

Study on cooperative MRV as a foundation for a potential regional carbon market within ASEAN

Myanmar Country Report



IGES

Regional Collaboration Centre – Bangkok
Promoting Action Against Climate Change



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Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BUR	Biennial Update Report
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO₂e	Carbon dioxide equivalent
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CSO	Central Statistics Organization
ECD	Environmental Conservation Department
FREL	Forest Reference Emissions Level
GDP	Gross domestic product
GEF	Global Environment Facility
GGGI	Global Green Growth Institute
GHG	Greenhouse gases
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
JCM	Joint Crediting Mechanism
MONREC	Ministry of Natural Resources and Environmental Conservation
MRV	Monitoring, Reporting and Verification
NC	National Communication
NDC	Nationally Determined Contribution
QA/QC	Quality assurance / Quality control
REDD	Reduced Emissions from Deforestation and Degradation
SNC	Second National Communication
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar

Executive Summary

The latest officially available figures on GHG emissions from Myanmar are from year 2000 and were reported in the country's Initial National Communication to the UNFCCC. On that year, Myanmar reported net removals of 67.8 MtCO_{2e}, making the country a carbon sink. With regards to gross GHG emissions in 2000, the major emitting sectors were forestry (53%), agriculture (32%) and energy (11%). Updated figures on GHG emissions are expected to be published by the end of 2019, when Myanmar submits its Second National Communication (SNC).

Myanmar submitted its Intended Nationally Determined Contribution (INDC) in September 2015. While the country has not set forth an economy-wide mitigation target, the INDC lays out a number of policies and targets that can lead to GHG emission reductions. These include an increase in the share of hydropower supply to 9.4 GW by 2030 and the realization of a 20% electricity savings potential by 2030 from improved energy efficiency in industries.

There is no MRV framework as such in Myanmar, but some MRV-related processes are being followed in the preparation of the national GHG inventory as part of the SNC process. These include the quantification of emissions based on IPCC Guidelines and tier 1 approaches, as well as some quality control procedures for checking the reliability and consistency of activity data obtained from the different sources. The SNC can be seen as a central document for future action on climate change in Myanmar, as GHG inventory data is being updated and will include full time-series for years 1990 up to 2015. The SNC will also serve as a basis to assess major data gaps for the estimation of GHG emissions, identify priority sectors for the development of tier 2 approaches for GHG calculations, and make initial projections for an economy-wide GHG emissions reduction target for 2030. It is expected that this data will support Myanmar in revising its NDC.

With the exception of REDD+, there are currently no plans to develop specific MRV systems and processes at the sectoral, policy or facility levels. On REDD+, Myanmar has prepared its Forest Emissions Reference Level (FREL), which as of December 2018 was being revised after an initial submission to the UNFCCC in early 2018. At present, the FREL only focuses on deforestation. On the other hand, the completion of SNC will enable the identification of areas where the development of MRV at the sector or facility level could be prioritized.

Carbon pricing is currently not under consideration by the national government of Myanmar. This should be understood in light of general low awareness on the need and benefits of introducing economic instruments that put a price on negative externalities. Nevertheless, some experience is being acquired on market-based mechanisms in Myanmar, with a number of Clean Development Mechanism (CDM) and Joint Crediting Mechanism (JCM) projects under implementation. These developments however, are relatively recent and somewhat limited, for instance only 4 CDM initiatives (one project activity and 3 CDM PoAs) had been registered by the CDM Executive Board as of December 2018. Nonetheless, these experiences could set the initial basis for Myanmar to consider participating in a future market-based architecture under Article 6 of the Paris Agreement.

In addition, there are possible entry points for the introduction of carbon pricing instruments and MRV at the facility-level, especially where opportunities for negative marginal abatement costs can be identified. In this regard, energy efficiency emerges as one of the areas that could be prioritized. Energy efficiency is recognized as a major mitigation priority in the NDC, and a national policy framework is currently in the working. Myanmar is also acquiring some "hands-on" experience on energy management in industries with the implementation of ISO 50001 as part of a GEF-funded initiative implemented by UNIDO. These could be initial opportunities to begin tracking GHG emissions at the facility level and, at a later stage, as a basis for piloting the adoption of carbon pricing instruments, in case the government considers exploring such options of interest in the future.

