Putting Forest Carbon Management on a Productive Path:

Some Recommendations

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Main Points

- The current path generally being followed is not particularly productive

- An alternative is needed

- Some guidelines to assess carbon management need to be agreed upon and followed

The Current Path

- Carbon management is being presented as the primary rationale/justification for management actions

- "We should either do X, Y, or Z because it either stores, sequesters, offsets, (or whatever the variable of choice), more carbon"

Carbon as the New Weapon

The C Bomb

The General Problems

- **Misleading:**
  - There are multiple, valid primary management objectives for forests
  - carbon is generally not one of them
- **It leads to advocacy science**
  - science is found (and sometimes made up) to justify a policy;
  - the science of the "other" policy is either ignored or dismissed as "bad" science
- **Zero sum**: Someone has to "win", hence the need for the C bomb

Two Questions Raised

- Is forest carbon management-

- **Relevant?** If all forms of management lead to more carbon being stored, then does forest management matter?

- **Credible?** If only some forms of management lead to higher carbon stores/sequestration, then someone must have it wrong. **Why believe any of it?**

A Proposed Solution

- **Accept there are multiple valid primary management objectives for forests**
- A short list:
  - Timber supply
  - Water supply
  - Biological conservation
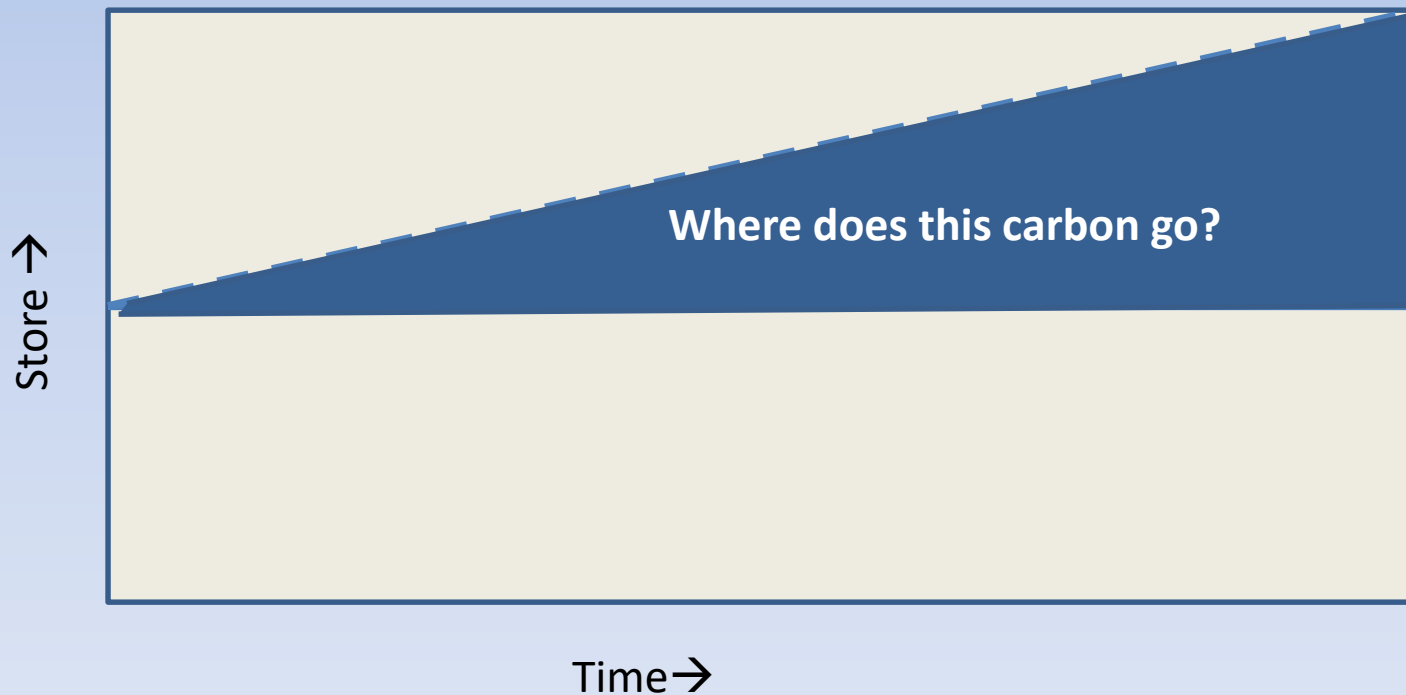 - Recreation
  - Esthetic

