
# Analysis and assessment of current status and use of carbon markets in neighbouring and Article 6 pioneering countries with similar framework

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Freiburg, Germany I 31.10.2022

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## Table of abbreviations

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| ADB | Asian Development Bank |
| BUR | Biennial Update Report |
| CA | Corresponding Adjustment |
| CAMPAS | Central Agency for Public Mobilization and Statistics |
| CCCD | Climate Change Central Department of Egypt |
| CCD | Climate Change Directorate of Jordan |
| CCS | Carbon Capture and Storage |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reduction |
| COP | Conference of the Parties |
| CORSIA | Carbon Offsetting and Reduction Scheme for International Aviation |
| EAA | Eastern African Alliance on Carbon Markets and Climate Finance |
| EBRD | European Bank for Reconstruction and Development |
| EEAA | Egyptian Environmental Affairs Agency of Egypt |
| EPA | Environmental Protection Agency of Ghana |
| ERCST | European Roundtable on Climate Change and Sustainable Transition |
| ETF | Enhanced Transparency framework |
| ETS | Emission Trading Scheme |
| GCF | Green Climate Fund |
| GGGI | Global Green Growth Institute |
| GHG | Greenhouse Gas |
| GIEP | Government Indicative Executive Program of Jordan |
| GS | Gold Standard |
| ICAO | International Civil Aviation Organization |
| ITMO | Internationally Transferred Mitigation Outcome |
| MATS | Mobilizing Article 6 Trading Structure |
| MESTI | Ministry of Environment, Science, Technology & Innovation of Ghana |
| MoE | Ministry of Environment of Egypt |
| MoEnv | Ministry of Environment of Jordan |
| MoU | Moratorium of Understanding |
| MRV | Measurement, Reporting, Verification |
| NAMA | Nationally Appropriate Mitigation Outcome |
| NCCC | National Climate Change Council |
| NCCS | National Climate Change Strategy of Egypt |
| NCEP | National Clean Energy Access Programme |
| NDC | Nationally Determined Contribution |
| NDCP | NDC Partnership |
| NMA | Non-Market Approach |
| PCR | Perspectives Climate Research |
| PMR | Partnership for Market Readiness |
| SB | Supervisory Body |
| SEA | Swedish Energy Agency |
| SEMED | Southern and Eastern Mediterranean Region |

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|---|---|
| TNC | Third National Communication |
| UNDP | United Nations Development Programme |
| UNEP CCC | United Nations Environment Programme Copenhagen Climate Centre |
| UNFCCC | United Nation Convention on Climate Change |
| VCM | Voluntary Carbon Market |
| VCS | Verified Carbon Standard |
| VVB | Validation/Verification Body |
| WAA | West African Alliance on Carbon Markets and Climate Finance |

# 1. Introduction

Under the Article 6 of the Paris Agreement, countries have the opportunity to cooperate voluntarily cooperating to reach their Nationally Determined Contribution's (NDC) mitigation targets and enhance ambition by using market-based and non-market based approaches. It is comprised of three key components:

- Article 6.2 provides a set of rules governing voluntary cooperative approaches between Parties, as well as the generation and transfer of Internationally Transferred Mitigation Outcomes (ITMOs);
- Article 6.4 creates a multilaterally governed market mechanism, overseen by a Supervisory Body (SB) and commonly seen as the successor to the Clean Development Mechanism (CDM) of the Kyoto Protocol; and
- Article 6.8 defines a framework for non-market approaches (NMAs).[1]

The so-called 'Article 6 rulebook' was officially adopted at the 26th Conference of the Parties (COP 26) to the United Nation Convention on Climate Change (UNFCCC) in November 2021, establishing the rules for participation in the three components (UNFCCC 2021a-b).

The guidance for cooperative approaches stipulates that when a government authorizes the transfer of a mitigation outcome it must apply a corresponding adjustment (CA) to its emissions balance, essentially increasing it by the amount of mitigation outcomes sold. Applying CA is key to avoid the risk of double counting mitigation outcomes). CA must be applied for use of ITMOs towards other countries' NDCs, as well as when ITMOs are used towards other international mitigation purposes (such as CORSIA)[2]. The guidance on cooperative approaches does not regulate the use of mitigation outcomes for the voluntary carbon market (VCM).

Making use of all or selected components of Article 6 requires "having in place the capacities and systems, including a strategy, guiding principles, an institutional framework and related monitoring procedures and tools" (Michaelowa et al. 2021). This is also referred to as Article 6 readiness.

A number of countries have already begun implementing pilot projects and are developing the national institutional framework to participate in cooperative approaches. Examples are buyer countries like Switzerland and Sweden engaging in agreements under Article 6.2 with Ghana or Peru with the intention to procure ITMOs (Climate Focus and Perspectives Climate Group 2019; West African Alliance 2021). Other countries like Germany support capacity building for Article 6 readiness (German Federal Environment Agency 2017), including through support to the West African Alliance on Carbon Markets and Climate Finance (WAA) and Eastern African Alliance on Carbon Markets and Climate Finance (EAA). Other Article 6 readiness initiatives include the Article 6 Support Facility of the Asian Development Bank (ADB) and the Mobilizing Article 6 Trading Structure (MATS) programme led by Global Green Growth Institute (GGGI).

[1] This report focuses on the market-based approaches under Articles 6.2 and 6.4.

[2] CORSIA (the Carbon Offsetting and Reduction Scheme for International Aviation) is a carbon offset scheme for international flights, developed by the International Civil Aviation Organization to address emissions from the aviation industry (ICAO n.d.a).

Palestine's updated NDC as well as statements by key Palestinian stakeholders indicate a clear interest in market-based approaches as a seller of ITMOs (State of Palestine 2021).[3] At the same time it has not yet undertaken activities enhance Article 6 readiness. With this in view, Perspectives Climate Research (PCR) has been mandated through the NDC Partnership (NDCP) to develop an action plan for a National Carbon Trading Platform in Palestine.[4] The project covers four phases building upon each other to advance a comprehensive strategy in which the use of Article 6 can bring Palestine closer to the achievement of its NDC targets.

This report presents the findings of the first phase of the project, which aims at understanding best practices and pitfalls to avoid when preparing for Article 6. It is based on a literature review as well as stakeholder interviews. The literature review consists of an analysis and assessment of the current status and use of carbon markets in three countries – Egypt, Jordan and Ghana. Egypt and Jordan, as neighboring countries, are selected for this study on the basis of their similarities regarding economic and social structures and may be direct potential competitors for Article 6 investments. The case of Ghana – a country that is generally considered as a leader in terms of Article 6 activities– offers insights as to what tends to work and what does not in the context of national frameworks for Article 6 engagement.

The results of Phase 1 will be presented in Sharm El-Sheikh during COP27 in the form of two side events to update key stakeholders and a broader audience about Palestine's interest to cooperate with other countries under Article 6 underlying approach.

The following second project phase will analyze Article 6-related tools developed by international and multilateral organizations and draw conclusions about how they can be adapted and locally implemented in Palestine. The third phase will conduct a country-specific literature review to identify the key sectors, actors, and necessary policy framework for Article 6 implementation in Palestine. Finally, the Action Plan for the National Carbon Trading Platform will be developed, based on a stakeholder consultation workshop, validation workshop and interviews with relevant ministries and private sector actors.

This report starts with an overview of the methodological approach (Chapter 2), followed by a description of the current situation, in particular regarding the use of carbon markets, in Egypt, Jordan and Ghana (Chapter 3). For each country, best practices and opportunities, as well as the remaining needs, gaps and challenges are identified. In Chapter 4, the report concludes by offering guidance as to how Palestine can build on these experiences to determine relevant activities and sectors to focus on and exploit this knowledge to formulate a robust and realistic Article 6 strategy.

# 2. Methodological Approach

The data collection and analysis followed a two-pronged approach: a comprehensive literature review was conducted to identify carbon market and Article 6 readiness activities in the focus countries of the study. This was combined with semi-structured expert interviews in all countries to gather additional insights.

[3] This report focuses on market-based approaches under Articles 6.2 and 6.4.
[4] NDC Partnership Action Fund request PAF22-Q1-16: Local Implementation of Article 6 of the Paris Agreement.

## 2.1. Literature review

The objective of the literature review was to get an overview of carbon market and carbon market readiness activities in the three focus countries. For this, the literature review comprehensively covered project-specific information, scientific papers, technical reports and policy documents. Data sources include carbon market registries, such as the CDM registry, Gold Standard (GS) and Verified Carbon Standard (VCS) registry (UNFCCC 2022; Gold Standard 2022; VCS 2022). Data of early Article 6 activities was retrieved from the United Nations Environment Programme Copenhagen Climate Center (UNEP CCC) Article 6 pipeline (UNEP CCC 2022). Scientific papers, reports and policy documents were retrieved from websites of institutions such as the European Roundtable on Climate Change and Sustainable Transition (ERCST), the European Bank for Reconstruction and Development (EBRD), the International Civil Aviation Organization (ICAO), the Swedish Energy Agency (SEA) and the Klik Foundation (Switzerland) (ERCST 2022; EBRD n.d.; ICAO n.d.; SEA 2022; Klik Foundation n.d.).

To analyze the data, the project team created a database. VCM projects, participation in CORSIA, national and local compliance markets as well as Article 6 pilots were assessed and categorized by market type and sector. Information regarding involved stakeholders, timeline and credits generated were also included. The database provides an overview of key areas and sectors, as well as references to the most useful sources available in Egypt, Jordan and Ghana in order to inform the development of a targeted strategy for Palestine. The database is presented in Annex 1.

## 2.2. Interviews with national carbon market experts

To complement the literature review, a total of four semi-structured interviews were conducted with relevant carbon market experts from Egypt, Jordan and Ghana. The project team selected interviewees based on recommendations from the Palestinian team, as well as relevant individuals from PCR's network of carbon market experts and stakeholders. The main stakeholder groups were governments, private sector actors and NGO professionals with a background in the implementation of the CDM and Article 6 in the selected countries. The objective of the interviews was to gain an understanding of the approach, challenges and expectations with regards to market mechanism implementation in these countries. The insights were analyzed in view of transferring this knowledge to the case of Palestine.

The four interviews took place through videoconference on MS Teams and were scheduled over the month of September 2022. Interviews lasted about thirty minutes each and were recorded, upon receiving consent from participants. Interview minutes are presented in Annex 2.

# 3. Lessons learned from carbon market engagement in the countries analyzed

This section provides a summary of the findings of the interviews and literature review. The carbon market and Article 6 experience of each country is reviewed in one sub-chapter. First, each chapter presents the climate policy context and elements of Article 6 readiness. Then

the best practices and opportunities, as well as the remaining needs, gaps and challenges in the respective countries are considered. Based on this, conclusions are drawn for the Palestinian context.

