SAARC Forest Carbon Concepts, Markets and Standards

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Abstract

SAARC countries offer good cases for forest restoration and conservation in gainful partnerships with local community stakeholders who depend on neighboring forest resources for meeting their subsistence needs including conservation-linked livelihood. Some of these countries have densely populated coasts with predominantly natural resources-based agrarian economy, and so their vulnerability to climate change is high. Their natural resources including cultivable land, forests and wetlands are getting degraded due mainly to heavy biotic pressure brought by huge population, concentrated in comparatively small geographic area. However, tropical forests in general and the coastal mangroves in particular are ensuring substantial sequestration and storage of carbon both in the forest biomass and forest soils of the SAARC countries. Avoiding the release of carbon dioxide resulting through deforestation and forests degradation is even more important phenomenon that is currently occurring in many SAARC countries.

In addition to afforestation and reforestation, avoided deforestation and forests degradation is included as a third category of forest-based activity, qualified for conservation financing under compliance and voluntary forest carbon markets. Reduction of emissions from deforestation and forests degradation (REDD+) is one such emerging carbon finance mechanism that is particularly suitable for the forests including the mangroves of the SAARC countries. Avoided deforestation offers an excellent opportunity for achieving national environmental goals by mitigating Green House Gas emissions while conserving biodiversity and alleviating rural poverty. Greening of the SAARC countries through community conservation activities necessary for reducing deforestation and degradation will result in empowering local communities. Many of the community forests conservation activities are labor-intensive, cost effective, efficient and equitable with large employment and income gains expected to accrue to neighboring poor community. Local surplus labor resources can be utilized in restoring the degraded forest landscapes of the SAARC countries while generating substantial forest carbon credits.

A number of carbon forestry concepts, markets and standards have been discussed in this paper. Introductory section on carbon forestry concepts provide explanation on : carbon forestry objectives, climate change mitigation and adaptation, eligible carbon forestry activities, forest carbon sequestration and storage, carbon forestry in poverty alleviation, carbon forests protection, forest carbon pools, data types, forest carbon assessment tiers, forest carbon assessment, forest carbon monitoring, temporal assessment of deforestation and forests degradation, and monitoring, reporting and verification system. Carbon markets have been discussed in the next section by analyzing and focusing on carbon forestry markets. The last section of the paper deals with main standards that can be applied while designing carbon project, and planning and estimating forest carbon credits.

Key words : CDM, A/R, ARR, IFM, ALM, REDD+, LULUCF, AFOLU, PES, climate change, resilience, mitigation, adaptation, green house gases, protected area, improved forests management, VCS

1. Introduction

All the eight South Asia Association for Regional Cooperation (SAARC) countries (Bangladesh, Nepal, Bhutan, India, Maldives, Sri Lanka, Pakistan and Afghanistan) are low-carbon emitting countries due mainly to their predominantly agrarian economy with low level of industrialization. But being located in a densely populated natural disaster prone region, their vulnerability to climate change is high; for instance, a sea-level rise of 1-2 meter would inundate the substantial area of coastal countries including Bangladesh, Maldives, Sri Lanka, India and Pakistan, thereby adversely affecting a large poor coastal population. The per capita carbon dioxide (CO_2) emission in the SAARC counties (estimated to be as 0.2 ton/year in Bangladesh, for instance) is much lower when compared to 15-20 ton/year in some developed countries. However, the consumption of fossil fuels in some of the SAARC countries is growing fast and increasing motor traffic in big cities such as Dhaka, Kathmandu and Delhi is causing environmental pollution.

Land-based natural resources including mangrove forests are degrading in the SAARC countries due mainly to heavy biotic pressure brought by huge population, concentrated in comparatively small geographic area. Their remainder forests (including man-made plantations) in general and the mangrove forests in particular can ensure substantial sequestration and storage of carbon dioxide, generating forest carbon credits. Avoiding the release of carbon dioxide resulting through deforestation and forests degradation is even more important as a large proportion of the total carbon is released due to deforestation activities that are currently occurring in the SAARC countries. In addition to afforestation and reforestation, avoided deforestation and forests degradation is included as a third category of forest-based activity qualified for conservation financing under compliance and voluntary markets. Reduction of emissions through deforestation and forests degradation (REDD+) is one such emerging mechanism that is particularly suitable for the forests of the SAARC countries.

