



Forest Stewardship Council®

DISCUSSION PAPER

Forestry Intensification for Shared Value

- Towards a Common Understanding-

A Discussion Report by Lars Laestadius

31 May 2022

A summary of this report is presented by the author in a short video [here](#)

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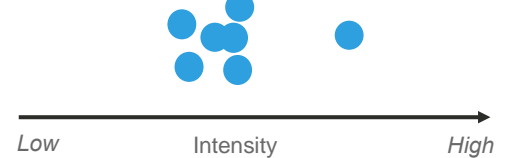
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Summary

The demand for forestry products is likely to grow in the coming decades, while the land available to produce them will shrink. Sustainable consumption will not be sufficient to fill this gap if the combined aspirations of Agenda 2030, the Paris Climate Agreement, and the post-2020 Global Biodiversity Framework are to be fulfilled. More wood will have to be produced from less land through a process loosely known as intensification.

The growing gap between demand and supply creates considerable risks and opportunities for forests. Remaining intact and wild forests are at risk. Avoiding forest management intensification is likely to be impossible. FSC therefore needs to adopt a strategy for guiding the intensification process.

A strategy should be built on a common understanding of key aspects of intensification.

<p>Intensity Any forest management system is working at some level of intensity. It can be low, it can be high, and it can be somewhere in between.</p>	
<p>Intensification and de-intensification Any forest management system can change its level of intensity. It can become higher (intensification) or lower (de-intensification).</p>	
<p>Intensified An intensified forest management system is either significantly more intensive than peer systems in a similar forest type or has undergone intensification.</p>	

All forest management systems all over the world, regardless of forest type, function at some level of intensity and are capable of changing it, becoming either more intensive or less intensive.

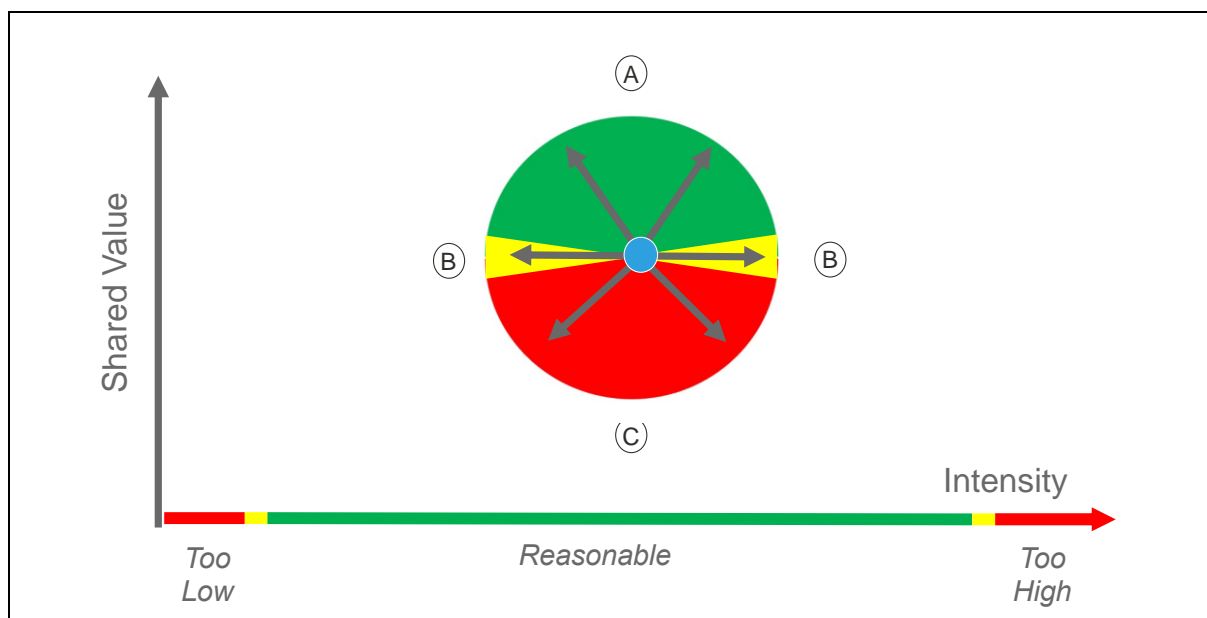
Intensification is not inherently good or bad. Its desirability depends on its consequences and the way that stakeholders value them.

Region	Type	Level of intensity		
		Low	Medium	High
Boreal	Natural			
	Plantation			
Temperate	Natural			
	Plantation			
Dry tropics	Natural			
	Plantation			
Wet tropics	Natural			
	Plantation			
Mountains	Natural			
	Plantation			

When assessing forest management intensification, there are two major issues to consider: (1) limits to the level of intensity, and (2) changes in the level of intensity.



(1) Limits to the level of intensity. Forestry systems can operate at any level of intensity, but some levels may be too high or too low to be considered responsible. The (A) zone represents levels that are clearly responsible while the (C) zone is clearly not responsible. The (B) zone represents cases that are difficult to determine.



(2) Changes in the level of intensity. All forestry systems can change their level of intensity, but not all changes may be considered responsible. As the system (blue dot) moves to the right (intensification) or to the left (de-intensification) from its baseline, the overall consequences may be desirable (A), not desirable (C), or difficult to determine (B).

FSC's Principles, Criteria, and Indicators address the first issue by placing some upper limits on intensity, including by prohibiting the use of genetically modified organisms. by stating that the use of fertilizers, pesticides and biological control agents be minimized or avoided, and by directing that native species be used unless there is clear and convincing justification for using others. The issue of a lower limit to responsible intensity is not addressed.

On the second issue, the Principles, Criteria, and Indicators offer little guidance as they are "generally independent of spatial scale and intensity of management activities" (Principle 4). FSC's Sustainable Intensification Advisory Group (SIAG) has suggested that "shared value" be used as the criterion for assessing intensification and that it be considered at the landscape level, not just at the FMU level.

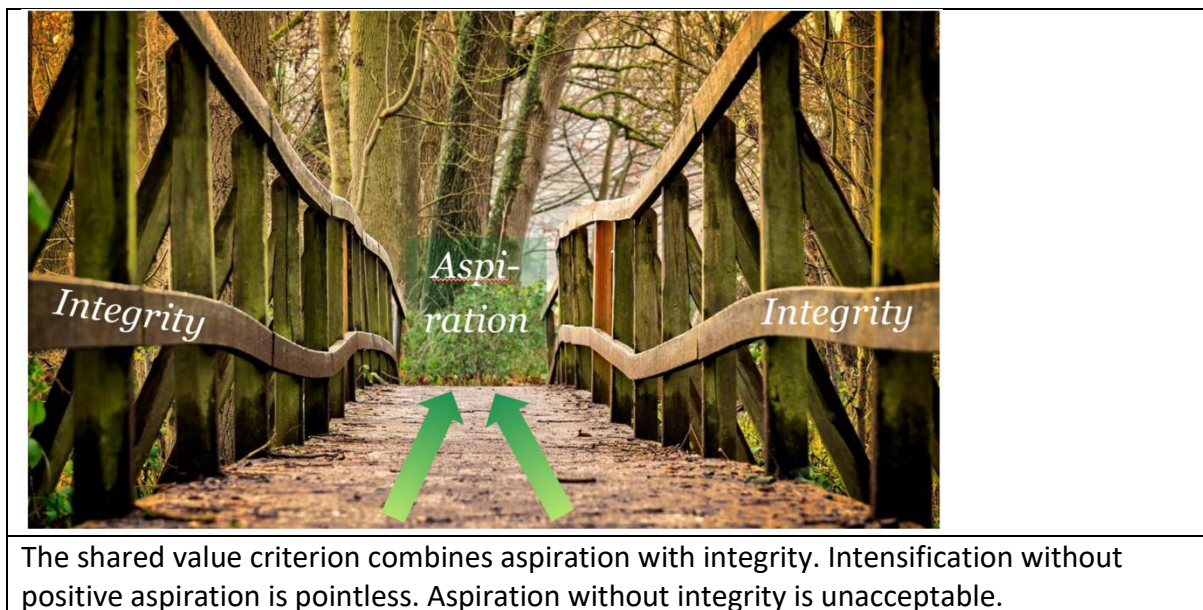
Shared value needs to be better understood before it can be made useful. The concept must be used in the singular to avoid the confusing notion that it refers to values that are shared (held in common) by stakeholders.

The following is a tentative working definition that might be capable of telling responsible intensification from other forms.

Shared value is produced if ...

- (1) Positive additional value is created.
- (2) The positive additional value is shared among stakeholders.
- (3) No stakeholder suffers a reduction in value without free, prior informed, consent.
- (4) There is no net loss of forest conservation value at the landscape level.

It is important to note that positive shared value according to this tentative definition is something that (1) is useful or valuable, (2) is shared among stakeholders, and (3) creates no negative value, neither for people nor for forest at the landscape level. This can be described as a combination of aspiration and integrity.



The shared value criterion combines aspiration with integrity. Intensification without positive aspiration is pointless. Aspiration without integrity is unacceptable.

Shared value needs to be better understood in the context of forest management. FSC should seek answers to a number of questions, drawing upon the experience and wisdom of its greater community, including:

- What sort of shared value has been produced through changes in forest management in different forest types and management contexts? How is this related to changes in management intensity? Are there any illustrative cases?
- How should shared value inside and outside the FMU be considered and balanced? How should value now and value later be considered and balanced? Are there any illustrative cases?
- Are there levels of management intensity that are either too high or too low to be considered responsible? Are there any illustrative cases?

FSC should develop a considered strategy that allows it to guide the inevitable process of forest management intensification over the coming decades. Intensification, while carrying promise for people, climate, and nature, also carries risks of undesirable outcomes. FSC is eminently suited to shoulder the responsibility of guiding forest management towards responsible intensification, given its mission, its considerable experience of forest management, and its inclusive community of practitioners and stakeholders.

Preface

This discussion report was commissioned by FSC International. It builds on a previous FSC Discussion Paper by Fred Pearce (2021) titled *Towards Shared Values in Sustainable Intensification*.

The author has benefitted from discussions with members of FSC's Sustainable Intensification Advisory Group (SIAG) and Sustainable Intensification Solutions Forum (SISF), as well as with members of its international secretariat. Nevertheless, the report does not necessarily represent the thinking or position of FSC.

The report has four main parts.

The report opens with a brief section anticipating the pressures and demands on forest landscapes from the Global South will increase significantly over the next few decades. The response time of forest landscapes is long, as humans measure time, and future pressures must be therefore mitigated with before they become critical. A more extensive analysis is given in an annex.

Having concluded that the world will have to produce more wood from less land if the goals of Agenda 2030 and the Paris Agreement and the post-2020 Global Biodiversity Framework are to be met, the report goes on to explore the meaning of intensity and intensification, noting that intensification can occur in any forest management system in any type of forest, including but not limited to plantations, and that its desirability must be judged on its consequences, as intensification is not inherently good or bad.

The report then explores how FSC has understood and addressed intensification. The Principles and Criteria have little to say but the shared value criterion proposed by the SIAG, which combines aspirational aspects ("do better") with integrity ("do no harm") in the wider landscape, can potentially be used to identify responsible intensification.

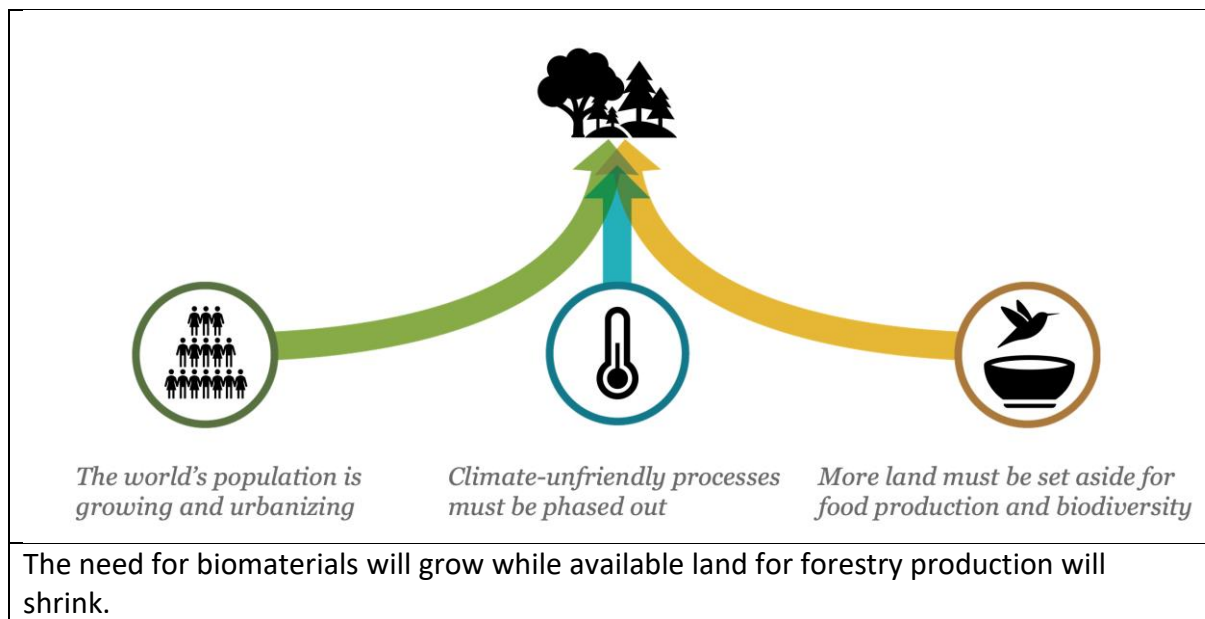
Operationalizing the shared value criterion for responsible intensification is not easy. The report concludes by suggesting ways that the FSC community can move forward by gathering its own practical experience of shared value creation.

