published by the BDC and UNIDO in 2022, indicates that the environmental, social and economic benefits of the GEF projects will be attained. The mid-term review draws similar conclusions. The GEF project succeeded in piloting the transfer of the clean tech clustering concept from industrialized/emerging countries to a small island developing state (SIDS). However, it is still difficult to estimate the project's impact on climate change mitigation and reduction of GHG emissions at this stage. The GHG emission impact potential will be finally estimated during the terminal evaluation. It shall be noted that a number of developed innovations will have also positive environmental impacts beyond the climate change mitigation classification (e.g. reduction of local pollution and protection of ocean health). In line with the findings of the independent MTR, the overall rating was reduced from Highly Satisfactory (HS) to Satisfactory (S). Previous ratings were based on self-assessments.</p>		
Implementation Progress (IP) Rating	<i>Satisfactory (S)</i>	<i>Highly Satisfactory (HS)</i>
<p>In line with the results of the undertaken independent mid-term review (MTR) the rating was adjusted from highly satisfactory (HS) to satisfactory (S). Generally, the MTR confirmed good overall project progress despite of the difficulties caused by the COVID-19 downturn, the IMF Barbados Economic Recovery and Transformation (BERT) plan and increasing import costs due to recent oil price escalations. Also in 2022/23, the project achieved major milestone across all outcomes and outputs.</p> <p>The created BLOOM Clean Tech Cluster receives increasing interest by private sector and international partners, and is an important element of the Government strategy to promote private sector development and economic diversification towards emerging sectors, including climate technologies. Moreover, since 2022/23, BDC (Export Barbados) has taken full leadership in the management of the cluster. BLOOM is fully integrated in the new Export Barbados (EB) strategic plan targeting emerging sectors of the green and blue economy. The plan indicates that BLOOM will be part of and benefit from the multi-million investments in upgrading, greening and expanding the industrial estates, and life-science and biotechnology industrial parks.</p> <p>However, on the other hand, the COVID-19 health and economic crisis and the BERT saving program, definitely impacted negatively on the overall project progress, particularly the component on capacity building, as well as the ability of Government to provide co-funding and the private and financial sector to invest in clean technology business. The Government could not provide the financial and human resources as initially committed. The continued fiscal constraints of the Government to provide public financing still impacts the economic recovery of the country and particularly emerging technology sectors. In this context, the MTR confirmed that the GEF project has been very "forward-looking" and is an important element of the green COVID-19 recovery of the country. The low-carbon pathway of Barbados was reconfirmed by the recent oil price escalations in the context of the conflict between Russia and Ukraine.</p>		
Overall Risk Rating	<i>Moderate Risk (M)</i>	<i>Moderate Risk (M)</i>

³ Adaptive management in the context of an intentional approach to decision-making and adjustments in response to new available information, evidence gathered from monitoring, evaluation or research, and experience acquired from implementation, to ensure that the goals of the activity are being reached efficiently

⁴ 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

<p>There are no changes in risk rating. The moderate risk was also reconfirmed by the mid-term review (MTR). The MTR made some practical recommendations to ensure the long-term sustainability of the project results and particularly the BLOOM Clen Tech Cluster. Recently, UNIDO has handed over the management to the local BIDC team. The hand-over plan includes important elements to ensure the long-term sustainability of the cluster by introducing a sustainability fund, business model, as well as new income streams. The plan addressed the raised issues by the MTR. Further information is available in this report and the MTR report.</p>		

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
Component 1 – Policy and Regulatory Framework				
<p>Outcome 1.1</p> <p>Enhanced market opportunities for SEC businesses through a coherent policy, regulatory and incentive framework and improved public-private coordination</p>	<p>% annual demand increase for SEC services and technologies in key economic sectors (e.g. generation and distribution of power and energy services, construction, fisheries and agro-processing, tourism, transport, waste management, as well as water/desalination)</p> <p>Satisfaction of the SECs industry with the adapted policy, regulatory and incentive framework after 5 years</p>	<p>Stagnating demand for SECs due to policy and regulatory issues (e.g. solar-thermal, LED lighting, EE in buildings and appliances)</p> <p>Low satisfaction of the private sector with the current policy, regulatory and incentive framework</p>	<p>10% annual demand increase for SEC services and technologies in key economic sectors (e.g. generation and distribution of power and energy services, construction, fisheries and agro-processing, tourism, transport, waste management, as well as water/desalination) over 5 years.</p> <p>Satisfaction of the SECs industry with the adapted policy, regulatory and incentive framework after 5 years</p>	<p>According to the undertaken MTR and the Barbados Clean Tech Industry Report and Tracking Framework, published end of 2022, the indicators will be achieved. The market for cleantech products and services is growing and there is an increasing number of cleantech service and product suppliers. The industry report revealed that in comparison with other countries in Central America and Europe, Barbados can be categorized as early-mover with favourable conditions for growth and development of a sustainable cleantech ecosystem given its structured strategies and policy-oriented efforts. According to the innovation outcome indicators, Barbados reaches a similar score such as Costa Rica, particularly regarding the cleantech density ratio, investment ratio and jobs.</p> <div style="text-align: center;"> <p><i>Positioning Analysis</i></p> <p>The chart is a 2x2 matrix with 'PUBLIC POLICY' on the vertical axis (0 to 5) and 'INNOVATION OUTCOME' on the horizontal axis (0 to 5). A dashed horizontal line is at approximately 2.5 on the y-axis, and a dashed vertical line is at approximately 2.5 on the x-axis. The quadrants are labeled: 'EARLY-MOVER' (top-left), 'ADVANCED' (top-right), 'LEGACY' (bottom-left), and 'MATURITY' (bottom-right). Data points include: EU27 (top-left), Costa Rica (top-left), Barbados (top-left), Dominican Republic (bottom-left), Israel (top-right), and United States (top-right).</p> </div>

				<p>The company base of the BLOOM Cluster has further expanded in 2022/23 and covers a broad range of sectors and solutions (e.g. renewable energy, digital auxiliary services, circular economy). The creation of the BLOOM cluster and its provided services regarding coordination, shared resources, networking, advocacy, intelligence, as well as incubation and acceleration had definitely a positive enabling effect. To upscale the impact, some of the developed documents and recommendations require further implementation during final project period. This includes, particularly:</p> <ul style="list-style-type: none"> • the full operationalisation of the developed concept of the Cleantech Industry Platform and the continuation of the policy dialogues; • the implementation of the thirty (30) proposals of the Barbados Clean Tech Policy Readiness Assessment to incentivise the participation of local industry within the sector; • the implementation of the ten (10) identified cleantech quality standards of the Barbados Clean Tech Quality Infrastructure (QI) Assessment;⁵ • the official adoption of the selected national vision statement and label for Barbados Cleantech “Greening Paradise together”; • a programmatic response to the expressed stakeholder priorities of the cleantech survey regarding agriculture and food, mobility and transport, water and the blue economy, as well as finance, education and knowledge and legislation; • the anchoring of the online capacity building program on sustainable energy solutions for islands in the curricular of UWI;
<p>Output 1.1.1</p> <p>A dialogue platform to promote sustainable energy and climate innovation, entrepreneurship and industrial development is fully operational</p>	<p>Public-private dialogue platform is operational</p> <p>Number of private and public platform members (at least % female)</p> <p>Number of meetings and consultations to discuss policy and legal key issues</p>	<p>The strengthening of public-private dialogue, the creation of an enabling policy and regulatory framework and the enhancement of quality infrastructure for clean-tech</p>	<p>Platform is operational. At least 50 platform members (it is envisaged that 40% are represented by women).²⁰ meetings and consultations to discuss policy and legal key issues organized</p>	<p>In 2022/23, the BLOOM cluster has continued to act as secretariat for the platform. Following the three organised high-level cleantech dialogues (see also output 1.1.3), the cluster has facilitated further meetings, events and dialogues within its incubation and acceleration programs. In line with the Five-Point or “Pentagon Model”, the team facilitates regular meeting involving the key stakeholders of the eco-system (1) Entrepreneurs (2) Capital (3) Corporates (4) Government (5) Academia. The cluster has a well-established cooperation with the members of the Barbados Chamber of Commerce and Industry (BCCI).</p> <p>More than 88 stakeholders are working with the Bloom Cluster and platform. The mid-term review revealed room for improvement by working more closely with academia and bigger corporates. BLOOM has established important links to international clusters, accelerators and financing partners. Moreover, BLOOM</p>

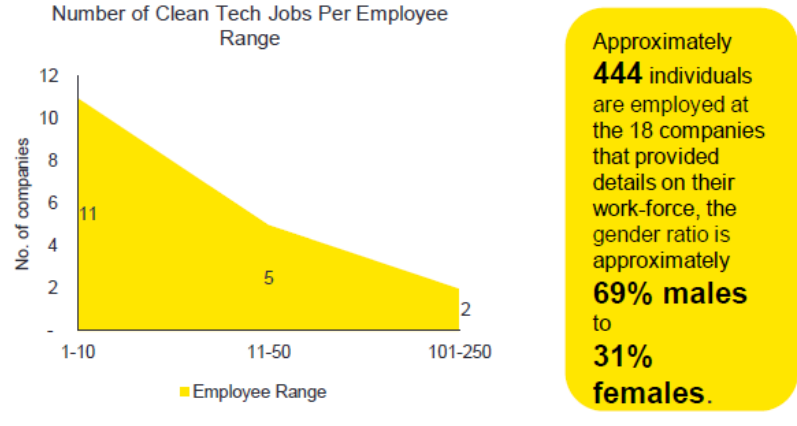
⁵ https://www.gn-sec.net/sites/default/files/bp/attach/cleantech_qi_framework_final.pdf

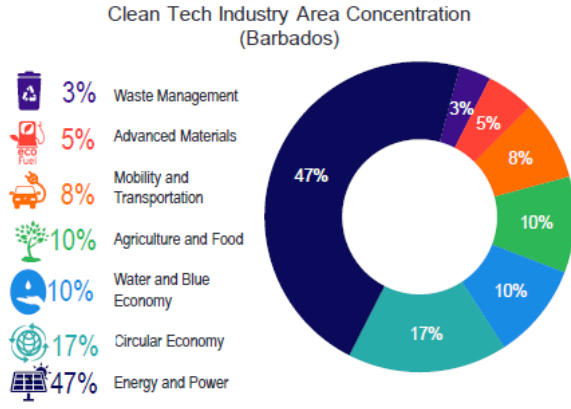
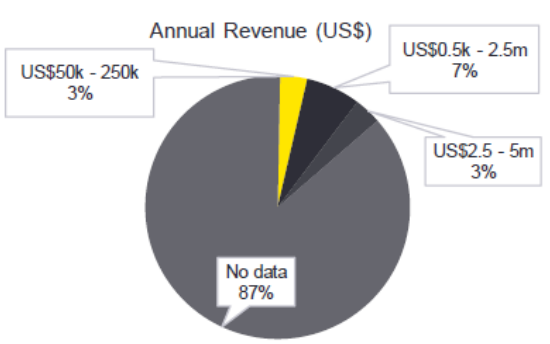
		products and services were identified as major barriers for the further uptake of market demand and the expansion of local clean-tech manufacturing and servicing. There is a weak coordination and communication on SE industry issues: between Ministries, between businesses, and between public and private sector.		continued to coordinate and cooperate with the cross-sectoral coordination mechanism of the Partnership for Action on Green Economy (PAGE).
<p>Output 1.1.2</p> <p>A vision statement and strategy to promote the country as a hub for SEC technologies and services is developed and promoted abroad through various means</p>	<p>Vision statement and strategy for the “B-Greentech“ hub as part of the National Plan vision</p> <p>Off- and online promotion material disseminated in various sectors (e.g. tourism)</p> <p>Number of road maps</p>	<p>The Government of Barbados launched the National Energy Policy 2017. The policy was designed to determine the general direction for the sector in broad terms, dealing with both renewable and</p>	<p>Vision statement and strategy developed (a gender dimension will be included). At least 80% of the foreseen activities in the strategy were implemented during the project duration. Promotion material disseminated in at least 5 different sectors (a gender</p>	<p>As part of the Business Plan of the cluster, the BLOOM label and vision statement was developed. In 2022/23, the cluster launched a consultative process to develop the national vision statement and label. On 15 February 2023 a national workshop to validate the options was organised by BLOOM and UNIDO. It saw the participation of 28 participants from different organizations, including the Ministry of Environment, Samuel Jackman Prescod Institute of Technology, IDB/Compete Caribbean, NPC, Rubis Caribbean, Emera Caribbean Renewables Ltd., BNOCL, Armstrong Industries Ltd., BIDC, UNIDO, Rum & Sargassum, BLOOM Team. In a joint effort the national vision statement “Green paradise together” and label was selected. BIDC announced to make BLOOM as an important part of the new national export strategy. Due to COVID-crisis, the Government puts major emphasis on the diversification of the economy. Cleantech was identified as an important area of growth.</p>