1. National Climate Change Context

The Republic of the Union of Myanmar is a country of South East Asia with borders with India, Bangladesh, China, Thailand and Lao PDR. It has a total surface area of 676,577 km²; its territory is covered with one of the largest forests in mainland South-East Asia. Owing to its geography and specific circumstances, Myanmar is one of the most vulnerable countries to extreme weather events¹.

As of 2016, the population of Myanmar stood at 52.9 million, having increased by 7.2 percent in the 2007-2016 period², one of the lowest demographic growth rates in ASEAN as a whole. Approx. 70 percent of Myanmar's population lives in rural areas and contributes to the agriculture sector. In 2016, Myanmar's Gross Domestic Product (GDP) at current prices totalled 81,128 billion Kyat (approx. 67.4 billion USD)³. In the same year, the services sector accounted for the largest share of the economy (41.6%), followed by industry (30.9%) and agriculture (27.5%)⁴. In the 2010-2016 period, Myanmar's economy increased at an annual average rate of 7.0 percent, above the 5.1 percent average reported in the ASEAN region in the same period. On a per capita basis, in 2016 Myanmar's GDP was 1,297 USD/capita at current prices, the second lowest in ASEAN just after Cambodia, rendering it the status of least developed country (LDC).

The latest officially published greenhouse gas (GHG) emission figures for Myanmar were reported in the Initial National Communication (NC) document⁵, which was submitted to the UNFCCC in December 2012. Data on national GHG emissions is presented in the form of a data series from the years 2000 to 2005. In the Initial NC a full GHG inventory is presented for the year 2000, with the country officially reporting net removals of 67.8 MtCO₂e⁶. At the time of writing this report, the Second NC was under preparation and its finalization is expected in June 2019, with submission to the UNFCCC planned at the end of that year. As part of this process, GHG emission data is being revised and updated, and a time series for all years from 1990 to 2015 being compiled.

Table 1 presents the breakdown of GHG emissions for 2000, as reported in the Initial NC⁷.

Table 1: GHG emissions by source in Myanmar, 2000, expressed in MtCO₂e

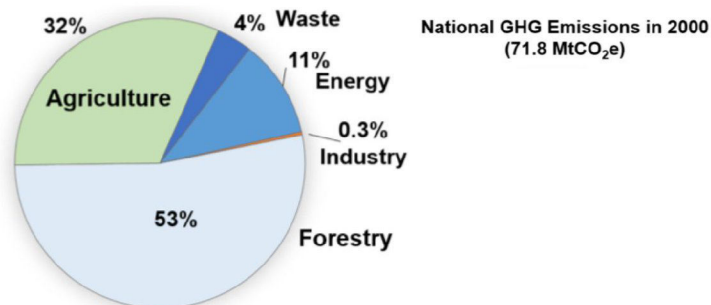
Greenhouse Gas Source and Sink Categories	CO ₂ emissions	CO ₂ removals	CH ₄ emissions	N ₂ O emissions	Total (MtCO ₂ e)
Energy Sector	7.659	-	0.118	0.087	7.864
Industry Sector	0.249	-	-	-	0.249
Agricultural Sector	-	-	20.239	2.604	22.843
Agriculture	-	-	10.652	2.542	13.194
Livestock	-	-	9.587	0.062	9.649
Forestry Sector	33.657	-142.221	3.041	1.321	-104.202
Waste Sector	-	-	2.826	-	2.826
Total (excluding removals from the forestry sector)	41.565	0	26.224	4.012	71.801
Total (Net) (including LULUCF)	41.565	-142.221	26.224	4.012	-70.420

Source: Initial National Communication (2012)

Figure 1 presents the breakdown of emissions per sector, in 2000, excluding removals from the forestry sector. It may be noted that the largest share of emissions is from the forestry sector, which is followed by agriculture and energy, of which the latter has a relatively limited contribution to national GHG emissions.

Myanmar has not prepared a BUR, but a project implementation plan is currently under development with the view of submitting the country's first BUR by the end of 2020.