2. Carbon Forestry Concepts

The neglect of existing natural forests due to lack of funding and inadequate management resulted in natural forests degradation in many SAARC countries. Anthropogenic pressures including increased commercial extraction of forest produce, brought by manifold increase in human population, led to widespread shrinkage and deforestation of natural forests. Keeping in view of deforestation that took place earlier, the Governments of most of the SAARC countries promulgated wildlife acts and gazetted some natural forests as Wildlife Sanctuaries and National Parks mainly to conserve dwindling wildlife and degraded forests. The people-oriented Forestry Policies which were enacted by most of the SAARC countries *inter-alia* emphasized peoples' gainful participation in the sustainable management of government forests. Accordingly, the emphasis of forests management during 80s and 90s gradually shifted from timber production to meeting bonafide consumption needs of local people. Community forestry and social forestry were included in the revised Forest Acts to implement the policy recommendations in most of the SAARC countries.

2.1 Carbon Forestry Objectives

Overall aims of a carbon forestry program could be to achieve, through avoided deforestation and degradation, afforestation and reforestation, and improved forest management activities, carbon sequestration and storage with livelihoods improvements through community participation in forestry activities as well as conservation of flora and fauna species through measures including habitat protection

and improvement The emissions reductions can be achieved through avoided deforestation and avoided forests degradation in selected forests areas subjected to biotic interference. A typical carbon forestry project in a SAARC country may have the following three objectives:

1. **Climate:** to mitigate greenhouse gases (GHG) through both emissions reductions and enhanced removals of carbon dioxide from the atmosphere. That is, to slow or reverse documented deforestation and forest degradation, and generating higher carbon intensities per hectare across more hectares through improved forests management (IFM), and afforestation, reforestation and revegetation (ARR).

2. **Community:** to assist local communities living within an identified zone of influence (may be referred to as the reference region or interface landscape zone) upon the project area by providing alternative livelihood options and conservation-linked value chain development to reduce forest dependency for daily needs and to ensure awareness raising and education facilities for adults and children to increase motivation about the importance of forests for climate change mitigation and adaptation.

3. **Biodiversity:** to conserve the habitat for biodiversity including endangered floral and faunal species, and flagship species such as tiger, elephant, hollock, dolphin, macaque, and other important species of bird, fish, reptile, and other wildlife.

2.2 Climate Change Mitigation and Adaptation

Climate change mitigation would involve either not releasing GHG in atmosphere by improving the technology or/and sequestering released GHG and storing so that adverse climate change impacts do not occur. However, in case GHG is already released and as a result climate change happened then both the concerned community and ecosystem should have resilience and adaptation capacity in order to be able to tolerate adverse impacts of climate change. In other words mitigation is an avoidance phenomenon for unmanageable climate change activities whereas adaptation refers to managing the unavoidable climate change resulting from development activities including industrialization, agriculture, deforestation, etc. For example, controlling release of GHG by avoiding deforestation and forest degradation or sequestrating carbon dioxide through afforestation and reforestation can be categorized as climate change mitigation, whereas improving ecosystem productivity or building capacity of local community in order to make them resilient to climate change can be categorized as an adaptation activity.

Land-use sectors (e.g. forests, agriculture, wetlands) provide low cost opportunities to combat climate change either through reduced GHG emissions or through improved land-use management practices or through carbon sequestration of GHG as sinks. Climate change adaptation of ecosystems can be achieved by enhancing their resilience and productivity. Similarly local community can be better prepared in order to be resilient to climate change.

2.3 Eligible Carbon Forestry Activities

A carbon forestry project activity cycle would include project design, validation/registration, implementation, monitoring, verification/certification and issuance of carbon credits. Only some specified activities have been allowed to be able to generate carbon credits. Eligible activities fit within one of such categories may for instance include afforestation and reforestation (A/R) under CDM, and should have completed all requirements like verification and board approval. Global warming has adversely affected earth's climate, with significant consequences for natural resources including water, soil, forests and air.

Land Use, Land Use Change and Forestry (LULUCF) has been identified as an important land-based activity that mitigates climate change as defined in the Climate Conventions. Forestry, broadly included under LULUCF sector, provides low cost mitigation opportunities to combat climate change either by increasing the removal of GHG from the atmosphere through forests/plantations as carbon sinks or by reducing GHG emissions through avoided deforestation and forests degradation. Till now only reforestation and afforestation are two eligible activities under the Article 12 for non-Annex-I countries including the SAARC countries. Avoided deforestation and forests degradation have now been focused as per the decision taken in the Bali Conference, 2008; Copenhagen, 2009 and Cancun, 2010.