## 3.1. Egypt

Egypt indicated that it may establish a national carbon market with the option to develop it into a regional market in the Arab and African region in its first NDC (Arab Republic of Egypt 2017). However, in its first NDC the country did not commit to a quantified mitigation target and did not start to pursue preparatory efforts to participate in international carbon markets under Article 6. In the context of its COP27 Presidency, Egypt has updated its first NDC with quantitative emission reduction targets in the electricity (-33% in 2030 compared to BAU), oil and gas (-65% in 2030 compared to BAU), and transport (-7% in 2030 compared to BAU) sector (Arab Republic of Egypt 2022a). It is questionable whether these targets represent an increase in mitigation ambition compared to the first NDC due to overestimated baselines. The implementation of the mitigation component is conditional on outside financing of USD 196 billion (Arab Republic of Egypt 2022a). It is clear that such a massive financing cannot be made available to Egypt through international climate finance only, so a balance must be struck between Egypt's own mitigation action and the finance, technology, and capacity building support received from external sources. Significant support in capacity building and policy reforms are needed in Egypt as a precondition for designing new climate finance mechanisms and leveraging private sector capital for climate change mitigation.

In recent years, the country took initial steps to integrate carbon markets into its national climate strategy. For this, Egypt draws on its CDM experience, as it is among the African countries that have most successfully engaged in the CDM: 21 projects are registered in Egypt, primarily in the energy, waste and industrial sectors. These are large-scale projects that have resulted in the issuance of just over 20 million Certified Emission Reductions (CERs), which is one of the highest issuance volumes in Africa. Given that success, the European Bank of Reconstruction and Development (EBRD) and Multilateral Carbon Credit Fund (MCCF) undertook efforts to upscale CDM activities in Egypt between 2016 and 2019, as part of a larger regional project. (South Pole; EBRD 2020). However, this project could not overcome the general problem of low prices for CDM credits and limited demand. Despite Egypt's success in the CDM and its high theoretical potential to generate emissions credits, voluntary carbon market activities have remained relatively limited in the country to date, as it only counts nine registered projects; while much smaller East African countries like Kenya have several dozen projects. As of now, the focus of the Egyptian voluntary carbon market projects is primarily on the renewable energy sector, as well as agriculture and land use. For example, there are two major renewables projects - wind farms in the Gulf of Suez and a huge solar PV project in Benban with an annual electricity generation of approximately 3.8 TWh. In the context of such large-scale projects, the government acts as co-owner of the project through the state-owned electricity transition company (Shalaby 2022).

Climate policy is within the responsibility of the Ministry of Environment of Egypt (MoE). Its key responsibilities are to define environmental policies, set priorities and implement

initiatives in a sustainable development perspective. The Egyptian Environmental Affairs Agency (EEAA) supports the MoE as its executive arm.

In 2015, the National Climate Change Council (NCCC) was founded through a Prime Minister Decree as the national inter-ministerial authority charged with climate change. It is the key decision-making body responsible for coordinating climate policy development and implementation (Climate Action Tracker 2022). The NCCC is steered by a Supreme Committee, presided by the Prime Minister and more than eight line ministers and an Executive Bureau consisting of high-level stakeholders from ministries, NGOs and the private sector. It is advised by a Technical Working Group, consisting of two sub-groups: one focusing on policies and strategies and a second one on implementation and finance. The Climate Change Central Department (CCCD) in the EEAA hosts the technical secretariat to the NCCC. The CCCD also acts as focal point to the UNFCCC and coordinates climate efforts with relevant ministries and governmental entities. The NCCC established climate change units in those ministries which collect relevant data and suggest mitigation and adaptation measures (Shalaby 2022). While the NCCC has been leading the development of the NDC and Egypt's National Climate Change Strategy (NCCS), it is unclear whether it is effective in coordinating climate policy implementation, as limited information and documentation on its output is available and there are a number of influential actors whose role is unclear (e.g., the military is heavily involved in the economy, especially large infrastructure projects) (Climate Action Tracker 2022).

"*Enhancing Climate Change Action Governance*" is one of five central goals of Egypt's NCCS up to 2050. In this context, Egypt wants to enhance its MRV system by developing a number of institutional structures, e.g., an emissions inventory system or a regulatory framework for carbon markets (Arab Republic of Egypt 2022b). In the context of the submission of Egypt's Third National Communication (TNC, 2016) and first Biennial Update Report (BUR, 2018), Egypt has started to build capacity with regard to the greenhouse gas (GHG) inventory process to report annual emissions data and in the development of MRV systems. Data for the Third National Communication (TNC) submitted in 2016, and first BUR was collected through various means including governmental institutions and national and international data sources. The TNC indicated that "data received from the sources are reliable with minimum uncertainty" (EEAA 2016, p.25). Moreover, by improving data collection methodologies while identifying reliable data sources for future reporting, the first BUR has sought to address existing gaps and reduce uncertainty encountered in previous inventories. In addition, Egypt received support from the European Commission to build institutional capacity for data collection and to design and implement an MRV system for the waste sector (MRV Africa n.d.). The Central Agency for Public Mobilization and Statistics (CAMPAS) assists with processing the data and contributes to the MRV system. Yet, despite these advancements, data constraints as well as resource gaps persist (EEAA 2018).

In light of the above developments, Egypt's updated NDC considers institutionalizing the proposed MRV system and establishing a new climate change unit and/or assign employees to be responsible for climate data collection (Arab Republic of Egypt 2022a). Once it has received sufficient funding to get fully operationalized, the proposed national MRV system could provide sufficient support to meet reporting obligations under the ETF, while also facilitating Egypt's objective to develop a national carbon market.

There is a clear need for improvement of specific technical capacities within the Egyptian institutions, in particular related to international transparency and reporting requirements, e.g., GHG inventories. An internal capacity building plan of the CCCD, which was shared with the consultants, shows the identified capacity building needs, and outlines the elements of training programmes for each point (EEAA 2022). They include:

- National GHG inventory process and how develop sustainable GHG inventory system using 2006 IPCC guidelines for GHG inventory.
- Biennial update report (BUR).
- Nationally appropriate mitigation action (NAMA) preparation and implementation.
- Develop monitoring, reporting and verification system (MRV).
- Project proposal writing.
- Evaluation of economic returns for mitigation opportunities

Robust accounting and MRV systems are critical elements to support the implementation of Egypt's NDC and a necessary condition for carbon market participation. Therefore, addressing these gaps is an important step toward achieving Article 6 readiness for market-based activities. In addition, the capacity building plan proposes a list of additional programs on new market mechanisms, standardized baselines, carbon capture and storage (CCS), and grid emission factor without going into detail. These could be important elements for Egyptian engagement in carbon markets under Article 6, although a more detailed programme and a clearer focus for the related capacity building efforts would be needed.

### 3.1.1. Best Practices and Market Opportunities Identified in Egypt

As of October 2022, Japan and Singapore have reached out to Egypt to explore collaboration under Article 6, but these statements of interest have not yet led to an agreement or Memorandum of Understanding (MoU) (Shalaby 2022). Market opportunities in Egypt are potentially significant, but whether they can be harnessed depends on the level of engagement of government in mitigation and on the willingness of private sector players to pursue ambitious mitigation activities if receiving revenues from ITMO sales.

With Egypt's successful CDM experience, carbon project developers in Egypt have a good starting point to engage in Article 6 activities. To benefit from existing knowledge and capacities, as well as understand stakeholders' needs, a committee on Article 6 matters has been formed. Through this committee, the government consults national stakeholders before engaging in Article 6 collaboration, ensuring Egypt's needs, compliance requirements and national ambition under the NDC framework are respected.

The intention to institutionalize a new national MRV system and the according capacities in the line ministries is a good development in light of an engagement in carbon markets under Article 6. It can build on existing coordination structures, and – if implemented successfully – will create an important knowledge and capacity base within line ministries.

Another best practice is the MoE's direct communication line with voluntary carbon market project owners. For instance, voluntary market project proponents and representatives of the private sector are expected to communicate with the MoE to ensure that the requirements of

the NDC have been considered before proceeding with their activities. Although the decision of where to sell the units is still in the hands to the project developer, attention is directed towards helping the alignment of VCM project developments to the national climate objectives. Such communication channels can build the basis for establishing an institutional structure for authorization once Egyptian Article 6 readiness is further advanced.

### 3.1.2. Needs, Remaining Gaps and Key Challenges Identified in Egypt

The main barrier to Article 6 readiness in Egypt is the capacity gap. On a broader level, GHG inventory and funding proposals development remain relatively weak within the Ministry of Environment, and, to a large extent, the EEAA must rely on external consultants to carry out research and data gathering for many sectors (Climate Change Tracker 2022; Rizzo 2016). Capacity building needs are therefore focused on strengthening the institutional and legal climate change framework, improving knowledge at various levels and developing efficient climate finance processes (South Pole; EBRD 2021). The capacity gap needs to be addressed on several levels:

Firstly, the lack of climate specific coordinating mechanisms at the institutional level complicates stimulating an effective communication process and dialogue necessary across all levels of government and between ministries. The NCCC is set at an overly high level and not anchored in an "epistemic community" of officials in each institution that would drive mitigation action. This situation hampers climate policy implementation in general and Article 6 readiness in particular, as it leads to a slowdown of processes and inefficiencies. Our interviewee highlighted that capacity building is only successful if it takes place on multiple levels simultaneously, enabling the exchange of data and information that is needed for successful market participation (Shalaby 2022).

Secondly, both government and private sector stakeholders need to have a better understanding of their requirements and of the processes of Article 6 to become further involved in carbon market activities. Actors are currently attempting to fill this knowledge gap, when it comes to project development, by creating templates to facilitate the process of gathering and sharing the information needed from project developers (Shalaby 2022).

Furthermore, how high carbon markets are on the political agenda determines whether capacities can be mobilized and effectively used. Therefore, high-level political buy-in backed by clear mitigation ambition is the foundation for building carbon market engagement, including addressing the lack of capacity. The fact that the country has only recently begun to consider the need for such a transition to a low-emission economy and society can partly explain why despite the good CDM experience partnerships or adoption of policy plans specifically geared to Article 6 remain either limited or at their early stage. Although Egypt acts as host of the COP27 and has recently updated its NDC, it is unclear whether mitigation will become a priority in the short-term.

### 3.1.3. Main Conclusion: Egypt

Overall, CDM participation has been significant in Egypt, but experiences with voluntary carbon market activities remain relatively limited. The Egyptian government and experts consider the capacity to develop a national carbon market low (Climate Action Tracker 2022; South Pole; EBRD 2020; EEAA 2018). With renewed interest this year as incoming COP27

presidency, Egypt continues to show its inclination to establish a national carbon market (Ministry of Environment 2022). Additionally, as evidenced by its NDC and the interviews with local stakeholders, there is a clear willingness to further develop the capacity to engage in Article 6. Although this process of working to harness the potential of carbon markets under Article 6 is still in its infancy and faces significant challenges, some steps in that direction have been undertaken. Notably, Egypt has started with the identification process of potential buyer countries for ITMOs and has worked on the development of an MRV framework with the aim to further institutionalize it across line ministries. Capacity building will be the main focus going forward: from defining requirements for project developers to ensuring effective communication to streamline the efforts across different levels of government, Egypt can work further towards meaningful carbon market action and contributions.

