Chapter 12
Nature-based Solutions

The Voluntary Carbon Market Explained

Chapter 12
Nature-based Solutions
Nature-based solutions (NbS) are actions to protect, sustainably manage, and restore ecosystems with their benefits for humans and nature. Identified as one of the most important and cost-effective tools to mitigate climate change while providing important social, economic, and ecological benefits, NbS could deliver about one-third of the emission reductions and removals needed to keep warming below 1.5°C (as estimated by Roe et al. 2019 and Griscom et al. 2017, see further reading below).

The voluntary carbon market (VCM) supports NbS through the development of projects or programs that sequester and avoid the emission of greenhouse gases (GHGs) and trade of carbon credits generated by those activities. The VCM NbS projects or programs that can be certified by VCM carbon standards fall into three main classes: forestry, agriculture, and wetlands.

Forestry projects and programs provide the vast majority of NbS credits in the VCM. Avoided forest conversion and reforestation are the NbS with greatest potential to deliver climate change mitigation as well as multiple other ecological and social benefits.

The largest supply of VCM credits come from “Reducing Emissions from Deforestation and Degradation plus conservation, sustainable management, and enhancement of forest stocks” (REDD+) activities. REDD+ may be developed to generate carbon credits at an individual project scale (e.g., avoided deforestation projects) or at the scale of jurisdictional REDD+ programs.

Other types of forestry NbS that can generate carbon credits are Afforestation, Reforestation and Revegetation (ARR) and Improved Forest Management (IFM). ARR projects restore degraded forest land, reforest previously forested land, and convert non-forest land to forests through human intervention. IFM projects increase carbon stocks or reduce GHG emissions in both natural forests and plantations, through activities such as reduced-impact logging and extended harvest cycles.

Agricultural NbS projects and programs include regenerative agriculture practices that sequester soil carbon, such as no-tillage, cover crop rotation and biochar. Agricultural NbS also includes activities that reduce emissions of methane and nitrous oxide, such as livestock and fertilizer management. Another type of agricultural NbS that can generate carbon credits is agroforestry—when trees are planted in
the same land areas used for crops or livestock. Projects to restore and avoid the conversion of grasslands may also fall under agricultural NbS. Sustainable grassland management projects may include reducing land used for livestock grazing, avoided conversion to crop production, managing for fire and drought, building or restoring soil carbon, and planting of vegetation.

Wetlands—including coastal wetlands (mangroves, marshes and seagrass) and peatlands—hold the greatest amount of carbon stocks per unit area of any ecosystem. Wetlands are important carbon sinks and can become major sources of emissions when damaged or converted. Thus, avoided impacts on and restoration of wetlands are important climate change mitigation strategies. Coastal wetland NbS projects or program activities are often referred to as ‘blue carbon,’ and include avoided conversion or degradation of coastal ecosystems; restoration of mangroves, marshes, and seagrasses; and enhancing the growth of kelp or shellfish. Peatland NbS activities include avoided conversion or degradation of peatlands, rewetting of drained peatlands, and restoration of peatland vegetation.

Which standards certify NbS credits?

To generate credits that are tradable in the VCM, NbS projects and programs need to be covered by methodologies that guide the quantification of GHG emission reductions and removals. The Verified Carbon Standard (VCS), the Gold Standard (GS), the Climate Action Reserve (CAR), and the American Carbon Registry (ACR) certify credits from NbS projects and programs. There are also standards that exclusively certify credits from REDD+ programs. The NbS project types and methodologies for which VCS, GS, CAR, and ACR issue credits (as of October 2021) and the standards that certify REDD+ are detailed in Table 12.1.

NbS projects often provide social, ecological and sustainable development benefits in addition to climate benefits and can support the achievement of Sustainable Development Goals (SDGs). Standards that credit SDG benefits of projects through labels or the issuance of tradable assets are still relatively new, and robust methodologies are under development. The Climate, Community and Biodiversity Standard (CCB) and the Sustainable Development Verified Impact Standard (SD VISta) and the Gold Standard for the Global Goals (GS4GG) allow the certification of socio-economic benefits.

What is the demand for NbS credits in the VCM?

Although NbS are essential to achieve global climate change mitigation goals, compliance carbon markets have historically excluded NbS credits due to concerns about permanence, conservative baselines, and additionality. However, in the last few years, demand for NbS credits in the VCM has expanded rapidly (see Figure 12.1) as voluntary buyers are attracted to the multiple social-environmental benefits and the large inventories of NbS projects and programs. NbS credits are now preferred by voluntary buyers and the supply of credits from NbS projects and programs is increasing.
Table 12.1: NbS project types for which standards issue credits