Eligibility of A/R projects would include key requirements including additionality, permanence and leakage. Additionality criterion ensures emission reductions or removals that would not happen in the absence of the project; for example, an A/R project under CDM would require a document that the area under the project was deforested prior to 1990. Ensuring permanence would focus on activities demonstrating that the carbon credits generated from the project are permanent. Project activities must demonstrate that non-permanence is being addressed for issuing of either tCERs or lCERs.

2.4 Forest Carbon Sequestration and Storage

By conserving forests and developing plantations, landscape degradation can be halted, biodiversity and water conserved *in-situ*, and community biomass needs met by utilizing surplus labour. Besides, sustainable forests management opportunities would have significant potential to transfer investment funds and technology, and upgrade institutional capacity of FD field staff and local community organizations for biodiversity conservation, forests landscape restoration and bio-energy. The revenue generated by carbon credits sale can be used to re-vegetate the degraded landscape through *in-situ* biodiversity conservation.

The role of forests in carbon cycle is vital as they account for approximately 80% of CO_2 exchanged between land and atmosphere through the process of photosynthesis. As trees grow, the carbon is stored in biomass by converting CO_2 and water (by using solar energy) into sugars and oxygen (released through the leaves). Forests also release CO_2 during the process of respiration. However, a forest that is growing (i.e. increasing in biomass) will absorb more CO_2 than it releases. So the sequestration and storage potential depends on growing and sustaining forests.

Sustainable forests management in densely populated regions such as the Indian subcontinent would have high socio-environmental benefits for local communities, who are mainly subsistence farmers and laborers. The development and sustainable management of forest carbon sinks will benefit local community by contributing to poverty alleviation through their enhanced income generation and better quality of life. There is substantial economic potential of carbon forestry for the mitigation of global GHG emissions over the coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels.

2.5 Carbon Forestry in Poverty Alleviation

Although climate change, as a public good, is global in its causes and consequences, its adverse impacts are being borne inequitably in different regions and communities of the SAARC countries. Riparian countries such as Bangladesh, Sri Lanka and Maldives, very near to sea level, and coastal poor, dependent on neighboring biodiversity, are being particularly affected adversely. Avoided deforestation

and degradation offer an excellent opportunity for achieving global environmental goals by mitigating GHG emissions while conserving biodiversity and alleviating rural poverty locally. Greening of the SAARC countries through community conservation activities will result in empowering local communities, thereby contributing in improved environmental governance. Many of the community conservation activities are labor intensive, cost effective, efficient and equitable with large employment and income gains expected to accrue to neighboring poor communities. In the process, local surplus labor resources can be utilized in restoring degraded forest landscapes of the SAARC countries and also will generate substantial carbon credits.

Avoiding deforestation and forests degradation is in line with the poverty reduction strategies of the Governments of most of the SAARC countries. Scaling up flows of carbon finance to the SAARC countries to support effective policies and programs for reducing emissions would accelerate the transition to a low-carbon economy. Avoided deforestation will sequester GHG emissions, and generate global and local environmental benefits and would conserve biodiversity and alleviate rural poverty locally.

2.6 Carbon Forests Protection

In some of the densely populous and poor SAARC countries, effective protection of dispersed and mosaic forests is not possible without gainful partnerships of local community. Climate change mitigation from forests conservation is important in addition to controlling deforestation. Participatory management initiatives hasve proved successful in many SAARC countries, thereby proving that conservation of forests is necessary for the forests landscape restoration by involving local community. The forests can be sustainably co-managed locally by sharing benefits accrued as a result of enhanced forests productivity. It should be possible to equitably distribute forests benefits to participating community as naturally regenerating forests would require canopy opening through silvicultral interventions, thereby providing yield as a byproduct. As regenerating forests (either through natural regeneration and/or aided regeneration) sequestrate more carbon than mature standing forests, it may be necessary to take recourse of silvicultural thinning by following selection system for encouraging natural regeneration in mature forests.