FSC's mission is to promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests. This report therefore concerns itself with all the world's forests, including but not limited to the forests currently certified by FSC.

1 Anticipating Intensification

The pressure on land is likely to grow over the coming decades. This pressures have many sources:

- The need to accommodate a growing human population.
- The need to urgently stabilize the climate.
- The need to use more land to produce food.
- The need to conserve forest wilderness and safeguard biological diversity.
- The need to meet the commitments of Agenda 2030.



Future markets will be hungry for wood. This is especially true in the Global South, which will be adding 2 billion people in the next three decades, most of them urban. An unguided market for wood may cause forest degradation and destruction on a massive scale, including negative consequences of uncontrolled intensification.

FSC needs to keep this perspective in mind as it contemplates how to relate to forest management intensification.

A more extensive analysis of the growing gap between demand and supply is provided in Annex 1.

2 Understanding Intensification

There are strong indications that the coming decades will see a combination of two trends: a growing demand for forest products and a shrinking land base for producing them. This combination is problematic, suggesting that it will become necessary to produce more wood from less land—a process loosely known as intensification.

Before considering how FSC might approach intensification, it is useful to understand what it is. We shall reflect on this in two steps, looking first at intensity as such and then at changes in intensity.

2.1 Intensity

There are different ways to understand and define intensity. The word means different things to different people, making different interpretations a potential source of confusion.

In the general theory of production, intensity is understood as the relationship between a supplementary production factor and a basic production factor. In forestry production (production and harvesting of live trees), land area is usually chosen as the basic production factor while the choice of supplementary production factor determines the aspect of intensity, e.g., labor intensity, capital intensity, or management intensity per unit of area. (Swedish Centre for Technical Terminology, 1994).

FSC (2015) defines intensity as “A measure of the force, severity or strength of a management activity or other occurrence affecting the nature of the activity’s impacts.” (Source: FSC 2011).

For the purposes of this report, intensity will be defined as the amount and quality of production factors, e.g., labor, capital, and knowledge, that are applied to a fixed area of land.

In other words, intensity is the effort applied to forestry production. The greater the effort and the greater its quality, the greater the intensity. Intensity can be a property both of an entire forest management system and of a discrete forestry intervention, such as seed selection, tree establishment, or thinning.

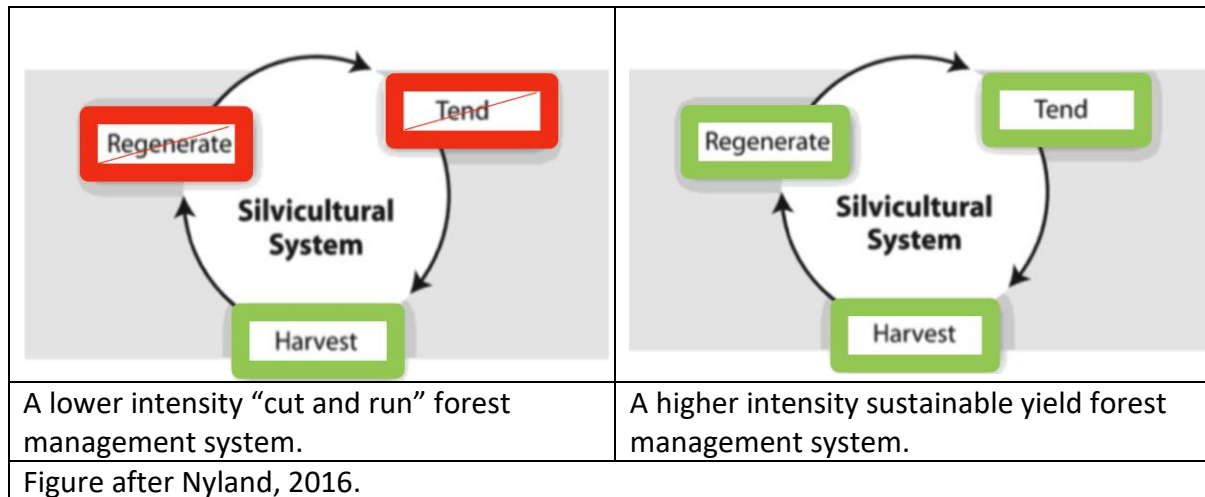
All forestry systems, no matter where they are or in which type of forest they operate, work at some level of management intensity. It can be low, it can be high, and it can be anywhere in between. At the low end are systems without any effort to manage regeneration or regrowth, such as “cut-and-run” forestry and shifting cultivation. At the high end is plantation forestry in which trees of a chosen genetical composition are assigned to chosen locations, stand density is regulated through repeated thinnings, and the supply of nutrients and water is controlled.

Intensity

Each forestry system is working at some level of intensity. It can be low, it can be high, and it can be somewhere in between.



In his textbook on silviculture, Nyland (2016) contrasts a lower-intensity cut-and-run system with a higher-intensity sustainable yield system. The latter includes systematic efforts at regeneration and tending; the former does not. The difference lies in the effort invested in forestry production, i.e., in the intensity of the forest management system.



The level of intensity can be measured, although this is no easy or unambiguous task. Duncker et al (2012) have developed a scale to measure intensity in European forestry. They identify five classes of intensity based on how the forestry manager responds to 12 design issues that are common to most forest management systems. The scale ranges from passive management at one end (unmanaged forest nature reserve) to intensive management at the other (short-rotation forestry). The framework is fine-tuned for European conditions, but the approach is widely applicable and illustrates some of the complexity that makes up intensity in forest management. Even then some of the complexity is missing, as human aspects are not included in the framework.

Decision	Basic principle by FMA				
	Intensity scale				
	Passive “Unmanaged forest nature reserve”	Low “Close-to-nature forestry”	Medium “Combined objective forestry”	High “Intensive even-aged forestry”	Intensive “Short rotation forestry”
1. Naturalness of tree species composition	Only species characteristic of the potential natural vegetation (PNV)	Native or site-adapted species	Tree species suitable for the site	Tree species suitable for the site	Any species (not invasive)
2. Tree improvement [†]	No	Not genetically modified or derived from tree breeding programs	Planting material can be derived from tree breeding but not genetically modified	Planting material can be derived from tree breeding but not genetically modified	Planting material can be derived from tree breeding or produced via genetic modification.
3. Type of regeneration	Natural regeneration / natural succession	Natural regeneration (planting for enrichment or change in tree species composition)	Natural regeneration, planting, and seeding	Natural regeneration, planting, and seeding	Planting, seeding, and coppice.
4. Successional elements	Yes	Yes	Temporarily	No	No
5. Machine operation	No	Extensive	Medium	Intensive	Most intensive
6. Soil cultivation	No	No (only to introduce natural regeneration)	Possible (mainly to promote natural regeneration)	Possible	Yes
7. Fertilization / Liming	No	No (only if devastated soil [‡])	No (only if devastated soil [‡])	Possible	Yes
8. Application of chemical agents	No	No	Possible as a last resort	Possible	Possible
9. Integration of nature protection	High	High	High	Medium	Low
10. Tree removals	No	Stem (solid volume)	Stem and crown (solid volume)	Up to whole tree	Whole tree and residues
11. Final harvest (and main silvicultural) system	No	Mimics natural disturbances Single Stem Selection Group Selection Irregular shelterwood	All possible Seed tree Strip shelterwood Group shelterwood Uniform shelterwood Coppice with standards	All possible, clearcut (long rotation) preferably used	All possible, Coppice Clearcut (shorter rotation)
12. Maturity	No intervention	Long rotation length \geq age of max. MAI or target diameter according to tree species and stem quality	Medium rotation length \approx age of max. MAI or target diameter according to tree species and stem quality	Short rotation length \approx age of max. financial return (low interest rate)	Shortest rotation length \leq age of max. MAI or \approx age of max. financial return (high interest rate)

[†] In this decision element, the definitions might need to be adjusted in future if the principle of genetic modification became more widely accepted in forestry. For example, planting stock produced through genetic modification might be accepted in “Intensive even-aged forestry.”

[‡] Devastated soil = soil that needs measures to get it into an acceptable condition.

A framework for measuring the intensity of forest management systems. The left-hand column lists 12 aspects (“decisions”) that together make up a forest management approach (“FMA”). The following 5 columns represent different levels of intensity, ordered from passive (lowest intensity) to intensive (highest intensity). The table was developed for European forestry, but its illustrative applicability goes wider. Source: Duncker et al, 2012.

Definitions

These definitions are for the purposes of this report.

Forest management system

A long-term program, style, or habit of forest management within a defined land area. A forest management system includes a silvicultural system and a forestry operations system.

Intensity of forest management

The relationship between a fixed area of land and the input of production factors other than land, e.g., labor, capital, and knowledge. Intensity can be a property both of an entire forest management system and of a discrete intervention, such as planting or thinning.

Sustainable forestry aims to repeatedly grow desirable trees in a desirable time without loss of productive capacity, while internalizing all associated benefits and costs, including the costs of negative side effects.

Intensive forestry

Forestry production (production and harvesting of live trees) that is conducted with a high input of labor or capital or knowledge in relation to the natural productive capacity of the land.

Intensification

A change from a lower level of intensity to a higher.

De-intensification

A change from a higher level of intensity to a lower.

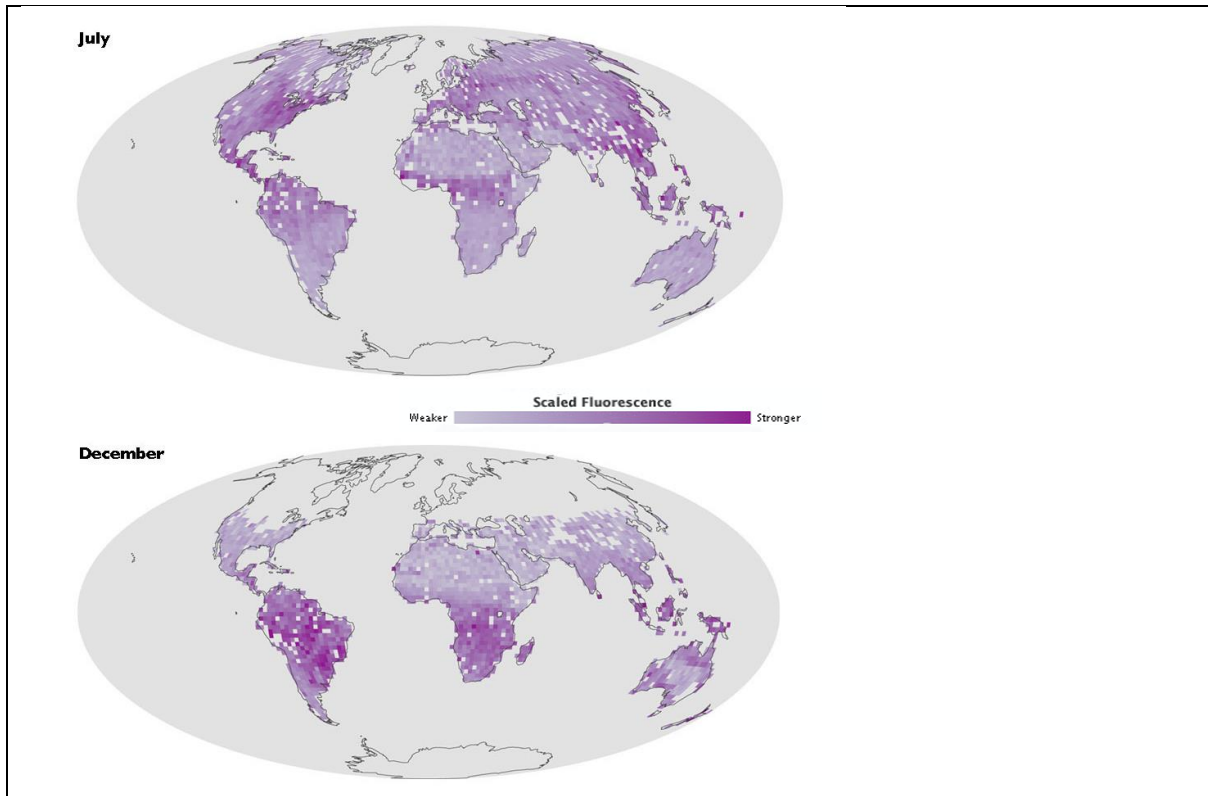
Intensified

A forest management system or intervention that is (or appears to be) significantly more intensive than comparable mainstream alternatives working under comparable conditions. Intensified may also denote a forest management system that has gone through a process of intensification.