## 3.2. Jordan

Jordan was the first country in the Middle East to adopt a National Climate Change Policy (NCCP), a seven-year plan (2013-2020) that defines the country's approach to tackling climate change in several key sectors. Nevertheless, the Jordanian government has long had reservations about the introduction of mandatory GHG emission targets as well as the development of a carbon market mechanism such as an emissions trading scheme (ETS), as they considered it inappropriate for national circumstances (South Pole; ERCST 2020; Ministry of Environment 2013). The Jordanian government later revised this position, which is reflected in the national GHG reduction target of 14% stated in its first NDC (Hashemite Kingdom of Jordan 2016). In the updated NDC, the GHG reduction target was even increased to 31% (Ministry of Environment 2021a). Several strategies, policies, and action plans set out how they intend to reach this target: These include piloting a market mechanism for cities developed under Amman's Climate Action Plan (Ministry of Environment 2021b), as well as supportive measures under the Government Indicative Executive Program (GIEP) 2021-2024 to harmonize national policies to enable use of new internal carbon market instruments (Ministry of Environment 2021a). Moreover, according to Shaqarin (2022), the Jordanian government is currently developing a long-term low emissions strategy which contains regulations for carbon markets.

The most relevant Jordanian activity for Article 6 readiness is the development of a pioneering MRV and GHG registry system to track emissions from key sectors which was supported by the World Bank's Partnership for Market Readiness (PMR). This activity makes Jordan the first developing country to put in place a state-of-the-art digital infrastructure to track and trade GHG emissions. The MRV framework was successfully piloted across the energy and water sectors and expanded to include waste, transport, industry, and agriculture in 2020 (PMR 2019). Since then, it has served as a foundation for countries such as Chile, Ghana, Senegal, Vanuatu as well as Palestine that have used it to strengthen their ability to access and enter international carbon markets (World Bank 2022).

Lack of public and private sector capacities in Jordan led to a low engagement under the CDM, with only four projects registered, covering waste handling and disposal, fugitive emissions from fuels (solid, oil and gas) and the renewable energy sector (Al-Zu'bi 2016). Collectively, the projects generated a total issuance of 1.2 million CERs between 2012 and 2016, with buyers across Europe, including the Netherlands, Finland, Portugal and the United Kingdom.

Under the voluntary carbon market only one - solar power - project has been registered under the VCS.

Jordan was included in the recently completed capacity-building project that focused on developing carbon market activities in the SEMED region (as described in the section on Egypt).

The Ministry of Environment (MoEnv) is primarily responsible for overseeing the policy and legal frameworks that guide climate change-related efforts in Jordan[5]. Within the ministry, the Climate Change Directorate (CCD), established in 2014, serves as the institutional focal point for coordinating and developing all activities related to the UNFCCC. This includes strengthening and follow-up of UNFCCC agreements, protocols, communications, and actions (The Hashemite Kingdom of Jordan 2020). The CCD houses two departments: one is responsible for formulating, developing, coordinating, and overseeing the implementation of mitigation and carbon market projects and the other does the same for climate change adaptation activities. The CCD also acts as secretary and coordinator of the National Climate Change Committee (NCCC) which is the national platform for the integration of multi-stakeholder dialogue and planning on climate change. Ten ministries (including the Ministry of Energy and Mineral Resources, the Ministry of Agriculture, the Ministry of Water and Irrigation and the Ministry of Health), three public institutions, private sector representatives as well as four research and four non-governmental organizations make up the NCCC which is also the owner of Jordan´s National Climate Change Policy and supervises its implementation.

### 3.2.1. Best Practices and Market Opportunities identified in Jordan

Jordan stands out for its innovative MRV framework that is fundamental for accurately reporting on emissions, as well as a prerequisite for carbon market engagements. The MRV system covers 22 entities (e.g., ministries and institutions), showing how stakeholders across the country are engaged in harnessing the potential of carbon markets. Its three key functions are:

- Tracking GHG emissions for the national GHG inventory;
- Measuring the GHG emissions reduction from implemented climate change mitigation projects; and
- Recording financial and technical support.

The MRV framework allows GHG data to be collected on four levels – national, sectoral, agency/fund and project level.

The Climate Action Plan for Jordan´s capital Amman is the first of its kind in the region and can be considered best practice due to its innovative character. It sets out the 2050 vision, commits to a near-zero emissions target and establishes a pathway with major pillars of action. These include, among others, piloting a market mechanism for cities to reduce emissions, decarbonizing electricity sources, improving energy efficiency in buildings, enhancing waste management as well as reducing waste and improving integrated planning towards increased public transport use with a strong focus on partnerships, collaboration and

[5] Only since the enactment of the Climate Change Bylaw (No. 79) in 2019, the regulatory framework for climate change actions in Jordan is clearer as the bylaw allocated previously missing tasks and powers to the Ministry and its departments (especially CCD and NCCC) (Ministry of Environment 2021).

stakeholder engagement. Details on potential carbon market activities fostered by the action plan are not yet available.

Interviewees also mentioned the high mitigation potential of the electricity sector in Jordan; making the sector relevant for the development of Article 6 projects in the future (Yagan 2022).

An additional positive element is the reference in Jordan's updated NDC to making environmental integrity and transparency (to e.g., avoid double counting of emission reductions) a condition for participation in carbon markets under Article 6 (Ministry of Environment 2021). Both are crucial for the credibility of carbon credits and Jordan's reputation as a seller country and must also be guaranteed in the Palestinian context.

### 3.2.2. Needs, Remaining Gaps and Key Challenges Identified in Jordan

In the discussions with Jordanian stakeholders, capacity building and financial constraints were highlighted as the main challenges to achieving Article 6 readiness (Yagan 2022; Shaqarin 2022). Capacity building has been a focus within the PMR and the Jordanian country programme of Green Climate Fund (GCF), but progress was described as limited so far. Lack of financial and technical resources are also major obstacles to the achievement of Jordan's NDC targets, and in particular to the development of the institutional and legal framework required for participation in Article 6 or other carbon markets. Furthermore, as the country has a rather limited history of participating in international carbon markets, both in the CDM and VCM, many relevant stakeholders (e.g., private sector and civil society) are not aware of the importance and opportunities that carbon markets can offer. Strategic outreach and capacity building are needed to change this situation.

### 3.2.3. Main Conclusion: Jordan

Overall, Jordan made relevant first steps with regards to Article 6 readiness. The most noteworthy is the development of its digital MRV framework which is imperative for participation in carbon markets. Jordan will need further financial and capacity support to develop and implement the institutional infrastructures, capacities, processes, research and frameworks needed to properly engage in Article 6 market mechanisms.

## 3.3. Ghana

Ghana has taken an early leap into the Article 6 market and established itself as one of the frontrunners of Article 6 institutional development. It is cooperating under an Article 6.2 bilateral agreement with the Government of Switzerland (agreement signed in November 2020 and ratified by Parliament in 2021). At COP26, Ghana signed a Memorandum of Understanding (MoU) with Sweden on Article 6.2 cooperation. An agreement with Singapore is currently under negotiation.

The analysis of carbon market activities shows that Ghana has half a dozen Article 6 pilot projects, this is more than any other country analyzed and one of the highest numbers worldwide. Under the cooperation agreement with Switzerland, the two countries implement the National Clean Energy Programme (NCEP) to generate ITMOs from decentralized renewable energy, clean cooking solutions, waste management and agriculture activities. In

addition, Ghana has 18 voluntary carbon market projects, which is above average in the African context. This contrasts with the just four activities registered under the CDM (in the fields of energy efficiency, energy demand, renewable energy, agriculture and chemical industry), none of which has issued CERs to date. Ghana is the only of the analyzed countries which will participate in CORSIA from 1 January 2023 (ICAO 2022).

In addition, Ghana is one of the world's most advanced countries when it comes to setting up a national institutional framework for Article 6. Under the responsibility of the Ministry of Environment, Science, Technology and Innovation (MESTI) and the Environmental Protection Agency (EPA), Ghana has developed the first part of its institutional framework on Article 6, which is currently awaiting approval by cabinet. It covers the policy context for market-based cooperation, key principles, technical information, as well as the institutional arrangements for cooperative approaches.

### 3.3.1. Best Practices and Market Opportunities Identified in Ghana

Ghana will use Article 6 as a policy tool to achieve its NDC target in a transparent way (Benefoh 2021). For this, the country has adopted a "pure seller" approach with the following policy priorities for Article 6 engagement:

- Article 6 engagement strategically focuses on the conditional mitigation measures of the NDC, defined as *"measures that face market, regulatory and technological barriers and unlikely to receive Government support to implement them."* (Republic of Ghana 2021a, p. 9). In its updated NDC, Ghana has therefore clearly indicated its intention to use voluntary cooperation under Article 6.2 to achieve up to 55% of its conditional absolute emission reductions, which is equivalent to 24 $MtCO_2e$ (Republic of Ghana 2021a).
- Article 6 activities should support adaptation financing. For this, Ghana plans to levy a 'share of proceeds' of up to 5% of ITMO value (Antwi-Boasiako 2022). The modalities are yet to be determined.
- Article 6 engagement shall increase private sector participation in mitigation activities, create green jobs and catalyze technology transfer (Benefoh 2021).

The overall objective of Article 6 cooperation is to support the implementation of the NDC, increasing ambition, as well as removing barriers for aligning to low carbon development in the long run (Benefoh 2021).

Entering into a bilateral agreement with Switzerland has assisted Ghana in developing and establishing an Article 6 institutional framework, including establishment of national arrangement for authorization and tracking of ITMOs. The framework is currently awaiting cabinet approval and expected to become operational in 2022. In addition to the cooperation with Switzerland, the institutional framework builds on CDM and VCM practice (Adu Yante 2022).

The proposed institutional set up for Article 6 (Benefoh 2021) is as follows:

⇒ A high-level Article 6 inter-ministerial group, chaired by the Ministry of Environment and Ministry of Finance, will be established at MESTI after approval from the President. This body will be responsible for oversight and coordination functions.

⇒ The existing Steering Committee set up under the Swiss-Ghana bilateral agreement and composed of representatives of relevant ministries in Ghana to provide guidance on the Article 6.2 cooperative approach process will be transformed into an Article 6 Board. The Board, located at MESTI, will be responsible for activity approval and rule-making functions.

⇒ Similarly, the Technical Committee established under the Swiss-Ghana bilateral agreement will be transformed into an Article 6 Technical Advisory Body which will provide relevant technical advice on matters such as methodology development, corresponding adjustments etc. The team will be established at MESTI.

⇒ An Article 6 implementation office will be set up at EPA to undertake an administration and implementation role, with tasks such as methodology application, activity registration, transactions, issuance, knowledge management, grievances, private sector coordination among others. In the initial stages, the office is expected to operate under a ministerial decree, which will be followed by a formal legal basis that will be enshrined in the planned revision of the EPA Act.

Ghana has developed an emissions transaction registry prototype to track and account for ITMO transfers and is currently in the testing phase (Benefoh 2021). Initially, a simplified version of the registry will be rolled out to keep operation costs at a minimum. As transactions increase, the full version of the registry will be made available. The registry will be managed by the Article 6 office mentioned above.

The current framework allows for both voluntary and compliance market activities. All mitigation activities require registration with the national government, regardless of whether Corresponding Adjustments will be authorized. The proposed framework is welcomed by project developers and other national and international stakeholders, as it provides clarity on the rules and requirements (Benefoh 2021). Priority sectors include waste and energy (including renewable energy and clean cooking). A key distinction is that any activity, regardless of its purpose, must be registered with the national government.