		<p>fossil fuel-based energy. That document has as one of its core values, the development of entrepreneurship in renewable energy in Barbados. However, there has been a barrier related to the lack of coordination between government and other sectors to contribute to national development, and Barbados is not promoted systematically as hub.</p>	<p>dimension will be included)</p>	
<p>Output 1.1.3 Annual high-level policy dialogues on sustainable energy and climate industry issues are organized</p>	<p>Number of high-level policy dialogues organized Number of CEOs and senior officials participated in the dialogues (at least % female)</p>	<p>No high-level policy dialogues on SE industry and entrepreneurship</p>	<p>At least three (3) high-level policy dialogues are organized. At least 200 national, regional and international senior officials of the public and private sector (businesses, banks, investors) participate in the dialogues (participation of 40% women</p>	<p>Following the design of the Cleantech Platform (see output 1.1.1), three policy dialogues were facilitated in previous reporting periods by BLOOM, focusing on: <i>Circular Economy, Emerging Technologies, and Enabling Technologies</i>. Due to COVID-19 restrictions, the dialogues were organised by online means. Further information is available in the previous PIRs. Attendees included over 60 participants (around 40% female) from academia, Government ministries and agencies, regulatory and standards institutions, funders, renewable energy companies, ICT companies, professional and business associations.</p> <p>In 2022/23, BLOOM organised further dialogues, award ceremonies and events as part of its incubation and acceleration programs. The participation in these activities exceeds 200 experts (around 40% women participation). Further activities are planned end of 2023.</p>

			participation is envisaged)	
<p>Output 1.1.4</p> <p>Demand creating and supplier-oriented proposals to improve the coherence and effectiveness of policies and legislation are formulated and under implementation</p>	<p>Number of proposals developed and discussed in policy and legislative processes</p> <p>Number of demand-creating and supplier-oriented policies, laws or standards on SEC technologies approved and under implementation</p> <p>Number of inputs to mainstream SEC technologies into cross-cutting policies in key economic sectors (e.g. generation and distribution of power and energy services, construction, fisheries and agro-processing, tourism, e-transport, EE of the buildings waste management, as well as water/desalination)</p> <p>Number of stakeholders involved in policy development</p>	<p>Three main issues were identified as significant hurdles to private-sector development: (i) public sector productivity, (ii) R&D activity by the private sector and (iii) finance for start-ups. Other drawbacks include tax rates and labour market rigidity. Contradictions between existing policies and fiscal disincentives and tax regimes that increase the cost of doing business could lead to more people leaving the market and a lack of interest of others taking the risk and entering.</p>	<p>At least 30 proposals developed and discussed in policy and legislative processes. At least 10 of demand-creating and supplier-oriented policies, laws or standards on SEC technologies are approved and their implementation facilitated. At least ten (10) inputs to mainstream SEC technologies into cross-cutting policies in key economic sectors (e.g. generation and distribution of power and energy services, construction, fisheries and agro-processing, tourism, transport, waste management, as well as water/desalination).</p>	<p>Progress in previous reporting periods: The Barbados Clean Tech Industry Report and Tracking Framework⁶ was published by BIDC and UNIDO in 2022. The report revealed that in comparison with other countries in Central America and Europe, Barbados was categorized as “early-mover” with favourable conditions for growth and development of a sustainable cleantech ecosystem given its structured strategies and policy-oriented efforts. According to the innovation outcome indicators, Barbados reaches a similar score such as Costa Rica, particularly regarding the cleantech density ratio, investment ratio and jobs.</p> <p>However, according to developed Barbados Clean Tech Policy Readiness Assessment by UNIDO and BIDC, the sector requires an additional strengthening of policies, regulations and incentives. This report highlights that “Barbados lacks a robust policy environment for the cleantech industry. The progress made so far has been largely led by the private sector with delayed support by the public sector. Since the private sector does not make policy, the development of parts of the Cleantech industry has been ad-hoc even though with some success”.</p> <p>The Assessment includes thirty (30) proposals to improve the effectiveness and coherence of the current policy and regulatory framework for circular economy and clean energy technologies in key sector such as tourism, manufacturing, construction, retail, agriculture and transport. Further information on the 30 proposals is included in the previous PIR. To facilitate the implementation capacity and to improve the dialogue between public and private sector, the concept for a cleantech industry platform was developed and three (3) policy dialogues were organised (see output 1.1.1 and 1.1.3).</p> <p>Progress in FY23: The cluster team made efforts to implement and advocate for some of the policy proposals in partnership with BLOOM companies and associations. This work will be intensified in 2023 and should result into the formulation of some concrete legislative proposals to be considered by the Barbadian policy makers.</p>

⁶ https://www.gn-sec.net/sites/default/files/bp/attach/clean_tech_industry_report_29nov2022_final.pdf

Component 2 – Investment and Business Promotion												
<p>Outcome 2.1</p> <p>Increased investments into the domestic sustainable energy servicing and manufacturing industry in technology areas with high GHG emission and value creation potential</p>	<p>% increase of annual investments in sustainable energy and climate technology businesses by project end (baseline 2017)</p>	<p>Low investments in the domestic manufacturing and servicing industry</p>	<p>20% increase of annual investments in sustainable energy and climate technology businesses (baseline 2017)</p>	<p>The GEF project MTR and the Barbados Clean Tech Tracking Framework and Industry Report, published by the BIDC and UNIDO in 2022, indicate that the environmental, social and economic benefits of the GEF projects will be attained. Also in 2022/23, the BLOOM Cluster contributed positively to the socio-economic development of the country. According to the collected data in the cleantech industry report, from 18 cleantech companies (out of 60 existing ones), around 444 individuals are employed in the sector. Approximately 31% of the employed are female. The total number of jobs can be estimated as significantly higher (around 3 times higher). Due to the creation of new companies during the GEF project duration, an increase of jobs can be assumed. In the initial baseline assessment in 2018 the number of jobs in the sustainable energy sector was estimated with 200 full-time equivalents. Further positive impacts are expected for 2024.</p> <div data-bbox="1150 678 1942 1101">  <table border="1"> <caption>Number of Clean Tech Jobs Per Employee Range</caption> <thead> <tr> <th>Employee Range</th> <th>No. of companies</th> </tr> </thead> <tbody> <tr> <td>1-10</td> <td>11</td> </tr> <tr> <td>11-50</td> <td>5</td> </tr> <tr> <td>101-250</td> <td>2</td> </tr> </tbody> </table> </div> <p>According to the industry report, around USD 13,8 million is the average annual turnover of the 13% of the cleantech firms which provided responses to the survey questions. The total figure of the 60 existing companies in Barbados can be estimated as much higher (at least 3 times). Around 47% of the clean-tech companies' origin from the energy and power sector, 17% from circular economy, 10% from agriculture and food, 10% from water and blue economy.</p>	Employee Range	No. of companies	1-10	11	11-50	5	101-250	2
Employee Range	No. of companies											
1-10	11											
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				<p style="text-align: center;">Clean Tech Industry Area Concentration (Barbados)</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Area</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Waste Management</td> <td>3%</td> </tr> <tr> <td>Advanced Materials</td> <td>5%</td> </tr> <tr> <td>Mobility and Transportation</td> <td>8%</td> </tr> <tr> <td>Agriculture and Food</td> <td>10%</td> </tr> <tr> <td>Water and Blue Economy</td> <td>10%</td> </tr> <tr> <td>Circular Economy</td> <td>17%</td> </tr> <tr> <td>Energy and Power</td> <td>47%</td> </tr> </tbody> </table> <p style="background-color: yellow; padding: 5px; border-radius: 10px; margin-top: 10px;">Energy & Power is the largest concentration of companies in the Clean Tech sector. Together with Circular Economy, Water & Blue Economy and Agriculture & Food, they represent 83% of companies in the industry.</p> <p>Twenty (20) companies are currently supported by the BLOOM cluster (around 30% of all companies). The Business Plans of nine supported companies assume an accumulated turnover of USD 6,5 million within three (3) years. As far as data is available, the supported companies raised USD 1,3 million equity, grants and loans between 2021 and June 2023.</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Revenue Range (US\$)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>US\$50k - 250k</td> <td>3%</td> </tr> <tr> <td>US\$0.5k - 2.5m</td> <td>7%</td> </tr> <tr> <td>US\$2.5 - 5m</td> <td>3%</td> </tr> <tr> <td>No data</td> <td>87%</td> </tr> </tbody> </table> <p style="background-color: yellow; padding: 5px; border-radius: 10px; margin-top: 10px;">US\$13.8m is the average annual turnover of the 13% of the clean tech firms which provided responses to the survey question on their annual turnover. One-half of the firms earn annual revenues between US\$0.5m - \$2.5.</p>	Area	Percentage	Waste Management	3%	Advanced Materials	5%	Mobility and Transportation	8%	Agriculture and Food	10%	Water and Blue Economy	10%	Circular Economy	17%	Energy and Power	47%	Revenue Range (US\$)	Percentage	US\$50k - 250k	3%	US\$0.5k - 2.5m	7%	US\$2.5 - 5m	3%	No data	87%
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No data	87%																													
Output 2.1.1	One technology cluster is operational	The industry of sustainable	At least 1 technology cluster	Also in 2022/23, the BLOOM Clean Tech Cluster expanded its membership base of cleantech companies and start-ups. It continues to be the first one of its kind in the																										