Baseline

The level of intensity of a forest management system prior to intensification or de-intensification

High management intensity does not necessarily equal high productivity. Northern forests do not grow in the winter and will therefore never grow as quickly as tropical forests at an equal management intensity. Much also depends on the quality of the input. Intensive tree-planting can fail because of other factors, such as poor genetic material, poor seedlings, or poor execution.



High intensity does not equal high productivity. Latitude has a dramatic effect on wood productivity. Northern trees have no photosynthetic activity in the winter. Source: NASA.

2.2 Changes in intensity

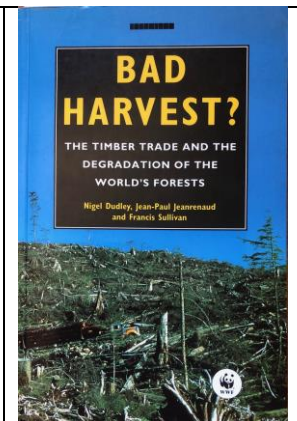
In the beginning, all forestry was extensive. Forest management was simple: cut the best trees, wait for the trees to grow back, and cut again.

This default forest management system broke down under the pressure of increasing human need. Lack of wood within reach led to overcutting and forest destruction. More complex systems eventually evolved, applying greater input of labor, capital, and knowledge to produce more wood from the same amount of land with less side effects. Forest management became more intensive (Dudley, Jeanrenaud, and Sullivan, 1995).

“In many cultures, forest management has taken place by default; an area of forest is cleared and then left to regrow. When the human population is low and the forest resources relatively abundant, such a system works quite well and is currently the basis of slash-and-burn agriculture throughout the developing world.

However, it quickly breaks down when there is greater demand for land or timber, or when population pressure results in shortening the rotation to beyond the forest’s regenerative capacity.”


Dudley, Jeanrenaud, and Sullivan. 1995. *Bad Harvest? The Timber Trade and the Degradation of the World’s Forests*.



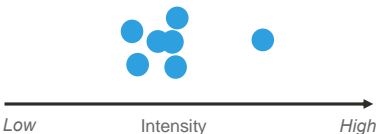
Intensification of a forest management system is a process of change over time, a process that may be sudden at the level of an individual forest management system but is gradual at the aggregate level of a region or continent. It can denote a change from cut-and-run forestry to active management involving silviculture, or a change from natural forest to plantation management. It can also apply to individual interventions, e.g., nutrient management, seed selection, worker safety, tools development, mechanization, etc.

De-intensification is also possible, e.g., by discontinuing the use of a harmful fertilizer or herbicide, or by moving away from radical site preparation, or by shifting from tree planting to management of natural (spontaneous) regeneration.

It is important to distinguish a change in intensity (intensification and de-intensification) from intensity as such. The former is a process while the latter is a static property of any forest management system. Intensification means putting a greater effort into forest management writ large. Any forest management system, whether in a natural forest or a plantation, can change its intensity, either up or down.

<p>Intensification and de-intensification Any forestry system can change its level of intensity. It can become higher (intensification) or lower (de-intensification).</p>	
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Another term that is often used is intensified forestry, meaning a forestry system or intervention that has gone through a process of intensification. It is used with another meaning as well, however, and that is to denote a forestry system or intervention that is (or appears to be) significantly more intensive than comparable mainstream alternatives working under comparable conditions.

<p>Intensified A forestry system that is significantly more intensive than comparable systems, or a system that has undergone intensification.</p>	
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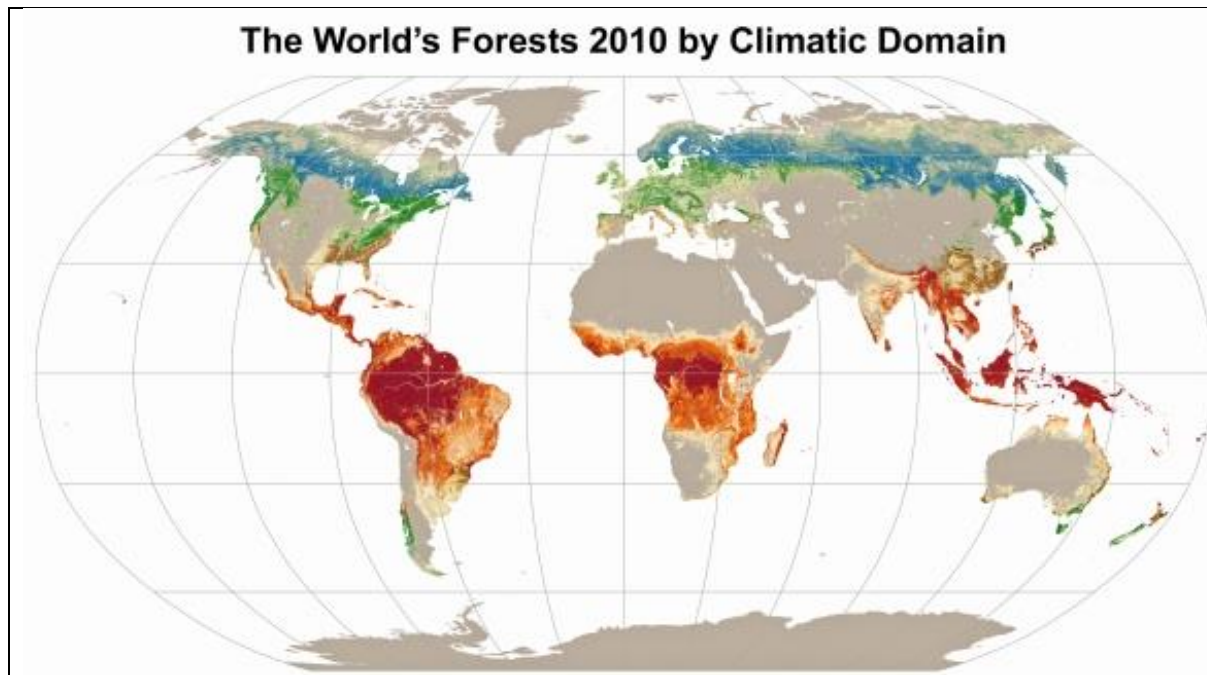
The possibilities for making a greater effort are virtually without limit. More labor can be invested, or more capital, or more knowledge, and this can happen at any location. Forestry systems from the rainforest to the tundra can be intensified (and de-intensified). Intensification means different things in different forest and social contexts, however.

A boreal natural forestry system that has historically operated on the cut-and-run philosophy may intensify by introducing active reforestation measures such as site preparation and planting. It may intensify further by introducing pre-commercial thinning, and further still by introducing fertilization.

A tropical natural forestry system that has operated on a conventional basis may intensify by introducing planned skid trails, directional felling, and climber cutting. A tropical plantation system may intensify by introducing precision guided micro dosing of nutrients or seed from a seed plantation.

2.3 Conclusion

All forest management systems all over the world operate at some level of intensity, and all have the potential to change it through intensification or de-intensification.



The world's forests are extensive and diverse. Any forestry system anywhere operates at a some level of intensity and is capable of changing it.

Region	Type	Level of intensity		
		Low	Medium	High
Boreal	Natural			
	Plantation			
Temperate	Natural			
	Plantation			
Dry tropics	Natural			
	Plantation			
Wet tropics	Natural			
	Plantation			
Mountains	Natural			
	Plantation			

All forestry systems, no matter in which forestry region they operate, and no matter whether they manage natural forest or plantations, can change their level of intensity, becoming either more intensive (intensification) or less intensive (de-intensification). Comparing forestry systems at similar levels of intensity offers opportunities for cross-regional learning, e.g., between South America and Africa.

It is important to note that intensity and intensification, as general phenomena, are neither good nor bad. To judge their desirability, one must (1) know their consequences, and (2) apply some sort of value system or standard to assess them. These issues are addressed next.

3 Assessing Intensification

How can responsible intensification be recognized? How can we know it when we see it?

Two things are needed. The consequences of intensification must be (1) known, and (2) assessed. Neither is trivial.

Knowing the consequences is difficult because they may be difficult to detect and difficult or costly to measure. Some consequences may occur in the landscape outside the forest management unit but still be relevant. Some consequences may occur in the future.

Assessing the consequences is difficult because they may not affect all stakeholders in the same way, and because different stakeholders may value the same consequences differently.

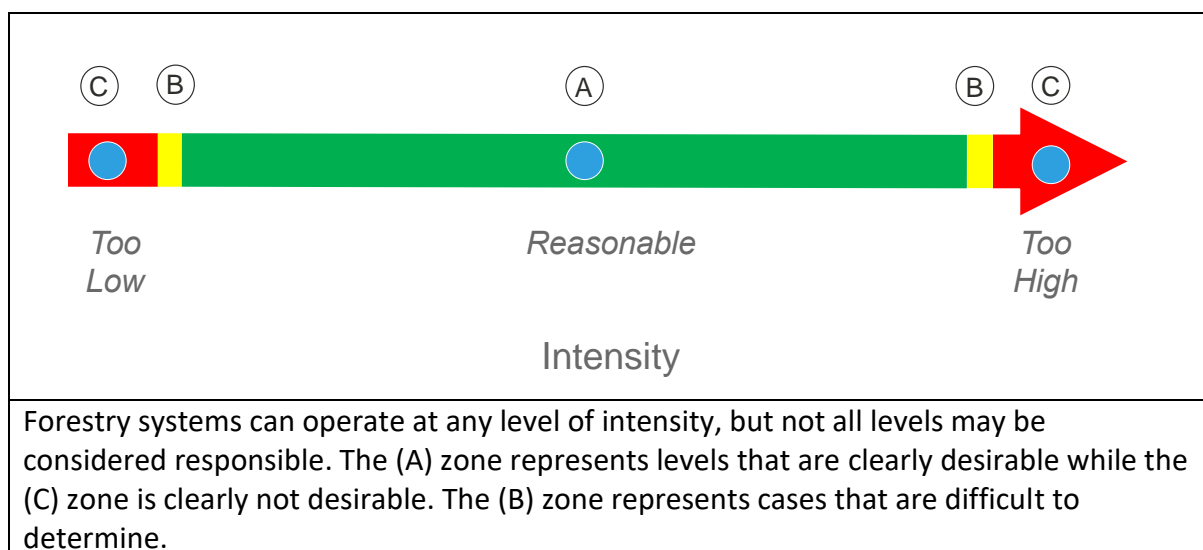
The cases of interest fall into two types: the ones that deal with the level of management intensity and the ones that deal with changes in management intensity. We shall consider them in order.

3.1 Limits to intensity

All forest management systems operate at some level of intensity. This level may be too high or too low to be considered responsible, either clearly so or possibly so.

This reasoning suggests that forest management systems can be divided into three zones or classes, depending on their level of management intensity (see figure):

- A. A reasonable level of intensity, that clearly falls within the boundaries of the desirable.
- B. A doubtful level of intensity, that may or may not clearly fall within the boundaries of the desirable.
- C. An extreme level of intensity, either very high or very low, that is clearly undesirable.



FSC's Principles and Criteria offer little guidance as they are "generally independent of spatial scale and intensity of management activities" (Principle 4). They do place some upper limits on the management intensity, however. They prohibit the use of genetically modified organisms. They state that the use of fertilizers, pesticides and biological control agents should be minimized or avoided, and that native species be used unless there is clear and convincing justification for using others.

While FSC recognizes that there can be an upper limit to management intensity, no lower limit appears to have been considered.