### 3.3.2. Needs, Remaining Gaps and Key Challenges Identified in Ghana

Ghana's pathway to Article 6 readiness revealed three main challenges (Benefoh 2021):

- Firstly, the initiation of a cooperation takes a lot of time and resources. It starts with the signing of an MoU, followed by the negotiation a bilateral agreement, which takes a minimum of six months until it is ready to sign. Only after signature can countries move to action.
- The important resource requirements for Article 6 readiness (for staff, capacity building, etc.) are a challenge for countries. Therefore, support from international organizations and partner countries is key. Ghana has received support from United Nations Development Programme (UNDP) to set up the institutional framework, as well as from the international partner countries.
- Another challenge is to manage different international and national stakeholders. Article 6 involves stakeholders that are unfamiliar in the climate change space (e.g.,

legal departments, private sector, etc.). The government actors need to carefully decide whom to bring on board at what time.

### 3.3.3. Main Conclusion: Ghana

Ghana's level of Article 6 readiness is outstanding, particularly when comparing it to its laggard CDM experience. A major factor for this achievement is the strong political buy-in: the bilateral agreement with Switzerland was approved by the Parliament. This high-level political commitment was decisive for Ghana to advance on bilateral agreements even with the international rules still under development. The structures that were established and tested under this cooperation (such as the Steering Committee and Technical Committee) served as 'blueprint' for the institutional set-up and enabled the government to build capacities on Article 6. The agreement also serves as a model for the cooperation agreements with Sweden and Singapore. The high-level political commitment has also been essential in convening all relevant ministries on the issue, including the Ministries of Finance, Foreign Affairs and Environment, as well as all relevant line ministries. The high-level inter-ministerial group will be approved by the President and chaired by the Ministers of Environment and Finance. Thirdly, it allowed a strong legal basis and provision of sufficient resources for the Article 6 institutional structure. The Article 6 office at the Ghana environmental protection agency will first function under a ministerial decree, with a formal legal basis for it envisaged with the revision of the EPA act (Benefoh 2021). The Article 6 office will be equipped with dedicated staff for each of its six functions (Administrator, Methodological oversight, Approval (registration and issuance), Registry, Quality Assurance, Rules, Accounting and reporting, and knowledge capacity and grievance).

A further enabling factor for Ghana's successful advancement on Article 6 readiness is a committed dedicated team across government and cross-institutional coordination. All key line ministries are represented in the Article 6 Board and Technical Advisory Committees. Smooth collaboration within government is pivotal for a quick operationalization of the key processes. In addition, it sends a clear signal to the private sector. Our interviewee made the point that there is always support available to answer questions and provide documentation (Adu Nyanteh 2022). Private sector stakeholders know who to turn to and receive answers to their questions. This makes it easier for project developers to implement projects, as they inevitably struggle with navigating the complex Article 6 rules. This support system should be available in any country attempting to build a framework to work with Article 6.

Last but not least, Ghana is building on existing experiences and strengths, instead of 'reinventing the wheel'. Ghana's national article 6 framework combines experience from the VCM and CDM, as well as experience from other market actors. For example, Ghana has set up a simplified registry system, modelled after Gold Standard's registry system. When it comes to reporting, Ghana can build on its strong experience in reporting under the Convention (Benefoh 2021). The country has published its fifth national inventory report in May 2022 and third Biennial Update Report in August 2021 (EPA 2022; Republic of Ghana 2021b). For validation and verification, Ghana relies on auditors known as validation/verification bodies (VVBs) that are already active in the country (Gold Standard and Verra, A6.4M). In the long-term, Ghana wants to establish a national process for the authorization of standards and third-party auditors. Ghana has established a white-list of activities (positive list for additionality)

to facilitate the determination of additionality, as well as a red list with activities that are ineligible, a model that Palestine could follow.

# 4. Conclusion

Article 6 is the framework within which carbon markets operate in the context of the Paris Agreement. It can play a decisive role in supporting countries to achieve their NDC targets and increase ambition through cooperation. The experiences of Egypt and Jordan, as neighboring countries of Palestine as well as Ghana, a frontrunner in Article 6 cooperation provide a wealth of information that Palestine can learn from when designing institutional structures and pilot activities. The findings of this study provide insights into both best practices to mirror, as well as pitfalls to avoid. These will be presented in this closing section.

## 4.1. Learning from best practices for implementation of Article 6 in Palestine

The insights from Ghana show that the country understood the opportunities from Article 6 early on and put substantial and successful efforts into developing a national framework for Article 6. The institutional framework set up by Ghana includes a national arrangement for authorization and tracking of ITMOs. The framework includes an emissions transaction registry and requires all activities to be registered with national government, allowing needed oversight over carbon market activities (both compliance and voluntary), regardless of whether corresponding adjustments are needed. This framework creates a bridge between project developers and national government to clarify points of concern, etc., ensuring smooth operation of activities. The Ghanaian experience can be clearly identified as best practice. Given that Ghana transparently shares lessons with interested countries, Palestine should draw on lessons learned from Ghana.

Another best practice is Jordan's MRV model, which mobilizes a number of ministries for economy wide MRV, providing the necessary data and oversight for the implementation of Article 6 projects. This strategy is crucial for the quick deployment of Article 6 projects, since the MRV process is often the longest and most tedious part of the carbon crediting process and is also the most difficult to implement. This is supported by findings from the Egyptian context where the institutionalization of a new MRV system is one of the key steps to prepare for Article 6 implementation. The Egyptian example shows that this requires a comprehensive capacity building programme, not only in the government entity responsible for reporting to the UNFCCC or Article 6, but also within relevant line ministries.

In the context of Ghana, the government's decision to focus on conditional measures of the NDC is also wise strategy. Pioneering Article 6 activities in sectors and project types where there is likely to be little government assistance otherwise means projects are much more likely to be additional and are not mitigation actions that are already planned to meet the Party's NDC, making them safe for authorization for ITMO sales to buyer countries. This way, funding can be directed where it is truly needed. It would be pertinent for Palestine to adopt a similar strategy.

## 4.2. Pitfalls to avoid in Palestine

The insights from Egypt, Jordan and Ghana show that some pitfalls need to be prevented to enable Palestine to profit rapidly and successfully from Article 6.

Firstly, when establishing an appropriate governance structure to integrate and align Palestine's carbon market ambitions with its sectoral policies and national climate strategy, a balance needs to be struck: on the one hand, there is the necessity to involve several entities (e.g., environment ministry, foreign affairs ministry, line ministries, finance ministry), on the other hand an overly bureaucratic structure with unclear institutional responsibilities needs to be avoided. The latter can be observed in Egypt, where the division of institutional responsibilities between the MoE, NCCC and EEAA remains unclear and the capacity of the governance structure to implement mitigation activities and a governance framework for carbon markets is questionable. Egyptian practitioners have experienced difficulties to extract information is needed from market participants, such as project proponents. In contrast, the dedicated team set up across government and cross-institutional coordination helped to drive Ghana's successful advancement on Article 6 readiness. As part of its strategic plan, Palestine should therefore strive for realizing a clear institutional responsibility for Article 6 readiness, clearly indicating how different stakeholders are contributing to and participating in projects and activities as well as the requirements they need to fulfill to contribute to this goal. This needs to be backed by a high-level political commitment to carbon markets, as the implementation of Article 6 requires significant inter-ministerial coordination.

Secondly, Palestine needs to capitalize on capacity and knowledge-transfer to create synergies when formulating or adapting its Article 6 strategy and readiness activities in line with national circumstances. As the Egyptian case demonstrated, transferring knowledge and capacities, as well as technical and institutional infrastructure to other market spheres is not straightforward. For instance, even though Egypt is considered to have quite a considerable experience with previous international carbon market mechanisms, thanks to its comparatively large portfolio of CDM projects for the region (UNFCCC 2022), transferring this capacity to the VCM has proven cumbersome. This partly explains the largely untapped potential of voluntary projects and activities as to this day. To limit bottlenecks on this front, Palestine's National Action Plan could take Ghana as an example and build on existing experience while considering the areas where the country has already gathered the most insights, expertise and/or benefited from capacity building support. Such an outlook could contribute to map and trace Palestine's market trajectory and pinpoint where relevant knowledge can feasibly be expanded to facilitate implementation with the least need for additional resources. The case of Jordan shows how partnerships with international organizations can foster Article 6 readiness in the country where previous carbon market engagement is lacking, or a transfer of knowledge and capacities has not been successful.

Finally, a defined Paris Agreement-compatible decarbonization pathway is a key factor for Palestine to contribute to the long-term planning for, and alignment with, the Paris Agreement's overall objectives, including its Article 6. This is underlined by the fact that before participating in carbon markets, all countries have included quantified mitigation targets in their NDCs.

## 4.3. Gaps that need to be closed

The main barrier to Article 6 operationalization mentioned by interviewees was lack of institutional capacity and finances. In the case of Egypt, lack of clarity for project developers on requirements and processes is an issue, which can be addressed in Palestine through clear central procedures project developers have to follow, as well as a dedicated office with an open-door policy to address procedural questions, a success factor in the case of Ghana.

The Egyptian interviewee also highlighted the need for capacity building to span all levels of government, a recommendation that will be taken into account in the development of Palestine's National Carbon Market Action Plan.

In Jordan, lack of awareness and buy-in of actors has limited the growth of carbon markets to date, another issue that can be addressed through Palestine's action plan, by considering how to engage key stakeholders. Private sector actors should be as involved as closely as possible, designing a strategy that caters to their needs as project developers and VCM actors.

Even in Ghana's advanced stage, lack of capacity was also listed as a problem, characterized by lack of financial resources, staff and time. Ghana's solution was to utilize funding from international organizations and partner countries as much as possible, a strategy that can be included in Palestine's plan, focusing on organizations that provide further support in designing institutional structures, funding pilot projects and supporting working groups.

Overall, this project is designed to address the institutional gaps that were revealed through the analysis in the above countries and design a National Carbon Market Action Plan that will take into account the best practices. The insights provided in this literature review will allow Palestine to move towards formulating a robust and realistic Article 6 strategy and determine relevant activities and sectors to focus on, learning from the experiences of Egypt, Ghana and Jordan.

