Validation and Verification Manual
for Forestry-based Carbon
Sequestration Projects in China

中国林业碳汇项目审定和核查指南

武曙红　宋维明 / 主编

中国林业出版社

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前　言

随着全球气温的不断上升和世界范围极端气候事件的频繁发生，由人类活动产生的温室气体排放引起的全球变暖问题，已引起国际社会的极大关注。“采取行动减少二氧化碳排放”已成为国际气候谈判议程中的一个重要的议题。从1992年联合国环境与发展大会的“边会”(side event)上首次提出“全球碳排放贸易方案”，到《京都议定书》生效后的今天，“碳贸易”的概念已从当时仅为部分科学家和环保主义者所关注的应对气候变化的金融解决方案，发展到作为实现可持续发展、减缓和适应气候变化、灾害管理三重目标的低成本途径和核心经济手段被各国政府纳入国家的低碳发展战略。

自《联合国气候变化框架公约》第15次缔约方会议前夕，中国政府对外宣布，到2020年中国单位GDP CO_2排放比2005年下降40%~45%的自主减排目标以来，我国政府不遗余力地推动节能减排与低碳转型的实践：中共中央十七届五中全会通过的《关于制定国民经济和社会发展第十二个五年规划的建议》中，明确提出要积极应对气候变化，把大幅度降低二氧化碳排放强度作为约束性指标；在国务院下发的《关于加快培育和发展战略性新兴产业的决定》中也首次将“碳交易”纳入官方文件；在国家发展和改革委员会发布的《关于开展低碳省区与低碳城市的试点工作的通知》中，明确提出要在全国“五省八市”开展低碳省区与低碳城市试点工作。这些官方文件的制定均表明了中国政府在应对气候变化问题上的信心和决心。虽然中央政府目前还没有明确地将具体的碳减排指标分解到地方，但国家在“十二五”规划中对碳强度

及排放指标的约束，决定了“十二五”期间各地方政府和各个行业均有承诺减少碳排放减排指标的可能性。目前，中国各相关管理部门已经提出了未来五年将在中国特定的区域和特定的行业开展碳交易的计划。为了顺应国家发展低碳经济的趋势，各地方政府根据各自的地方利益、综合实力、发展水平以及自然资源状况，积极探索利用市场机制促进节能减排的政策和措施。鉴于在《京都议定书》清洁发展机制的碳交易市场中获得的启示和经验，连接现代金融业和低碳产业的碳金融行业，已经受到了我国政府和企业的极大关注。碳金融已被作为应对气候变化的主要激励机制和解决方案，成为各地方政府推动低碳发展重要的路径选择。

我国作为全球碳排放量最大的国家，在利用市场机制促进节能减排的行动中，北京、上海等地利用自身的区位优势，先后成立了北京环境交易所、北京林权交易所、上海环境能源交易所以及天津排放权交易所等碳金融服务机构。随着国家“十二五”规划相关政策的实施，发展林业碳汇市场也将被作为一种低成本的应对气候变化行动的激励机制和解决方案，成为实现2020年我国森林面积增加4000公顷，森林蓄积量增加13亿立方米战略目标的重要路径选择。

我国是第一个成功注册清洁发展机制（CDM）碳汇项目的国家，但这只意味着我国在CDM碳汇项目方法学以及项目设计方面技术的成功，而无论是京都市场还是非京都市场的碳汇交易都是市场经济条件下的市场行为，我国在未来国际碳汇市场中所占的份额不仅取决于增汇技术和潜力，更多的还取决于碳汇项目本身的质量、所采用的审定、核查、认证标准以及公众对审定和核查机构权威性的认可度。虽然《联合国气候变化框架公约》缔约方会议、国际碳排放联盟以及生物多样性保护联盟等机构和组织相继开发了CDM林业碳汇项目方式和程序、AFOLU－VCS、CCBS、

CFS 以及 CCX 等与林业碳汇项目开发、审定、核查以及核证的标准，但这些标准对于缺乏激励机制和市场机构，仍处于起步阶段的我国林业碳汇市场而言，仍不具备应用条件和能力准备。