3.2 Changes in intensity

All forest management systems have the potential to change their level of intensity. Changes may or may not lead to desirable consequences. Determining whether they are desirable or not is key to assessing intensification.

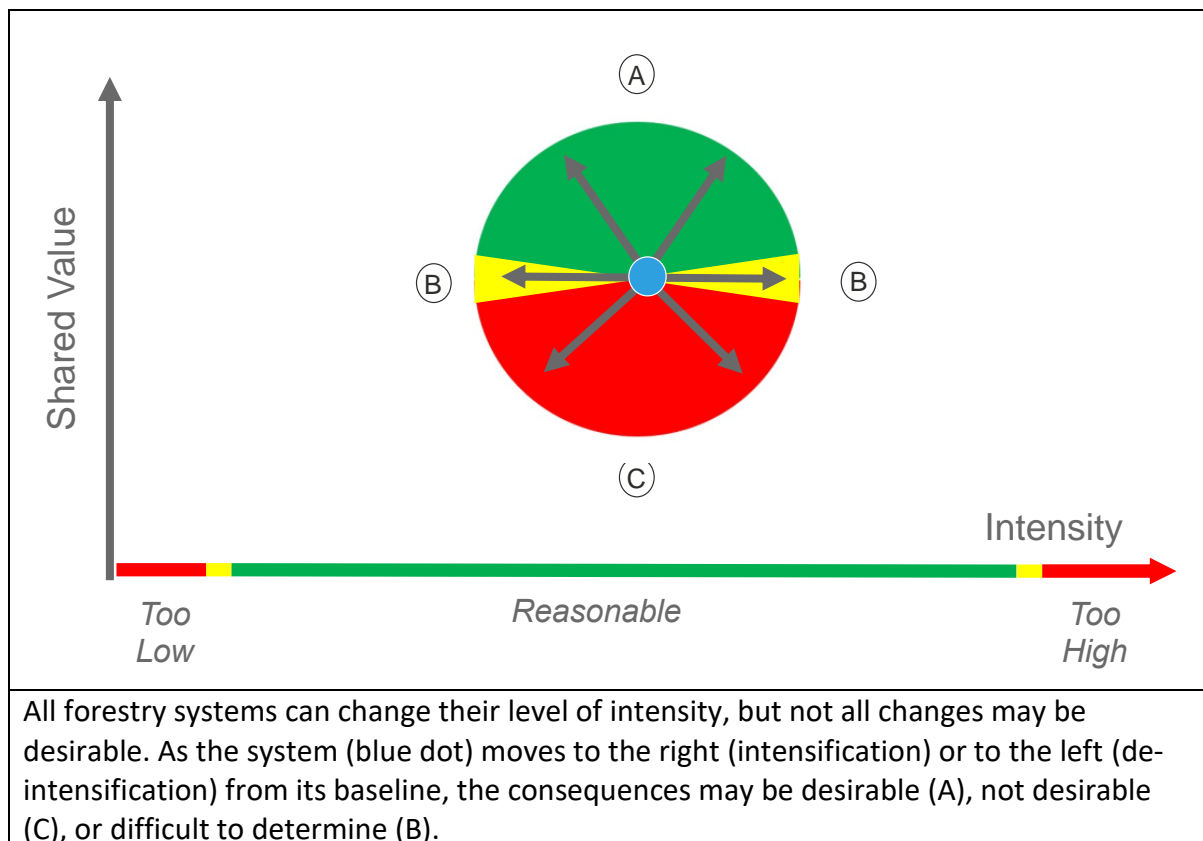
To assess a change in management intensity, the situation prior to the change is a reasonable point of reference or baseline. The reasoning is illustrated in the figure below.

At the outset, before intensification, a forestry system (shown in the figure as a blue dot) is operating within the zone of reasonable intensity (shown by its position on the X-axis), and at a certain level of shared value (shown by its position on the Y-axis). (The meaning of shared value will be explained below).

Baseline

The level of intensity of a forest management system prior to intensification or de-intensification.

The system can change its level of intensity, moving either to the right or to the left on the intensity axis. This will have consequences in terms of shared value. There are three options, as indicated by the arrows. The system can move up into the green zone (A), indicating a gain in shared value. It can also move down into the red zone (C), indicating a loss of shared value. The third option is a move into the yellow zone (B), indicating that the consequences are difficult to assess.



To distinguish the desirable from the non-desirable, it is necessary to establish the boundaries between these zones. To do this, the shared value criterion needs to be more clearly interpreted. This is the topic for the next section.

3.3 Interpreting shared value

FSC's Sustainable Intensification Advisory Group (SIAG) has suggested that the concept of shared value be used to separate desirable intensification from non-desirable. This section explores this notion.

3.3.1 Previous work

The concept of shared value has been covered in a seminal paper by Porter and Kramer (2011). A summary is provided in Annex 2.

FSC's Sustainable Intensification Advisory Group (SIAG) has suggested that creation of shared value be used as a criterion of desirable intensification, notably that:

- Implementing shared value can make intensification sustainable.
- Intensification respecting shared value should be considered at the landscape level, not just at the FMU level.

SIAG has also tabulated various aspects of shared value in the context of intensification. The full tabulation is included as Annex 3. The table below provides a summary.

<i>Social</i>	<i>Environmental</i>	<i>Economic</i>
<ul style="list-style-type: none"> ▪ benefits for small producers, including access to the intellectual property rights of any trialed products; ▪ local food security; ▪ maintaining the cultural and spiritual links of local communities with their land and forests; ▪ adequate lands for local livelihoods and ecosystem services; ▪ job retention and/or retraining and compensation; ▪ benefits for women and other marginalized groups; ▪ respect of customary and other land rights, including adherence to free, prior and informed consent; ▪ protection for the rights of activists, whistle-blowers and others; ▪ and remedies in case of unintended harm. 	<ul style="list-style-type: none"> ▪ protection and enhancement of forests that are either intact or have high conservation value; ▪ maintenance of forest carbon stores; ▪ more efficient use of environmental resources such as water and nutrients; ▪ maintenance of ecosystem services in the landscape; ▪ maintenance of species composition, distribution and densities in managed forests; ▪ and reducing waste of FSC-certified wood <u>fibres</u> in the supply chain. 	<ul style="list-style-type: none"> ▪ higher yields and improved efficiency to spare land, reduce carbon emissions, re- source consumption and environmental impact; ▪ creation of economic value in a way that also creates value for society; ▪ generation of dignified employment conditions for a trained local workforce; ▪ engagement with local communities.
<p>Components of shared value according to SIAG.</p>		

To be meaningful as a criterion of desirable intensification, shared value must be used in the singular. Using it in the plural (“shared values”) suggests an entirely different meaning—the values that are held in common (shared) by all stakeholders. This meaning is not consistent with the sense in which Porter and Kramer use it, nor is it useful for assessing the consequences of intensification.

3.3.2 Interpretation

Drawing upon the sources mentioned above, it is possible to extract some core characteristics of shared value.

Porter and Kramer (2011) use the concept of shared value to denote something that is good for the corporation and (at the same time) good for society. In their interpretation, shared value involves creating economic value in a way that also creates value for society by addressing its needs and challenges. This suggests that shared value has two characteristics: that positive additional value is created, and that this value is shared among stakeholders.

SIAG provides a list of positive values that might be created in a forestry context, departing from the challenges or risks raised by intensification (see Annex 3). This suggests an additional characteristic: that there be no loss of value as a side effect – not to stakeholders, not to the forest.

The two aspects of the no loss characteristic need to be operationalized, however; perhaps as follows. No stakeholder should lose value unless this has been freely agreed based on prior sufficient information. No forest landscape should lose conservation value. Any losses should be compensated within the landscape.

Combining these characteristics creates a shared value criterion that might be used in the context of forestry intensification.

- (1) Positive additional value is created.
- (2) The positive additional value is shared among stakeholders.
- (3) No stakeholder suffers a reduction in value without free, prior informed, consent.
- (4) There is no net loss of forest conservation value at the landscape level.

It is important to note that shared value in this context refers to something useful or valuable that is produced for and provided to all stakeholders.

If this criterion is applied to assess a change in intensity, three outcomes are possible:

- (A) Intensification (or de-intensification) is clearly creating shared value. Such intensification is desirable. It can be an effective response to the increasing pressure on forests and lands.
- (B) Intensification is producing an unclear result where it is difficult to say whether the shared value criterion has been fulfilled or not.
- (C) Intensification is clearly producing a result that are not consistent with shared value. Such intensification is not desirable.

In summary: intensification, to be desirable, should create positive value that is shared among stakeholders across the wider landscape while there are no negative side effects: not to stakeholders, not to the forest at the landscape level.

How the consequences of intensification should be demarcated in time and space remains an issue, however.

3.3.3 Aspiration and integrity

The shared value concept combines two aspects on intensification:

- *Aspiration*, representing the ambition to create shared positive value (“do good”).
- *Integrity*, representing the ambition to avoid that anyone or anything is exposed to negative side effects (“do no harm”).

The aspiration aspect is necessary, because without the prospect of achieving positive additional value, there is no point in pursuing intensification. The integrity aspect is needed as a guardrail. In combination, they enable FSC to distinguish desirable (sustainable) intensification from undesirable.



3.4 Conclusion

On the issue of limits to responsible intensity, FSC's Principles and Criteria identify an upper limit but not a lower one. While the discussion about how to define the upper limit is very active, particularly concerning the application of genetically modified organisms, the lower level is not getting much attention within FSC, despite concerns about irresponsibly low intensity from environmental stakeholders in Russia. The issue of a lowest intensity level of responsible forest management needs to be more carefully considered by FSC.

FSC's Principles and Criteria are mum on how to assess a change in intensity. The shared value criterion holds promise but needs to be developed further.

4 Moving forward

The demand for forestry products is likely to grow in the coming decades, while the land available to produce them will shrink. Sustainable consumption will not be sufficient to fill this gap if the combined aspirations of Agenda 2030, the Paris Climate Agreement, and the post-2020 Global Biodiversity Framework are to be fulfilled. More wood will have to be produced from less land through a process loosely known as intensification.

The growing gap between demand and supply creates considerable risks and opportunities for forests. Avoiding intensification is neither possible nor (in the opinion of the author) desirable. FSC therefore needs to adopt a strategy for guiding the intensification process.

4.1 Issues

The relationship between shared value creation and intensification is complex. As pointed out by Dudley, Jeanrenaud, and Sullivan (1995), forest management has been driven toward a higher level of management intensity by the negative consequences of low intensity. Having experienced running out of wood within feasible transportation distance, among other things, forest managers moved gradually toward making a greater management effort.

It would appear that there are cases where intensification has produced positive shared value over the long term. Yet, many stakeholders are concerned that intensification can produce negative value for stakeholders and/or the forest.

Intensification contains two major issues:

- Are there limits to the intensity of responsible forest management? Are there levels of management intensity that are either too low or too high? If so, what are they? Where should the line be drawn?
- How can desirable (responsible, sustainable, good) intensification be distinguished from undesirable? What sort of intensification should FSC embrace and what sort should it resist? How should the shared value criterion be interpreted and operationalized?

FSC needs to develop a considered response to these issues in order to be able to guide forest management intensification.

To do so, FSC needs to consider the wider context of shared value creation and intensification.

- What sort of shared value has been created by changes in forest management? Which ones can be attributed to intensification?
- What is the role of time and space in shared value creation? Positive and negative consequences may not occur immediately, but after many years, And they may occur outside the forest management unit as well as inside.

To seek answers to these and other questions, FSC needs to tap into the experience and wisdom of the greater FSC community. It should also seek illustrative practical cases to learn

from, drawing upon a range of forestry regions (boreal, temperate, tropical, mountain), forest types (natural, plantation), and management types (industrial, non-industrial).

4.2 Conclusion

Given the growing gap between demand and supply of forest products, intensification of forest management is all but inevitable.

Maintaining a constant level of production intensity across the world's accessed forests is likely to be a sure recipe for making industrial forestry expand into new areas, given the near certainty of a surge in demand for forest products.

In the opinion of the author, well-guided management intensification in some of the already accessed forests of the world is the best solution. This is for many reasons—to satisfy the legitimate needs of poor people in the Global South, to urgently stabilize the climate, and to conserve remaining forest wilderness.

This involves opportunities but also risks. FSC should therefore take the lead on forest management intensification and develop a well-considered strategy with the objective to guide forest management intensification worldwide.

It is incumbent on FSC to do so, given its mission to promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests, its long experience of guiding forest management through voluntary regulation, and its inclusive community of practitioners and stakeholders.

Nobody is better placed than FSC to guide the world's forest sector on its inevitable and necessary path towards responsible management intensification.