Figure 1 - Share of gross emissions in Myanmar, 2000 (excludes removals from the forestry sector and emissions of CO, NO_x, NMVOCs, Ozone Depleting Substances and SF₆)



Source: Myanmar's Initial National Communication (2012)

1 Myanmar's Intended Nationally Determined Contribution, 2015.

2 Figures as of mid- 2016. Source: ASEAN Statistical Yearbook 2016/2017.

3 Ibid. Exchange rate used as of 30 June 2016.

4 Ibid.

5 Myanmar's Initial National Communication, 2012.

6 This includes reported emissions of CO, NO_x, NMVOCs, Ozone Depleting Substances and SF₆.

7 The inventory displayed in the table only includes reported emissions (and removals) of CO₂, CH₄ and N₂O. Emissions of CO, NO_x, NMVOCs, Ozone Depleting Substances and SF₆ have not been included, even though these are reported in Myanmar's official GHG inventory.

Myanmar ratified the Paris Agreement on September 19, 2017, while its Intended Nationally Determined Contribution (INDC)⁸ dates from August 25, 2015 (subsequently becoming Myanmar's first NDC). In their NDC Myanmar emphasizes its circumstances as a net sink and, because it is an LDC highly vulnerable to climate change, it prioritizes adaptation over mitigation, including actions in the fields of agriculture, forestry, water, infrastructure and biodiversity. The NDC also identifies a number of mitigation actions under implementation in Myanmar, even though these are not expressed in the form of sectoral GHG emission reduction targets. It is expected, however, that the updated (and more recent) GHG emission figures that will be computed as part of the Second NC can serve as basis for the determination of an economy-wide emissions reduction target⁹. Indicative targets identified in the INDC on mitigation actions include the following:

- Increase the share of hydropower supply to 9.4 GW by 2030;
- Foster electrification in rural areas through the use of at least 30% renewable sources;
- Realize a 20% electricity savings potential from the forecasted consumption by 2030 by increasing efficiency in industries and implementing management systems compatible with ISO 50001 standards;
- To distribute approximately 260,000 cook stoves between 2016 and 2030.

Table 2 below provides an overview of Myanmar's main policy documents related to climate change, some of which are identified in the NDC document.

Table 2: Policy documents in Myanmar related to the reduction of GHG emissions¹⁰

Policy document	Main elements
National Environmental Policy	<p>>> Provides long-term guidance on the achievement of environmental protection and sustainable development objectives in Myanmar.</p> <p>>> The policy is dated from 1994 but was revised in 2018.</p>
Myanmar Climate Change Policy	<p>>> Lays out the vision of Myanmar being a climate-resilient, low-carbon society that is sustainable, prosperous and inclusive.</p> <p>>> Sets the ambition of decoupling economic growth from an increase in GHG emissions, and contribute to the global climate change mitigation effort through sustainable, low-carbon energy, transport, industrial and waste management systems.</p> <p>>> Promotes and prioritizes renewable energy sources and energy efficiency.</p>
Myanmar Climate Change Strategy and Master Plan 2018-2030	<p>>> These are the operational instruments of the Myanmar Climate Change Policy, and both documents – the strategy and the master plan – were prepared in the context of the Myanmar Climate Change Alliance programme, which is implemented by UN-Habitat and UN Environment with the funding of the European Union.</p> <p>>> A strategic objective stated is the maximization of opportunities for low carbon development.</p> <p>>> The master plan lays out a number of results and indicators for six key sectorial areas: i) agriculture, fisheries and livestock; ii) environment and natural resources; iii) energy, transport and industry; iv) cities, towns and human settlements; v) climatic hazards and health; and vi) education, science and technology.</p>
National Energy Policy (2014) ¹¹	<p>>> This policy provides the overarching framework for energy development and planning in Myanmar.</p> <p>>> Among its goals is an increase in the national electrification rate to 75% by 2021/2022. For this purpose, it is envisaged an increase in the use of hydropower and biofuel production. Other goals include the reduction in fuelwood production from natural forests to 46% in 2030, compared to 71.4% in 2000.</p>
Myanmar Energy Master Plan (2015)	<p>>> This document presents a comprehensive review of Myanmar's energy sector and lays out a number of projections on energy demand from 2014 to 2035. This forms the basis for a set of energy supply expansion plans, which are discussed in detail in the form of five scenarios.</p> <p>>> The Energy Master Plan was developed with the assistance of the ADB.</p>
National Energy Efficiency and Conservation Policy, Strategy and Roadmap (2015) ¹²	<p>>> While these documents are still pending approval by the national government, draft versions prepared with the support of the ADB lay out a number of sector specific targets and institutional arrangements to foster energy efficiency in Myanmar.</p>
Green Economy Strategic Framework (2017)	<p>>> Lays out the framework for a green economy for Myanmar. It consists of two main components: an overarching set of guiding principles and goals to support the development of a green economy, and an investment plan to support the achievement of national development goals, including the SDGs.</p> <p>>> As of December 2018, the final draft of this document (dated September 2017) had not been approved by the national government.</p>

⁸ Myanmar's Intended Nationally Determined Contribution, 2015.