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# 6. Annex

## Carbon market activity database

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| 21 registered CDM projects | Egypt | CDM Projects, UNFCCC mechanism | Energy, waste, industrial | 2006-2020 | Under the CDM, 21 projects were registered in Egypt, including 15 renewable energy projects, 1 waste project, and 5 industrial sector projects. These projects generated a total of 20.9 million issued CERs to date and were registered between 2006-2020, with the majority in 2011 and 2012. Buyer countries included Switzerland, Germany, Austria, Italy, and the UK. | Spain, France, Austria, Germany, UK, Switzerland, Canada, Denmark, Japan, Netherlands, Italy, Portugal, United Arab Emirates, Ras Ghareb Wind Energy S.A.E. etc. | https://cdm.unfccc.int/Projects/projsearch.html www.cdmpipeline.org |
| Capacity building project - Developing and Transacting an Up scaled CDM-based Carbon Credit Approach in the Southern and Eastern Mediterranean region (SEMED) | Egypt | Voluntary | Not applicable | 2016-2019 | This capacity-building project is focused on developing carbon market activities in the SEMED region. It includes following activities.<br>1.Developing, implementation and purchase of carbon credits from a carbon credit up scaled CDM-based approach in the renewable energy sector in one or more SEMED countries.<br>2.Contribution and support the carbon market development, by i) reviewing the carbon market options, including domestic use of carbon credits, and ii) developing of local capacity, in particular in the area of Monitoring, Reporting and Verification ("MRV") and in the management of large emission reduction programmes/mechanisms.<br>3.Contribution to the further development of an up scaled CDM based carbon credit instruments, such as PoAs under CDM or New Market Mechanism. | Egypt, Morocco, Jordan, Tunisia, EBRD Green Carbon Fund, Spanish Government, a consortium led by South Pole Group together with INCLAM CO2, Typsa, Aenor, Enviro Consulting International (ECI) and the Egypt National Cleaner Production Centre (ENCPC) | https://www.ebrd.com/work-with-us/procurement/pn-49824.html https://www.ebrd.com/documents/climate-finance/carbon-market-options-for-semed-countries.pdf?blobnocache=true |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Waste Gas-based Cogeneration Project at Alexandria Carbon Black | Egypt | Voluntary | Renewable energy | 2022-2029 | The project is registered with VCS. Estimated annual emission reductions equal to 26,597 metric tonnes of CO2. Alexandria Carbon Black Company S.A.E. (ACB), Egypt is an Indo-Egyptian joint venture of the Aditya Birla Group with the Egyptian Government. It is the only Carbon Black producer in the Middle East and North African region. Carbon Black production process generates waste gas as a by-product & utilizes this energy to generate electricity & steam for its captive requirement. ACB generates waste gas with three production lines in operation. The present captive co-generation capacity is enough to meet its own plant requirement for all carbon black production lines. | Egypt, India, Alexandria Carbon Black Co. S.A.E. | https://registry.verra.org/app/projectDetail/VCS/854 |
| 200 MW Kom Ombo Solar PV Power Project In Egypt | Egypt | Voluntary | Renewable energy | 2021-2031 | The project is registered with VCS. Estimated annual emission reductions equal to 340,821 metric tonnes of CO2. The project will be developed under the Build-Own-Operate model and will be exporting electricity to the national grid through a 25 years PPA with Egyptian Electricity Transmission Company (EETC). The project activity is expected to produce 630,000 MWh of electricity annually. The project's lifetime is 25 years. | Egypt, ACWA Power Komombo for Energy, Egyptian Electricity Transmission Company | https://registry.verra.org/app/projectDetail/VCS/2046 |
| Benban Solar PV Project Plot 43_4 | Egypt | Voluntary | Renewable energy | No info | The project is registered with VCS. Estimated annual emission reductions equal to 83,683 metric tonnes of CO2. The project activity involves the installation and operation of Benban Solar PV Project (Plot 43_4) solar power plant with peak capacity of 50 MW. This project is located in Benban, Aswan governorate, Egypt. The purpose of this project activity is to generate clean electricity through renewable solar energy. The net electricity generated from this project (annual estimated electricity output is 158,881 MWh) is supplied to the national grid via the transmission line. | Egypt, Acwa Ben Ban one for Energy | https://registry.verra.org/app/projectDetail/VCS/2007 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Benban Solar PV Project Plot 42_4 | Egypt | Voluntary | Renewable energy | No info | The project is registered with VCS. The project activity involves the installation and operation of Benban Solar PV Project (Plot 42_4) solar power plant with peak capacity of 20 MW. This project is located in Benban, Aswan governorate, Egypt. The purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The net electricity generated from this project (annual estimated electricity output is 66,289 MWh) is supplied to the national grid via the transmission line. | Egypt, city of Cairo, TK for Solar and Renewable Energy Systems | https://registry.verra.org/app/projectDetail/VCS/2008 |
| Benban Solar PV Project Plot 3_1 | Egypt | Voluntary | Renewable energy | 2019-2029 | The project is registered with VCS. The project activity involves the installation and operation of Benban Solar PV Project (Plot 3_1) solar power plant with peak capacity of 50 MW. This project is located in Benban, Aswan governorate, Egypt. | Egypt, Alcom Energy | https://registry.verra.org/app/projectDetail/VCS/2003 |
| Ras Ghareb Wind Energy SAE | Egypt | Voluntary | Renewable energy | No info | This large-scale project is planned under Gold Standard with the estimated annual credits equaling 730,788. The Ras Ghareb Wind Energy project has an installed capacity of 262.5 MW. The project is a Non-Conventional Renewable Energy (NCRE) generation plant that will be developed in Ras Ghareb on the Gulf of Suez, Egypt, by an Independent Power Producer (IPP). The project is an alternative to dispatching existing and developing new, fossil fuel based and greenhouse gas (GHG) intensive, power generation plants connected to the electricity grid. | Egypt, Ras Ghareb Wind Energy SAE, EETC | https://registry.goldstandard.org/projects/details/3652 |
| West Bakr Wind Farm Project | Egypt | Voluntary | Renewable energy | 2021-2026 | This large-scale project is planned under Gold Standard with the estimated annual credits equaling to 688,021. The project activity is a 250 MW Wind power project, promoted by Lekela Egypt Wind Power BOO (S.A.E.) in Egypt. The project will replace anthropogenic emissions of greenhouse gases estimated to be approximately | Egypt, Lekela Egypt Wind Power BOO (S.A.E.), First Climate Markets AG | https://registry.goldstandard.org/projects/details/2584 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| | | | | | 688,021 tCO2e per annum, thereon displacing 1,197,600 MWh/year amount of electricity. | | |
| SEKEM tree project | Egypt | Voluntary | Agriculture Forestry and Other Land Use | 2016-2036 | This micro scale reforestation project is planned under Gold Standard with the estimated annual credits equalling to 5,000. | Egypt, SEKEM for Land Reclamation (SLR) | https://registry.goldstandard.org/projects/details/1721 |
| 4 registered CDM projects | Ghana | CDM Projects, UNFCCC mechanism | Energy, waste, industrial | 2012-2016 | Under the CDM, 4 projects were registered in Ghana, including 2 waste handling and disposal projects, 1 fugitive emissions from fuels (solid, oil and gas) project, and 1 energy industries (renewable - / non-renewable sources) sector projects. These projects (3 large, 1 small) were registered between 2012-2016. but have not issued any CERs. Buyer countries included Switzerland, France, and the UK. | Switzerland, France, the UK, ZOOMLION GHANA LTD, Standard Bank Plc, EAO Utility (Gh.) Ltd., Carbon Ghana Limited, Ghana National Gas Company, Carbonswiss AG, Takoradi International Company, ENERCAP | https://cdm.unfccc.int/Projects/projsearch.html www.cdmpipeline.org |
| Participation in CORSIA | Ghana | Voluntary[6] | Air travel | Beginning in 2023 | Ghana will participate in CORSIA from 1 January 2023. The program offers a harmonized way to reduce emissions from international aviation, minimizing market distortion, while respecting the special circumstances and respective capabilities of ICAO Member States. CORSIA complements the other measures by offsetting the amount of CO2 emissions that cannot be reduced through the use of technological improvements, operational improvements, and sustainable aviation fuels with emissions units from the carbon market. | Ghana, ICAO | https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA_participating_States.aspx |

[6] CORSIA is implemented in three phases: a pilot phase (2021-2023), a first phase (2024-2026), and a second phase (2027-2035). For the first two phases (2021-2026), participation is voluntary.