2.7 Forest Carbon Pools

Carbon gain-loss method estimates net balance of additions to and removals from a carbon stock (based on annual growth rates), whereas the carbon stock change method estimates the difference in carbon stocks at two periods. Temporal inventories for mangrove forests can provide time series data on growing stock, particularly for trees, and in such a case the later method is suitable for carbon monitoring and reporting. The following carbon pools can be estimated depending on the forest type where carbon inventory is to be designed and implemented:

Above-ground carbon (tree, sapling, seedling, bamboo, cane, crown foliage, branches)

On-ground carbon (woody debris, dead trees, leaf litter, grass)

Below-ground carbon (soils, roots)

2.8 Data Types

Forest carbon inventorying needs the collection of activity data and information for estimating emission factors. Activity data refers to landscape coverage of different land-use that might be present in the forest area to be inventoried, and can be collected through remote sensing and field surveys. Emission factors refer to changes in various carbon pools of forest and can be estimated based on ground data collection.

2.9 Forest Carbon Assessment Tiers

Forest carbon information can be collected at 3 tier levels. Tier 1 uses Inter-governmental Panel on Climate Change (IPCC) default values which are based on simplified assumptions and so are generic. Tier 2 employs country-specific data for key factors that can be used locally for a project area. Tier 3 is the most precise and uses detailed inventory of key forest carbon stocks and temporal assessments by collecting and analyzing data collected by field crew from the project area.

2.10 Forest Carbon Assessment

It is important to develop an appropriate methodology for objectively assessing enhancement of forest carbon stocks as a consequence of conservation and sustainable management of natural forests in the SAARC countries. Forest carbon assessment methods as approved internationally would require updating in view of local forests situations in some of the SAARC countries. The carbon inventory protocol as circulated among the workshop participants includes suitable carbon inventory methods for assessing forests carbon pools (above-ground carbon, on-ground carbon and below-ground carbon, forest soil carbon). Scientific data showing the increment of carbon stocks in forests will be required and more work may be needed in some countries, particularly for the temporal assessment of forests stocking that will include an accurate assessment of deforestation/forests degradation rates. Suitable modalities and procedures for transparent and verifiable assessment of forests changes need to be developed by Forest Departments. This also will require developing a suitable common strategy, approach and modality for assessing positive and negative forests changes over a period of time.

Species specific volume equations and specific gravity may be estimated for carbon stock and historical deforestation and degradation rates can be assessed either by employing temporal inventory data and/or temporal analyses of imageries such as LANDSAT/IRS. Maps can be generated by using remote sensing facilities and base maps at 1:50,000 scale will be helpful in generating these maps. However, it is important to know that carbon inventory and mapping pose some challenges as forests inventory are generally characterized by uncertainty and data limitations. Emission factors may not be available for some of the SAARC countries and land-use changes may happen rather fastly due to heavy biotic pressure. Therefore Forest Departments will require being equipped with the latest equipments and technology, and manned with trained staff.

Measuring of soil carbon as well as below- and above-ground carbon and biomass can be carried out through permanent sample plots determined by systematic random sampling. The dominant pools of biomass and carbon stock (i.e., trees) may be measured every five years, along with periodic independent verification. Measurement of pools that comprise a less significant portion of the overall carbon stock or that are likely to change more slowly, such as soil carbon, may be measured less

frequently, for instance every ten years. Best practices such as remote sensing and field methods can be employed to inform the land use categorizations that are used in measuring and monitoring changes in biomass and carbon. Similar to the case of the project parameters, carbon stock monitoring can be carried out largely by the local community with the FD providing guidance on field inventory protocols. To ensure they are equipped with the necessary knowledge and skills for carbon stock monitoring, NGOs and other relevant institutions can be brought in to provide training-of-trainers to FD field staff as well as the local community on the use of remote sensing and field inventory technologies. Targeted follow-up training will be offered, particularly if technologies used changes.

2.11 Forest Carbon Monitoring

Several aspects of a carbon project may be monitored to ensure that project activities are successfully carried out and adhere to conservation principles. Monitoring of both project parameters and carbon sequestered may be conducted in order to gauge the effectiveness and impacts of project activities; to measure forest carbon; and to inform any adjustments needed to ensure the efficacy of methodologies, implementation activities, or the monitoring plan itself. Key aspects of the project to be monitored include: project boundaries; forest protection; forest management; carbon stock changes; and leakage. It is envisioned that local community, together with the FD field staff, can play a central role in participatory monitoring, with assistance from relevant local NGOs in the areas of administrative, managerial, and financial monitoring.

Periodic monitoring of the boundaries of the project areas may be conducted through the use of appropriate technologies such as remote sensing as well as through monitoring and ground-truthing in the field. Maps can be updated regularly to ensure that monitoring is based on the most current situation. The capacity of institutions such as local community and the FD field staff to understand and utilize monitoring technologies and techniques will be strengthened through targeted training.