虽然自 2008 年以来，在中国绿色碳基金、中国绿色碳汇基金会、中国石油股份有限公司以及北京林权交易所等碳金融服务机构的支持和推动下，北京、内蒙古、河北等地已逐步开始实施自愿林业碳汇项目，在中国开启了自愿碳减排市场的新篇章。目前，中国绿色碳汇基金会也正在积极推进这批项目产生的林业碳信用的交易，但由于目前国家碳汇管理办公室对此类市场还没有制定出任何规范的交易体系和核查/认证林业碳汇项目的标准，对审定、核查、核证国内林业碳汇项目的机构的授权或指定也没有严格的审批程序和资质要求，成功交易这些林业碳信用仍还面临着巨大的挑战。

随着国内林业碳汇市场规模的进一步发展，审定和核查标准的缺乏不仅会导致国内林业碳汇市场交易中不同林业碳汇项目之间的林业碳信用缺乏可比性，使林业碳汇市场秩序处于混乱状态，还将影响我国林业碳信用的信誉度和国内外林业碳信用投资者和购买者对林业碳信用的信心，使我国的林业碳汇项目在国际林业碳汇市场中失去竞争力。因此，在顺应国际林业发展的潮流、实现我国地区资源优化配置的背景要求下，北京林业大学碳汇计量与监测中心精心策划并组织国内林业碳汇领域的专家参与编撰了本书，本书集合了我国林业碳汇领域业内权威机构和资深专家的观点，相信对从事与林业碳汇相关业务的政府机构、企业、科研院校、核查机构、咨询机构等人员具有重要的参考价值。

编 者

2012 年 4 月于北京

Preface

As the increase of the global temperature and the frequency of extreme climate events, the problems of global warming coursed by human activities, in form of emission of carbon dioxide has aroused wide attentions. "Take actions to reduce the emission of carbon dioxide" has caused international society' great attention. From first global carbon emission trading strategy that was proposed on UNCED side event in 1992 to Kyoto Protocol which was in effect in 2005, "carbon trading" has already been different from just a financial solution of dealing with climate change which focused by some scientists and environmentalists, and now becomes a low-cost way and core economics means of achieving sustainable development, mitigation climate change, emergency of management, and this approach has been used by many countries as a low-carbon development strategy.

From the eve of the 15th session of the conference of Parties, Chinese government announced that, the goal of China' emission reduction is a 40% -45% reduction in carbon intensity (CO_2 emissions per unit of GDP) by 2020 compared with 2005, our government spare no efforts to promote energy saving, emission reduction, and practice Low Carbon Transformation : The Twelfth Five-Year Plan for Economic and Social Development, passed by the fifth plenary session of the 17th CPC Central Committee , proposed that we must actively respond to climate change and make carbon dioxide emissions intensity reduction as an obligatory target; On Speeding up the Cultivating and Developing Strate-

gic New Industry Decision which was issued by the State Council, points out that "carbon trading" need to be included into the official documents; The Notice about Starting Low Carbon Provinces and Low Carbon Cities Pilot Projects, issued by China's Reform and Development Commission, proposes that we need carry out low carbon provinces and low carbon cities of pilot projects in "five provinces and eight cities". These documents indicate that Chinese government' confidence and determination on dealing with climate change. Although central government hasn't allocated the emission reduction targets yet, the index in "the twelfth five-year plan" determines the possibility of reducing emission in every province and industry. Now the relative management section proposed the plan of reducing emission in China' spatial areas and industries in the next five years. In order to comply with the trend of the low-economics development, based on the local interest, comprehensive strength, development level, local governments are starting to explore the strategy of energy saving and emission reduction. In the consideration of the revelation and experiences in carbon trade market of CDM, carbon financial industry, which combines with modern financial industry and low-carbon industry, has became a great choice of promoting low-carbon development of every local government.

As China is the largest contributor of carbon emission, in the action of using market mechanism as the solution of energy saving and emission reduction, China's government taking location advantage of Beijing and Shanghai, successively established Beijing environmental exchange, Beijing forest exchange, Shanghai environment energy exchange and Tianjin climate exchange. With the practice of the twelfth five-year plan, the development of forestry carbon market will be

viewed as an incentive mechanism and solution strategy of dealing with climate change in a low-cost way. And this would become a great choice of achieving expanding forest coverage by 40 million hectares and forest volume by 1. 3 billion cubic meters.

