

Position Statement on Climate Smart Forestry

Introduction

Climate smart forestry describes a wide range of practices intended to mitigate and adapt to climate change. Climate smart forestry practices are considered *nature based solutions* to address climate change and forest products generated with climate smart forestry practices are *climate smart commodities*. There is no single authoritative definition of climate smart forestry and tensions exist at international, national, and local levels over what practices should be considered climate smart forestry. At stake in these debates are climate and non-climate related risks to economic outcomes, ecosystem services, intrinsic values attributed to forests, and the special relationships people and communities have with forests.

Climate smart forestry practices, like all forestry, are likely to result in trade-offs producing winners and losers with the potential for more or less equitable and just outcomes. In this context the Forest Stewards Guild has prepared this Position Statement with the purpose of:

1) providing a brief overview of the current state of climate smart forestry;

2) highlighting advantages and trade-offs associated with climate smart forestry to facilitate more informed and robust dialog in implementation of climate smart forestry practices; and

3) state our position on climate smart forestry through the lens of the Guild's six <u>guiding</u> <u>principles</u>.

This Position Statement is timely and relevant in the context of rapidly developing government actions to encourage climate smart forestry, specifically President Biden's executive order, "Tackling the Climate Crisis at Home and Abroad" and the passage of the Infrastructure Investment and Jobs Act and the Inflation Reduction Act which have created the directive and financial support to expand and incentivize climate smart forestry. As a result, more than a billion dollars is being invested by USDA and others to support projects aimed at production and marketing of climate smart commodities and the monitoring and development of climate smart agriculture and forestry practices (e.g. USDA-NRCS-COMM-22-NOFO0001139). Successful implementation of these incentives requires input about what projects and practices should qualify and how success is gauged. As a leading voice for ecologically, economically, and socially responsible forestry, the Guild and its members are increasingly called to weigh in on emerging climate smart forestry practices, projects, and policy.





What is climate smart forestry?

The term *climate smart forestry* evolved from climate smart agriculture to describe sustainable forest management intended to adapt to reduce the impacts of climate change (Bowditch et al., 2020; Nabuurs et al., 2017). Multiple, sometimes conflicting definitions of climate smart forestry co-exist in policy documents and the scientific literature (see **Box 1**). The lack of a single authoritative definition can lead to misunderstandings, but more open and general descriptions allow the term to encompass the wide range of practices and considerations that go into climate smart forestry across different socialecological systems. While many definitions exist, each with important nuance, there are three dimensions of climate smart forestry consistently included in policy documents and literature: 1) climate smart forestry helps forests *adapt* to future climate conditions, 2) climate smart forestry *mitigates* climate change by reducing emissions and sequestering and/or storing carbon, 3) climate smart forestry produces desirable social outcomes.

Adapt

Multiple strategies can lead to forests that are better adapted to climate that is increasingly deviating from historical conditions. Various adaptation frameworks have been proposed (e.g., Lynch et al., 2021; Millar et al., 2007; Nagel et al., 2017; Schuurman et al., 2022) which generally describe three types of active strategies: 1) making forests more *resistant* to climate change and climate induced disturbances, 2) making forests more *resilient*, and 3) transitioning forests from historical conditions into ecosystems better suited for the climate of the future. Specific forest practices for adapting to climate change will vary based on the region, forest type, objectives, and social-ecological context (Himes et al., 2023). Common practices to increase resistance include thinning to reduce stand density which can increase water availability for residual trees (D'Amato et al., 2013; Young et al., 2023). Increasing tree species

Box 1. Definitions of Climate Smart Forestry

Below are some of the prominent definitions of climate smart forestry, although many organizations have adopted their own. Cooper and MacFarlane note that "[s]pecific definitions for [climate smart forestry] vary widely, with some emphasizing sustainability or economics, and others highlighting landscape carbon reserves... As such, [climate smart forestry] is seemingly being applied to a wide swath of activities and interpreted uniquely by each audience, landowner type, and practice" (2023). These diverse understandings of climate smart forestry invite disagreement about what kind of practices qualify as climate smart.

"Climate-smart agriculture and forestry is an integrated approach that enables farmers, ranchers, and forest landowners to respond to climate change by reducing or removing greenhouse gas emissions (mitigation) and adapting and building resilience (adaptation), while sustainably increasing agricultural productivity and incomes" (USDA).