<p>A sustainable energy and climate technology cluster hub is created and provides effective services to its expanding member base</p>	<p>Number of working groups established after 5 years</p> <p>Study tours to Latin America, Europe, Israel related to RE and Climate Technology Clusters and Innovation Agencies</p> <p>Number of paying cluster members after 5 years</p> <p>Number of prototypes and business ideas developed and tested after 5 years</p> <p>USD of funding for the activities of the cluster raised by the cluster management after 5 years</p> <p>USD of raised investment for business ideas developed in the scope of the cluster (committed not contracted) after 5 years</p> <p>Biannual sustainable energy and climate technology survey and industry report</p> <p>% of satisfaction with the services of the cluster</p>	<p>energy technologies (e.g., PV, small scale wind, solar thermal, electric storage, electric vehicles/charging) are featured by (i) huge GHG emission reduction potential, (ii) established market with experienced players for mainstream technologies, (iii) experience in assembly or fitting of components, (iv) a good image of SET by the public, and (v) economic viability that is acceptable for early adopters. However, there are the following limitations: (i) lack of local experience and design/engineering capacity for large scale systems or not</p>	<p>is fully operational.</p> <p>At least 10 private sector working groups established after 5 years (at least 40% women participation is envisaged).</p> <p>Guided tours for at least 150 participants to the cluster and SEC (Sustainable Energy and Climate Technology) demonstration sites organized (tourists, delegations).</p> <p>At least 30 contributing private-sector cluster members after 5 years (at least 40% women participation is envisaged).</p> <p>At least 5 prototypes and business ideas developed and tested after 5 years.</p> <p>At least USD 4 million of funding for the activities of the cluster raised by the cluster management.</p>	<p>Caribbean Community (CARICOM). The BLOOM concept has triggered the development of a global UNIDO approach, which will be replicated in other lower- and middle-income countries through the BLOOM Regional Clean Tech Cluster Program under the Global Network of Regional Sustainable Energy Centres (GN-SEC). The program was officially launched during the 5th GN-SEC Steering Committee in September 2022 in Vienna. BLOOM was showcased as an example in the 2022/23 editions of the industry magazine Business Barbados.</p> <p>The GEF MTR confirmed the relevance of the cluster, identified areas of improvement and made recommendations for the long-term sustainability of its operations. It confirmed the effectiveness of the applied UNIDO “twinning and peer-to-peer learning approach”, which included the provision of an international cluster manager and the gradual transfer of responsibilities to the local cluster team.</p> <p>To address the sustainability issues, UNIDO developed a detailed handover plan, which includes also the creation of a sustainability fund and targeted capacity building for the local cluster team. In line with the decisions of the 4th PSC meeting, held on 31st August 2022, the internationally recruited cluster manager gradually handed over the management to the local BIDC team. A joint handover workshop was organised from 1st to 2nd December 2022 in Barbados. Mr. Terrell Thompson was designated by BIDC as the BLOOM cluster manager. The international cluster manager continued to provide backstopping to the local team by end of May 2023. Currently, the BLOOM team comprises one cluster manager, two project officers, one project accountant and one administrative assistant. UNIDO and BIDC signed another execution agreement for the final phase of the GEF project.</p> <p>Moreover, in 2023, UNIDO and BIDC established a funding mechanism, which ensures continued operations of the cluster at least for another year. Moreover, BIDC has started various projects to generate income for the cluster to ensure its long-term sustainability. It is currently investing in a number of renewable energy projects in its real estate portfolio, which are managed by the BLOOM cluster and generate income through electricity sales. Biodigester demonstration plants are currently under installation (investment of around USD 1 million).</p> <p>The BLOOM cluster operates according to latest standards of cluster management and has adopted the Five-Point or “Pentagon Model”. The established BLOOM makerspace connects the following key stakeholders of the eco-system (1) Entrepreneurs (2) Capital (3) Corporates (4) Government (5) Academia. More than 88 stakeholders are working with the Bloom Cluster. The mid-term review revealed room for improvement by working more closely with academia and bigger corporates.</p>
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<p>services by its members after 5 years (survey)</p>	<p>so common but otherwise well-developed technologies, (ii) key parts/components are imported, and (iii) economic viability is not acceptable for mass market. Contrary to that, opportunities come up to make the Barbados industry a role model for many others in the region and to foster a strong market potential in hotel and in specific niche markets, with low competition from external suppliers.</p>	<p>At least 10 million USD of raised investment for business ideas developed in the scope of the cluster (committed not contracted) after 5 years.</p> <p>Biannual sustainable energy and climate technology survey and industry report prepared and distributed. At least 70% of satisfaction with the services of the cluster services by its members after 5 years (survey)</p>	<p>In line with its established business plan, the cluster provides office space, intelligence, funding for prototyping and various incubation and acceleration programs either home-made or in cooperation with other partners. The BLOOM incubator continues to implement call for proposals. End of June 2023, BLOOM has had 20 company members, which worked partly from the office space at in the Newton Incubation Facility. Most of the businesses are start-ups but some of them are also established companies, which brought their own equity.</p> <p>With support of the BLOOM incubation program, nine (9) incubatees have finalised their business plans with and overall turnover estimation of USD 6,5 million over the first three years of operation. Start-ups are reinforcing their business models and the Bloom Cluster is utilizing the Live Plan Pro platform for more efficient exchange with incubatees. Moreover, to support prototype development and testing, BLOOM supported ten (10) incubatees with USD 10.000 grant financing.</p> <p>BLOOM companies represent a wide range of cleantech solutions, including solar PV, energy storage, blue economy, green chemistry, biotechnology and recycling. Examples for the supported companies are:</p> <ul style="list-style-type: none"> ▪ BIMEV Services ▪ Caribbean E waste Management ▪ CEMBI ▪ Ecomyco ▪ Goodridge Power ▪ Healing Grove ▪ Iron Charging Solutions ▪ Kayamo Cloth Pads ▪ On solar ▪ Prosolar246 Inc ▪ Red Diamond ▪ Rum & Sargassum ▪ SJPI ▪ The Green Collective <p>A number of companies were accepted for acceleration programs co-managed by BLOOM, including the LIF 2022 Acceleration Program in partnership with RaEng (UK) and the IDB Caribbean Circular Economy Accelerator. Supported BLOOM companies have already mobilized around USD 1,3 million private or public investment (e.g. Red Diamond, Rum & Sargassum, Goodridge Power, CEMBI) between 2021 and 2023. Other applications are pre-selected for potential support through SAGANA Capital, the UNIDO hosted Private Finance Advisory Network (PFAN) and other financiers.</p>
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<p>Output 2.1.2</p> <p>A dedicated financing facility provides grants and concessional loans for the commercialisation of business ideas and innovations developed in the scope of the cluster</p>	<p>Number of calls for proposals of the facility on technology priority areas implemented</p> <p>Number of specific calls for women entrepreneurs undertaken</p> <p>Amount of USD of facility funding contracted and implemented (in USD) after five (5) years</p> <p>Number of businesses supported through grants and/or concessional loans after five (5) years</p> <p>Number of joint projects established by the cluster</p>	<p>Lack of funding for start-ups and SEC ideas and technologies. Low incentives / tax system not in support of activating the low income household or hotel & tourism industry. Market regulations too weak (regulations not certain enough to reduce risks for investors, regulations not strong enough to impose a demand). Changes in fiscal and</p>	<p>At least 3 calls for proposals of the facility on technology priority areas implemented.</p> <p>At least 1 specific call for women entrepreneurs undertaken. USD 2 million of facility funding contracted and implemented (in USD) after five (5) years.</p> <p>At least 30 businesses supported through grants and/or concessional loans after five (5) years</p>	<p>The creation of a dedicated funding window to support cleantech companies and start-ups is of the highest importance for the impact and sustainability of the BLOOM cluster. However, due to the COVID-19 impact and the absence of corporate financing windows for Barbados, the so far achieved results are mixed.</p> <p>In this context, the dialogues with the European Commission and IDB were continued. UNIDO continued to have discussions with various donors on support for the BLOOM. MIST has directed an official request to the Ministry of Energy and Water Resources (MoEWR) to earmark part of the IDB Smart Energy Funding Phase II to this facility. The total budget of the smart energy fund 2 SME component is US\$ 15 million. It includes also a window for SMEs and energy innovations. Recently, the fund has become operational. A direct link to the BLOOM cluster still needs to be discussed further.</p> <p>BLOOM has supported its twenty (20) companies and incubatees in raising funds for their developed business plans. The so far completed business plans assume an accumulated turnover of USD 6,5 million within three (3) years. The BLOOM team supported cluster members in preparing funding proposals and requests and provide match-making support with investors, acceleration and funding programs. As far as data is available, the supported companies raised USD 1,3 million equity, grants and loans between 2021 and June 2023.</p> <p>For example, two (2) proposals amounting to \$ 375 000 USD per each were submitted to the IDB funded Compete Caribbean program in Jan 2020 and Jan 2021, respectively. 1 PFAN proposal submitted in Feb 2021 amounting to \$ 600 000 USD</p>

	<p>Project financing generated by the cluster team</p> <p>Committed amount of USD by grant financing (it is usually for early start-ups)</p> <p>Committed amount of USD by private equity (company owns shares)</p> <p>Committed amount of USD by loan financing (from commercial banks)</p> <p>Amount of capital raised by the startups</p> <p>In-kind co-financing raised</p> <p>Public co-financing raised by the cluster</p>	<p>financial regulations can bring market easily to a stand still.</p> <p>However, there is the Barbados Income Tax Act (2013 BITA) that allows deductions of the costs of training in renewable energy and energy efficient systems for individual tax payers and for minors and young adult students who are under 25 years old and unemployed. There are also deductions for some training available in RE/EE systems that is approved by the Barbados Accreditation Council, and an income tax holiday of ten years for developers, manufacturers and installers of</p>		<p>and 4 women led startups were involved. Additionally, the committed amount of grant financing for cluster members is 266,000 USD (GEF SGP grant program, UNDP Blue lab accelerator, UNIDO-GEF financing). Some of these proposals are still under consideration.</p> <p>As result, the Goodridge Power's (Bloom pre-incubatee) RE generation programme was selected into the PFAN project pipeline. The company is eligible to receive expert coaching support from the PFAN's coaches. http://pfan.net. The company <i>Rum and Sargassum</i> was able to mobilise \$200 000 from the Blue Chip Foundation, New York City, another \$200 000 from Venture for Climate Tech, as well as \$600 000 from the European Union.</p> <p>Also in 2022/23, the implementation of the incubation and prototyping awards continued.</p> <p>Already in 2021, BLOOM organised an award ceremony to release certification for recipient start-ups of small grants (5 companies were awarded with \$ 20 000 BDS award per each) to develop business plans including prototyping, IP, marketing and sales, validation, etc. This activity was coordinated with BIDC, and the awarded start-ups were: BIMEV, EcoMycö, ProSolar 246, OnSolar and SJPI Solar power e-fishing vessel project. Moreover, ten start-ups received prototype capital award letters (10 000 USD per startup), which are currently under implementation.</p> <p>A second Grant Award Ceremony for the 5 Bloom Incubatees took place on 11th January 2022 at 10-11 am in Bagnall's Point Gallery, Bridgetown. Incubator grants amounting to 10 000 USD were awarded for the following startups: Caribbean Environmental Management Bureau (CEMBI), GoodRidgePower, Green Collective 246, Healing Grove Container Farm, Red Diamond Compost Inc. Representatives of the press had been invited to the award ceremony. The grants are still under implementation.</p> <p>BLOOM facilitated the participation of Barbadian companies in four international calls for proposals between 2022 and 23: (LIF 2022 Accelerator by RaEng (UK); Call for SEED financing program by Diproinduca Inc (Canada); Ocean Innovation Challenge; and, CE Acceleration program 2022. Regarding the call for SEED financing jointly organized by the Bloom and Diproinduca: there is one shortlisted candidate. Moreover, some of the BLOOM startups applied for support from the newly created Project Preparation Facility (PPF) of the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), established by UNIDO and CARICOM. In 2023, BLOOM partnered with one incubate to submit an application to Geo-Act Caribbean. Geo-Act Caribbean is an EU co-funded project that aims to</p>
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		RE systems and EE products.		<p>enhance Research and Innovation (R&I) ecosystems to tackle geohazards and climate change impacts in the Caribbean Region.</p> <p>BIDC has started various projects to generate income for the cluster to ensure its long-term sustainability of the BLOOM cluster. It is currently investing in a number of renewable energy projects in its real estate portfolio, which are managed by the BLOOM cluster and generate income through electricity sales. Biodigester demonstration plants are currently under installation (investment of around USD 1 million). It is intended to upscale this income-generating activities. Funding could be used to support companies and start-ups.</p>
<p>Output 2.1.3</p> <p>A business match-maker provides market intelligence and interlinks cluster members with technology companies, investors and venture capitalist in the Caribbean, the diaspora and internationally</p>	<p>Number of business intelligence briefs on key SEC growth market areas in the Caribbean are available for cluster members</p> <p>Number of SEC match-making and/or investment forums organised in the Caribbean</p> <p>Number of Barbadian businesses participate in Caribbean and international match-making and/or investment forums (at least % female)</p> <p>Number of consolidated business partnerships between Barbadian and Caribbean or international companies in the scope of the cluster are created</p>	<p>The Barbados Investment and Development Corporation (BIDC) is a statutory body of the GoB with a focus on fostering the development of bold, innovative, dynamic and creative enterprises. BIDC's core services are: (i) Entrepreneurial Development; (ii) Export Development and Promotion; (iii) Research and Information Services, and (iv) Property Development and Leasing.</p>	<p>At least 5 business intelligence briefs on key SEC growth market areas in the Caribbean are available for cluster members.</p> <p>At least 3 SEC match-making and/or investment forums are organised in the Caribbean.</p> <p>At least 40 Barbadian businesses participate in match-making and/or investment forums (at least 40% female participation is envisaged).</p> <p>At least five (5) consolidated business</p>	<p>The BLOOM cluster produced at least more than five (5) cleantech assessments, reports and briefs, including the Barbados Clean Tech Industry Report and Tracking Framework. Several surveys to assess the priorities of the private sector were undertaken in the course of several assessments and reports.</p> <p>Discussions with various stakeholders on potential partnerships on the provision of tailored Caribbean market intelligence have been held. The recruited BLOOM team provides business matchmaking services to local companies on a daily basis. A number of start-ups were successfully supported in participating in accelerator programs and fund-raising activities. The project officers provide business intelligence services to the cluster members, including assistance in development of business models and business plans. The BLOOM team organised various knowledge events and policy dialogues with business matchmaking elements.</p> <p>Despite COVID-19 restrictions and lockdowns, UNIDO and BLOOM facilitated the participation of Barbadian cleantech companies in a number of matchmaking events and activities with investors, financiers and international cleantech companies. This was done by partnering with various international acceleration programs (see explanation under 2.1.1). Moreover, various study tours were organised, including to European cleantech clusters and demonstration projects (see explanation under 2.1.1). Moreover, there was a continued dialogues with the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), established by UNIDO and CARICOM in Barbados, to replicate the BLOOM model in other regions. It can be concluded, that at least 5 business matchmaking events were organised. At least 50 Barbadian companies participated in these events. A number of examples for such events were mentioned in the previous PIR.</p> <p>The BLOOM cluster signed more than 15 partnerships with various international key stakeholders. The following were under implementation within 2022/23:</p>