⁹ Information conveyed to the author during the in-country consultations conducted on November 15 and 16, 2018.

¹⁰ Policy documents without a reference being indicated are not publicly available and were handed out to the author in soft or hard copy during the country consultation conducted on November 15 and 16, 2018.

¹¹ National Energy Policy, 2014.

¹² National Energy Efficiency & Conservation Policy, Strategy and Roadmap for Myanmar, 2015.

The focal point for climate issues in Myanmar is the Environmental Conservation Department (ECD), under the Ministry of Natural Resources and Environmental Conservation (MONREC). It holds the responsibilities of preparing and updating the NDC, developing the national MRV system, and engaging with other ministries and departments on topics related to climate change.

2. Analysis of National MRV Systems

2.1 Carbon pricing status and outlook

The government of Myanmar does not currently have plans to develop or introduce carbon pricing instruments. Carbon pricing is still a novel topic across national ministries and agencies, additionally there is a lack of a general framework for the introduction of “polluter pays” principles and associated economic instruments¹³. Furthermore, energy consumption is subsidized in Myanmar, implicitly putting a negative price on GHG emissions¹⁴.

Nonetheless, Myanmar has been gaining some experience on market based mechanisms and results-based payments related to the reduction of GHG emissions, particularly in the context of the CDM. As of December 2018, Myanmar was host to four CDM initiatives registered by the CDM Executive Board, one consisting of a large-scale hydropower project and three Programmes of Activities (PoA) (see table 3, section 2.4, for further details). Myanmar is also hosting a number of projects under Japan’s Joint Crediting Mechanism (JCM), which include a waste-to-energy plant in the city of Yangon and two energy efficiency projects in the food and beverages industry¹⁵.

Overall, it is expected that the use of carbon market instruments could benefit both Myanmar and the ASEAN region as a whole. Indeed, only a fraction of the estimated 39.7 GW technically feasible hydropower potential¹⁶ in the country has been developed so far, while several ASEAN countries in the region strongly rely on fossil fuels to generate their electricity, with grid emission factors above 0.5 or even 0.7 tCO₂e/MWh¹⁷. An opportunity therefore exists for Myanmar to become an exporter of renewable energy, especially given ASEAN’s ongoing efforts on integrating and interconnecting national electricity grids¹⁸.

2.2 National GHG inventory and MRV processes

There is no MRV framework as such in Myanmar, but some MRV-related processes have been adopted in the compilation of the national GHG inventory. This section provides an overview of these processes.

As part of its Initial National Communication (NC), in 2012 Myanmar formally submitted to the UNFCCC GHG inventory data for years 2000 to 2005. This was the first nation-wide effort to quantify GHG emissions, and it was a process carried out in an ad-hoc manner for the specific purposes of reporting emissions in the NC.

As of December 2018, the national GHG inventory was in the process of being updated and expanded to take account of emissions from years 1990 to 2015. This work was being carried out as part of the Second National Communication (SNC) preparation, an initiative supported by the Global Environment Facility (GEF) with UN Environment as the implementing agency. The SNC was initiated in September 2016 with completion foreseen by December 2019. The team leading the SNC process is totally different from that of the First NC, which led to the loss of some institutional memory, as most of the individuals involved in that process left or retired¹⁹.

¹³ Assessment based on the consultations held in Myanmar on November 15 and 16, 2018.

¹⁴ As reported in the meetings held on November 15 and 16, 2018, subsidies currently spent on energy consumption equate to approximately 400 billion Kyat per year (approximately USD 250 million).

¹⁵ IGES Climate Policy and Market Mechanism Status Report, 2017.

¹⁶ Hydropower Development in Myanmar and its implications on regional energy cooperation, 2015.

¹⁷ Institute for Global Environmental Strategies (2018). List of Grid Emission Factors version 10.3

¹⁸ Moving Forward with ASEAN Interconnected Grid, 2018.