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Annex 1. Anticipating Intensification

What is the outlook for forest management intensification? Is it needed? Is it likely to happen?

Forests grow slowly, at least from a human perspective. Future pressures are best mitigated through early action. Once the pressure has become acute, the time for mitigation may already have passed, making it likely that someone or something will suffer - the forests, the people who depend on them, or (most likely) both.

The question of whether intensification is needed or likely to happen must therefore be answered through a look into the future.

Will the world be demanding more from its forests in the future? If yes, what are the risks and opportunities? Can the risks be mitigated?


Let's take a closer look.

1.1 Agenda 2030 is far-reaching and people-centered

[The 2030 Agenda for Sustainable Development](#), adopted by all United Nations Member States in 2015 and reaffirmed in 2019, provides a big-picture frame and level of ambition into which responsible forest management should integrate.

Agenda 2030 consists of a Preamble, a Declaration, and a set of 17 Sustainable Development Goals (SDGs) with associated targets. Some aspects of the Agenda are of particular relevance to the issue of intensification of forest management.

Table 1. Agenda 2030

<p>Agenda 2030</p> <p>Eradicating poverty in all its forms and dimensions is the greatest global challenge and an indispensable requirement for sustainable development.</p> <p>Eradicate poverty and hunger everywhere by 2030. Leave no one behind. Endeavour to reach the furthest behind first.</p> <ul style="list-style-type: none"> - SDG 11.1 Ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums. - SDG 12.1 By 2030, achieve the sustainable management and efficient use of natural resources - SDG 13 Take urgent action to combat climate change and its impacts. - SDG 15 Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss. 	
<p>Some aspects of Agenda 2030 are of particular relevance to forests.</p>	

1.2 Demand for forestry products will increase

The demand for forest products over the next few decades depends on many factors. Some of the most important will be examined below in light of the global ambitions set out in Agenda 2030.

1.2.1 General consumption

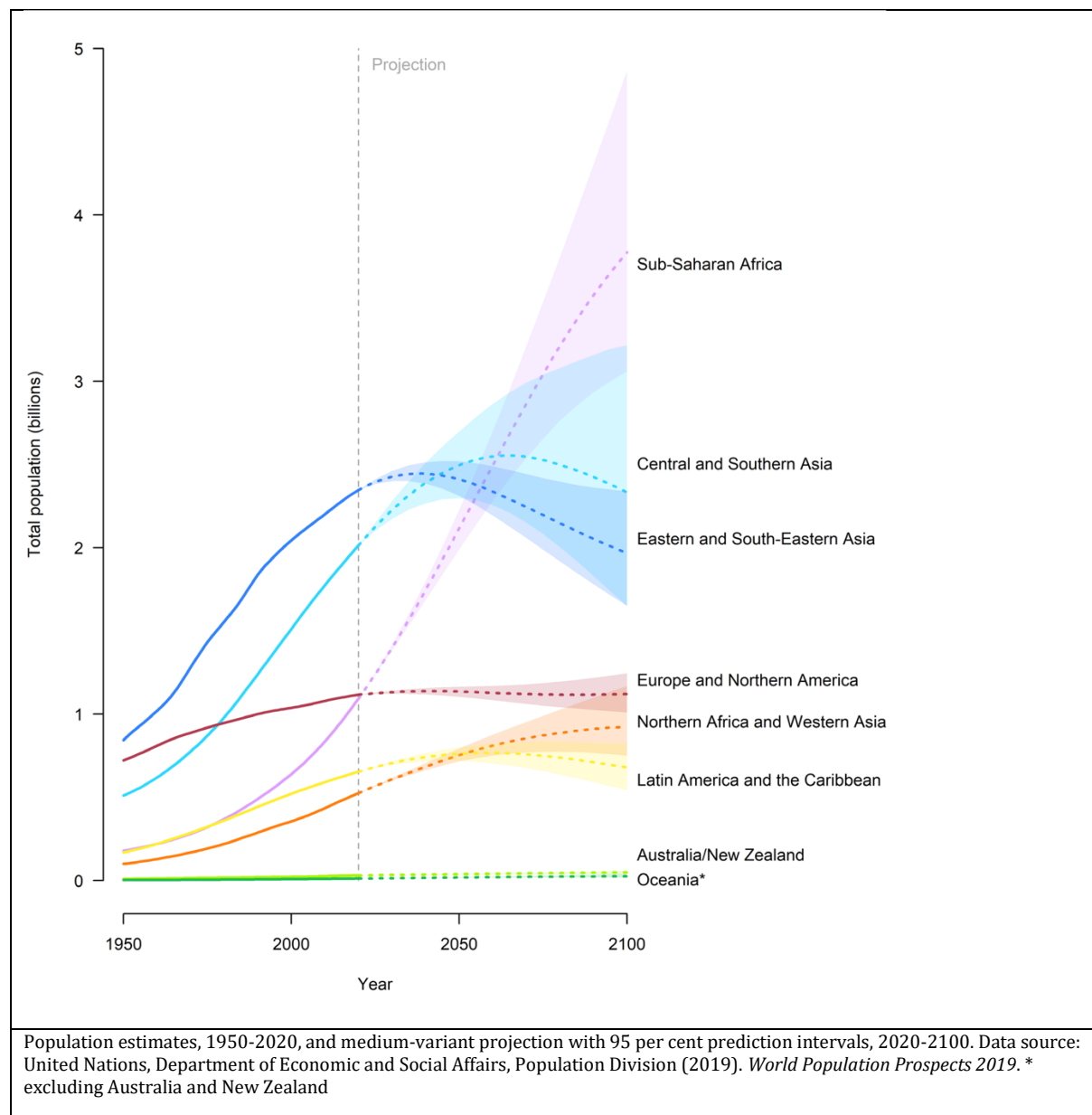
Forest products fulfil a wide range of functions in an economy, including hygiene (diapers, absorbents), education and democracy (books, newspapers), administration (office paper), distribution (packaging), construction (buildings), energy supply (cooking, heating), and more. Some of these products are so basic and ubiquitous that they often are overlooked.

The total demand for forest products is strongly influenced by the number of people in the world and their level of wealth. As a general rule, rich societies consume more forest products per person than poor countries.

The United Nations (2019) projects that the world's population will increase by 2 billion persons in the next 30 years. Out of the additional 2 billion people, about 50% could be added in sub-Saharan Africa and another 25% in Central and Southern Asia. The world population could reach a total of 9.7 billion in 2050 and peak around the end of the current century, at a level of nearly 11 billion. Two-thirds of this growth will be driven by current age structures. It would occur even if childbearing in today's high-fertility countries were to fall immediately to around two births per woman over a lifetime.

The growth in population is not evenly distributed. More than half will be concentrated in just nine countries: India, Nigeria, Pakistan, Democratic Republic of the Congo, Ethiopia, the United Republic of Tanzania, Indonesia, Egypt and the United States of America (ordered by the absolute increase in population). India is expected to add nearly 273 million people between 2019 and 2050, while the population of Nigeria is projected to grow by 200 million.

The group of 47 countries designated as least developed countries (LDCs) by the United Nations is projected to nearly double in size from 1 billion inhabitants in 2019 to 1.9 billion in 2050, and to increase further to 3.0 billion in 2100. This is 2.5 times faster than the total population of the rest of the world.



Asia is expected to stop growing by mid-century, but Africa is showing no signs of slowing down. Thus, the poorest continent will have to accommodate the greatest growth in population.

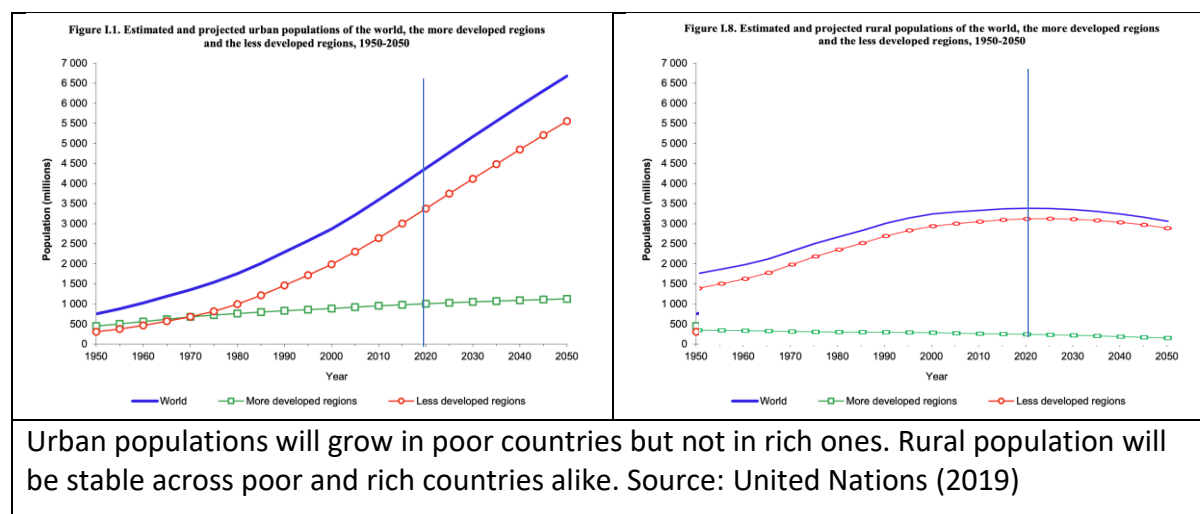
Agenda 2030 calls for the eradication of poverty in all its forms. This means, in other words, that the poorest people should become less poor, i.e., increase their consumption per capita. The combination of population growth and increasing per capita consumption in the countries where the population is growing the most suggests that the demand for forest products will increase.

1.2.2 Construction

Forest products play a major role in construction, a role that is likely to grow (see below).

The outlook for construction is influenced by the growth in population, by the rate of urbanization, i.e., the relocation of people from rural to urban areas, and by the need to improve slums.

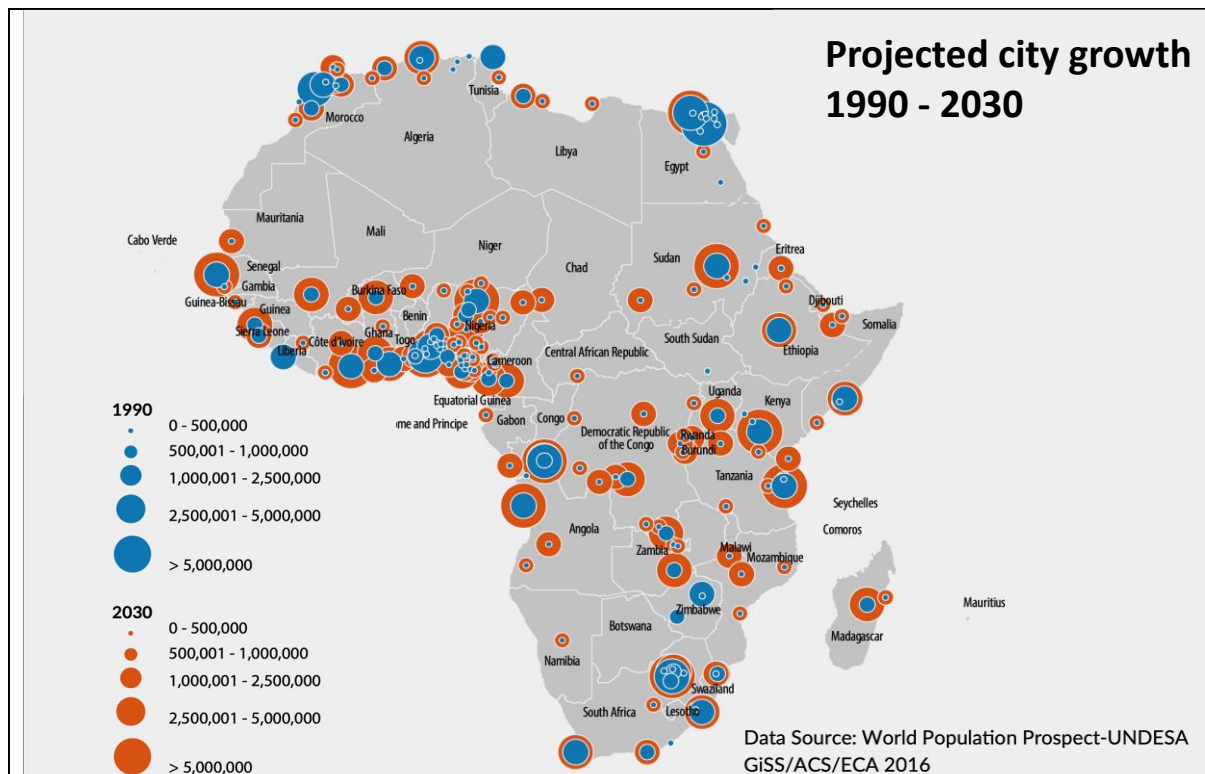
The United Nations (2019) projects that urban areas will grow a lot in the coming decades while rural areas will not. Almost all the world’s population growth will occur in urban areas and almost all of it will occur in Africa and Asia. The world’s rural population will even begin to shrink in the coming decade.