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Transitional National Clean Energy Access Program | Ghana | Article 6 Pilot, UNFCCC mechanism | Renewable energy | No info | Ghana's National Clean Energy Access Programme (NCEP) is a state-run programme and Article 6 pilot aimed at closing the gap in access to clean and affordable energy by utilising performance-based payments and securitised loans at concessional conditions. The program focuses on solar PV, solar lanterns, solar home systems and improved cooking systems. The NCEP will operationalise Article 6.2 in Ghana and transfer mitigation outcomes of 750000 tCO2 as ITMOs to Switzerland. | Climate Cent Foundation, Environmental Protection Agency, Klik Foundation, Switzerland | https://ghana.klik.ch/activities/national-clean-energy-program-ncep, https://ghana.klik.ch/about-us |
| Article 6 Pilot Solar PV for health centres in Ghana | Ghana | Article 6 Pilot, UNFCCC mechanism | Renewable energy | No info | The project would target approximately 350 hospitals in small towns and rural areas creating jobs and expanding the solar market. A mitigation activity design document (MADD) has been drafted. | Ghana, 350 hospitals, Swedish Energy Agency (SEA) | https://www.energimyndigheten.se/en/cooperation/swedens-program-for-international-climate-initiatives/cooperationunder-the-parisagreement/activity-design-for-article-6/ |
| Article 6 Pilot Clean Cooking: Transformative Cookstoves in Rural Ghana | Ghana | Article 6 Pilot, UNFCCC mechanism | Renewable energy | 2022-2030 | The activity foresees the sale of 60,000 Improved Cook Stoves (ICS) among smallholder farmers in rural Ghana and the establishment of a dedicated fund in the form of a Village Loan and Savings Association (VLSA) to enable access to a revolving consumer credit fund. The project timeline is 2022-2030, generating emissions reductions of 500,000 tCO2. | ACT Commodities, Envirofit, Klik Foundation, Switzerland | https://ghana.klik.ch/activities/clean-cooking |
| Three additional undisclosed Article 6 pilots | Ghana | Article 6 Pilot, UNFCCC mechanism | Local forest mgmt, refrigeration, biomass pellets | No info | The UNEP Copenhagen Climate Centre lists in its Article 6 pipeline tracking sheet three additional pilots in Ghana led by the Klik Foundation, though details have not been published yet. | Klik Foundation | https://article6pipeline.org/Publications/Article6Pipeline.xlsx |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Reforestation of Degraded Forest Reserve Areas in Ghana, West Africa | Ghana | Voluntary | Agriculture Forestry and Other Land Use | 2016-2046 | The project is registered with VCS. Estimated annual emission reductions equal to 46,229 metric tonnes of CO2. Miro Forestry has over 10,000 hectares of standing plantations, expanding this plantation area at a rate of 3,000 hectares per year and producing sustainable timber products including plywood, rotary veneer, poles, sawn timber, and wood biomass. The land has been designated a forestry reserve. | Ghana, Miro Forestry Developments Limited | https://registry.verra.org/app/projectDetail/VCS/2410 |
| Reforestation of Degraded Forest Reserves in Ghana | Ghana | Voluntary | Agriculture Forestry and Other Land Use | 2008-2048 | The project is registered with VCS. Estimated annual emission reductions equal to 8,815. This ARR VCS project aims at the reforestation of 15,000 ha in degraded forest reserves in Ghana. Currently, 1,506 hectares in the Asubima Forest Reserve in the north of the Ashanti region are realized, forming the first project instance of this grouped project. The project foresees an average expansion of 1000 hectares per year, adding new project areas and instances. The project will be performed in cooperation with the Dutch company. | Form Ghana Ltd, Noord Holland, Netherlands | https://registry.verra.org/app/projectDetail/VCS/987 |
| TW Ghana ODS Project | Ghana | Voluntary | Chemical industry | 2018-2028 | The project is registered with VCS. Estimated annual emission reductions equal to 97,000 metric tonnes of CO2. The TW Ghana Project collects recovered and stockpiled ozone depleting substances (ODS) in Ghana and transports them to the United States for destruction at a facility that meets the Montreal Protocol's TEAP requirements. | Ghana, USA, Tradewater, LLC | https://registry.verra.org/app/projectDetail/VCS/1752 |
| African Improved Cooking Stoves Grouped Project | Ghana | Voluntary | Energy demand | 2012-2022 | The project is registered with VCS. Estimated annual emission reductions equal to 47,004. The purpose of this grouped project is the dissemination of improved cooking stoves (ICS) in the Republic of Ghana (Ghana). The project will replace traditional cooking stoves using charcoal fuel with more efficient stoves using charcoal fuel. | Ghana, the Netherlands, Vitol SA | https://registry.verra.org/app/projectDetail/VCS/983 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Clean Cook Stoves in Sub-Saharan Africa by ClimateCare Limited | Ghana | Voluntary | Energy demand | No info | The project is planned but still not registered with VCS. The duration of the project is not stated. Estimated annual emission reductions equal to 136,734 metric tons of CO2. Credits transferred from approved GHG program. | Ghana, Kenya, India, ClimateCare Limited, Carbon Check Private Ltd., | https://registry.verra.org/app/projectDetail/VCS/2389 |
| North Bandai Bamboo Reforestation Project | Ghana | Voluntary | Agriculture Forestry and Other Land Use | 2021-2041 | The project is under validation but still not registered with VCS. Estimated annual emission reductions equal to 105,106 metric tonnes of CO2. The North Bandai Bamboo Reforestation Project is a reforestation project that is restoring 2,863 hectares of degraded forest lands within the Ashanti Region of Ghana, West Africa. It is a carbon financed project that integrates the reforestation of 1 million seedlings of sympodial bamboo with remnant standing trees, and areas set aside for biodiversity and conservation. The project area has suffered extreme historical deforestation and represents highly degraded lands that are prone to further loss of remaining tree cover in the absence of the reforestation activity. The project is managed alongside the adjacent Bandai Hills Bamboo Reforestation Project to represent a combined 10,681 hectare unique approach to forest landscape restoration. | Ghana, USA, EcoPlanet Bamboo Group, DE, United States | https://registry.verra.org/app/projectDetail/VCS/2928 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Bandai Hills Bamboo Reforestation Project | Ghana | Voluntary | Agriculture Forestry and Other Land Use | 2022-2032 | The project is under validation but still not registered with VCS. Estimated annual emission reductions equal to 157,858 metric tonnes of CO2. The Bandai Hills Bamboo Reforestation Project is a reforestation project that is restoring 7,818 hectares of degraded forest lands within the Ashanti Region of Ghana, West Africa. It is a carbon financed project that integrates the reforestation of 1.5 million seedlings of sympodial bamboo with remnant standing trees, and areas set aside for biodiversity and conservation. The project area has suffered extreme historical deforestation and represents highly degraded lands that are prone to further loss of remaining tree cover in the absence of the reforestation activity. The project is managed alongside the adjacent North Bandai Bamboo Reforestation Project to represent a combined 10,681 hectare unique approach to forest landscape restoration. | Ghana, USA, EcoPlanet Bamboo Group, DE, United States | https://registry.verra.org/app/projectDetail/VCS/2929 |
| GS1385 Man and Man Enterprise Improved Cooking Stoves Programme in Ghana - VPA003 | Ghana | Voluntary | Energy Efficiency | 2021-2026 | The project is planned but still not registered with Gold Standard. It is carried out within the urban areas of Greater Accra region, Ghana, where households mainly rely on charcoal for cooking purposes with inefficient devices. An average of 0.180 t of woody biomass is used per person (for cooking purposes) annually. The promotion and dissemination of affordable and efficient improved cookstoves (ICS) to low-income Ghanaian households and the associated awareness and training campaigns will help Ghanaian households by replacing currently used traditional coal pot, thus reducing greenhouse gas emissions by about 200,000 tCO2/yr. | Ghana, Greater Accra Region, Man and Man Enterprise | https://registry.goldstandard.org/projects/details/3598 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| GS1385 Man and Man Enterprise Improved Cooking Stoves Programme in Ghana - VPA002 | Ghana | Voluntary | Energy Efficiency | 2021-2026 | The project is planned but still not registered with Gold Standard. The project is carried out within the urban areas of Western region, Ghana, where households mainly rely on charcoal for cooking purposes with inefficient devices. An average of 0.180 t of woody biomass is used per person (for cooking purposes) annually. The promotion and dissemination of over 400,000 affordable and efficient improved cookstoves (ICS) to low-income Ghanaian households and the associated awareness and training campaigns will help Ghanaian households by replacing currently used traditional coal pot, thus reducing greenhouse gas emissions by 413,653 tCO2/yr. | Ghana, Man and Man Enterprise | https://registry.goldstandard.org/projects/details/3550 |
| JOil Jatropha plantation in Ghana | Ghana | Voluntary | Agriculture Forestry and Other Land Use | 2018-2047 | This small-scale project is certified under Gold Standard with the estimated annual credits equaling to 55,072. The JOil Jatropha plantation project is located near Yeji, the district capital of the Pru District Assembly of the Brong Ahafo Region of Ghana. The project aims to expand its plantation activities to mitigate climate change and improve the land use of open shrubland. Furthermore, the project missions to create jobs in rural areas through the sustainable production of biofuels and enhance the livelihood of communities. The project is working with local communities and out-growers to promote sustainability practices. The project attempts to the plantation of about 3,944.20 ha with Jatropha curcas. In 2018, the area of 1,018.0 ha has been planted and the remaining will be planted in 2022. | Ghana, JOIL (S) Pte. Ltd. | https://registry.goldstandard.org/projects/details/3109 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| GS1264: Native Clean Water Programme West Africa: VPA(01) Ghana | Ghana | Voluntary | Energy Efficiency | 2012-2022 | This micro scale project is certified under Gold Standard with the estimated annual credits equalling to 10,000. The VPA aims to reduce ligneous fuel consumption used for domestic/non-residential water treatment by introducing zero energy clean water technology to replace the use of boiling. The VPA shall be implemented by the CME Native Energy and shall be implemented in the Greater Accra Region of The Republic of Ghana. This micro-scale VPA shall apply the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption", and therefore shall incorporate any project technologies or activities that displace thermal energy consumption in existing baseline practices - namely the Biosand filters. | Ghana, Greater Accra Region, NATIVE, A PUBLIC BENEFIT CORPORATION | https://registry.goldstandard.org/projects/details/1578 |
| GS1264: Native Clean Water Programme West Africa-VPA (03) Santrokofi, Ghana | Ghana | Voluntary | Energy Efficiency | 2019-2029 | This micro scale project is certified under Gold Standard with the estimated annual credits equalling to 9,540. The VPA aims to reduce ligneous fuel consumption used for domestic/non-residential water treatment by introducing zero energy clean water technology to replace the use of boiling. | Ghana, Greater Accra Region, NATIVE, A PUBLIC BENEFIT CORPORATION | https://registry.goldstandard.org/projects/details/1572 |
| Native Hydraid BioSand Water Filter Programme West Africa | Ghana | Voluntary | Energy Efficiency | 2012-2019 | This micro scale project is estimated under Gold Standard with the annual credits equaling to 10,000. The VPA aims to reduce ligneous fuel consumption used for domestic/non-residential water treatment by introducing zero energy clean water technology to replace the use of boiling. | Ghana, NATIVE, A PUBLIC BENEFIT CORPORATION | https://registry.goldstandard.org/projects/details/1571 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| *Improved Household Charcoal Stoves in Ghana | Ghana | Voluntary | Energy Efficiency | 2007-2017 | This large-scale project is certified under Gold Standard with the estimated annual credits equaling to 65,563. The project will reduce greenhouse emissions by disseminating fuel-efficient charcoal stoves. The improved charcoal stove reduces fuel consumption by introduction of a ceramic liner that increases combustion efficiency and retains heat. Currently, inefficient, and polluting cooking regimes are deeply entrenched in Ghanaian culture. Carbon finance provides a means to increase affordability of stoves by significantly lowering their retail price, while introducing quality guarantees and an ongoing monitoring and evaluation component. | Ghana, E+Carbon, Inc | https://registry.goldstandard.org/projects/details/705 |
| Gyapa Cook Stoves Project in Ghana | Ghana | Voluntary | Energy Efficiency | 2015-2022 | This large-scale project is certified under Gold Standard with the estimated annual credits equaling to 167,279. The project started with the Greater Accra and Ashanti regions and gradually moved to the rest of the country. By so doing, there will be significant reduction of greenhouse gas emissions as well as savings on the Charcoal fuel which is the main cooking fuel for families in Urban and semi-urban Ghana. The project is implemented by Relief International (RI), who coordinates the liner making, stove manufacturer, distribution, and sales across several regions of Ghana. Project promotes stove sales and use by investing revenues from carbon finance to stove value chain investments, marketing, and the development of robust distribution channels. | Ghana, GS TPDDTEC v 2. | https://registry.goldstandard.org/projects/details/696 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| GS1385 Man and Man Enterprise Improved Cooking Stoves Programme in Ghana - VPA001 | Ghana | Voluntary | Energy Efficiency | 2020-2025 | This small-scale project is certified under Gold Standard with the estimated annual credits equalling to 47,244. The PoA GS1385 (under which activity GS2094 is included) aims at significantly reducing wood fuel consumption of Ghanaian users (primarily households but eventually communities, small and medium enterprises) by providing them with affordable improved cook stoves (ICS) in replacement of their low-efficiency three-stone fires and traditional cook stoves (coal pots). The fuel-efficient charcoal stoves, so called Jiko-type improved cook stove, are manufactured by Man and Man Enterprise (M&M), a Kumasi (Ghana) based private company that produces efficient cook stoves for households. | Ghana, Man and Man Enterprise, Kumasi | https://registry.goldstandard.org/projects/details/306 |
| GS1385 Man and Man Enterprise Improved Cooking Stoves Programme in Ghana | Ghana | Voluntary | Energy Efficiency | 2020-2025 | This small-scale project is estimated under Gold Standard. The proposed Gold Standard programme of activities aims at significantly reducing wood fuel consumption of low-income Ghanaian households by providing them with affordable improved cookstoves in replacement of their low-efficiency three-stone fires and traditional stoves. | Ghana, Man and Man Enterprise | https://registry.goldstandard.org/projects/details/237 |
| GS936 CookClean Ghana Limited - CPA01 | Ghana | Voluntary | Energy Efficiency | 2013-2019 | This small-scale project is planned under Gold Standard with the estimated annual credits equaling to 100,000. This project seeks to install improved cookstoves and water filters in 1,000,000.00 homes in Ghana. It is an activity under the programme Efficient Kitchen Practices in Africa. | Ghana, ClimateCare Limited | https://registry.goldstandard.org/projects/details/306 |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Capacity building project - Developing and Transacting an Up scaled CDM-based Carbon Credit Approach in the Southern and Eastern Mediterranean region (SEMED) | Jordan | Voluntary | Renewable energy | 2016-2019 | This capacity-building project is focused on developing carbon market activities in the SEMED region. It includes following activities.<br>1.Developing, implementation and purchase of carbon credits from a carbon credit up scaled CDM-based approach in the renewable energy sector in one or more SEMED countries.<br>2.Contribution and support the carbon market development, by i) reviewing the carbon market options, including domestic use of carbon credits, and ii) developing of local capacity, in particular in the area of Monitoring, Reporting and Verification ("MRV") and in the management of large emission reduction programmes/mechanisms.<br>3.Contribution to the further development of an up scaled CDM based carbon credit instruments, such as PoAs under CDM or New Market Mechanism. | Egypt, Morocco, Jordan, Tunisia, EBRD Green Carbon Fund, Spanish Government, a consortium led by South Pole Group together with INCLAM CO2, Typsa, Aenor, Enviro Consulting International (ECI) and the Egypt National Cleaner Production Centre (ENCPC) | https://www.ebrd.com/work-with-us/procurement/pn-49824.html https://www.ebrd.com/documents/climate-finance/carbon-market-options-for-semed-countries.pdf?blobnocache=true |
| Amman Climate Action Plan carbon crediting scheme | Jordan | Compliance and voluntary | Not applicable | No info | According to the EBRD, Partnership for Market Readiness is assisting Jordan in developing a carbon crediting program for Amman's Climate Action Plan, submitted to the Carbon Partnership Facility, which includes a GHG inventory. It is submitted to the Carbon Partnership Facility. | City of Amman, Partnership for Market Readiness | https://ercst.org/wp-content/uploads/2021/02/20200922-carbon-report.pdf |
| Fuel Switching Project of the Aqaba Thermal Power Station (ATPS) | Jordan | CDM Projects, UNFCCC mechanism | Energy | 2008-2018 | This is a large-scale project registered under CDM. The Fuel Switching Project of the Aqaba Thermal Power Station is developed by Central Electricity Generating Company, CEGCO is a project to switch from oil to gas at the Aqaba Thermal Power Station in Aqaba, Jordan. | The UK, Jordan, Central Electricity Generating Company | https://cdm.unfccc.int/Projects/DB/SGS-UKL1206977860.83/view |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| Reduction of Methane Emissions from Ruseifeh Landfill | Jordan | CDM Projects, UNFCCC mechanism | Waste handling and disposal | 2009-2019 | This is a large-scale project registered under CDM. The purpose of the proposed CDM project activity is to maintain, expand and improve the landfill gas (LFG) collection systems and electricity generation facilities operated by Jordan Biogas Company (JBC) at Ruseifeh landfill, near Amman, Jordan. The scenario existing prior to the start of the implementation of the CDM project activity was a demonstration phase that became operational in June 2000, consisting of 10 ha and 12 gas extraction wells (Stage I), a bioreactor, a gas booster, a storage tank, a flare and one generator (make Jenbacher). The LFG was fed into the generator and biogas from the bioreactor was fed into the same generator and/or flare. An extension phase was initiated by JBC in 2002 with the aim of expanding the LFG collection systems with 84 new wells and 2 new generators (make Deutz) to cover Stages IIA and IIB, with the view of registering the extension phase under the CDM. | Jordan, Finland, Jordan Biogas Company | https://cdm.unfccc.int/Projects/DB/TUEV-SUED1239267670.4/view |
| Amman Ghabawi Landfill Gas to Energy Project | Jordan | CDM Projects, UNFCCC mechanism | Waste handling and disposal, renewable energy | 2019-2026 | This is a large-scale project registered under CDM. The purpose of the project activity is to reduce the greenhouse gas emissions from the Ghabawi landfill by the extraction of the landfill gas (LFG) and the utilization of the methane for energy purposes. Furthermore, using LFG as a fuel will displace electricity from the national grid that is dominated by fossil fuel power plants. | Jordan, Greater Amman Municipality, Jordanian Electric Power Co, Jordan Biogas Company Ltd., Portugal | https://cdm.unfccc.int/Projects/DB/TUEV-SUED1265645036.88/view |
| Samra 300 MW combined cycle project | Jordan | CDM Projects, UNFCCC mechanism | Renewable energy | 2011-2018 | The project will contribute to sustainable development in Jordan as it is in line with the main goal of the National Energy Efficiency Strategy of the country. The objective is to define the course of action which will achieve sustainable economic development and reduce | The UK, Jordan, Samra Electric Power Generation Company | https://cdm.unfccc.int/Projects/projsearch.html www.cdmpipeline.org |