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<thead>
<tr>
<th>Standard</th>
<th>Forestry</th>
<th>Agriculture</th>
<th>Wetlands</th>
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<td><strong>Verified Carbon Standard (VCS)</strong></td>
<td>REDD+ for avoiding planned and unplanned deforestation and degradation in forests and wetlands; mosaic and landscape-scale REDD+; improved forest management (IFM) through extension of rotation age; avoided ecosystem conversion; preventing planned degradation; IFM in temperate and boreal forests; IFM through reduced impacted logging; avoided degradation through fire management; Canadian forest carbon offsets (Verra methodologies)</td>
<td>Sustainable agricultural land management; soil carbon; N2O emission reductions in crops; sustainable grassland management; adjustment of fire and grazing for grasslands management; improved agricultural land management; grassland avoided ecosystem conversion; reduction of methane emissions from ruminants; use of organic bedding material (Verra methodologies)</td>
<td>Avoided planned conversion of peat swamp forests; coastal wetland creation; rewetting drained tropical and temperate peatlands; tidal wetland and seagrass restoration (Verra methodologies)</td>
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<tr>
<td><strong>Gold Standard (GS)</strong></td>
<td>Afforestation/Reforestation (GS impact quantification) GS does not issue credits for REDD+ projects due to concerns about leakage and baseline uncertainty (GS NbS)</td>
<td>Soil carbon; low tillage; methane reduction; livestock; water impacts (GS impact quantification)</td>
<td>Blue carbon (GS NbS)</td>
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<tr>
<td><strong>American Carbon Registry (ACR)</strong></td>
<td>Afforestation/Reforestation of degraded lands; IFM on Canadian and non-federal U.S. lands; IFM on non-industrial private lands (ACR Methodologies)</td>
<td>Avoided conversion of grass- and shrublands to crop production (ACR Methodologies)</td>
<td>Restoration of California deltaic and coastal wetlands; Restoration of Pocosin wetlands (ACR Methodologies)</td>
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<tr>
<td><strong>Climate Action Reserve (CAR)</strong></td>
<td>Forests; Mexican forests; urban forest management and tree planting (CAR Protocols)</td>
<td>Biochar; grasslands; Canadian grasslands; livestock in Mexico and in the U.S.; nitrogen management; rice cultivation (CAR Protocols)</td>
<td>No protocols for wetlands (CAR Protocols)</td>
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The Taskforce on Scaling the Voluntary Carbon Market estimates that the VCM needs to grow to 15 times its current size by 2030 to keep global warming below 1.5°C, and that at least two-thirds of carbon credits generated per year should come from NbS. Investment and demand for credits from the VCM at this scale would accelerate NbS and secure needed climate, ecosystem services, biodiversity, and socio-economic benefits.

There are also questions about the types of NbS credits that buyers demand and that the VCM can support. Private sector buyers may prefer project-level credits over jurisdictional-level credits because the climate and socio-economic impacts at the project level are easier to understand, audit, and communicate. Clear narratives about huge potential benefits of large-scale NbS can guide buyers to invest in these essential activities.

Governments can engage in jurisdictional programs to access payments that support forest governance and public programs. As adopting and implementing public policies takes time, governments can support investment in carbon projects and programs in areas where ecosystems are lost rapidly and where the reach of public institutions is weak.

Carbon projects and programs in the VCM should never replace public action. However, the ability of VCM projects and programs to be designed and implemented relatively quickly and in areas out of reach of public policy makes them an important source of finance for and driver of climate change mitigation. VCM activities also attract foreign direct investments in hard currencies into sectors that are often cut off from financial services and credit access. Through REDD+ nesting, defined safeguards, and guidance on benefit sharing, governments can ensure that carbon projects are of environmental and social integrity.

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### Table 12.1: NbS project types for which standards issue credits continued

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<tr>
<td>Jurisdictional and Nested REDD+ Framework (JNR)</td>
<td>JNR and ART/TREES specifically provide methodologies to certify jurisdictional-scale REDD+ credits. So far, no credits have been issued under JNR or ART/TREES.</td>
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<tr>
<td>Architecture for REDD+ Transactions’ The REDD+ Environmental Excellence Standard (ART/TREES)</td>
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<td></td>
<td>JNR and ART/TREES do not provide methodologies for Agriculture or Wetlands. However, REDD+ activities may include peatlands, mangroves or other wetland ecosystems.</td>
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Box 12.1: High Forest Low Deforestation (HFLD) Countries

Under VCM rules, GHG emission reductions and consequent results-based payments for avoided deforestation or degradation can only be generated where there are measured, evident threats to forests. Credits traded in the VCM represent reductions in GHG emissions calculated against a counterfactual baseline scenario. This means that VCM credits are not designed to incentivize or fund forest conservation in areas with low rates of deforestation, such as HFLD countries. The underlying logic of carbon markets therefore leaves limited scope for conservation projects and programs to access carbon finance.

However, there is interest in finding incentives for HFLD countries that could enable access to market finance. The ART/TREES standard (version 2.0) provides for carbon market payments for HFLD countries, but it remains to be seen how the proposed rules are applied by countries. Additionally, mechanisms outside of the VCM should be developed to support HFLD areas for the service of providing vital carbon sinks and safeguarding natural ecosystems and biodiversity. Such mechanisms could be implemented in the context of the Warsaw Framework for REDD+, which explicitly recognizes the importance of conservation. Conservation could be rewarded through alternative finance or results-based payments.
Further Reading


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