The global urban population is expected to grow by 2.5 billion people in the next 30 years. The increases are expected to be highly concentrated. Out of every ten additional urban people, nine will be living in Asia and Africa. The urban population of Africa is expected to triple by 2050.

Together, India, China and Nigeria will account for 35% of the growth. By 2050, it is projected that India will have added 416 million urban dwellers, China 255 million and Nigeria 189 million.

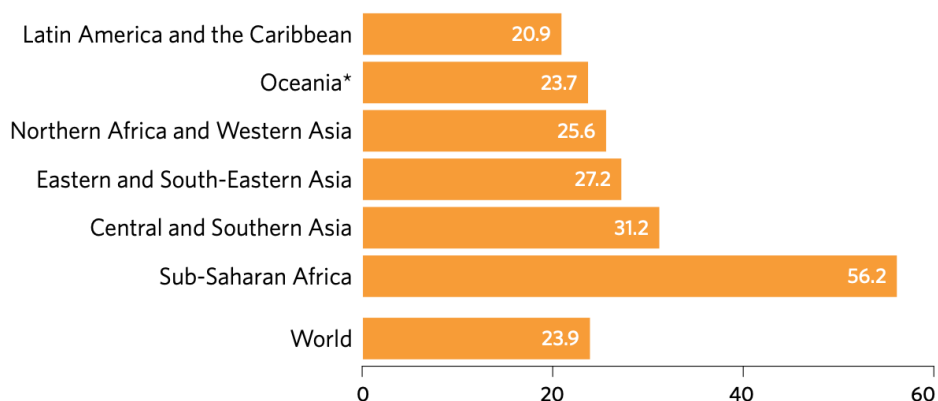
As the world's urban population grows, existing cities will expand and new cities will arise, calling for construction on a large scale. This is particularly true in Asia and Africa.



Urban expansion will generate new construction on a large scale, particularly in Africa and Asia.

Another factor driving the need for construction is the poor quality of the urban environment in many countries. More than 1 billion people live in slums worldwide. In Africa, more than half of the urban dwellers live in slums. Slum dwellers are most prevalent in three regions: Eastern and South-Eastern Asia (370 million), sub-Saharan African (238 million) and Central and Southern Asia (226 million).

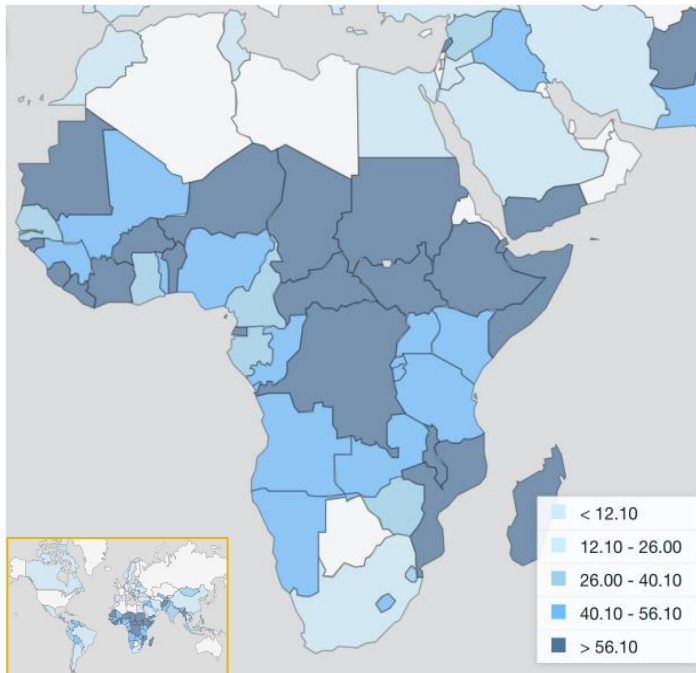
Proportion of the urban population living in slums in selected regions, 2018 (percentage)



* Excluding Australia and New Zealand.

Almost one quarter of the world's urban population is living in slums. In Africa, every second urban dweller does. Source: United Nations (2021).

Urban people living in slums 2018 (%)



Many countries in Africa have a major deficit of decent urban housing. Source: World Bank (2021).

SDG 11.1 is clear: *Ensuring access for all to adequate, safe and affordable housing and basic services and upgrade slums*. Population growth, urbanization, and legacy issues combine to create a huge need for new construction and reconstruction in the growing cities of developing countries.

1.2.3 Climate mitigation

The buildings and construction sector is a very considerable contributor to global carbon emissions, responsible for about 40% of global carbon emissions, according to the United Nations Environment Programme (2020). Approximately three-quarters are driven by buildings' operational energy use and a quarter by the embodied carbon associated with its construction, particularly because of the choice of building materials.

The emission footprint from the built environment threatens to consume our remaining carbon budget, given the huge need for construction and reconstruction.

The sector is not on a positive trajectory. The emissions from the operation of buildings hit their highest-ever level in 2019. To get the buildings sector on track to achieving net-zero carbon by 2050 and fulfil its huge potential to slow climate change and contribute significantly to the goals of the Paris Agreement, all actors across the buildings value chain need to increase decarbonization actions and their impact by a factor of five.

A major opportunity for improving the climate performance of the construction sector is to shift the choice of building materials such that wood and other biomaterials are used where possible, and steel and concrete only where necessary. The necessary transition to more climate friendly building materials will increase the demand for wood from the construction sector.

1.3 Land for forestry production will decrease

The amount of land available for forestry production is likely to shrink over the coming decades. More land will go to the expanding cities, more land will go to agricultural production (particularly in the absence of intensification), and more land should be set aside for biological diversity. Less land for forestry production will be the result.

1.3.1 Urban growth

As cities expand, they will require more land.

McDonald et al (2018) estimate that urban growth was responsible for the loss of 19 Mha of natural habitat between 1992-2000 and could threaten an additional 29 Mha of natural habitat by 2030. Biomes with large amounts of natural habitat lost due to urban growth include temperate forests and tropical moist forests, as well as deserts and xeric shrublands.

1.3.2 Food production

A growing world population will require more food.

Searchinger et al (2019) estimate that world food demand (measured in total calories) will rise by 55 percent between 2010 and 2050, counting the caloric content of all food categories, including not just crops but also dairy, fish, and meat.

Producing this greater quantity of food will likely require that land use be shifted from forestry to agriculture.

Searchinger et al (2019) have analyzed this shift in terms of a “land gap”—the difference between the global agricultural land area in 2010 and the area that will be required in 2050 to produce enough food to meet projected demand.

The agricultural land gap is estimated to be 593 million hectares, an area nearly twice the size of India and more than 10% greater than the 5 billion hectares in use in 2010. This assumes that crop and pasture yields continue to grow at rates achieved in the past, an assumption that the authors consider optimistic. In a more realistic projection, agricultural land would need to expand by 855 Mha.

However, soil erosion can lead to a 50% reduction in crop yields, according to FAO. If this happens, more forest land will have to be shifted to agriculture.

1.3.3 Biodiversity conservation

The growing gap between the demand for forest products, which is growing, and the production in already accessed forest areas, which is not growing (without intensification), is a major driving force of forestry expansion into new areas, leading to fragmentation and destruction of intact forest landscapes and other forest wilderness.

One of the main components of the draft post-2020 Global Biodiversity Framework, under discussion for adoption at the upcoming 15th meeting of the Conference of Parties to the Convention on Biological Diversity (CBD), is the so-called Action Target 3 (CBD, 2021):

Ensure that at least 30 per cent globally of land areas and of sea areas, especially areas of particular importance for biodiversity and its contributions to people, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

This is in essence a proposal to double the current extent of protected land areas and quadruple current ocean protections by 2030 (HAC a, 2022).

The arguments for setting aside more land to conserve and restore biodiversity are growing in strength (HAC b, 2022). Although it is uncertain at this time what the CBD will agree, it is clear that the pressure for removing land from forestry production is getting stronger and the proposed set-aside targets are getting larger. A case in point is the Half-Earth Project (2022) espoused by the late scientist E.O. Wilson.

For many species and ecosystems, even the most low-intensity economic activity can be destructive, including fragmentation by infrastructure. If the production on the lands currently used for forestry is kept stable or even going down, while the demand for forest products is going up, then more land will be brought into production. To conserve forest wilderness and meet the objectives of CBD, it is necessary to increase the production from the lands that are already being used for forestry production.

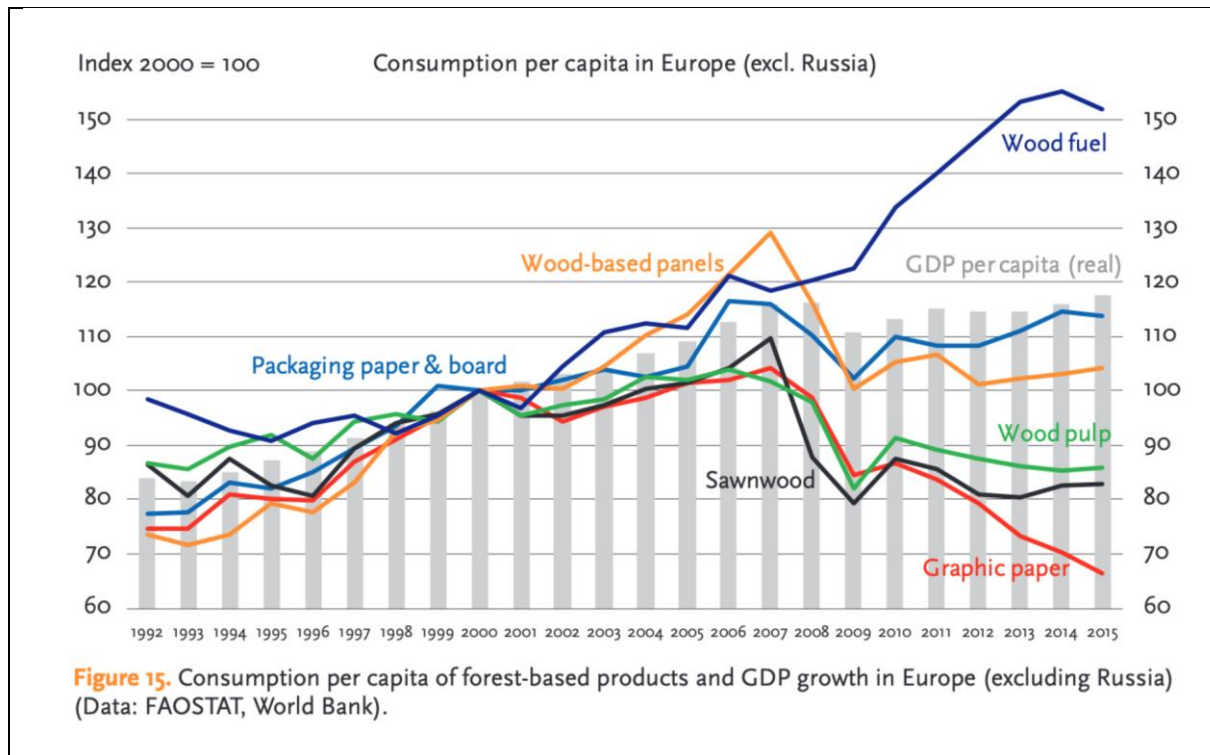
This assumes that demand for forest products will be going up over the next few decades. Is this a valid assumption? This is the topic of the next section.

1.4 Sustainable consumption will not close the gap

The analysis above suggests that the demand for forest products will increase while the land available for production forestry will decrease. This poses a conundrum—how can a growing demand be met from a shrinking land area?

A common response is that sustainable consumption will solve the issue. This strategy is included in Agenda 2030 as SDG 12: Ensure sustainable consumption and production patterns. The essence of this idea is to eliminate wasteful consumption and production and to find ways to decouple economic growth from environmental impact. An associated aspect is that the world should eliminate frivolous consumption, although this is not explicitly said in the Agenda.

The development of forest products consumption in Europe suggests that this strategy has merit. The per-capita consumption of several product categories has declined in relation to GDP since the year 2000. Exceptions are wood fuel, which is growing due to dedicated policy support, and packaging, which is still closely associated with GDP. This development suggests that dedicated measures might succeed in further reducing per-capita wood consumption.