	<p>Number of stakeholders working with the cluster</p> <p>Number of cluster members (Public and private)</p> <p>Number of regional and international partnerships</p> <p>Number of local, regional and international agreements</p> <p>Number of stakeholders working in the cluster</p> <p>Number of private investors and banks working with the cluster</p> <p>Jobs generated by the startups/cluster members</p> <p>Number of regional and international conferences</p> <p>Number of conference participants</p>	<p>However, there is a lack of systematic investor and business match-making in the SEC sector. Additionally, only a very small number of Caribbean business to business partnerships in the SEC sector. Moreover, traditional financial institutions do not provide financing for start-ups or R&D investments unless collateral is made available in the form of assets such as land, houses or patents.</p>	<p>partnerships between Barbadian and Caribbean or international companies in the scope of the cluster are created</p>	<ul style="list-style-type: none"> - The cluster has signed a Memorandum of Understanding with the University of West Indies (UWI) and the Caribbean Climate Innovation Centre (CCIC). Both have a regional mandate and network within the Caribbean. - Regional and International partnerships established with University of West Indies (UWI), Climate KIC, the Caribbean Climate Innovation Centre CCIC, IASP (International Association of Science Parks) and TCI Network (the leading global network of people and organizations working in clusters and innovation ecosystems around the world), RaEng LIF 2022, Diproinduca and Sagana. The Bloom Cluster profile has been also validated by the European Cluster Collaboration Platform (https://clustercollaboration.eu) - Cluster member meetings with circular economy SMEs (B's recycling and Dicebed). Discussion about cooperation areas and types of cluster services Bloom can provide to foster their business. Meetings were jointly organized by the Bloom team and BIDC bioeconomy team. Discussion was held with Mr. Stephen Foster, Founder of Dicebed and Paul Bynoe, Founder of B's recycling. www.bsrecyclingbarbados.com - Discussions with Roddy Carr, Barbados Golf Club and introduction of BGC Solar PV project. Discussions about cooperation possibilities relating to Cluster and PFAN financing. Currently and as result there are assessments of lay-outs and master plan prepared by Emera Caribbean. - Since Sep 2021, a solid cooperation with Royal Academy Engineering has been established (partnership facilitated by Lisa Rose, Senior Manager at RAEng https://www.raeng.org.uk/). - Since October 2021, the Leaders in Innovation Fellowships (LIF) programme is under implementation in cooperation with BIDC, Bloom and BCCI. Three incubatees continue to be part of the LIF Global Barbados (https://www.raeng.org.uk/global/sustainable-development/leaders-innovation-fellowships/lifglobal): <ul style="list-style-type: none"> ✓ Andre Murrell, Iron Charging Solutions - an online platform that allows owners of electric vehicle charging infrastructure to share their chargers with electric vehicle drivers. ✓ Kerri-Ann Bovell, EcoMyco - EcoMyco manufactures biomaterials packaging for industrial manufacturing companies in an effort to eliminate plastic waste and fight the plastic crisis.
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				<ul style="list-style-type: none"> ✓ Cherith Pedersen, Kayamo pads - an environmentally friendly hygiene product for women more cost effective for their budgets than ordinary pads. - Also in 2022/23, BLOOM continued to promote LIF in cooperation with BCCI, BIDC, UWI, Ministry of science, innovation and new technology. Publication of call for applications of the LIF programme at Bloom, BIDC and BCCI websites. https://www.barbadoschamberofcommerce.com/call-for-applications-for-the-lif-global-programme/ - Ongoing discussions with the Canadian Government Business Initiative (Ms.Paula Greene) on the Beyond Ventures Group https://beyondventuresgroup.com/about/ to define cooperation in conducting business and trade with startups. - Ongoing discussions with Sherry-Ann Blackett, Senior Trade and Investment Officer /Country lead of Barbados & Eastern Caribbean, Department for International Trade, British High Commission Barbados & Eastern Caribbean. - The Bloom Cluster together with IDB was invited to participate at the Ocean Innovation Challenge 2022, organized by UNDP. Bloom offered knowledge transfer and advice on project development in line with the incubator programs. - Continued discussions with USAID contractor ACDI/VOCA on cooperation with USAID funded program related to Green and Blue island economies in the Eastern Caribbean. - Continued meetings with H2 Horizons Barbados to introduce business plan and financial needs of the Bloom Cluster incubatees in order to define cooperation. - Furthermore, for cooperation, there were held meeting with Adam Bregu,Startup Genome, Royal Academy of Engineering LIF, RaEng, Ino-Gro Inc, Atlantic Canada Opportunities Agency (ACOA) and Government of Newfoundland’s Department of Industry, Energy and Technology - There were initiated discussions with SAGANA (Patricia Garza, Investment Manager) and Circular Capital on the establishment of Circular Economy Accelerator and submissions of the startups for financial opportunities (since April 2022)
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				<ul style="list-style-type: none"> - The Bloom Cluster is advising the Austral University team (Buenos Aires on cluster development). AU is working on the UNEP Policy Assessment. Advisory support for the policy assessment and sharing of our experiences in cluster development. (Since August 2021) <p>In summary, it is worth highlighting that several private investors are working with the Bloom Cluster: Williams Caribbean Capital, Private business angels, Diproinduca Inc, SAGANA, Circulate Capital, and banking facilities: RBC and Republic Bank</p> <p>In a previous reporting period:</p> <ul style="list-style-type: none"> - Participation in the ISEC 2022 conference. Bloom Cluster members presented 2 papers on April 6 2022. Session 3. Renewable Energy and Circular Economy Applications towards a low-carbon industry, chaired by Mr. Martin LUGMAYR. Conference papers presented: (i) Pelagic Sargassum and food waste valorisation using hydrothermal pre-treatment and anaerobic co-digestion, Dr. Terrell Thompson, the University of Auckland, NZ; and, (ii) Bio-Resource Circularity Centres for Small Island Developing States, whose authors are Ms. Kerri- Ann Bovell, Ms. Deandra Crawford, Mr. Joshua Forte, Bloom Cluster. https://aee-intec-events.at/call-for-abstracts/topics-call-for-abstracts.html <p>Currently, BLOOM is discussing a participation in the ISEC 2024.</p>
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Component 3 – Capacity building and knowledge management

<p>Outcome 3.1</p> <p>Enhanced innovation and implementation capacities of sustainable energy businesses in technology areas with high GHG emission reduction and value creation potential</p>	<p>Reported accelerated implementation of SE support programs through improved private sector capacities after five (5) years</p> <p>Annual % increase in the use of domestic contractors, services and content throughout the value chain of SE investments</p>	<p>Slow progress of the two major SE promotion programs due to reported lack of private sector capacities</p> <p>Relatively high import dependence in some SE sectors</p> <p>Very low level</p>	<p>Reported accelerated implementation of SE support programs through improved private sector capacities after five (5) years.</p> <p>Annual 3% increase in the use of domestic contractors,</p>	<p>The GEF project MTR and the Barbados Clean Tech Tracking Framework and Industry Report, published by the BIDC and UNIDO in 2022, indicate that the environmental, social and economic benefits of the GEF projects will be attained. The BLOOM Cluster also positively contributes to the socio-economic co-benefits and indicators. The BLOOM cluster has supported around 30% of the existing cleantech companies and has provided to most of the newly created start-ups during GEF project duration. Therefore, the implementing capacity has definitely increased. Ten companies received prototyping grants, which are required for IP development and submissions.</p> <p>Twenty (20) companies are currently supported by the BLOOM cluster. The Business Plans of nine supported companies assume an accumulated turnover of USD 6,5 million within three (3) years. As far as data is available, the supported</p>
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	Number of SE patents submitted for registration after five (5) years	of SEC patents submitted	services and content throughout the value chain of SE investments. At least 3 SE patents submitted after five (5) years	companies raised USD 1,3 million equity, grants and loans between 2021 and June 2023. The BLOOM cluster supported ten start-ups with grants for prototype development. Currently, several of these companies working on patent registrations.
Output 3.1.1 Proposals for improved product, service and qualification standards and certifications are formulated (e.g. PV, solar-thermal buildings, appliances)	Number of proposals for improved product, service and qualification standards and certifications are formulated Number of qualification and certification standards in priority technology areas are adopted and their application is facilitated	Lack of standards and certifications for both products and persons participating in the sustainable energy industry (e.g. solar-thermal systems, PV installation). However, equipment labelling standards have been implemented and there are additional standards of related work that needs to be completed: (i) Design, installation, testing and commissioning	At least 10 proposals for improved product, service and qualification standards and certifications are formulated. At least 5 qualification and certification standards in priority technology areas are adopted and their application is facilitated.	The assignment "For provision of services related to consulting support for cleantech policy readiness and quality infrastructure assessments and policy dialogues in Barbados" was awarded to Atom Solutions. Under the assignment, the Barbados Clean Tech Quality Infrastructure (QI) Assessment ⁷ was developed. It provides an overview of the existing national quality infrastructure, actors and processes for products and services, including accreditation, certification, standards, testing, inspection, metrology, and quality management systems. Moreover, the assessment provides practical recommendations on how to improve the current framework and the potential role of BLOOM regarding standard development, assurance and enforcement. The assessment reveals that, Barbados ranks on place 138 of 184 countries in the Global Quality Infrastructure Index. There is significant room for improvement and the assessment proposes ten (10) cleantech quality standards for implementation. Also in 2023/2024, BLOOM made efforts to implement the proposals. In line with the recommendations of the MTR, these efforts will be enhanced in the final phase of the project.

⁷ https://www.gn-sec.net/sites/default/files/bp/attach/cleantech_qi_framework_final.pdf

		<p>of RE technology</p> <p>(ii) RE standards specific to artisans and engineers</p> <p>(iii) Imported RE and EE equipment. Equipment needs to be suitable for the local market</p> <p>(iv) Disposal of RE and EE equipment. E.g. compact fluorescent lights (CFL), batteries</p> <p>(v) Enforcement by regulatory agencies. E.g. Customs and Excise</p>		
<p>Output 3.1.2</p> <p>One (1) on-line training program on sustainable energy island solutions is developed and applied by educational institutions and experts in Barbados</p>	<p>Online-training program operational</p> <p>Number of institutions include the tool in the curricula</p> <p>Number of Barbadians have taken the online-training (at least % women participation is envisaged)</p>	<p>Currently only very few island-specific training tools are available in Barbados.</p>	<p>Online-training program operational. At least 5 institutions use the tool in their curricula. At least 100 Barbadians have taken the online-training (at least 40% women participation is envisaged)</p>	<p>Due to COVID-19 the development and offering of online tools and trainings has become a priority of the BLOOM cluster. For example, BLOOM is offering the Coursera platform for online trainings to incubatees. The platform addresses issues such as business idea and model validation, startup financing, green business and startup management. Moreover, through the UNIDO support to CCREEE, BLOOM members had the opportunity to participate in highly relevant online courses and trainings of the centre. For example, CCREEE is offering a train the trainers program on electric mobility. It also offers an online training on marine energy resource assessment and project development. It is planned to organise further capacity building events with CCREEE in 2023/2024.</p> <p>Moreover, during the handover process, the BLOOM team had the opportunity to deepen knowledge on cluster management through the Online Cluster Leadership</p>