¹⁹ The Status of Monitoring, Reporting and Verification of Nationally Determined Contributions to Climate Actions in Myanmar, Global Green Growth Institute, 2017.

The preparation of the SNC is led by the Environmental Conservation Department (ECD), under MONREC, and is supported by five inter-ministerial working groups: i) GHG inventory and mitigation; ii) vulnerability assessment and mitigation; iii) research and systematic observation; iv) environmentally sound technology; and v) education, training and awareness. More than 100 individuals across ministries participate in these working groups.

GHG emissions for the inventories in the SNC are being computed by multiplying activity data with default emission factors (tier 1) based on 2006 IPCC Guidelines²⁰. Computations are made with the support of IPCC software and spreadsheets. Tier 2 and tier 3 approaches are not yet being adopted in Myanmar, although there exists the intention of moving to higher tiers in the future. For the SNC, a reference and sectoral approach are both being applied to estimate GHG emissions. This is to detect inconsistencies in the data collected from different sources and identify possible errors in computation, thereby supporting QC procedures.

One of the main sources for obtaining activity data to estimate GHG emissions are national statistics prepared by the Central Statistics Organization (CSO). Yet, this data is typically insufficient to carry out all GHG emissions computations necessary, and additional sources are consulted, such as publications or statistics from concerned ministries or departments. Furthermore, ECD conducts a structured data collection process in the form of questionnaires/meetings for the different departments. However, this process is fraught with challenges, due to staff turnover in ministries, difficulties in understanding data requirements, and delays in the provision of requested data, for instance.

Furthermore, for some sectors/sub-sectors there are challenges with regard to the availability of activity level data. For example, difficulties have been reported in the estimation of emissions for road transportation: while statistical data exists on the number of vehicles in Myanmar, there is no data on distance or passengers per vehicle. Additionally, the methods being discussed to obtain this type of data are considered costly and time-consuming.

Another example can be found in the forestry sector, where challenges have been reported on data availability for the early years of the period between 1990-2015, which is covered by the Second NC.

Myanmar also lacks a data management system to support MRV processes. Moreover, no formal QA/QC procedures exist for the preparation of the national GHG inventory. Nonetheless, ECD conducts some QC internally to check the integrity of data supplied by different ministries. This data is then cross-checked with statistical records handled by CSO. No QA procedures are currently in place, but Myanmar has the intention of requesting international organizations to take this responsibility²¹.

Myanmar recognizes the importance of establishing a domestic MRV system, not only for the purposes of keeping track of national GHG emissions in a consistent and reliable manner, but also as a means to establish a robust basis for the definition of economy-wide mitigation targets and track progress in implementation. In this regard, the finalization of the SNC in 2019 will be a landmark moment for future action on climate change in Myanmar. In particular, it will enable a better understanding of existing gaps on MRV and the identification of sub-sectors where the development of facility-level MRV could be prioritized.

All in all, MRV processes in Myanmar at the level of national GHG inventory are conducted in a fragmented and ad-hoc manner, and therefore there is scope for improvement. In recognition of this, a number of capacity building initiatives on MRV are under implementation or have been proposed. In addition to the support provided by UN Environment in the preparation of the SNC, the Global Green Growth Institute (GGGI) has been assisting Myanmar to build its capacity on MRV. This support has mostly consisted of the provision of training sessions across ministries on key MRV concepts. GGGI is also developing a joint proposal with UN Environment for obtaining GEF funding on capacity building for transparency in the context of Article 13 of the Paris Agreement. In case the application is successful, project implementation could start in the fourth quarter of 2019.

20 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

21 Information provided during consultations conducted in Myanmar on November 15 and 16, 2018.

2.3 Sectoral and policy-level MRV

Myanmar currently does not have any sectoral or policy level MRV frameworks in place. An exception to note however, is the forestry sector, in the context of which an MRV framework is in the process of being established for REDD+. As noted in chapter 1, the forestry sector is the largest contributor to GHG emissions in Myanmar, but also a major source of removals. Therefore, this is an important sector in which to accurately record emissions. This was a major catalyst for Myanmar becoming a partner country to the UN-REDD Programme in December 2011. Since then, a REDD+ readiness roadmap has been developed and a number of activities are under implementation.