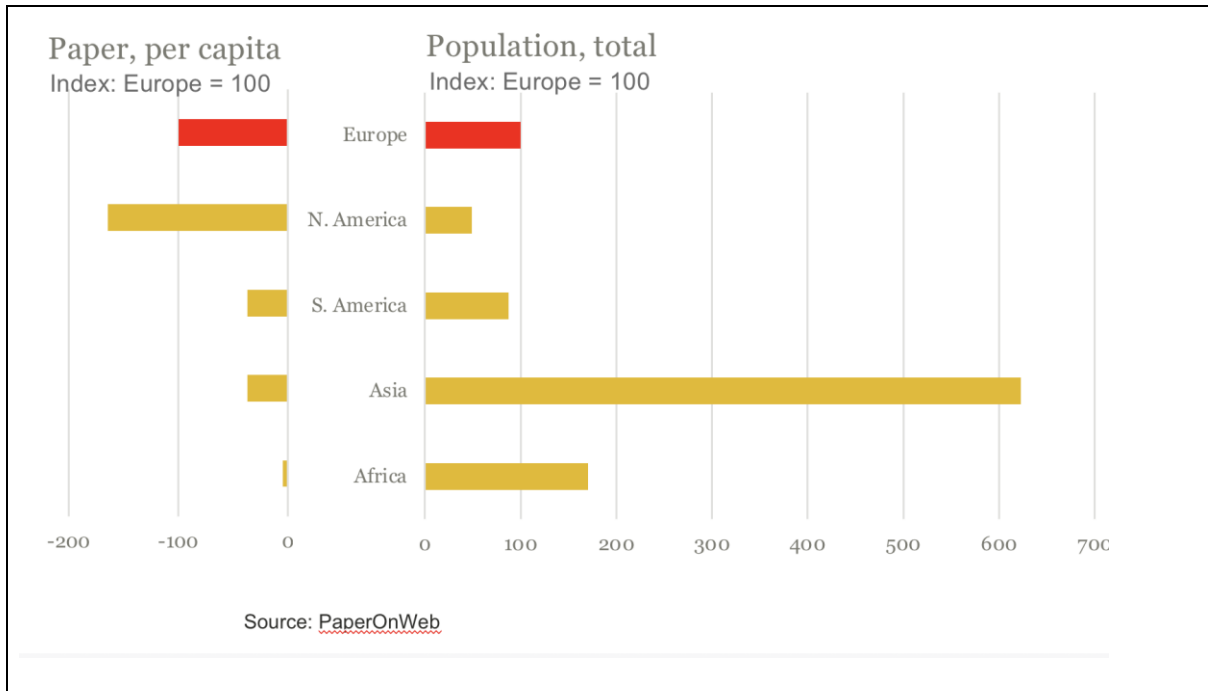


The consumption of forest products in Europe has become decoupled from GDP growth. But this is unlikely to happen in the Global South. Source: Jonsson et al (2017).

Reducing the amount that each person is consuming may not reduce total consumption, however, if the number of people is growing, and the developing countries whose populations are growing the most have little or no potential to reduce per-capita consumption. On the contrary, and consistent with Agenda 2030, their consumption needs to increase as they eradicate poverty.

The average person in North America consumes more paper than the average European, suggesting a potential to reduce per-capita consumption in the Global North. The situation is very different in the Global South, however. The average South American and Asian consumes only 37% of the average European, while the corresponding number for the average African is as low as 5%.

The countries in the Global South have big and rapidly growing populations but low rates of per-capita consumption. Even a small increase in per capita consumption here, as is likely and legitimate, will cause their paper consumption to surge. An analogous argument can be made for timber products (see the section above on construction).



Using Europe as the region of reference, we see that the per capita consumption of paper (on the left) is greater in North America while the population (on the right) is smaller. The per-capita consumption in South America and Asia is less than half of that in Europe, while in Africa it is only around 5%. The big and rapidly growing populations of Asia and Africa, combined with an expected increase in per-capita consumption, will cause a major increase in total paper consumption that will more than offset any reduction that can be achieved in the Global North. Source: PaperOnWeb (2021)

1.5 Risks and opportunities

The outlook suggests a growing gap between global demand and global supply. The growing gap poses risks as well as opportunities.

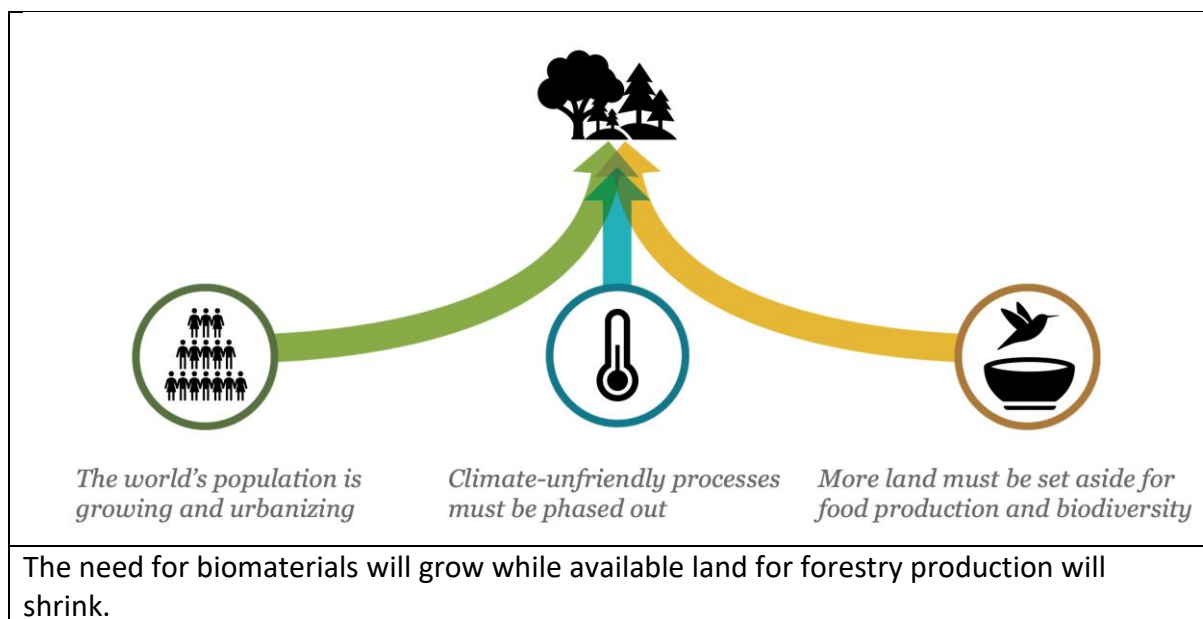
Among the risks, forest degradation and destruction are high on the list. The market for wood is likely to take what it needs. Climate concerns will likely force the construction industry to shift from steel and concrete to biomaterials. Demand for forest products will grow, and this will have a huge impact on forests.

Among the opportunities, the surge in demand can be leveraged to drive restorative land and forest management. This is a major opportunity for FSC, which is founded on the premise that demand can be harnessed to drive responsible land management and possesses an experience and a community second to none.

1.6 Conclusion

The pressure on land is likely to grow over the coming decades. This pressures have many sources:

- The need to accommodate a growing human population.
- The need to stabilize the climate-
- The need to use land to produce food.
- The need to conserve forest wilderness and to safeguard biological diversity.
- The need to meet the commitments of Agenda 2030.



Future markets will be hungry for wood. This is especially true in the Global South. An unguided market may cause forest degradation and destruction on a massive scale, including uncontrolled intensification and significant degradation and destruction of forests. Maintaining an even and constant level of production intensity across the world's forests seems like a recipe for making industrial forestry expand into new areas.

FSC needs to keep this perspective in mind as it contemplates its strategy for dealing with intensification.

Annex 2. Summary of *Creating Shared Value* by Porter and Kramer

In 2011, Michael Porter and Mark Kramer published an influential paper in *Harvard Business Review*.

In recent years, they say, business has increasingly been viewed as a major cause of social, environmental, and economic problems.

The purpose of the corporation must therefore be redefined as creating shared value, not just profit per se. In this way, capitalism can be reinvented and unleash a wave of innovation and growth.

Shared value highlights the immense human needs to be met, the large new markets to serve, and the internal costs of social and community deficits—as well as the competitive advantages available from addressing them.

It involves creating economic value in a way that also creates value for society by addressing its needs and challenges.

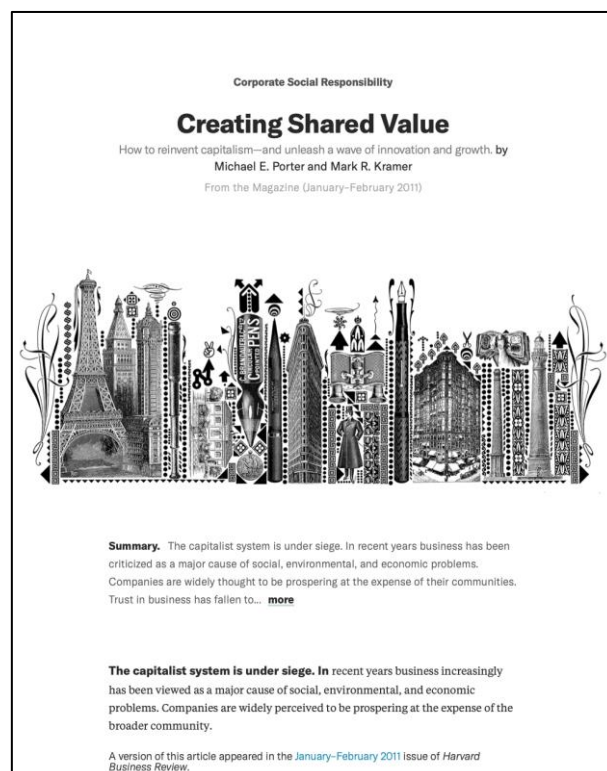
Companies can create economic value by creating societal value. There are three distinct ways to do this, say Porter and Kramer:

1.1 Reconceiving products and markets

- Society's needs are huge—health, better housing, improved nutrition, help for the aging, greater financial security, less environmental damage.
- Serving disadvantaged communities and developing countries. Though societal needs are even more pressing there, these communities have not been recognized as viable markets.
- The societal benefits of providing appropriate products to lower-income and disadvantaged consumers can be profound, while the profits for companies can be substantial.
- As capitalism begins to work in poorer communities, new opportunities for economic development and social progress increase exponentially.

1.2 Redefining productivity in the value chain

A company's value chain inevitably affects—and is affected by—numerous societal issues, such as natural resource and water use, health and safety, working conditions, and equal treatment in the workplace. Opportunities to create shared value arise because societal problems can create economic costs in the firm's value chain. Many so-called externalities



actually inflict internal costs on the firm, even in the absence of regulation or resource taxes.

1.3 Enabling local cluster development

The success of every company is affected by the supporting companies and infrastructure around it. Clusters include not only businesses but institutions such as academic programs, trade associations, and standards organizations. They also draw on the broader public assets in the surrounding community, such as schools and universities, clean water, fair-competition laws, quality standards, and market transparency.

Porter and Kramer highlight an achievement by Nestlé as a good example of shared value creation.

Today some companies are beginning to understand that marginalized suppliers cannot remain productive or sustain, much less improve their quality.

Nestlé redesigned procurement. It worked intensively with its growers, providing advice on farming practices, guaranteeing bank loans and helping secure inputs such as plant stock, pesticides, and fertilizers.

Nestlé established local facilities to measure the quality of the coffee at the point of purchase, which allowed it to pay a premium for better beans directly to the growers and thus improve their incentives.

Greater yield per hectare and higher production quality increased growers' incomes, and the environmental impact of farms shrank. Meanwhile, Nestlé's reliable supply of good coffee grew significantly.

Embedded in the Nestlé example is a far broader insight, which is the advantage of buying from capable local suppliers.

Shared value creation in the sense of Porter and Kramer is an aspiration to create additional positive value that is shared among corporations and communities. Shared value denotes something that is good for not only for the corporation but also for society. It is a shared positive aspiration and something to strive for.