| Activity | Country | Type of carbon market | Sector | Duration | Key information | Stakeholders involved | Source of Information |
|---|---|---|---|---|---|---|---|
| | | | | | harm to the environment. Specifically, the proposed project contributes by:<br>1) Providing cleaner energy because it uses natural gas instead of other fossil fuels and it diminishes the emission of harmful gases to the environment;<br>2) Collaborating to achieve the balance between energy imports and exports;<br>3) The proposed CCGT is the first in Jordan together with Rehab power station and will transfer this technology to the country. It constitutes an example to be replicated elsewhere;<br>4) The CCGT project will increase the skilled workforce required at the generation station. The CCGT will result in training of local workers. | | |
| Grouped solar VCS project | Jordan | Voluntary | Renewable energy | 2019-2029 | Jordan registered 1 VCS project, a grouped solar project generating a total of 39,000 VERs from 2019-2029. The project covers the territory of the whole country with the biggest capacities situated in the cities of Wadi Al Ash, Halabat and Mafraq. It was developed by Yellow Door Energy Ltd. and South Pole. Renewable electricity that will displace fossil fuel-based electricity | Yellow Door Energy Ltd., South Pole Carbon Asset Management Ltd., 8 power plants | https://registry.verra.org/app/projectDetail/VCS/2016 |

## Interview notes

### Interview with Mr. Tarek Shalaby (Egypt)

Interviewer: Laila Darouich, PCR

**Project background:** Perspectives Climate Research is currently in collaboration with the NDC Partnership and the Palestinian government on a project regarding the Local implementation of Article 6 of the Paris Agreement in Palestine. The objective of the project is to develop an Action Plan for a National Carbon Market Platform defining potential Art.6 priority sectors and activities.

**Objective of the interview:** understand the approach, challenges, and expectations with regards to carbon markets in Jordan/Ghana/Egypt in order to gain insights for implementation in Palestine.

**Duration**: 30 minutes

**Interviewee background:** Head of Climate Change Vulnerability and Adaptation general department of Egyptian Environmental Affairs Agency. Former Head of Clean Development Mechanism and mitigation general department. Master's degree in environmental engineering and Climate Change. Member of UNFCCC Roster of Experts

**Questions:**

- **How is your country currently dealing with emission reductions of mitigation projects (carbon credits)?**
    - NDC update recently submitted
    - Focus on energy sector, esp. electricity, transportation, and the Associated Oil& Gases Subsector Emission reductions since 2015 quantified. Ambitious goals set for 2030.
    - Major mitigation carbon market activities include wind farms in Gulf of Suez and solar installation in BenBan –Aswan, and others
    - Specific activities listed for these sectors which are also applicable for Art. 6
- Has your country begun developing institutional capacities and/or platforms/frameworks to participate in Article 6 and other carbon markets? if yes, kindly share relevant information (documentation).
    - Institutional arrangement consists of three levels:
    - National Climate Change Council was created, headed by Prime Minister. Consists of three levels: Supreme Committee (consisting of more than 8 ministers), Executive Bureau (consisting of high-level stakeholders from ministries, NGOs, and the private sector), and a Technical Working Group (consisting of two main groups focusing on i) policies and strategies and ii) implementation and finance).

  - Climate change central department within the Ministry of Environment, working as a coordinator with other ministries in the context of all climate change issues
  - National Climate Change Council has also established climate change units in different ministries collecting data, establishing GHG inventories, and suggesting mitigation actions in each unit, as well as identifying vulnerabilities and needs for adaptation measures.
  - National Climate Change Strategy and NDC have been published and are good sources of information. These are outcomes of the Technical Working Group

- What sectors and project types are you focusing on?
  - Energy sector is the main focus – particularly electricity and renewable energy. Projects include wind farms, solar stations. 1,450 GW produced by one station. Numerous wind farm projects.
  - Transport sector – focus on mass public transit. Electric train, bus rapid transit and monorail already implemented. Electric vehicles have been imported and diesel buses converted to natural gas. Considerable emissions reductions have been made from this sector. Some under NDC and others used for other purposes
  - Agriculture is important for adaptation rather than mitigation. Some actions in this sector but not a main priority.
- Which market segments are you aiming at (compliance or voluntary)?
  - Carbon markets have been established very recently and significant capacity building is still necessary. Stakeholders need to be involved in this platform and understand the registry requirements. Emission cap is still needed, as well as a better understanding of stakeholder requirements.
  - Regarding voluntary markets, the Ministry works with emission reduction unit owners to consider Article 6 and needs under the NDC before sale of the respective units. Decision of where to sell the units is up to the owner as long as he has considered requirements of the NDC and Article 6. In context with huge project such solar installation in ben-ban, we have two owners of credits, one of them are the government represented by the electricity transition company (most carbon credits owned belong to the government for considered the requirements of implementing our NDC), second acts as private sector who has to communicate with the environment ministry to be sure that he has considered the requirements of the NDC and art.6 compliances.
- With which ITMO buyer countries do you collaborate and or want to collaborate in a priority fashion? Did you start bilateral communication with them?
  - Japan has contacted Egypt for collaboration under Article 6
  - Singapore has also reached out to Egypt
  - A committee has been arranged to consult national stakeholders before engaging in Article 6 collaboration

- What price of ITMOs are you aiming at?
    - No specific price, it's a case-by-case basis depending on the amount of emission reductions produced
- Has Article 6 and the associated MRV process already been considered in the NDC?
    - Article 6 and MRV is included in the NDC by enhancing the institutional arrangement
    - Central Agency for Public Mobilization and Statistics will collect data needed and this data will be analyzed and calculated in the context of the GHG inventory.
- What challenges has Egypt encountered, and how have they been overcome?
    - Capacity building and financial aspects, such as providing equipment, were listed as challenges.
    - In terms of capacity building, creating templates for information needed is one focus.
    - Capacity building takes place on multiple levels, which is an added difficulty. There needs to be communication and accurate exchange of data between various levels of government
    - Capacity building is tackled on a subject-by-subject basis through individual projects
    - Capacity Building Action Plan has been developed - This document is just a list of capacity building courses needed to the climate change staff , it will be raised and discussed with national projects provide training in the field of climate change and to be requested specifically if any International organization offer us a training or capacity building programs

**Main messages:**

Capacity building is a main challenge for Egypt and is needed amongst all levels of government with adequate communication between committees and levels. Institutional arrangements have begun to be addressed through a three-tier system consisting of a National Climate Change Council, the Department of Climate Change within the Ministry of Environment, and climate change units within each ministry to collect data and suggest mitigation and adaptation activities. Energy is the main focus of current projects, primarily installation of renewable energy capacity. Transportation projects have also been undertaken and provided significant emission reductions. Further work on capacity building is needed to better understand the requirements of Article 6 and communicate these to emission reduction owners.