"[Climate smart forestry] is more than just storing carbon in forest ecosystems; it builds upon three main objectives; (i) reducing and/or removing greenhouse gas emissions; (ii) adapting and building forest resilience to climate change; and (iii) sustainably increasing forest productivity and incomes." (Nabuurs et al., 2017)

"Climate-smart forestry is sustainable adaptive forest management and governance to protect and enhance the potential of forests to adapt to, and mitigate climate change. The aim is to sustain ecosystem integrity and functions and to ensure the continuous delivery of ecosystem goods and services, while minimizing the impact of climate-induced changes on mountain forests on well-being and nature's contribution to people...climate smart forestry should enable both forests and society to transform, adapt to and mitigate climate-induced changes" (Bowditich et al., 2020).



diversity (Messier et al., 2021) and retaining old, large trees for their contributions to ecosystem functions, preservation of mycorrhizal networks and genetic diversity (Lutz et al., 2018; Mildrexler et al., 2023) are examples of strategies suggested to improve forest resilience. The Forest Stewards' Guild position paper on Old Growth Forests and their importance provides further detail regarding mature and late-seral forest habitats (https://foreststewardsguild.org/oldgrowth/). Assisted migration is one way to transition forest ecosystems to be more adapted to anticipated climate of the future (Dumroese et al., 2015; Gustafson et al., 2023; Nagel et al., 2017).

Mitigate

Mitigation refers to the ability of forests to reduce atmospheric greenhouse gas concentrations, particularly carbon dioxide (CO₂). Trees sequester carbon through photosynthesis as they grow and store carbon in wood. The rate of sequestration (growth) and duration of carbon storage before it returns to the atmosphere through combustion or decomposition both contribute to how much forests mitigate climate change. Young, intensively managed forests tend to sequester carbon from the atmosphere at a rapid rate, but old forests tend to store more carbon. Mitigation is further complicated by the fact that some forest products also store carbon for a long time (e.g., wood used in building

Box 1. Definitions of Climate Smart Forestry Continued

"CSF builds on the concepts of sustainable forest management, with a strong focus on climate and ecosystem services. It builds on three mutually reinforcing components:

- Increasing carbon storage in forests and wood products, in conjunction with the provisioning of other ecosystem services;
- Enhancing the health and resilience through adaptive forest management; and
- Using wood resources sustainably to substitute non-renewable, carbon-intensive materials" (Verkerk, et al., 2020).

"Climate-Smart Forestry (CSF) is a collection of strategies and management actions that increase the carbon storage benefits from forests and the forest sector, in a way that also supports ecosystem services and cultural values. It 1) reduces carbon emissions, 2) increases forest resilience to climate change, and 3) supports forest economies by increasing forest productivity and incomes" (climatesmartforestry.org).

"Climate smart forestry refers to the sustainable management of forests with a focus on mitigating, reducing and adapting to the impacts of climate change" (rayonier.com).

houses) while others release stored CO₂ back to the atmosphere quickly (e.g., paper decomposing in a landfill or biomass that is burned). Forest management activities also tend to emit greenhouse gases directly, for instance, as diesel burning equipment is used to harvest and transport timber. Indirect factors also affect the mitigation potential of forests. For instance, if wood products, like mass timber, replace other materials like steel and concrete that release large amounts of greenhouse gas to the atmosphere when they are made (Churkina et al., 2020; Himes & Busby, 2020; Oliver et al., 2014), or if woody biomass used to generate energy can reduce dependence on fossil fuels (Nabuurs et al., 2017). Further, reducing harvests to increase carbon storage in one place can lead to importing more wood products from further away, increasing transportation related greenhouse gas emissions and potentially resulting in no change in forest carbon storage at the global level (often called leakage) (Gan & McCarl, 2007). Scientific tools, like remote sensing and sophisticated models, are allowing researchers to better understand how all of these factors interact to assess the mitigation potential of different forest management approaches (e.g., Diaz et al., 2018; Law et al., 2018; Peng et al., 2023) but there remains much



uncertainty and argument over the appropriate assumptions and system boundaries (Badgley et al., 2022; Cowie et al., 2021; Giuntoli et al., 2020; Howard et al., 2021; Wells et al., 2023).