				<p>Capacity Building Program of Strategy Tools. More than 100 Barbadians participated in the online courses and activities. The final figures will be calculated during the final terminal evaluation phase.</p> <p>The Online Capacity Building Program on Sustainable Energy for Islands has been developed by UNIDO and SIDS DOCK in partnership with the CIEMAT (Spanish Centre for Research in Energy, Environment and Technology). The program has been developed by fulfilling CIEMAT’s quality criteria in terms of scientific and technical expertise, Information and Communication Technologies (ICT) tools, and methodological and pedagogical resources. The program includes nine online modules, which describe and analyse the following technologies and energy issues: Solar Photovoltaics, Solar Thermal and Ocean Energy technologies, Bioenergy, Energy Efficiency and Thermal Optimization in buildings, Mini-grids and Energy Storage in Insular Power Systems, E-mobility and an overview on Energy, Climate Change Mitigation and Resilience in island regions. All modules are available online in Portuguese and are free of charge (https://training.gn-sec.net/course/index.php?categoryid=1). A number of Barbadians finalised the online trainings.</p> <p>For September 2022, CIEMAT organised a train of trainers workshop. The workshop allowed 25 participants to gain expertise in delivering the e-learning courses. An expert from UWI participated in the course. There are ongoing discussions with UNIDO to integrate the online capacity building program into the curricular of UWI.</p>
<p>Output 3.1.3</p> <p>At least 300 experts from various sectors are trained through national and sub-regional trainings, by train-the-trainer approaches and training missions</p>	<p>Number of training courses launched</p> <p>Participants registered for the online training courses</p> <p>Certified online Training Courses completed</p> <p>Number of trainers</p>	<p>700 persons would need some kind of special training (short or long term) to be fit for the transformation to sustainable energy industry and services at the national level and in</p>	<p>At least 50% of the trained trainers provide regular trainings to others either as a free-lancer or as trainer of an institution. At least 300 experts from various sectors are trained in cleantech entrepreneurship, VC financing,</p>	<p>According to the GEF project MTR, up to now at least 200 Barbadian experts participated in study tours, capacity building and awareness raising events facilitated either by BLOOM or one of the partners (e.g. acceleration programs, UWI, CCREEE) by end of 2022. In the meantime, the figure has increased to 240. The final figures will be calculated during the final terminal evaluation phase. Some of the activities are mentioned below (and above in section 3.1.2). Currently, UNIDO and BLOOM are recruiting a training company to implement a workshop series for cluster entrepreneurs.</p>

	<p>trained in key technology areas</p> <p>Number of experts from various sectors are trained in priority technology and skill areas (at least % women participation is envisaged)</p> <p>Number of entrepreneurs (incl. cluster management) participating in training missions to international cluster/technology hubs focusing on solutions with high GHG emission reduction and value creation potential (e.g. solar-thermal, efficient buildings, climate technology) (at least % women participation is envisaged)</p>	<p>specific niche areas. There are a number of educational institutions in Barbados that are involved in promotion or educational activities in sustainable energy, such as University of the West Indies (UWE), Samuel Jackman Prescod Institute of Technology (SJPI) and the Barbados Community College (BCC). However, there is a consensus that current levels do not provide the necessary expertise that will facilitate the level of technological innovation that is expected from the private sector. There will be a need for greater investment to ensure that there</p>	<p>export marketing of hightech products, HRM of project teams and technology and innovation management (at least 40% women participation is envisaged). At least (five) 30 entrepreneurs (including cluster management) are participating in training missions to international cluster/technology hubs (at least 40% women participation is envisaged)</p>	
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		is an increase in the number of trained persons that can effectively participate in the private sector as well as in government and other organizations.		
<p>Output 3.1.4</p> <p>At least two R&D partnerships between companies of the cluster and domestic and/or international applied research institutions are created and under execution</p>	<p>Number of R&D partnerships on technology priorities created</p> <p>Number of prototypes and business ideas developed and under testing</p>	<p>Lack of collaboration within competitive sectors. There is intense competition felt uncomfortable about coming together to share information and ideas and to potentially reveal important 'trade secrets' and establish cooperation and partnerships. Few companies are seeking partnerships within the region and internationally to maximize their potentials, such as Megapower and</p>	<p>2 (two) R&D partnerships on technology priorities created.</p> <p>At least two (2) prototypes and business ideas developed and under testing</p>	<p>Also in 2022/23, BLOOM continued to support 9 companies to develop their business plans. Moreover, during the period, BLOOM supported ten (10) incubatees with USD 10.000 grant financing to develop prototypes and undertake testing. The following results in previous reporting periods can be reported:</p> <ul style="list-style-type: none"> - Red Diamond Compost. Prototype product testing results were incorporated into production processes of the company and communicated to relevant investors and clients. - OnSolar, the testing results for the reusable battery based Solar PV system were incorporated in business operations and communicated to relevant investors an clients. - CEMBI-BiteGreen app is still under development and testing. - EcoMyco recyclable plastic is under testing at UWI Jamaica campus. - Green collective 246, biodiesel pilot production demonstrated. The results were incorporated in the business plan and operations. Biodiesel from cooking oil. Bioethanol produced from biowaste Small demos done. - GoodRidgePower: PFAN TA for development of bankable Solar PV farm project worth of 800 kUSD is still under consideration (Further details in Output 2.1.2 and 2.1.3). <p>Furthermore, the partnership with Wello a Finnish wave energy company, Pilot WE plant project in Barbados is ongoing, Bloom’s role mainly identification of project financing. 0,5 MW plant tested in Scotland. www.wello.eu</p>

		the Caribbean LED Lighting. Moreover, there are no tailored instruments to systematically promote the cooperation of companies and applied research.		<p>Moreover, Hydrogen Horizons Barbados. Portable hydrogen solutions based on metal hydride storage and PEM FC units for producing clean electricity. Capacity 85 kWh to 1 MWh fuel cells. Bloom assistance for financing the project through BNOC is ongoing.</p> <p>Some of the incubatees are currently working on registrations of IPs.</p>
Component 4 – Monitoring and Evaluation				
<p>Outcome 4.1</p> <p>Project's progress towards objectives continuously monitored and evaluated</p>	Timely implementation of the project and project targets and indicators properly monitored throughout the project duration	N/A	Project progress and an overall project impact assessment periodically monitored and evaluated	The GEF project MTR was finalised end of 2022. The terminal evaluation is envisaged to start end of 2023. The mid-term review was positive but identified some issues to be addressed to ensure the long-term sustainability of the BLOOM cluster. Based on the recommendations and the decision of the 4 th Project Steering Committee, held in December 2022, the project was extended until June 2024. There are biweekly meetings between UNIDO HQ and the Bloom Cluster team. Moreover, the cluster manager provides monthly reports to UNIDO HQ. BIDC provides annual reports under the existing project execution agreement.
<p>Output 4.1.1.</p> <p>Project monitoring and evaluation</p>	List of all progress reports prepared Mid-term review (optional) and terminal evaluation conducted Number of project steering committee meetings Number of dissemination materials	N/A	M&E Plan ready within 3 months of project start. Mid-term review (optional). Terminal evaluation completed by end of project closing time. Project terminal report completed by end of project. At least one (1) project steering committee meeting per year. Dissemination	<p>The GEF project mid-term review was finalised end of 2022. The terminal evaluation is envisaged to start end of 2023.</p> <p>So far, four PSC meetings were organised. The fourth SC meeting was held in December 2022 in hybrid form.</p> <p>With the development of the Barbados Cleantech Industry and Tracking Framework, a M&E Plan is available. The framework allows the tracking of project progress and future developments in the Barbadian cleantech sector.</p>

			materials ready by the end of project.	
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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	(i) Risk level FY22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁴¹
1	<p>Policy Risk: Due to the upcoming national elections in the first quarter of 2018 there is some risk that the new Government might change the policy towards sustainable energy and Barbados as a “green technology hub”.</p>	Moderate Risk (M)	Moderate Risk (M)	<p>The UNIDO project management has adapted to the changed realities after the governmental change and the fiscal crisis caused by the BERT program and the COVID-19 impact. Certain activities without priority, which would have required co-funding by the Government, were not implemented. Cost-savings were achieved by reducing costly study tours. Moreover, the project focused more strongly on mobilising co-funding from private sector and other international partners.</p>	<p>The rating remains unchanged. The governmental change following the parliamentary elections in May 2018 and the fiscal crisis of the country marked a major shift of paradigm. Due to the difficult fiscal situation, the new Government had to enter into the five-year Barbados Economic Recovery and Transformation (BERT) Program with the International Monetary Fund (IMF). The Government was urged to reduce debt and cut-down public spending.</p> <p>The developments caused a number of unforeseen bottlenecks and delays for the implementation of the GEF project. After the governmental change the main counterpart Ministry – the MIICs – was split into two Ministries – the Ministry of Industry, Innovation, Science, and Technology (MIST) and the Ministry of Small Business, Entrepreneurship and Commerce (MSBEC). MIST informed that the committed cash-contribution to the project might not be available in the full amount as planned.</p> <p>Also the COVID-19 pandemic and economic downturn in the tourism sector caused additional constraints. The BERT was extended for 5 years. Therefore, up to now the committed co-funding of the Ministry has not been materialized. Between 2021 – 2023, the relevant Ministries have allocated 28,436 USD as co-financing for the project.</p> <p>On the other hand, the governmental change and the fiscal constraints did not have a negative impact on the commitment of the country towards clean technologies and the GEF project. In contrary, the Government puts even more focus on economic diversification away from purely tourism to other emerging higher added value sectors, including cleantech. Therefore, the importance of the GEF project and the BLOOM cluster has increased significantly, also demonstrated by the strong commitment of Export Barbados (BIDC) to host and manage the cluster. The recent oil-price escalations had a positive impact on the positive attitude towards renewables and energy and resource efficiency.</p>	<input type="checkbox"/>

2	Involvement Risk: Lack of interest by the public and private sectors in the platform, resulting in limited interest of local players in developing the sustainable energy value chain	Moderate Risk (M)	Moderate Risk (M)	During project design, a consultative and participatory approach has been applied; from the very beginning of the implementation, the ownership of the platform will lie with MIICS and the local key stakeholders; A proper communication strategy will be prepared and implemented with adequate resources allocated to ensure an effective and widespread communication of the platform.	Also in 2022/23, the interest in the cluster remained high. UNIDO and the cluster manager are undertaking continued stakeholder consultations. Many Cleantech and RE entrepreneurs expressed their interest to join the incubation program. In May 2023 the entire cluster management was transferred to BIDC. The Bloom cluster counts with 20 public and private members. There are established 6 partnerships with CCIC, ECCP, IAS, RaEng LIF 2022, Diproinduca, and Sagana. Furthermore, there are 13 local, regional and international agreements; and, 88 stakeholders are working with the cluster, including 8 private investors. Due to the strong emphasis on economic diversification and export-oriented growth of the current Government and BIDC, the importance of the BLOOM cluster has significantly increased after the COVID-19 crisis.	<input type="checkbox"/>
3	Technical/Capacity risks: Lack of capacity by the national counterpart	Low Risk (L)	Low Risk (L)	The project is in line with national policies and the project will be executed in close coordination with the respective Ministries and authorities. UNIDO applied a twinning approach, which included knowledge transfer and capacity building through an internationally recruited cluster manager. End of 2022, the management was transferred to the local team at BIDC.	The risk remains low. The international cluster manager has built up the BLOOM team. In the meantime, the entire management of the cluster was transferred to BIDC. The internationally recruited UNIDO manager has left Barbados. The Bloom Cluster is hosted by BIDC HQ and receiving full support.	<input type="checkbox"/>
4	Management Risk: Lack of effective coordination between various project partners	Low Risk (L)	Low Risk (L)	A proper coordination will be sought through the Project Steering Committee and the strategic platform. Consultation between MIICS and other GEF executing and implementing agencies has already happened during the preparation of this document.	Two preparatory and inception meetings were held; one initial PSC meeting was held in April 2019. A second PSC meeting was held in September 2019. The 3rd meeting of the PSC took place in December 2020. The 4 th meeting took place in December 2022. During COVID-19 lockdowns, coordination meetings were held by online means.	<input type="checkbox"/>
5	Financial Risk: Incentive and financial support systems are insufficient.	Moderate Risk (M)	Moderate Risk (M)	The capacity of financial and governmental institutions will be strengthened for the promotion of innovation and added value creation. Grant instruments will be developed and applied to ensure availability of financing resources.	The risk remained unchanged. Also after the end of COVID-19 lockdowns, the ability of the Government, foreign direct investors and venture capitalists to invest in cleantech businesses remained constrained. However, against this trend and as demonstrated by the success stories, BLOOM succeeded in connecting its member to venture capital or concessional finance. A number of companies raised funding during the implemented incubation and acceleration programs. Bloom has established 6 partnerships with strategic partners such as CCIC, ECCP, IAS, RaEng LIF 2022, Diproinduca, and Sagana. Furthermore, there are 13 local,	<input type="checkbox"/>