2.12 Temporal Assessment of Deforestation and Forests Degradation:

Deforestation is long-term or permanent conversion of land from forest to non-forest uses. Forest degradation is reduction in forest cover, tree density, or tree biomass (and thus carbon stock) that do not qualify as deforestation. International negotiations on forest reference levels, agreed levels for transition point, long-term responsibility, definitions, incentives, etc. are continuing in response to the decisions taken in the Copenhegan and Cancun COP conferences in view of the Bali decision that refers to incremental changes and enhancement of stocks linked to sustainable forest management and conservation in line with the additionality principle. National baselines and emission reference levels, forest stock changes and time series analyses will be required for assessing historical trends of de-generating and/or re-generating forests. Forests under conservation and sustainable management will need to be assessed, inventorized and accounted for at the national and sub-national levels using inter-governmental panel on climate change (IPCC) guidelines in order to be assigned REDD credits for carbon trading. Monitoring of forests carbon stocks and assessing leakage and permanence would be required regularly. Access to remote sensing technology will be helpful but needs to be supplemented by ground truthing to be conducted regularly both at national and local levels.

Increment of carbon stock can be assessed by using scientific data collected from the identified permanent and temporary sample plots. Technology transfer particularly from relevant tropical countries would be helpful in carrying out not only national inventory and carbon credit assessments but also sustainable management of natural forests that have degraded severely due to lack of resources. Some SAARC countries do not currently have a regular forests inventory mechanism and so developing national forests inventory institutions for objectively assessing baseline scenarios and emission reference levels are necessary.

2.13 Monitoring, Reporting and Verification (MRV) System

Main elements of a feasible monitoring, reporting and verification (MRV) system can be identified. Mangrove forests form important bio-geographical zones in the coastal SAARC countries. and shall thus form a stratum when a national MRV system is designed and implemented. In the identified Forest Divisions and Forest Ranges, sample plots (temporary and permanent) can be laid out by estimating appropriate sampling design, sampling intensity, number and location of sample plots on a grid. A two year cycle inventory can be carried out in the sample plots laid out as per the grid by marking them in the field. Mangrove forests can be typically categorized in the following 4 categories:

- Dense forests (more than 70% crown density)
- Moderately dense forests (40-70% crown density)
- Open forests (15-40% crown density)
- Scrub forests (less than 15% crown density)

However, country- and region-specific MRV systems may be necessary in different SAARC countries.

3. Forest Carbon Markets

Developing appropriate conservation financing mechanisms and frameworks is necessary for carrying out forests-based climate change mitigation and adaptation activities. Initiatives such as Payments for Ecosystem services (PES) have developed over the period as a mechanism for valuation of the functions and services from forest ecosystems and compensation to losers from those who benefit. Suitable incentives are being discussed and worked out for payments to the communities and countries which are able to protect their forests beyond an agreed cut off period. Similarly, conserving forests on a progressive sustained yield basis should be well compensated through financial incentives that can be ploughed back in forest restoration, achieved by employing participatory management initiatives/activities. As carbon credit market develops in the SAARC countries, it may be necessary to develop climate change trust funds such as National REDD+ Trust Funds exclusively for addressing forests-based climate change mitigation and adaptation issues. For example, currently there two such funds are in operation in Bangladesh: the climate change trust fund set up by the national government and the climate change resilience fund set up different donors and being managed by the World Bank.

Forest carbon markets can be categorized into two broad types : compliance or regulatory markets such as Kyoto Protocol's Clean Development Mechanism (CDM), and voluntary carbon markets such as the

voluntary over-the-counter (OTC). Project-based markets (e.g. compliance under CDM, voluntary under informal OTC or formal Chicago Climate Exchange, or donor-driven under BioCarbon Fund managed by the World Bank or other donor carbon finance) cater to different projects which result in the generation of carbon credits through project implementation in developing countries (for example, CDM projects implemented in developing countries with buyers of carbon credits from developed countries) or in a developed country (for example, Joint Implementation (JI) mechanism under CDM) with buyers from another developed country. CDM, established under Article 12 of Kyoto Protocol, has been operationalized in 2003 with the unit of trade as Certified Emission Reduction (CER) credits. Most of the credits under CDM have been bought by private companies based in European Union with UK being the largest buyer of credits from a vast majority of projects (mainly in energy efficiency, hydropower and wind) in China, India and Brazil.