The main reference for the establishment of Myanmar's framework for REDD+ is the "Forest Reference Emission Level (FREL) of Myanmar"²². This document was developed in alignment with international REDD+ requirements and submitted to the UNFCCC in January 2018. It is currently being revised in order to reflect feedback provided by the UNFCCC.

The scope of the FREL is limited to deforestation²³, the consideration of three carbon pools (above ground biomass, below ground biomass, and litter), and the CO₂ emissions (other GHG are excluded). Its preparation followed the IPCC Good Practice Guidance and Uncertainty Management of National Greenhouse Gas Inventories. The reporting framework for REDD+ is also in the process of being aligned with the national GHG inventory preparation processes.

The FREL submission is completely based on historical data, while the reference basis was the period from 2005 to 2015, given the availability of fairly reliable activity data and emission factors for this period. For this reference period, activity data was estimated based on a sampling approach. The Myanmar FREL is established at the national level, in view of the limited capacities currently observed at the sub-national level²⁴.

The preparation of the FREL is an important step towards the establishment of an MRV framework for REDD+ in Myanmar. Nonetheless, several gaps still need to be addressed, which include the development of standard operating procedures to detect land cover changes and a national forest monitoring and information system that can provide higher levels of data granularity. The preparation of a National Forestry Inventory (NFI) is expected to address some of these gaps.

2.4 MRV at facility level

In Myanmar, no requirements exist or are planned for the MRV of GHG emissions at the facility level. Nevertheless, MRV at the project level has been carried out under the scope of the CDM, even though the purpose of these activities is to claim emission reductions rather than reporting GHG emissions as part of regulations or from a voluntary initiative. Table 3, on the following page, identifies these projects, indicating the type (i.e. small-scale, large-scale or programme of activities), registration date, CDM methodology applied and volume of CERs issued (if applicable). It may be noted that experiences under the CDM are relatively recent and somewhat limited, with just four initiatives registered by the CDM Executive Board and only one which has issued CERs. It is expected that the CERs issued as part of these initiatives can be used for compliance purposes in the scope of CORSIA or the ETS of the Republic of Korea²⁵.

²² Available [here](#).

²³ Definitions of forest degradation as well as methodologies to assess it are currently under discussion in Myanmar.

²⁴ Ibid. Forest Reference Emission Level for Myanmar.

²⁵ Based on information provided during country consultations on November 15 and 16, 2018.

Table 3: CDM Projects in Myanmar with CER Issuance

Name	Type	Registration Date	CDM Methodology	CERs issued
Dapein (1) Hydropower Project	Large Scale	4 February 2013	ACM0002 – Consolidated baseline methodology for grid-connected electricity generation from renewable sources	1,733,299 CERs (for the 04/02/2013 to 31/12/2015 period)
Household energy appliance programme	CDM PoA	10 March 2016	AMS-I.A. – Electricity generation by the user AMS-III.AV. – Low greenhouse gas emitting safe drinking water production systems AMS-II.G. – Energy efficiency measures in thermal applications of non-renewable biomass	N/A
Installation of Energy Efficient Cook Stoves in Myanmar	CDM PoA	15 March 2017	AMS-II.G. – energy efficiency measures in thermal applications of non-renewable biomass from renewable sources	N/A
Clean Energy Program Supported by the Republic of Korea	CDM PoA	28 August 2018	AMS-II.G. – Energy efficiency measures in thermal applications of non-renewable biomass	N/A

Source: CDM Database

While the national government does not currently have plans for introducing MRV at the facility level, there could be a few possible entry points for such an initiative. A window of opportunity is suggested by a GEF supported project on the improvement of Industrial Energy Efficiency in Myanmar²⁶. This project was approved in October 2014 and is being implemented by UNIDO. Its goal is to promote the reduction of GHG emissions in Myanmar's industrial sector through the adoption of energy efficiency measures. Specific goals of this project include improving the national policy and regulatory framework for energy efficiency, and the implementation of energy management systems based on ISO 50001. The project includes carrying out a number of pilots in selected industries, through which facility-level data on energy consumption will be collected and reported. This could be the foundation for the establishment of a bottom-up sectoral framework for the measurement and reporting of facility-level data, which could also include data on GHG emissions and relevant activity levels in support of the potential future use of carbon pricing instruments. In fact, the estimation of GHG emissions is already stated as a goal of this project, even though these do not directly derive from a specific national policy mandate or target.