Annex 3. Tabulation of shared value discussion by SIAG

1.1 Environmental value

HCVs (e.g., species, biodiversity)	Increased risk of localized extirpation (mainly endemic species)	Further intensification might lead to pressure over HCVs, and decrease interest in key geographies in protecting these attributes	Already experiencing decline in some species and geographies, focus must be on recovery	Establish strong requirements for a robust process of protecting and enhancing HCVs and effectively monitoring them. FSC could use better the assessor licensing scheme from the HCV network.	SDG nationally
Baseline and Environmental Matrix	How to assess. Also legacy consideration in terms of existing environmental degradation and restoration/ rehabilitation needs	It is not clear whether intensification already in course is considering different matrices' needs. Tendency to intensify also the damage.	Baseline based on today, if not, when? Intensification has already been occurring for a long time	Must have some direction to differentiate between BAU and Intensification. More complex environmental matrices might demand larger conservation efforts	Only partially by conversion committee, CBs
Landscape 'vs' FMU level	Sphere of Influence and jurisdiction of FSC	Some of the environmental issues arising from intensification are worsening due to the limited solution scope at the FMU level	Needs buy-in from multiple stakeholders who may not benefit from FSC certification. Governments need to be closely engaged	Document existing success stories and lessons learned from FSC certified forests who are already undertaking landscape-level project, and pilots. FSC system need to project itself as a convener at landscape scales.	FSC staff, certificate holders, membership
Carbon	Sphere of Influence, scale, jurisdiction of FSC	Intensification and the use of new traits to significantly change the balance of carbon in production forests	Debate over forest carbon accounting, impacts of CC on forest carbon sequestration and storage	Must have some direction to differentiate between BAU and intensification. Need to learn how intensification is already influencing this value.	Ecosystem Services committee

				Assess Carbon at the landscape level over time	
Efficiencies (carbon, water, pollution, pesticides, chemicals, other)	Is intensification leading to a more efficient use of environmental resources (measured by each unit of output generated from X units of inputs)?	Potentially, in a series of geographies, intensification is at the 'peak' in terms of efficiency. Further intensification might lead to the exhaustion of resources.	Accounting and externalities. What is the point until intensification makes sense and it is efficient?	Increasing demand for forest products cannot be achieved at 'all costs'. Research and study cases should be stimulated to better understand where we are in relation to efficiency.	Certificate holders, CBs
Management Practices	How management supports or impedes 'sustainability'; making management as an allied and crucial component in the enhancement of environmental values.	In a set of geographies, it seems that the role of technology is being overestimated and the role of management ignored. Literature suggest that both are important areas of improvement towards SI	Needs better understanding and consistent monitoring. There is a need of improving management practices in a level as high as the intensification in technology for SI.	There is a need in the pilots being conducted to understand silviculture and management practices as a core component, as well as the assessment of the standards by specialists with regards to this issue.	SDG, PSU
Recycled FSC in supply chain	Uptake in supply chain and with producers	Less pressure on primary forests	We have an FSC recycled label, but what is the opportunity to increase its use?	Explore mechanisms for expansion, increase	Membership? CoC certificate holders??
Collaboration (on landscape level)	Sphere of Influence, scale, jurisdiction of FSC	Some values can only be successfully protected/managed at a landscape level (e.g., water, protected areas networks/corridors, wide-ranging species).	Resources and capacity, jurisdiction. How FSC can be involved and how the entity can influence at this level?	Document existing success stories and lessons learned from FSC certified forests who are already undertaking landscape-level project, and pilots. FSC system need to project itself as a convener at landscape scales.	Landscape discussion and pilot areas

1.2 Social value

But remember: 'social values are always context dependent and place specific'.

Theme	Challenges or Risks raised by Intensification	Impacts	Dilemmas	Draft Recommendations	Other relevant FSC working groups/ policy processes	Notes
Scale questions/ Small-producers	Intensification favours large-scale, highly capitalised industries	Small and medium scale producers disadvantaged. Greater land and wealth concentration excludes other users	Can 'land sparing' favour other production systems? FSC does not have jurisdiction outside FMUs.	Discuss what FSC could require or recommend? How ensure that disadvantaged groups get preferential access to spared lands?	Smallholder revision designed to make certification easier for small producers.	Easing certification does not solve disadvantage of economies of scale.
Identity	More intensive land use may weaken peoples' links to original lands and ecosystems	Cultural heritage and identity undermined or lost. Spiritual relations between communities and forests can change irreversibly.	Cultural values usually extend way beyond FMU boundaries	HCV 6 may need strengthening to protect wider cultural heritage values. When there is no way to avoid the destruction of an HVC 6, appropriate compensation measures should be identified and agreed by FPIC	IFL is being matched with ICL FSC is <u>not</u> developing landscape standard	Jurisdictional challenge (FSC's authority beyond FMU) is unresolved Rainforest Alliance has developed a landscape standard
Livelihoods	More intensive land use may diminish resources available for livelihoods	Livelihood option reduced. Poverty increases, cultural repertoire also diminished, minority land use	Can landscape mosaics protect livelihoods if outside FMUs?	HCV 5 needs to be strengthened to provide for more than 'basic needs'	Strengthened NTFP standards are being considered?	FSC does not have jurisdiction outside FMUs.

		disproportionately affected. Changes in forest use by communities may also lead to some forest functions diminishing or disappearing.	Could compensation mechanism really compensate the loss of everything (eg where bushmeat has strong cultural values)?		FSC is <u>not</u> developing a landscape standard	Rainforest Alliance is developing a Gold Standard for landscape approach.
Local Food Security	More intensive land use may lead to less land or resources for local food security	Food insecurity and under-nutrition. Disproportionate impact on poor and marginal groups.	Can landscape mosaics protect local food security if outside FMUs?	New P&C needed to protect local food security in FMUs (taking account of legal restrictions) Any restrictions on community resource access should be subject to FPIC.	Not yet being addressed by FSC? FSC is <u>not</u> developing landscape standard	RSB, RSPO, FAO and GIZ are developing norms for protecting local food (and water) security.
Employment	Mechanisation associated with intensification may cause job losses.	Local communities lose jobs and related benefits	Mechanisation may require new skills, can new training be guaranteed to locals?	Benefit sharing to ensure re-training in forestry (or equivalent number of service sector) jobs?	'Just Transition' developing BPs. Core labour standards being discussed with ILO	How can BPs be made mandatory or, at least, safeguarded?
Gender	Intensification may favour those with greater power, rights and education	Marginalization of women and disadvantaged groups	There are many cultural and political barriers to gender justice	Need to strengthen gender protections	Gender indicator being reviewed	Other certification schemes have stronger gender provisions
FPIC and land rights	Further expansion may cause land-grabbing and	FPIC is currently not being well enforced by CBs;	Can FPIC be withdrawn	FPIC should be required prior to	FPIC standard is being reviewed by PIPC and Board.	Other standards do require FPIC prior to land acquisition.

	ensuing rights abuse	FPIC is required before 'management' not prior to land acquisition, permits, concessions.	unilaterally by either party?	land/permit acquisition. Social audits must be improved to ensure lack of FPIC is not overlooked or deemed 'minor'. Lands acquired by State expropriation ('eminent domain') should not be certifiable.		RSPO has 'New Planting Procedure' which requires FPIC is underway prior to clearance.
Human Rights Defenders	Some companies may resent complaints, whistle-blowers and community spokespersons & human rights defenders	Criminalization, harassment and worse of those standing up for their rights	FSC has not yet adopted a standard on HRDs	Adopt 'zero tolerance initiative' norm into FSC P&C. Operators should implement policies to protect HRDs Mechanisms are needed to allow protection and anonymity for complainants and whistle-blowers.	ASI is developing anonymity protection	RSPO has HRD policy which is beginning to be implemented and is in the P&C.
Remedy	Intensification (more from less) may reduce incentives to resolve existing conflicts	Current violations and demands for remedy may get ignored	Right to remedy is a fundamental human rights principle. Ignoring existing rights abuses exposes FSC to reputational risk.	Make remedy in existing production areas a condition for FSC endorsement of any further intensification. Ensure complaints system complies with UN Business and Human Rights	Complaints procedure Is being reviewed. (Technical Working Group on Dispute handling procedures). Policy of Association review	Learn from other remedial systems eg SAN, CAO, ILO RSPO has RaCP.

				principles for 'non-judicial remedy procedures'	may address 'legacy' challenges. Conversion Policy is being reviewed.	
IPRs	Proprietary plant breeding technologies /germplasm are not freely available but protected by patents.	Small producers may be denied access to, or be unable to afford, licences to use such varieties.	Can companies that produce such plant materials avoid imposing intellectual property rights on their germ lines? (Answer seems to be 'no', they need security for their investments)	FSC should require benefit-sharing with small producers by large operators seeking certification of forests planted with proprietary technologies (not just GMTs).	SISF	Agricultural sector shows that IPRs on GM crops is fundamental to GMO industry.

1.3 Economic value

Theme (value)	Challenges or risks raised by Intensification	Potential Impacts	Dilemmas	Recommendations and safeguards	Other relevant FSC working groups/ policy processes
Higher yield	Does higher yield occur at the expense of environmental and/or social values? Competitive disadvantage of regions less able to drive yield increase.	Satisfy an incremental demand for wood and wood-based products. Produce more with less: More production output with less factor input (land, resources)	Will higher yields in a given space effectively reduce land pressure in a context of growing market demand?	Driving higher yield from a productivity but also from a land-sparing perspective. Assign an indirect value to land-spared through incremented yield.	
Profitability	Does intensification lead just to more profit to companies' shareholders only or will the incremented profitability spill over through the value chain and society?	Healthy economic future. Prosperity for workers, service providers, related communities. Better wages and working conditions. Better companies' image in the society.	How far are companies willing to share their profitability as a value to others in society? Short term "profit" vs. long-term sustainable "health".	Creating economic value in a way that also creates value for society by addressing its needs and challenges (social licence to operate). "Win-win" approach, with profitability enabling generation of economic shared value to shareholders, service-providers, communities.	
Local and national tax-contributions	Is intensification leading to more local and national tax contributions?	Incremental contribution to the general incomes, welfare, and wealth.	Sustainable intensification can happen in other locals/countries where multinational companies pay their taxes.		
Employment	Is intensification leading to more job opportunities or to substitution by machines and technology?	Better training and education. Better wages. Shift in labour skills and addition of new supporting services.	Labour substitution. In some countries, there is no people to work in forestry and more mechanization will be inevitable.	Generation of dignifying employment conditions. Local workforce needs to be employed and trained. Quality labour generation in the value chain.	

Theme (value)	Challenges or risks raised by Intensification	Potential Impacts	Dilemmas	Recommendations and safeguards	Other relevant FSC working groups/ policy processes
Supporting services (R&D, machinery)	<p>Intensification is a result of R&D, technological and biotech improvement.</p> <p>Potential to accentuate the concentration of resources, or widen the gap to less intensified & smaller operations?</p>	<p>Continuous improvement and development.</p> <p>Increasing efficiency and productivity in the value chain.</p> <p>With increased efficiency, less consumption of production factors, less impact on human and environmental health.</p> <p>With increased availability of (bio)technology, lower cost, and easier access.</p>	<p>Efficient communication between science, companies, service providers and forest owners.</p> <p>(Bio)tech improvements are narrow-focused</p>	<p>Continuous communication and dialogue.</p> <p>Enable access and use of (bio)tech improvements.</p> <p>An integral focus of (bio)tech advances enable triple bottom line improvements.</p>	
Local communities	Will intensification lead to protect, develop, or benefit local communities' livelihoods or force them to move someplace else?	Spill over of social benefits for the development of local communities, their economic and social conditions.	Communities are excluded from generated benefits	Engagement and participation of the communities in the shared value generation	
Climate change	Will intensification lead to carbon-emission, land grabbing or loss of biodiversity increases?	<p>More forest products with smaller carbon footprint than others.</p> <p>Substitution effect. Increased efficiencies reduce environmental impact.</p> <p>Land sparing.</p>	Intensification is managed in addition to an increased consumption of resources.	Higher unit outputs lead to net gain of lower emissions, lower resource consumption and higher conservation impact per produced unit.	
Efficiencies (carbon, water, pollution,	Is intensification leading to a more efficient use of environmental resources (measured by each unit of	Producing more with less will benefit the world with more renewable materials.	In some geographies, intensification is at the 'peak' in terms of efficiency and further	Increasing demand for forest products cannot be achieved at "all costs".	

Theme (value)	Challenges or risks raised by Intensification	Potential Impacts	Dilemmas	Recommendations and safeguards	Other relevant FSC working groups/ policy processes
pesticides, chemicals, other)	output generated from X units of inputs)?	Resource efficiencies throughout the value chain reduce environmental impact. New technologies. Land sparing.	intensification may not be sustainable. What is the point until intensification makes sense and is efficient? This peak means new ways (GMO)?	Research and study cases should be stimulated to better understand where we are in relation to efficiency. Higher unit outputs lead to net gain of lower emissions, lower resource consumption and higher conservation impact per produced unit.	