Social Outcomes

Social outcomes of climate smart forestry are wide ranging. Often economic outcomes are emphasized, specifically through jobs for local communities, increased production of forest products and/or payments for other ecosystem services like carbon storage (Gežík et al., 2021; Shephard et al., 2022; Verkerk et al., 2020). However, social outcomes may also include impacts like the health and wellbeing of local people and non-monetary ways forests contribute to a good life through contributions like recreation, aesthetics, spiritual experiences, connectedness with the natural world, sense of place, and identity (Cooper & MacFarlane, 2023; Raymond et al., 2023). Some of these other values associated with forests may depend on treating forests as though they are important for their own sake and not only for their utility to people. Some aspects of what constitute desirable social outcomes will depend on the local community, their values, and worldviews. Others, like contributions to the global economy and meeting demand for wood products have much wider impacts. Determining the overall benefit or cost of forest practices in terms of social outcomes requires assessing the diverse ways people value and depend on forests, considering who benefits and who might suffer, and acknowledging inequity in power dynamics and historical treatment of some groups, for example tribes and minoritized communities (Cooper & MacFarlane, 2023).

Synergies, complications, and tradeoffs

Some definitions of climate smart forestry suggest that practices must improve adaptation, mitigation, and social outcomes all at the same time while others imply improvements in one or more areas are sufficient. Some practices may make forests more adapted to future changes but reduce their mitigation potential, for example reducing stocking levels or transitioning to more drought adapted but slower growing tree species could reduce carbon sequestration rates and storage. Other practices may increase climate adaptation and mitigation but have undesirable social outcomes. For instance, shifting timber production-oriented forests toward lower densities, mixtures of species, and longer rotations to increase carbon storage and forest resilience may result in fewer harvesting opportunities, negatively impacting local economies.





Ideally, incentives will encourage practices that synergistically support adaptation, mitigation, and social outcomes, but climate smart forestry, like all forest practices, will result in trade-offs. Because people have diverse values and different priorities for forests there is the potential for conflicts. Even forest management strategies that seem like climate smart forestry will have winners and losers. We encourage practitioners of climate smart forestry to be mindful of the trade-offs associated with their practices and transparent about limitations.

Forest Stewards Guild Position on Climate Smart Forestry

The Guild holds that forests have an effect on and are influenced by climate change and forest management has potential to both contribute to and combat global warming (see Policy Statement: Climate Change and Forests). Climate smart forestry is a concept that has the power to engage, educate, inspire, stimulate, and motivate foresters and society more broadly to pursue forest practices leading to more resilient forests and communities capable of withstanding future conditions and preventing more extreme climate change. However, climate smart forestry, like all forest practices, can result in trade-offs between forest goods, services, and values (Bradford & D'Amato, 2012; Himes et al., 2020). While climate change is a defining issue of our generation, the Guild holds that forestry should holistically engage forests, as complex ecological and social systems and as such avoid narrowly focusing on a single objective, be it timber production or climate, without broader consideration for the whole system (Puettmann et al., 2009). Responsible stewardship calls on us to take thoughtful actions that address other crises of our time, specifically unprecedented loss of biodiversity and the challenge of achieving more just and equitable futures (Pascual et al., 2023). To this end the goals of climate smart forestry ought to be matched with the holistic acknowledgement of the diverse challenges facing forest management and the multiple responsibilities we have to the forest and to future and current generations of people who depend on it. As members of the Forest Stewards Guild, we believe it is helpful to assess impacts of climate smart forestry adaptation, mitigation, and social dimensions using the metric of the Guild's six principles. We believe that criteria and indicators of climate smart practices developed to certify climate-smart forest commodities or determine allocation of subsidies for climate smart forest practices are more likely to support socially just, economically equitable, and ecologically sound outcomes if they align with these principles. Below is a brief discussion of considerations for climate smart forestry practices through the lens of each of the Guild's six guiding principles:

- 1. The well-being of human society is dependent on responsible forest management that places the highest priority on the maintenance and enhancement of the entire forest ecosystem. This principle is well aligned with the adaptation pillar of climate smart forestry but prioritizes holistic forest ecosystem outcomes over climate mitigation. In most cases maintenance and enhancement of forest ecosystems will mitigate climate change and have positive social outcomes, but not all climate smart forest practices may be ecologically appropriate, e.g., planting trees in "understocked" forest ecosystems that have historically been open woodlands maintained by frequent fire (Domke et al., 2020; Hanberry et al., 2020).
- 2. The natural forest provides a model for sustainable resource management; therefore, responsible forest management imitates nature's dynamic processes and minimizes impacts when harvesting trees and other products. Climate smart forestry practices will likely represent a spectrum of approaches from establishing and maintaining novel