					regional and international agreements; and, 88 stakeholders working with the cluster, including 8 private investors. Until 2023, BLOOM and the companies have mobilised already more than USD 1,6 million of funding.	
6	Climate Change Risk: Negative impacts of climate change	Low Risk (L)	Low Risk (L)	The potential impact of extreme weather events on the industry-cluster and business models will be studied case by case and capacity will be built around climate resilient technologies. It shall be ensured that developed technology innovations shall be resilient to climate change impacts (e.g. disasters).	The risk remains very “low”. Business plans of start-ups incorporate technologies and measures to reduce climate impact.	
7	Gender Risk: Resistance against or lack of interest in, the project activities from stakeholders, especially with regard to the active promotion of gender equality. Low participation rates of suitable female candidates due to lack of interest, inadequate project activity or missing qualified female population within the i.e. engineering sector.	Low Risk (L)	Low Risk (L)	This project will pursue thorough and gender responsive communication and ensure stakeholder involvement at all levels, with special regard to involving women and men, as well as CSOs and NGOs promoting GEEW.	The risk remains low. 40% of startups part of the Bloom Cluster incubator are led by women. (e.g Kerri-Ann Bovell, and CEMBI - The Caribbean Environmental Management Bureau -). Furthermore, several activities of the project ensure women's participation for guaranteeing an appropriate and equal environment in the entrepreneurship ecosystem. For instance, in public private clean tech dialogues, there was an average participation of women in 49% as attendees, and 41% as speakers.	<input type="checkbox"/>
8	Sustainability Risk: There is risk that the cluster cannot be sustained after the closure of the GEF project. The same might happen regarding the envisaged financing facility.	Moderate Risk (M)	Moderate Risk (M)	The project builds on strong ownership of the counterpart. The execution of the cluster-component by BIDC as well as the high co-financing contribution of BIDC and the Government will ensure that the cluster will continue to operate after the closure of the project. Moreover, the cluster will start to generate its own revenues during the life-cycle of the GEF projects. The receipt of funding from the facility is linked to a membership in the cluster – that will strengthen the membership base of the cluster from the very beginning. Moreover, the cluster will contribute to the sustainability of the funding operations of the facility, since the supported entrepreneurs will get access to other services (e.g. incubation, cooperation with other companies).	Despite the collapsed co-funding planned to come from the relevant Ministries, most of the project results were achieved. UNIDO applied a twinning modality, which allowed the cluster to grow gradually. The process was accompanied by an experienced international cluster manager, who built up the local team at BIDC. In May 2023 the cluster management was fully handed over to BIDC. The mid-term review expressed some concerns regarding the long-term sustainability of the cluster. Currently, UNIDO and BIDC are working on innovative funding models. A funding mechanism, which allows the centre to operate one more year was established. BIDC has delegated some green real-estate projects to the BLOOM. A comprehensive handover plan is under implementation.	<input type="checkbox"/>
9	Impact of COVID-19 crisis Project delays due to supply-chain interruptions, economic downturn and lock-downs	Low Risk (L)	Low Risk (L)	The COVID-19 restrictions were lifted in Barbados and the Caribbean and there are no major issues anymore. Due to downturn in the tourism industry, the importance of the BLOOM has increased in support of the economic diversification efforts of the Government.	No countermeasures are necessary.	<input type="checkbox"/>

As the project is not operational and there no further progress made during the reporting period the risk assessment will remain same as the previous year with some more uncertainties on financial support system.

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.

N/A

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

The COVID-19 crisis has impacted the project implementation moderately. However, currently, the implementation of activities is back to normality and the project is showing good results. There are still some negative impacts when it comes to the mobilisation of co-funding to the project and financing for the BLOOM start-ups.

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

No further extensions are planned.

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

The MTR confirmed the high relevance and acknowledge the good progress of the project. However, it also raised some concerns regarding the long-term sustainability of the BLOOM cluster after project closure. A moderate risk regarding the financial sustainability was identified. Therefore, UNIDO has come up with a management response and agreed with BIDD on a comprehensive handover plan with important sustainability elements. A sustainability fund ensures the continued operations of the cluster and BIDD has introduced revenue-generating modalities for the cluster. Further information is available in the attached MTR and handover plan.

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

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
(i) Risks identified in ESMP at time of CEO Endorsement	During the project preparation period (PPG) it has been concluded that no construction will take	No special actions were required at this stage.	The BLOOM cluster hub was established without major infrastructure works. Therefore, no special environmental or social safeguard measures needed to be taken.

	place, therefore, no environmental risks are foreseen at this stage.		
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	N/A	N/A	N/A

V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

The BLOOM Clean Tech Cluster has continued to operate and increased its membership of cleantech companies and start-ups also in 2022/23. In line with its established business plan, the cluster provides office space, intelligence, funding for prototyping and various incubation and acceleration programs either home-made or in cooperation with other partners. End of June 2023, BLOOM has 20 company members. The BLOOM cluster has adopted the Five-Point or “Pentagon Model”. The established BLOOM makerspace connects the following key stakeholders of the eco-system (1) Entrepreneurs (2) Capital (3) Corporates (4) Government (5) Academia. The cluster has established broad partnerships on national and international level. More than 88 stakeholders are working with the Bloom Cluster. The MTR revealed room for improvement by working more closely with academia and bigger corporates. This is being addressed in the agreed handover plan with BIDC and the development of a stakeholder engagement strategy. No other major challenges were faced.

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.).

So far, the project has received good feedback from local counterparts and international partners. The innovative character is appreciated. Within CARICOM the BLOOM Cleantech Cluster is the first of its kind. The Bloom Cluster is becoming a national priority project thanks to the support of BIDC and the valuable results, this initiative in the centre of helping the country to recover from the COVID crisis and impacts on an economy dependent on tourism. Furthermore, the high interest in working with the Bloom Cluster has result in a number of 88 stakeholders, being among them, IDB, SAGANA, PFAN, BREA, BNSIE, RaEng, ITC, this also include cooperation with 8 private investors. The cluster received international acknowledgement and is now being replicated by UNIDO in other countries.

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

- 9648_Barbados Clean Tech Vision Statement and Label Workshop Report
- 9648_Conceptualization of the Clean Tech Industry Platform. November 2021
- 9648_Dialogue report on the Clean Tech platform. February 2022
- 9648_Minutes of the 4th PSC meeting
- 9648_4th PSC meeting presentation
- 9648_UNIDO-BIDC Handover plan for BLOOM

- 9648_5th PSC GN-SEC Meeting Report
- 9648_BLOOM Cluster Expert Meeting and Training_Story

VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress achieved on implementing gender-responsive measures and using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

Generally, there is a high representation of women in the BLOOM cluster team (currently 50%) and the supported companies. 40% of incubatees are represented and led by women, such as Good Ridge Power, EcoMycö, BIMEV Rental Services Inc, and CEMBI (Caribbean Environmental Management Bureau). All project officers of the BLOOM cluster team are female. In average, the women participation in BLOOM events and meetings lies at around 40%. In the study tour to Europe in September 2022, there was 36% of women participation among incubatees and government representatives. The Bloom Cluster project is highly committed with promoting and advocating for gender equality at national and international level.

VII. Knowledge Management

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

To create and enabling environment for the cleantech industry, the GEF project facilitated the development of some important assessments and recommendations to improve the regulatory framework and quality infrastructure within the sector. The Barbados Clean Tech Industry Report and Tracking Framework was published by BIDC and UNIDO in 2022. For the first time, the Barbadian cleantech market was assessed in line with international indicators and best practice.

The report revealed that in comparison with other countries in Central America and Europe, Barbados was categorized as “early-mover” with favourable conditions for growth and development of a sustainable cleantech ecosystem given its structured strategies and policy-oriented efforts. According to the innovation outcome indicators, Barbados reaches a similar score such as Costa Rica, particularly regarding the cleantech density ratio, investment ratio and jobs.

However, the developed Barbados Clean Tech Policy Readiness Assessment revealed also that the sector requires an additional strengthening of policies, regulations and incentives. The Assessment includes thirty (30) proposals to improve the effectiveness and coherence of the current policy and regulatory framework for circular economy and clean energy technologies in key sector such as tourism, manufacturing, construction, retail, agriculture and transport. The Barbados Clean Tech Quality Infrastructure (QI) Assessment reveals that, Barbados ranks on place 138 of 184 countries in the Global Quality Infrastructure Index. There is significant room for improvement and the assessment proposes ten (10) cleantech quality standards for implementation. To facilitate the implementation capacity and to improve the dialogue between public and private sector, the concept for a cleantech industry platform was developed and three (3) policy dialogues were organised.

UNIDO is ready to replicate the BLOOM model with GEF support in other developing countries. Under the platform of the Global Network of Regional Sustainable Energy Centres (GN-SEC) program, UNIDO has launched the Regional BLOOM Cluster Program, which will replicate the BLOOM approach particularly in LDCs and SIDS. Further information is available here: <https://www.gn-sec.net/content/bloom-regional-program>.

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

- 9648_Cluster website www.bloomcluster.com
- 9648_Cluster Business Plan 2020-2024
- 9648_MTR Report clean
- 9648_Barbados Sustainable Energy Industry Market Assessment Report.
- 9648_Barbados Clean Tech Industry Report and Tracking Framework (various languages)
- 9648_Barbados Clean Tech Vision Statement and Label Workshop Report
- 9648_Clean tech readiness assessment. May 2022
- 9648_Clean Tech quality infrastructure assessment (final version)
- 9648_Start ups profile ppt.
- 9648_Start ups business plans
- 9648_Start ups business models (draft versions)

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.

a. Achievements:

Generally, the MTR confirmed good overall project progress despite of the difficulties caused by the COVID-19 downturn, the IMF Barbados Economic Recovery and Transformation (BERT) plan and increasing import costs due to recent oil price escalations. Also in 2022/23, the project achieved major milestone across all outcomes and outputs.

The created BLOOM Clean Tech Cluster receives increasing interest by private sector and international partners, and is an important element of the Government strategy to promote private sector development and economic diversification towards emerging sectors, including climate technologies. Moreover, since 2022/23, BIDC (Export Barbados) has taken full leadership in the management of the cluster. BLOOM is fully integrated in the new Export Barbados (EB) strategic plan targeting emerging sectors of the green and blue economy. The plan indicates that BLOOM will be part of and benefit from the multi-million investments in upgrading, greening and expanding the industrial estates, and life-science and biotechnology industrial parks.

However, on the other hand, the COVID-19 health and economic crisis and the BERT saving program, definitely impacted negatively on the overall project progress, particularly the component on capacity building, as well as the ability of Government to provide co-funding and the private and financial sector to invest in clean technology business. The Government could not provide the financial and human resources as initially committed. The continued fiscal constraints of the Government to provide public financing still impacts the economic recovery of the country and particularly emerging technology sectors. In this context, the MTR confirmed that the GEF project has been very “forward-looking” and is an important element of the green COVID-19 recovery of the country. The low-carbon pathway of Barbados was reconfirmed by the recent oil price escalations in the context of the conflict between Russia and Ukraine.

Also in 2022/23, the BLOOM Clean Tech Cluster expanded its membership base of cleantech companies and start-ups. It continues to be the first one of its kind in the Caribbean Community (CARICOM). The BLOOM concept has triggered the development of a global UNIDO approach, which will be replicated in other lower- and middle-income countries through the BLOOM Regional Clean Tech Cluster Program under the Global Network of Regional Sustainable Energy Centres (GN-SEC). The program was officially launched during the 5th GN-SEC Steering Committee in September 2022 in Vienna. BLOOM was showcased as an example in the 2022/23 editions of the industry magazine Business Barbados.

BIDC has taken full ownership of the cluster management and the recruited team comprises one cluster manager, two project officers, one project accountant and one administrative assistant. The BLOOM cluster has adopted the Five-

Point or “Pentagon Model”. The established BLOOM makerspace connects the following key stakeholders of the ecosystem (1) Entrepreneurs (2) Capital (3) Corporates (4) Government (5) Academia. More than 88 stakeholders are working with the Bloom Cluster. The mid-term review revealed room for improvement by working more closely with academia and bigger corporates.