Allowance-based markets include the European Union Emissions Trading Scheme (EU ETS) set up by European Parliament as the largest carbon market in the world. Other allowance-based markets include : i) Chicago Climate Exchange (CCX) that trades both allowances and offsets with membership consisting of a wide range of industries including agriculture and forest, ii) Regional Greenhouse Initiative which is a consortium of 10 northeastern and mid-Atlantic US state governments using regulations to force compliance particularly in power sector, iii) New South Wales Greenhouse Gas Abatement Scheme for power sector, and iv) New Zealand Emission Trading Scheme (NZ ETS).

Compliance markets support country and industry compliance with the targets as fixed under Kyoto Protocol as legally binding commitments to reduce GHG emissions on time. CERs are sold in carbon markets, with each CER representing one metric ton carbon dioxide equivalent (tCO_2e). CERs are further classified as temporary CER (tCER) and long-term CER (lCER). In the voluntary markets selling unit is voluntary emission reduction (VER) credit. Removal Units (RMUs) are obtained from LULUCF activities such as afforestation and reforestation. Projects generate credits from eligible activities and companies buy offsets in carbon markets (CCX, ETS and others serve as trading platform) to meet company targets.

Over-the-Counter markets involve a wide range of transactions by many players engaged in many markets. Such markets are called voluntary because they are not subject to emission caps. Project catering to OTC markets are carbon offset projects and are outside of allowance systems. Market drives the prices and transaction volumes in OTC carbon markets. Many private companies are increasingly entering OTC markets based on corporate social responsibility and public relations. Of late REDD has emerged as a major source of credits as a result of strong international support and emerging compliance markets that were strengthened in Bali and Copenhagen conferences. A number of methodologies have been developed, which cater to the development and implementation of REDD projects. As a result, in 2010, REDD surpassed the volume supplied by any other project type.

4. Forest Carbon Standards

Forest carbon standards provide a practical tool to evaluate carbon projects in the early stages of project design and development. Standards enable investors and project managers to identify quality projects by avoiding implementation roadblocks in order to ensure timely delivery of their stated products and outcomes. This helps in the generation of credible carbon credits. There are nearly 30 standard types, which can be categorized into two main types : carbon standards ensuring the quality of carbon product (credits0 and project design process standards ensuring positive community and biodiversity benefits. Main forest carbon standards are presented as below:

- CDM Standards and Methodologies
- Verified Carbon Standards (VCS)
- Gold Standards (supported by World Wide Fund for Nature)
- Climate Action Reserve (CAR) Standards
- Plan Vivo Standards
- American Carbon Registry Standard
- Brasil Mata Viva (BMV)
- Forest Carbon Standard International (FCSI)
- Climate, Community and Biodiversity (CCB) Standards

For forestry projects, the CDM, VCS and CCB standards are particularly suitable and are so employed by most of the projects that have come recently in forest carbon markets. VCS, founded in 2005 and operational since 2007, for voluntary offset markets for Agriculture, Forestry and Other Land Use (AFOLU) projects, facilitate robust, global standards for approval of credible voluntary offsets for projects under REDD, ARR, IFM and Agricultural Land Management (ALM). They have recently included wetlands and grasslands for which new standards are under development. Voluntary carbon units (VCU) are issued by following a rigorous evaluation process.

CCB standards go beyond CDM or VCS requirements by generating positive community and biodiversity benefits by following 15 required criteria and 8 optional criteria, classified under General, Climate, Community and Biodiversity sections. Gold Standards are managed by a company called APX for a non-profit foundation of 60 NGOs. Climate Action Reserve was established in California for US compliance market and has protocols for forestry, livestock methane and landfills. An Edinburgh (UK) based foundation manages Plan Vivo Standards mainly for small community-based forest and agroforestry projects. American Carbon Registry Standards are forestry related standards that were released in 2009 by Winrock International, USA.

5. Conclusion

Given favourable and enabling environment, many SAARC countries offer good cases for forests restoration and conservation in gainful partnerships with local community, who depend on neighboring forests for meeting their subsistence needs including livelihoods. Coastal countries in the SAARC region are particularly prone to negative consequences of global climate change that need to be mitigated by protecting and conserving forests through carbon forestry initiatives that generate forest carbon credits. This workshop would go a long way in developing required capacity, particularly for FD both for climate change mitigation and adaptation of local ecosystems and community.

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