### Interview with Mr. Ernest Adu Nyanteh (Ghana)

**Interviewer:** Laila Darouich, PCR

**Project background:** Perspectives Climate Research is currently in collaboration with the NDC Partnership and the Palestinian government on a project regarding the Local implementation of Article 6 of the Paris Agreement in Palestine. The objective of the project is to develop an Action Plan for a National Carbon Market Platform defining potential Art.6 priority sectors and activities.

**Objective of the interview:** understand the approach, challenges, and expectations with regards to carbon markets in Jordan/Ghana/Egypt in order to gain insights for implementation in Palestine.

**Duration**: 30 minutes

**Interviewee background:** Involved in business development for Enking International (EKI). Background in renewable energy. Currently identifies and manages projects within sub-saharan Africa for carbon market activities

**Questions:**

- **How is your country currently dealing with emission reductions of mitigation projects (carbon credits)?**
    - Ghana's first A6 agreement was a bilateral agreement with Switzerland
    - Ghana has now developed the A6 framework to operationalize this agreement and govern A6 activities (authorization, etc)
- **Has your country begun developing institutional capacities and/or platforms/frameworks to participate in Article 6 and other carbon markets? if yes, kindly share relevant information (documentation).**
    - The Ministry of Environment, Science, and Technology is the head body regulating Article 6 activities
    - Ghana has developed an interministerial and technical advisory committee which develops methodologies. Within this committee is an Article 6 office which manages day to day activities and regulates and authorizes VVBs and manages the project registry.
    - The interviewee recommended we clarify this topic with someone from the Ministry of Environment and request a diagram of how this is organized. They can clarify who sits on this board and how they are selected
    - The interviewee has not officially participated in capacity building for A6, but noted that the Klik Foundation did an information session for project developers for developers in Ghana to clarify what they expect for procurement
- **What sectors and project types are you focusing on?**
    - Klik is not interested in forestry but is interested in agriculture, particularly rice farming, as well as waste management and composting, rooftop solar projects, and cookstoves.
- **Which market segments are you aiming at (compliance or voluntary)?**
    - The current framework allows for both voluntary and compliance market activities. However, no mitigation activity can be conducted for the generation

of ERs without registration with the national government, regardless whether or not CAs will be applied. CAs are optional, but government must be aware of the activity.

- **With which ITMO buyer countries do you collaborate and or want to collaborate in a priority fashion? Did you start bilateral communication with them?**
    - Sweden, Switzerland, and Singapore have been in contact with Ghana, though the interviewee is unable to provide more information regarding the status with Singapore
- **What price of ITMOs are you aiming at?**
    - No information
- **What other challenges has Ghana encountered, and how have they been overcome?**
    - Interviewee made the point that there is always support available to answer questions, provide documentation, etc. in Ghana, making it easy for project developers to implement projects and understand the rules. This support system must be available in any country attempting to build a framework to work with Article 6. Inevitably project developers will struggle with the rules, but there must be an open door to provide clarification from government.
    - In regards to rules, the interviewee noted that there is no need to reinvent the wheel. From his point of view, Ghana's rules simply combine the VCM and CDM, such as copying Gold Standard's registry system and building internal capacity and a robust registry to authorize credits. Authorization of credits is possible by central government, relying on a third party. VVBs that have been working for Gold Standard or Verra etc. can do validation and verification for projects in Ghana. This process combined with a robust registry makes crediting very easy.
    - Pointed out that carbon market development is an opportunity for economic development. An opportunity to attract small-scale businesses with high emission reduction potentials. His opinion is that businesses should be structured around bundling approaches, allowing more scale, particularly in rooftop solar, for example. This benefits small developers who need the financing the most.

**Main messages:**
Ghana's engagement with Article 6 began with a bilateral agreement with Switzerland and has become very advanced, utilizing a clear registration, validation, and authorization process taken from previous CDM and VCM practices. The institutional arrangement is clear and provides an open door for project developers to receive clarification on rules and requirements. Priority sectors include agriculture, waste and energy (including renewable energy and clean cooking). A key distinction is that any activity, regardless of its purpose, must be registered with the national government.

## Interview with Mr. Yagan (Jordan)

**Interviewer:** Laila Darouich, PCR

**Project background:** Perspectives Climate Research is currently in collaboration with the NDC Partnership and the Palestinian government on a project regarding the Local implementation of Article 6 of the Paris Agreement in Palestine. The objective of the project is to develop an Action Plan for a National Carbon Market Platform defining potential Art.6 priority sectors and activities.

**Objective of the interview:** understand the approach, challenges, and expectations with regards to carbon markets in Jordan/Ghana/Egypt in order to gain insights for implementation in Palestine.

**Duration**: 30 minutes

**Background of interviewee:**

Mr. Yagan is a freelancer consultant in climate change.He works with several countries in the region, namely with the Gulf countries apart from the UAE and Middle East countries. He participated in programmes aiming at achieving NDC goals.

- **How is your country currently dealing with emission reductions of mitigation projects (carbon credits)?**
  - Jordan needs the development of the middle scale and large mitigation projects.
  - We have to learn why the CDM failed
  - Mr. Yagan thinks that potential for Article 6 in Jordan and for Palestine is limited.

- **Has your country begun developing institutional capacities and/or platforms/frameworks to participate in Article 6 and other carbon markets? if yes, kindly share relevant information (documentation).**

  - Jordan has done most of the initial work. The infrastructure is almost there. There are trainings which are not yet completed but are already at a satisfactory level.
  - Jordan has a digital MRV system which will be replicated in Palestine, it covers 22 entities within the country (ministries, institutions etc.). Any trade of emissions is dependent on a good, reliable MRV system (prerequisite for carbon market use)
  - Jordan also has a registry, shall have connections with int. and regional registries. It is not yet implemented, there is still training on how to use it.
  - The main issue is implementing NDC. Financing is a major problem and obstacle as is the case in all developing countries
  - Ministry of Env. has a small department, very limited number of officials. Modest resources, depend on int. aid.

- Long-term Strategy is being developed

- **What sectors and project types are you focusing on?**
  - Renewables are in focus (wind and solar)
  - There were 4 projects registered with CDM in the past.
  - Electricity sector is main emitter (based on natural gas), then water and agriculture

- **Which market segments are you aiming at (compliance or voluntary)?**
  - Voluntary carbon engagement has no prospect because of the absence of the feeling importance of climate change in Jordan and lack of awareness. This applies to all sectors.
  - Some mayor businesses in Jordan might attempt engagement in VCM for CSR reasons.
  - Putting a cap on emissions is not practical in prevailing conditions.

- **What are your priorities for capacity building on Art. 6?**

  - There is capacity building through Market readiness program, and through GCF project.
  - It is restricted to a small sector. Other potential players should be invited, as well as a platform that connects all that potential players should be created.

- **Which stakeholders are involved? and how the country plan to engage the private sector? links to PPP?**
  - Focal point and the NDA Ministry are the main stakeholders, as well as the banks which are acting on the renewables (they give loans for installing renewables).
  - The Stock Exchange
  - Ministry of Planning in Jordan (the entry point of all international agreements)
  - Ministry of energy plays an important role as well.

- With which ITMO buyer countries do you collaborate and or want to collaborate in a priority fashion? Did you start bilateral communication with them?
- What price of ITMOs are you aiming at?
- Any additional observations/ ideas?

**Main messages:**
The most effective emission reductions or mitigation projects would be middle- and large-scale projects. Jordan is in its initial phase of the carbon market development with the trainings in this field being carried out. Jordan has a digital MRV system which will be replicated in Palestine. Financing is a major problem and obstacle as is the case in all developing countries. Renewables are in focus of the projects. Voluntary carbon engagement has no prospect because of the absence of the feeling importance of climate change in Jordan

and lack of awareness. This applies to all sectors. There is capacity building through Market readiness program, and through GCF project. Focal point and the NDA Ministry are the main stakeholders, as well as the banks which are acting on the renewables.

### Interview with Mr. Belal Shaqarin (Jordan) – not approved by interviewee

**Interviewer:** Laila Darouich, PCR

**Project background:** Perspectives Climate Research is currently in collaboration with the NDC Partnership and the Palestinian government on a project regarding the Local implementation of Article 6 of the Paris Agreement in Palestine. The objective of the project is to develop an Action Plan for a National Carbon Market Platform defining potential Art.6 priority sectors and activities.

**Objective of the interview:** understand the approach, challenges, and expectations with regards to carbon markets in Jordan/Ghana/Egypt in order to gain insights for implementation in Palestine.

**Duration**: 30 minutes

**Questions:**

- **How is your country currently dealing with emission reductions of mitigation projects (carbon credits)?**

- The first and the main issue is that accurately collected data is needed for the development of the carbon markets One needs an accurate dataset of occurring emissions
- We developed within the PMR, a MRV system and sister system GHG registry. They cannot be used without the other
- Translate the NDCs into sectoral NDCs

- **Has your country begun developing institutional capacities and/or platforms/frameworks to participate in Article 6 and other carbon markets? if yes, kindly share relevant information (documentation).**

- Previously developed Article 6 strategy. Training was held to institutionalize the carbon market.
- Climate change regulation implemented during 2019.
- All of the governmental entities are in line with the whole process of implementation.
- At the moment, developing a long-term strategy (LTS) at the moment which will have a regulation for carbon markets.

- **What sectors and project types are you focusing on?**

- NDC has lot of sectors e.g., energy
- For countries like Palestine, total emissions should be compared with the NDC emission reduction plan and then one should have a look at the sectors. Next it should

be decided how the emission credits will be sold and to whom. One of the solutions is not to lose the moment of carbon reduction. If it is possible, it is advisable to establish a Palestinian entity responsible for buying voluntary credits and create own emissions rating system.

- Piloting in forest sector and one in a coral reef, calculation the carbon sequestration potential

- **Which market segments are you aiming at (compliance or voluntary)?**
- In Jordan there is no compliance carbon market, however there is a developing voluntary carbon market
- Problem in VCM is that price for carbon credit amounts to only 3 USD/credit.
- Growth in price could be an incentive to further develop the market.
- The developing countries do not have an emissions cap system while the developed countries have a much better carbon trading system. There is a huge gap in prices of carbon between the developed and developing countries. Compliance market in the developed countries will be reflected in the developing countries. They are going to make a draft of a legal framework of an emission trading system.

- **Which stakeholders are involved? and how the country plan to engage the private sector? links to PPP?**
- Ministry of Environment & Climate Change Directory – main responsible for Art. 6 implementation
- Jordan´s Council of Ministers
- National Committee for Climate Change

- With which ITMO buyer countries do you collaborate and or want to collaborate in a priority fashion? Did you start bilateral communication with them?
- What price of ITMOs are you aiming at?
- What are your priorities for capacity building on Art. 6?
- Any additional observations/ ideas?

**Main messages:**

The first and the main issue is that accurately collected data is needed for the development of the carbon markets. Previously developed Article 6 strategy. Training was held to institutionalize the carbon market. Climate change regulation was implemented during 2019. For countries like Palestine, total emissions should be compared with the NDC emission reduction plan and then one should have a look at the sectors. Next it should be decided how the emission credits will be sold and to whom. it is advisable to establish a Palestinian entity responsible for buying voluntary credits and create own emissions rating system. Growth in carbon price could be an incentive to further develop the market. Ministry of Environment & Climate Change Directory are the main responsible for Art. 6 implementation.

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