ecosystems of intensively managed plantations of fast-growing exotic species for bioenergy and carbon capture, to extending rotations and increasing retention of live trees and deadwood during harvest, to establishing forest carbon reserves where no timber harvesting is permitted. The degree to which a particular climate smart forestry project aims to maintain or enhance natural forest ecosystem processes in projected future climate conditions may be a good basis for assessing how well a project or practice aligns with this Guild principle. In some cases, it may be prudent to consider deviating from strictly emulating historical disturbance regimes and species composition if they will no longer be viable under projected climate change (Klenk et al., 2009; O'Hara, 2016). Some intensive plantations may also be compatible with Guild principles if they are sited on marginal agricultural land and contribute to overall ecological function of the forest landscape (Messier et al., 2019).

3. The forest has value in its own right, independent of human intentions and needs. The term climate smart forestry

is often used in contexts where forests are viewed narrowly through the lens of benefits they provide people. This does not mean that climate smart forestry is incompatible with forest values that are independent of human intentions and needs, but it does mean for climate smart forestry practices to align with Guild principles, other types of values (i.e., intrinsic and relational values) should be considered alongside the instrumental values of forests (Himes & Muraca, 2018).

4. Human knowledge of forest ecosystems is limited. Responsible management that sustains the forest requires a humble approach and continuous learning. Global climate change is pushing forests and people into unexplored territory. Climate and forest science can provide valuable information about likely trajectories, but it is essential to recognize uncertainty in both climate and ecosystem responses (Puettmann, 2014; Wells et al., 2023). A humble approach to climate smart forestry requires monitoring so that successes and shortcomings can be documented and shared. To that end, experimentation should be nurtured and a failure to deliver desired outcomes expected and tolerated as long as it furthers our understanding and leads to better approaches.



- 5. The practice of forestry must be grounded in field observation and experience as well as in the biological sciences. This practical knowledge should be developed and shared with both traditional and non-traditional educational institutions and programs. To this end, adaptive and flexible approaches to climate smart forestry are encouraged, which allow foresters to learn and modify approaches based on new information, knowledge, and experience. Other ways of knowing, like Traditional Ecological Knowledge should be acknowledged and incorporated because it may have been developed over millennia of intergenerational experience (Minahan, 2023).
- 6. Our first duty is to forests and their future. When confronted with circumstances that threaten the integrity of the forest and conflict with the Mission and Principles of the Forest Stewards Guild, members must respond through education, advocacy, or where necessary, disassociation. Guild membership signifies a commitment to the highest forest stewardship ethic. This principle guides our response to climate smart forestry proposals that conflict with the other principles discussed above.

In addition to consulting the Guild's six guiding principles, we also make the following specific recommendation for engaging in climate smart forestry projects and to guide the development and/or implementation of climate smart forestry criteria and indicators:

- 1. When parties with potentially differing interests engage with each other over climate smart forestry, all people involved clearly articulate their understanding of what climate smart forestry is and their priorities for the project.
- 2. Assessing the overall mitigation potential of a specific climate smart forestry project should consider as many factors as possible. System boundaries should be clearly defined and made transparent. Whenever possible sensitive analysis should be conducted to understand the impact of different assumptions and stochastic factors should be considered.
- 3. We encourage practitioners of climate smart forestry to be mindful of the trade-offs associated with their practices and transparent about limitations of what climate smart forestry can achieve in the practical conditions and processes of their projects.
- 4. Climate smart forestry practices should be place specific. They should be sensitive to the local social context and be ecologically appropriate for the forest type and forest condition where they are implemented.
- 5. In recognition of uncertain future conditions, we recommend that climate smart forestry practices include the goal of increasing forests adaptive capacity, focus on guiding trajectories of forest structural development and ecological processes instead of dictating precise outcomes, and incorporate monitoring procedures and flexibility to learn and adapt to the unexpected.

As members of the Guild, our first duty is to forests and their future. Climate smart forestry aligns with this duty by emphasizing the need to help forests adapt to future conditions, mitigate climate change, and support social outcomes. However, climate smart forestry practices may not always align with Guild principles, and when confronted with circumstances that threaten the integrity of the forest, members must respond through education, advocacy, or where necessary, disassociation. The Guild looks forward to providing opportunities for members and our colleagues to discuss and explore climate smart forestry both in the woods and online.



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