China is the very first country witch successfully registered CDM forestry carbon project, but this only means that we are successful in developing methodology and project design technology of CDM forestry carbon projects. Either in the Kyoto Carbon Market or Voluntary Carbon Market, the forestry carbon trade is market behavior under the market economy conditions. The share of the market for China in the future international carbon market is not only determined by carbon sink increasing technology and potential , but also by the quality of carbon sink projects, the certification standards, verification and certification, the recognition of verification institutions authority by the public. Though the United Nations framework convention on climate change conference of the Parties, international carbon emissions alliance, biological diversity protection union has developed the methods and procedures of CDM forestry carbon projects, such as AFOLU-VCS, CCBS and CFS, these standards are lack of incentive mechanism and market institutions. And for our elementary forestry carbon market, these standards have no application conditions and capability.

Although since Beijing, Inner Mongolia and Hebei began practicing voluntary forestry carbon projects which are backed by carbon financial service institutions such as CGCF, Chinese Petroleum Corporation, China has opened a new chapter of voluntary forestry carbon market. Now CGCF is dedicated to promote the trades of forestry carbon credit of these projects, but there are no standards to restrain cap-and-

trade system, verification and certification standards, plus there are no procedures for examination and approval when we need to improve an institution to examine and approve, so these forestry carbon credits are still facing a fudge challenge.

As the development of China' forestry carbon market, the lack of standards of verification and certification will result in the lack of comparability between different forestry carbon projects in China, and disordering the forestry carbon market sequence, and this would impact the creditworthiness of China' forestry carbon credits and the confidence of the domestic and overseas investors and buyers, and finally make China' forestry carbon projects lose their competitiveness in international forestry carbon market. So under the request of complying with the tide of international forestry development and achieve China' local resources optimization allocation, Carbon Measurement and Monitoring Center of Beijing Forestry University organized the authorities in China' forestry carbon field to compile this book. This book gathered the opinions of authoritative institutions and senior experts, and we believe this book has great reference value for many people who work for the institutions related to forestry carbon, such as government institutions, companies, research institutions, verification institutions and advisory bodies.

Editor
Beijing
April, 2012

缩略词

AFOLU：农业、林业和其他土地利用

CDM：清洁发展机制

CCBS：气候、社区和生物多样性标准

CFS：林业碳标准

CCX：芝加哥气候交易所

GHG：温室气体

IPCC：政府间气候变化专门委员会

VCS：自愿碳标准

Acronyms

AFOLU: Agriculture, forestry and other land uses

CDM: Clean Development Mechanism

CCBS: Climate, Community and Biodiversity Standard

CFS: Carbon Forestry Standard

GHG: Greenhouse Gas

IPCC: Intergovernmental Panel on Climate Change

VCS: Voluntary Carbon Standard

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1 范围和规范性引用文件

1.1 范　围

本指南适用于在中国实施的林业碳汇项目的审定和核查。

1.2 规范性引用文件

下列文件所包含的条款通过本指南的引用而构成为本指南的条款。凡是标注日期的引用文件，其随后所有的修改单(不包括勘误的内容)或修订版均不适用于本指南。凡是不标注日期的引用文件，其最新版本适用于本指南。

——《IPCC 土地利用、土地利用变化和林业优良做法指南》；

——《IPCC 2000 优良做法指南和不确定性管理》；

——《IPCC 2006 国家温室气体清单指南》；

——《CDM 审定和核查手册》；

——《CDM 造林再造林项目方式和程序》。

2 术语和定义

下列术语和定义适用于本指南。

林业碳汇项目(forest-based carbon sequestration project):

以增加和维持森林碳储量为目的的造林项目再造林项目、可持续的森林管理项目和避免毁林项目。

森林(forest):

面积大于0.05~1.0hm^2、林木冠层覆盖度(或立木度)10%~30%、就地生长成熟时最低树高可达2~5m的土地。冠层覆盖度尚未达到10%~30%或树高尚未达到2~5m的天然和人工幼龄林也属森林。

造林(forestation):

通过栽植、播种或人工促进天然下种方式,将不曾为森林的土地转化为有林地的直接人为活动。

再造林(reforestation):

通过栽植、播种或人工促进天然下种方式,将曾经为林地的非林地转为有林地的直接人为活动。

植被恢复(revegetation):

通过建立最小面积为0.5hm^{2}的植被,但不满足造林和再造林定义的增加立地碳储量的直接人为活动。

可持续森林管理(sustainable forest management):

能够维持森林健康及生物多样性与社会对林产品日益增长的需求的森林管理活动。