In line with its established business plan, the cluster provides office space, intelligence, funding for prototyping and various incubation and acceleration programs either home-made or in cooperation with other partners. End of June 2023, BLOOM has had 20 company members. Most of the businesses are start-ups but some of them are also established companies, which brought their own equity. With support of the BLOOM incubation program, nine (9) incubatees have finalised their business plans with an overall turnover estimation of USD 6,5 million over the first three years of operation.

Moreover, a number of companies were accepted for acceleration programs co-managed by BLOOM, including the LIF 2022 Acceleration Program in partnership with RaEng (UK) and the IDB Caribbean Circular Economy Accelerator. The supported BLOOM companies have already mobilized around USD 1,3 million private or public finance (e.g. Red Diamond, Rum & Sargassum, Goodridge Power, CEMBI) between 2021 and 2023. Other applications are pre-selected for potential support through SAGANA Capital, the UNIDO hosted Private Finance Advisory Network (PFAN) and other financiers.

To create an enabling environment for the cleantech industry, the GEF project continued to facilitate the development of some important assessments and recommendations to improve the regulatory framework and quality infrastructure within the sector. The Barbados Clean Tech Industry Report and Tracking Framework was published by BIDD and UNIDO in 2022. For the first time, the Barbadian cleantech market was assessed in line with international indicators and best practice. The report revealed that in comparison with other countries in Central America and Europe, Barbados was categorized as “early-mover” with favourable conditions for growth and development of a sustainable cleantech ecosystem given its structured strategies and policy-oriented efforts. According to the innovation outcome indicators, Barbados reaches a similar score such as Costa Rica, particularly regarding the cleantech density ratio, investment ratio and jobs.

However, as revealed by the developed Barbados Clean Tech Policy Readiness Assessment, the sector requires an additional strengthening of policies, regulations and incentives. The assessment includes thirty (30) proposals to improve the effectiveness and coherence of the current policy and regulatory framework for circular economy and clean energy technologies in key sectors, such as tourism, manufacturing, construction, retail, agriculture and transport. The Barbados Clean Tech Quality Infrastructure (QI) Assessment reveals that, Barbados ranks on place 138 of 184 countries in the Global Quality Infrastructure Index. There is significant room for improvement and the assessment proposes ten (10) cleantech quality standards for implementation. In 2022/23, the BLOOM cluster made efforts to implement the proposals to enhance policy coherence and quality infrastructure.

Despite the severe impact of COVID-19 on capacity building activities, progress was also achieved in project component 3 on qualification and certification. BLOOM quickly switched to virtual trainings. The on-line training program “Sustainable Energy Solutions for Small Island Developing States” saw increasing users from Barbados in 2023. During project implementation, two training workshops were organized in partnership with CIEMAT and the CCREEE. Up to now, more than (twenty) 20 experts from Barbados, including the University of West Indies (UWI) undertook the courses. Two incubatees have completed the NABCEP certification course on Solar PV, on fundamental principles of the application, design, installation and operation of grid-tied and stand-alone PV Systems.

BLOOM is also offering the Coursera platform for online trainings to incubatees. The platform addresses issues such as business idea and model validation, startup financing, green business and startup management. Up to now, around 200 Barbadian experts participated in capacity building and awareness events facilitated either by BLOOM or one of its partners (e.g. acceleration program, UWI, CCREEE). A study tour to cleantech clusters in Austria, Sweden and Denmark was organised for twelve (12) core members of the BLOOM cluster in September 2022. The BLOOM team had the opportunity to learn from European cleantech cluster models and technology innovation. Currently, the BLOOM is preparing to participate in the cleantech days of the International Vienna Energy and Climate Forum in November 2024. BLOOM was showcased as an example in the 2022/23 editions of the industry magazine Business Barbados.⁸

⁸ <https://millerpublishing.net/publications/Bizbar/2023/84/>

In the course of 2022, UNIDO handed over the cluster management to BIDD. A handover workshop was organised and a hand-over plan agreed. The international cluster manager continued to provide advice and capacity building to the local team until May 2023. The cluster is now managed by the local team. UNIDO and BIDD have established a funding mechanism, which ensures continued operations of the cluster at least for another year. BIDD has agreed to partly match the financial contributions by UNIDO for the financial year 2023-2024. Moreover, BIDD has started various projects to generate income for the cluster to ensure its long-term sustainability. It is investing in a number of renewable energy projects in its real estate portfolio, which are managed by the BLOOM cluster and will generate income through electricity sales. Biodigester demonstration plants are currently under installation (investment of around USD 1 million).

b. Bottlenecks:

In line with the findings of the MTR, the project faced some bottlenecks, particularly created by the COVID-19 pandemic and the severe fiscal crisis the country through since 2019. The governmental change following the parliamentary elections in May 2018 and the fiscal crisis of the country marked a major shift of paradigm.

Due to the difficult situation, the new Government had to enter into the five-year Barbados Economic Recovery and Transformation (BERT) Program with the International Monetary Fund (IMF). The program included the requirement to significantly reduce public spending. Several governmental agencies were privatized. The fiscal situation was further impacted by the economic downturn in the tourism sector during the COVID-19 pandemic.

Therefore, MIST (previously MIICS) could not provide the committed co-funding to the GEF project as planned. The assigned project coordinator could not be extended. The non-availability of parts of the co-funding had impacts on the scope of the provided services of the BLOOM cluster to its members. However, UNIDO and BIDD managed the situation and prioritised the activities and support streams of the cluster.

A major bottleneck is also the reluctance of the private sector to provide financial company data, which makes it difficult to establish baselines and monitor progress. The BLOOM cluster will need to do further trust building in future.

Another risk and bottleneck are the financial long-term sustainability of the BLOOM cluster. Since May 2023, the cluster is fully managed by BIDD. A comprehensive handover plan with sustainability elements was agreed, including the establishment of a sustainability fund. Currently, the BLOOM is revising its Business Plan and income streams.

2. Please briefly elaborate on any **minor amendments⁹ 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	NA
<input type="checkbox"/>	Components and Cost	NA
<input type="checkbox"/>	Institutional and Implementation Arrangements	NA
<input type="checkbox"/>	Financial Management	NA
<input checked="" type="checkbox"/>	Implementation Schedule	To ensure long-term sustainability of the project results it was decided to extend the project by June 2024. This will allow UNIDO to provide backstopping to the BLOOM cluster management, which was fully handed over to BIDD in May 2023.

⁹ 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%.

<input type="checkbox"/>	Executing Entity	NA
<input type="checkbox"/>	Executing Entity Category	NA
<input type="checkbox"/>	Minor Project Objective Change	NA
<input type="checkbox"/>	Safeguards	NA
<input checked="" type="checkbox"/>	Risk Analysis	In PIR 2021/22, Policy Risk increased from low to medium; Financial risk increased from low to medium. In PIR 2022/23, there are no registered changes in risk analysis from the previous financial year.
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	NA
<input type="checkbox"/>	Co-Financing	NA
<input type="checkbox"/>	Location of Project Activities	NA
<input type="checkbox"/>	Others	NA

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

The project expenditures (excl. PPG grant) amount to **USD 1.684.416,77**. Most of the spending during the project period went into the prototype grants for the start-up companies as well as the implemented study tours.



GRANT DELIVERY REPORT

Grant:	2000003915	Grant Status:	Authority to implement	Grant Validity:	05.06.2018 - 30.06.2024
Sponsor:	400150 - GEF - Global Environment Facility	Currency:	USD	Reporting Period:	05.06.2018 - 30.06.2023
Other Reference:	9648-U3-PJ-MS-GR-01	Fund:	GF	Prepared on:	04.07.2023
Project	Project Description	Country	Region	Project Manager	Project Validity
150123	STRATEGIC PLATFORM TO PROMOTE SUSTAINABLE ENERGY TECHNOLOGY INNOVATION, INDUSTRIAL DEVELOPMENT AND ENTREPRENEURSHIP IN BARBADOS	Barbados	The Americas	Martin Lugmayr	31.05.2017 - 30.06.2024

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
150123		USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
150123-1-01-01	1.1 Policy and regulatory framework										
1100	Staff & Intern Consultants	383,96	0,00	0,00	0,00	84.866,48	84.866,48	84.482,52	383,96	0,00	84.482,52
1500	Local Travel	500,00	0,00	0,00	0,00	500,00	500,00	0,00	500,00	0,00	0,00
1700	Nat.Consult./Staff	91,08	0,00	0,00	0,00	2.880,54	2.880,54	2.789,46	91,08	0,00	2.789,46
2100	Contractual Services	7.361,10	0,00	0,00	0,00	109.498,50	109.498,50	101.887,40	7.611,10	0,00	101.887,40
5100	Other Direct Costs	879,43	0,00	0,00	0,00	1.700,00	1.700,00	820,57	879,43	0,00	820,57
9300	Support Cost IDC	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	18.048,18	18.048,18
150123-1-01-01	Total	9.215,57	0,00	0,00	0,00	199.445,52	199.445,52	189.979,95	9.465,57	18.048,18	208.028,13
150123-1-01-02	1.2 Investment and business promotion										
1100	Staff & Intern Consultants	45.000,00	8.300,43	47.605,14	55.905,57	348.449,67	348.449,67	359.355,24	(10.905,57)	0,00	359.355,24
1500	Local Travel	1.000,00	(726,39)	771,53	45,14	15.689,78	15.689,78	14.734,92	954,86	0,00	14.734,92
1700	Nat.Consult./Staff	0,00	0,00	0,00	0,00	32.326,94	32.326,94	32.326,94	0,00	0,00	32.326,94
2100	Contractual Services	20.029,46	(29.152,50)	29.182,27	29,77	817.307,49	817.307,49	797.057,80	20.249,69	0,00	797.057,80
3500	International Meetings	500,00	(768,20)	776,78	8,58	66.612,45	66.612,45	66.121,03	491,42	0,00	66.121,03
4500	Equipment	500,00	0,00	0,00	0,00	500,00	500,00	0,00	500,00	0,00	0,00
5100	Other Direct Costs	2.000,00	0,00	216,42	216,42	7.947,19	7.947,19	6.163,61	1.783,58	0,00	6.163,61
9300	Support Cost IDC	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	121.197,20	121.197,20
150123-1-01-02	Total	69.029,46	(22.346,66)	78.552,14	56.205,48	1.288.833,52	1.288.833,52	1.275.759,54	13.073,98	121.197,20	1.396.956,74
150123-1-01-03	1.3 Capacity building and knowledge										
1100	Staff & Intern Consultants	667,54	0,00	0,00	0,00	123.201,17	123.201,17	122.533,63	667,54	0,00	122.533,63
1500	Local Travel	500,00	0,00	6.488,89	6.488,89	500,00	500,00	6.488,89	(5.988,89)	0,00	6.488,89
1700	Nat.Consult./Staff	391,21	0,00	0,00	0,00	7.726,57	7.726,57	7.335,36	391,21	0,00	7.335,36
2100	Contractual Services	27.995,98	0,00	0,00	0,00	55.499,25	55.499,25	27.253,27	28.245,98	0,00	27.253,27
3500	International Meetings	1.000,00	0,00	0,00	0,00	1.000,00	1.000,00	0,00	1.000,00	0,00	0,00
5100	Other Direct Costs	1.580,08	0,00	0,00	0,00	3.019,46	3.019,46	1.439,38	1.580,08	0,00	1.439,38
9300	Support Cost IDC	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	15.679,96	15.679,96
150123-1-01-03	Total	32.134,81	0,00	6.488,89	6.488,89	190.946,45	190.946,45	165.050,53	25.895,92	15.679,96	180.730,49
150123-1-51-01	Project Management and Monitoring										
1100	Staff & Intern Consultants	1.000,00	(2.628,00)	2.662,07	34,07	20.955,24	20.955,24	19.989,31	965,93	0,00	19.989,31
1500	Local Travel	5.000,00	0,00	0,00	0,00	5.000,00	5.000,00	0,00	5.000,00	0,00	0,00
1700	Nat.Consult./Staff	18.439,44	0,01	13.950,42	13.950,43	21.740,10	21.740,10	17.001,09	4.739,01	0,00	17.001,09
5100	Other Direct Costs	2.025,60	0,00	825,84	825,84	2.563,17	2.563,17	1.363,41	1.199,76	0,00	1.363,41
9300	Support Cost IDC	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3.643,63	3.643,63
150123-1-51-01	Total	26.465,04	(2.627,99)	17.438,33	14.810,34	50.258,51	50.258,51	38.353,81	11.904,70	3.643,63	41.997,44
150123-1-53-01	Evaluation										
1100	Staff & Intern Consultants	1.075,27	(3.942,00)	3.993,10	51,10	13.000,00	13.000,00	11.975,83	1.024,17	0,00	11.975,83
1500	Local Travel	1.000,00	41,71	3.145,69	3.187,40	1.000,00	1.000,00	3.187,40	(2.187,40)	0,00	3.187,40
1700	Nat.Consult./Staff	1.500,00	0,00	0,00	0,00	1.500,00	1.500,00	0,00	1.500,00	0,00	0,00
2100	Contractual Services	29.750,00	0,00	0,00	0,00	30.000,00	30.000,00	0,00	30.000,00	0,00	0,00
3500	International Meetings	500,00	0,00	0,00	0,00	500,00	500,00	0,00	500,00	0,00	0,00
5100	Other Direct Costs	890,29	0,00	0,00	0,00	1.000,00	1.000,00	109,71	890,29	0,00	109,71
9300	Support Cost IDC	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1.450,91	1.450,91
150123-1-53-01	Total	34.715,56	(3.900,29)	7.138,79	3.238,50	47.000,00	47.000,00	15.272,94	31.727,06	1.450,91	16.723,85
150123	Total	171.560,44	(28.874,94)	109.618,15	80.743,21	1.776.484,00	1.776.484,00	1.684.416,77	92.067,23	160.019,88	1.844.436,65
2000003915	USD Total	171.560,44	(28.874,94)	109.618,15	80.743,21	1.776.484,00	1.776.484,00	1.684.416,77	92.067,23	160.019,88	1.844.436,65