3. Concluding Remarks and Future Outlook

Myanmar is at the initial stages of development of a framework for the Monitoring, Reporting and Verification of GHG emissions. Some MRV-related processes are followed in the preparation of national GHG inventories, such as emissions quantification based on IPCC guidelines, and some quality control procedures for activity data. On the other hand, MRV frameworks specifically developed to track GHG emissions at the facility level, on policy actions or sectoral programmes still do not exist in Myanmar. An exception to note is the forestry sector, with Myanmar in the process of establishing an MRV framework as part of its national REDD+ programme.

Myanmar has been following a top-down approach to setting-up its national MRV system, with a focus on the preparation of national GHG inventories. In this respect, the completion of the Second National Communication (SNC) in 2019 can be expected to be a turning point for future developments on MRV. In addition to a major update of national GHG emission figures, it will enable a better understanding of current gaps on MRV and the identification of sectors where the development of facility-level MRV could be prioritized. In particular, this development of facility-level MRV could focus on facilities with relevance for carbon pricing instruments in order to enable this option in the future.

26 Improvement of Industrial Energy Efficiency, 2014

Notwithstanding these developments, Myanmar faces a number of challenges in the establishment of a sound and robust MRV framework. Among these are, the lack of an institutional set-up assigning clear responsibilities for the collection of activity level data, limited level of technical capacity, and high staff turnover, the latter significantly hindering the creation of institutional memory. In this regard, Myanmar should endeavour to capitalize on the support provided by GGGI on MRV capacity building, in addition to other initiatives currently under consideration. On the other hand, a more detailed assessment of current gaps and needs is necessary in order to identify further targeted opportunities for support.

Myanmar does not currently have plans to introduce carbon pricing instruments. This should be understood against the background of a general low awareness on the need to develop economic instruments that put a price on negative externalities and gives an economy-wide signal for climate-friendly development. Myanmar also spends a significant amount on subsidies to energy, which in effect put a negative price on GHG emissions. Nonetheless, there are possible entry points for the introduction of carbon pricing instruments and MRV at the facility-level, in particular where opportunities for negative marginal abatement costs could be harnessed. In this respect, energy efficiency is an area that could be targeted initially.

Furthermore, energy efficiency has been recognized as a priority area in the NDC, and a national policy framework is in the process of being established. Myanmar is also acquiring some concrete, hands-on experience in energy management in industries and in the implementation of ISO 50001 as part of a GEF-funded initiative implemented by UNIDO. In this regard, Myanmar could additionally benefit from the experiences of other countries in ASEAN: Singapore, for example, developed its facility-level MRV framework based on energy management regulations that had been previously introduced. Last but not least, in the mid to long run, Myanmar could also capitalize on its recent experiences on market-based mechanisms, namely the CDM, especially with regards to future developments on cooperative approaches in the context of the Paris Agreement.

Acknowledgements

The author would like to thank the support extended by staff of the Environmental Conservation Department, MONREC, in the elaboration of this report and, in particular, in the organization of a fact finding mission to Nay Pyi Taw, Myanmar, on November 15 and 16, 2018, in the course of which the following individuals were consulted:

- Ms. Khin Cho Cho Shein, Deputy Director General, Department of Meteorology and Hydrology, Ministry of Transport and Communications;
- Ms. Thi Thi Soe Min, Assistant Director, Environmental Conservation Department, MONREC;
- Mr. Kyaw Moe Aung, Project Coordinator, Myanmar's Second National Communication;
- Mr. Khin Mg Lwin, Ministry of Transport and Communications;
- Ms. Phyu Phyu Khin, Ministry of Electricity and Energy;
- Mr. Aung Zaw Myint, Ministry of Electricity and Energy;
- Min Min Thu Kyaw, Ministry of Industry;
- Ms. Swai Thi Htut, Ministry of Industry;
- Mr. Nay Tun Oo, Ministry of Construction;
- Mr. Phyo Wai Han, Ministry of Construction;
- Mr. Aung Nay Phyo, Ministry of Construction;
- Mr. Pyae Phyo Aung, Forest Department, MONREC;
- Ms. Danl Thant Zin Maw, Forest Department, MONREC;
- Mr. Aaron Russell, Myanmar Country Representative, Global Green Growth Institute.