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.

Outputs by Project Component	Year 2 (2020/21)	Year 3 (2021/22)	Year 4 (2022/23)	Year 5 (2023/24)	GEF Grant Budget Available (US\$)
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	Develop and disseminate results of policy dialogues																		
	At least 30 policy proposals developed and discussed in policy and legislative processes.						5				25								fol lo w- up on leg isl ati on
Output 1.1.4	At least ten (10) policy inputs to mainstream SEC technologies into cross-cutting policies in key economic sectors (e.g. generation and distribution of power and energy services, construction, fisheries and agro-processing, tourism, transport, waste management, as well as water/desalination)						5				5								fol lo w- up on leg isl ati on
	At least 10 of demand-creating and supplier-oriented policies, laws or standards on SEC technologies are approved and their implementation facilitated.						5				5								fol lo w- up on leg isl ati on
Project Component 2 – Investment and Business Promotion																			
Outcome 2.1																			13,073.98
Output 2.1.1	Establish the fully functional office and IT infrastructure of the cluster in partnership with						done	continued	continued	continued	continued	continued	continued	continued					

PAGE program and its focal point in Barbados; coordinate closely with the UNIDO team;																				
Establish the cluster governance structure and organize regular Steering Committee (SC) meetings; act as a Secretary to the SC and provide regular updates to its members;																				
Establish the website of the cluster at BIDC website including community functions; ensure effective public relations and dissemination of information on the cluster;																				
Develop and implement the Cluster Business Plan and Strategy for the period of 2019 to 2024 (incl. organizational chart, budget, results framework with indicators, as well as financial sustainability scenario); make use of international cluster methodologies and handbooks (e.g. UNIDO, GIZ);																				
Develop the annual work plans and budgets, progress reports and externally audited financial statements of the cluster in line with BIDC, MIBI and UNIDO/GEF requirements and submit the documents for approval to the Steering Committee;																				

Establish an effective project cycle management and monitoring system to ensure efficient implementation of the work plans and to track progress in relation to the long-term objectives and indicators in the Business Plan;								X											
Develop annual Project Implementation Reports according to the GEF guidelines.			X				X								X				
Establish and implement the internal administrative, procurement and financial rules and procedures of the cluster in line with BIDC, MIBI and UNIDO/GEF requirements;							done												
Develop a strong gender-sensitive “vision statement” and “corporate identity” of the Cluster and contribute to the national efforts to promote Barbados as a hub for green industry and climate innovation centre								Pub lish ed											up dat ed
Develop the key support policies (incl. gender) of the cluster and ensure strong client-orientation; continuously (re)adapt its strategy and provided services to the needs of the cluster members and international developments in the sector;								Pub lish ed											

Define the membership policy of the cluster and ensure sustainable growth of the membership base, comprising businesses, research institutions and other relevant key stakeholders;								Done	Continued implementation	Continued implementation	Continued implementation	Continued implementation			
Develop a cluster membership fee policy and pricing policy to charge for offered services to members or external partners;												X			
To act as one-stop shop develop a practical set of customer-oriented service packages to sustain cluster memberships and attract new members (e.g. information exchange, training, applied R&D, entrepreneurial support, shared facilities, matchmaking and networking, lobbying & policy inputs, fund raising, joint tendering & sourcing, joint project, product and patent development, market intelligence, export promotion);								Done	Continued implementation	Continued implementation	Continued implementation	Continued implementation			
Identification and renovation of new cleantech incubator facility for startups								Done	Continued activity	Continued activity	Continued activity	Continued activity			

	sustainable energy entrepreneurship facility under the Smart Energy Fund Phase II; at least USD 2 million of facility funding mobilised and under implementation;														
	Expert Group Meetings and Training with Greentech Clusters in Europe (Austria, Denmark, Sweden), to be organised by UNIDO in conjunction with the 5th Steering Committee of the GN-SEC					ST1			ST2						
	Undertake 6 calls for proposals of the facility on technology clusters priority areas implemented (bioenergy, Smart EV, Green Buildings, one targeting particularly women entrepreneurs)				X		X		X			X			
	Provide management and financial support to at least 30 businesses and start-ups under the business incubator facility						10 businesses		20 businesses			30 businesses			
Output 2.1.3	As part of the cluster a business match-maker is established; it provides market intelligence and interlinks cluster members with technology companies, investors and venture capitalist in the Caribbean, the diaspora and internationally; close coordination with CCREEE. Organization of 3 investor meetings or forums						X		X			X			

	At least 5 institutions use the tool in their curricula										5 uses							20.000
	Evaluate given feedback and improve the online training										1st survey							-
Output 3.1.3	At least (five) 30 entrepreneurs (including cluster management) are participating in training missions to international cluster/technology hubs focusing on solutions with high GHG emission reduction and value creation potential (e.g. solar-thermal, efficient buildings) (at least 40% women participation is envisaged)																	15 businesses
																		30 businesses
Output 3.1.4	2 (two) R&D partnerships on technology priorities created. Study Tour + Training provided by the foreign R&D partners																	3 partnerships
Project Component 4																		
Outcome 4.1	Evaluation																	31,727.06
Output 4.1.1.	Mid Term Evaluation																	available
Output 4.1.2.	Final Terminal Evaluation																	Report
Project Management																	11,904.70	
Total																	92,067.23	

X. Synergies

1. Synergies achieved:

The Bloom Cluster has already established a broad range of international and regional partnerships including the International Association of Science Parks (IASP), Climate-KIC, Climate launchpad (CLP) and European Cluster Collaboration Platform (ECCP). The Cluster has signed an agreement with the Climate launchpad that is the European Union's biggest pre-accelerator for the early-stage climate technology startups. Bloom is also an associate member of IASP that is the global innovation ecosystems and network for science parks and areas of innovation. www.iasp.ws. Similarly, the cluster has signed MOUs with the University of West Indies (UWI) and the Caribbean Climate Innovation Center (CCIC). Barbados Chamber of Commerce and Industry (BCCI) is providing valuable support for the Cluster in awareness building, marketing, and evaluation of applications for the Bloom Cleantech Incubation Program.

The Bloom Cluster cooperates with the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), which is based in Barbados and will contribute to the business intelligence and capacity-building component of the cluster. Among the joint activities, it is the development of a new project proposal in order to harness algae /sargassum for industry development and alleviate social and economic impacts in blue economies of the region, including Barbados. Furthermore, the Cluster submitted proposals for funds opportunities to Private Finance Advisory Network (PFAN) and IDB. One of them presented by Goodridge Power's will be implemented and involves the deployment of a PV solar farm.

Moreover, the BLOOM concept has triggered the development of a global UNIDO approach, which will be replicated in other lower- and middle-income countries through the BLOOM Regional Clean Tech Cluster Program under the Global Network of Regional Sustainable Energy Centres (GN-SEC).¹⁰ A project concept is available and the program was officially launched during the 5th GN-SEC Steering Committee in September 2022 in Vienna. The BLOOM cluster and some incubatees had also the chance to present their innovations during a particular session of the 2nd International Sustainable Energy Conference, held from 5 to 7 April 2022 in Graz, Austria. A follow-up event is planned at the 3rd ISEC in 2024.

3. Stories to be shared (Optional)

A number of stories and videos were published, which showcase the broad range of BLOOM supported sustainable energy and circular economy solutions addressing various environmental challenges and simultaneously contributing to local industrial added value creation in terms of revenues and jobs:

- <https://barbadostoday.bb/2023/03/28/new-biofuel-company-set-to-roll-out-cost-saving-gas-venture/>
- <https://bloomcluster.com/news/entrepreneur-joshua-forde-of-wins-canewood-award-at-the-barbados-national-youth-award/>
- <http://bidc.org/mediaresources/cleantech-futures-healing-grove-contained-farms>
- <http://bidc.org/mediaresources/cleantech-futures-red-diamond-compost>
- <http://www.bidc.org/mediaresources/cleantech-futures-goodridgepower>
- <http://www.bidc.org/mediaresources/cleantech-futures-bitegreen-app-cembi>
- [Cleantech Futures: The Green Collective 246 – Export Barbados](#)
- https://www.youtube.com/watch?v=y4LIS_mKRtA
- https://www.youtube.com/watch?v=y4LIS_mKRtA

During the project reporting period the GEF project was mentioned in a number of national, regional and international policy documents or research papers:

¹⁰ <https://www.gn-sec.net/content/bloom-regional-program>

- Barbados' Voluntary National Review of the Sustainable Development Goals presented to the United Nations High-Level Political Forum on Sustainable Development, <https://hlpf.un.org/sites/default/files/vnrs/2023/VNR%202023%20Barbados%20Report.pdf>
- BLOOM acknowledged as best-practice example: L. Walker and J. de Paula, "Science, technology and innovation for sustainable development: lessons from the Caribbean's energy transition", No. 110 (LC/TS.2022/217; LC/CAR/TS.2022/4), Santiago, ECLAC, 2022 https://repositorio.cepal.org/bitstream/handle/11362/48634/3/S2201133_en.pdf

Several articles and feature stories were published:

- Feature story, http://www.ipsnews.net/2021/07/cleantech-entrepreneurs-driving-green-recovery-barbados/?fbclid=IwAR21qUdyMBsnpDJDzyULHTFq9TWeWe4DgxpGwD4_uteehM6q83vDuuxqgbg
- Business Barbados 2023, <https://millerpublishing.net/publications/Bizbar/2023/84/>,
- Business Barbados 2022, <https://millerpublishing.net/publications/2022/BB2022/64/>
- GN-SEC feature story, https://www.gn-sec.net/sites/default/files/articles/files/23092022_bloom_cluster_expert_meeting_and_training_story_0.pdf,

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>

Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Bridgetown, Barbados	13.099145066893849	-59.6247263955045		Export Barbados (BIDC)

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate.

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	
Highly Satisfactory (HS)	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".
Satisfactory (S)	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.
Moderately Satisfactory (MS)	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.
Moderately Unsatisfactory (MU)	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.
Unsatisfactory (U)	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.
Highly Unsatisfactory (HU)	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)	
Highly Satisfactory (HS)	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".
Satisfactory (S)	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.
Moderately Satisfactory (MS)	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	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.
Unsatisfactory (U)	Implementation of <u>most</u> components is <u>not</u> in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	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:	
High Risk (H)	There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between 51% and 75% that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between 26% and 50% 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.