Within the Primary Objective

- **Store as much carbon as possible in the forms available**
  - The longer carbon stays in a pool, the more stored
  - Forests or products
- **Keep the carbon losses to a minimum**
  - Target locations to limit losses
  - Increase efficiency
- **Find ways to "offset" losses if they occur**
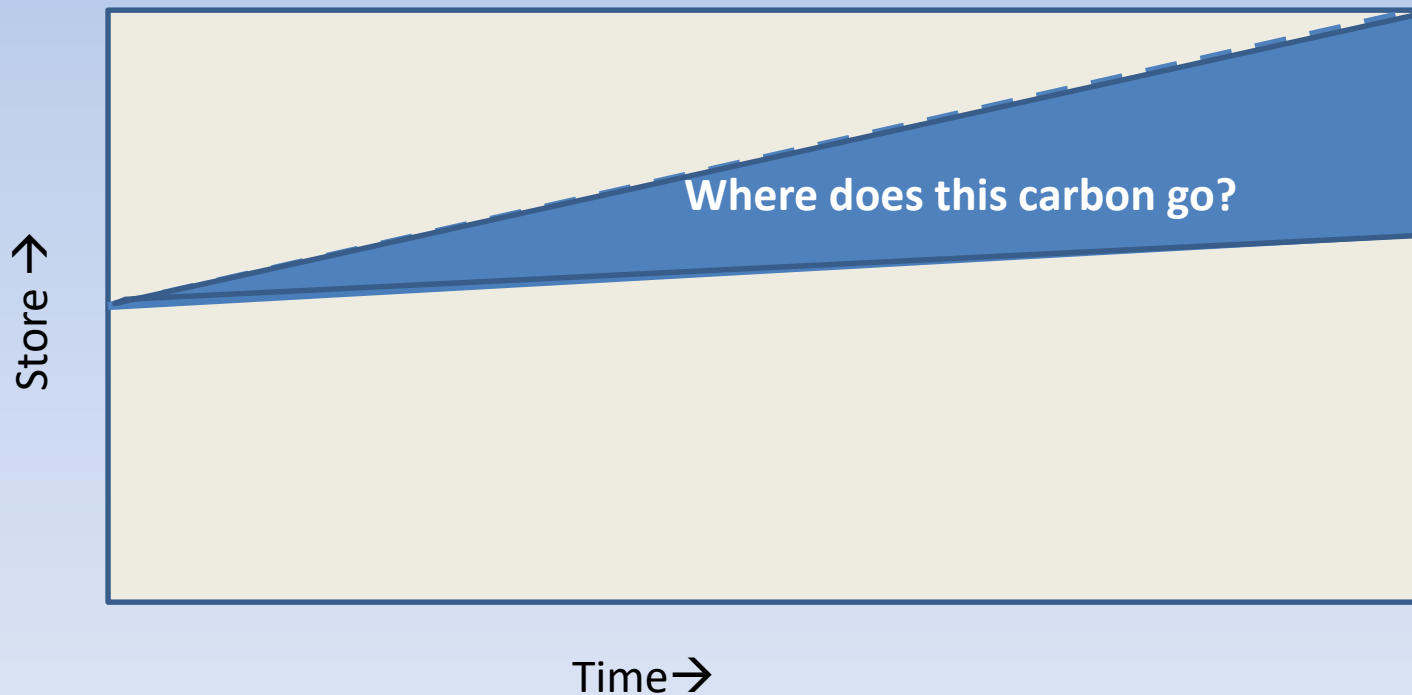 - Other pools
  - Other places

Criteria for Assessment
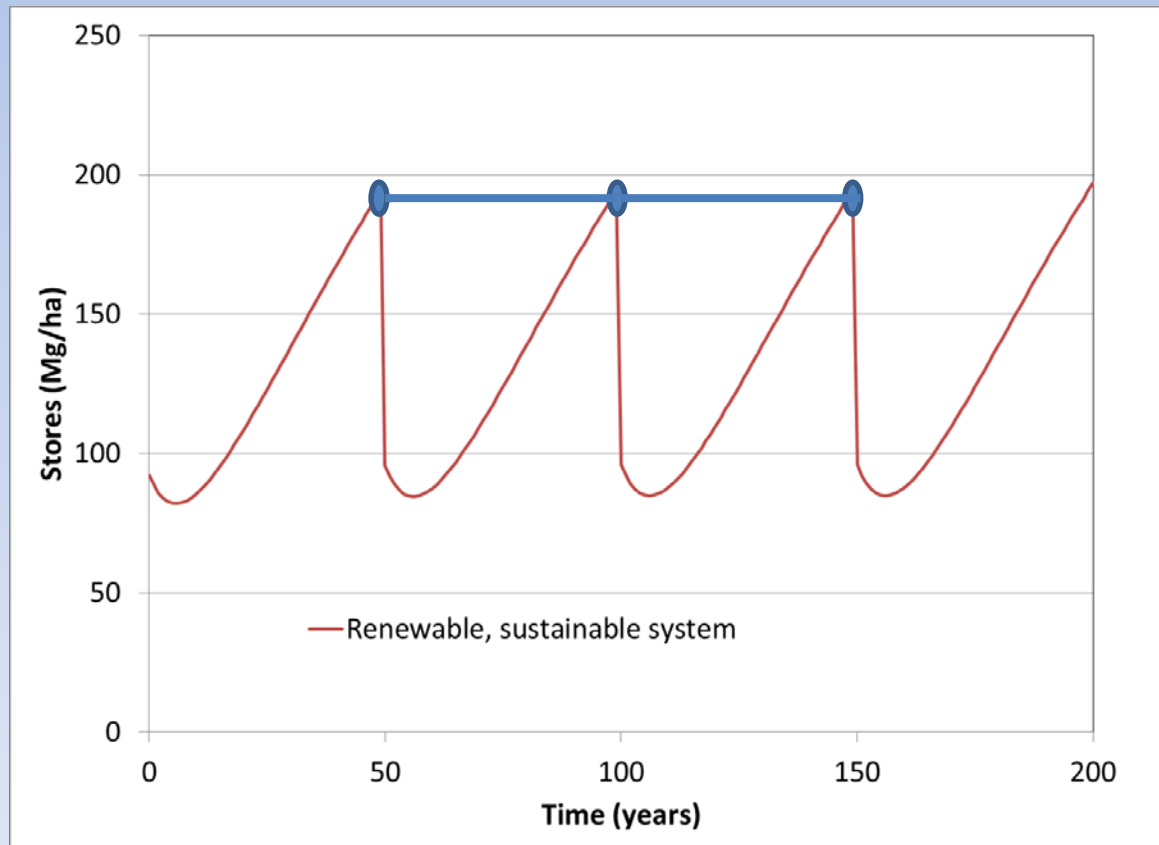
- **Follow science laws such as the conservation of mass**

Criteria for Assessment

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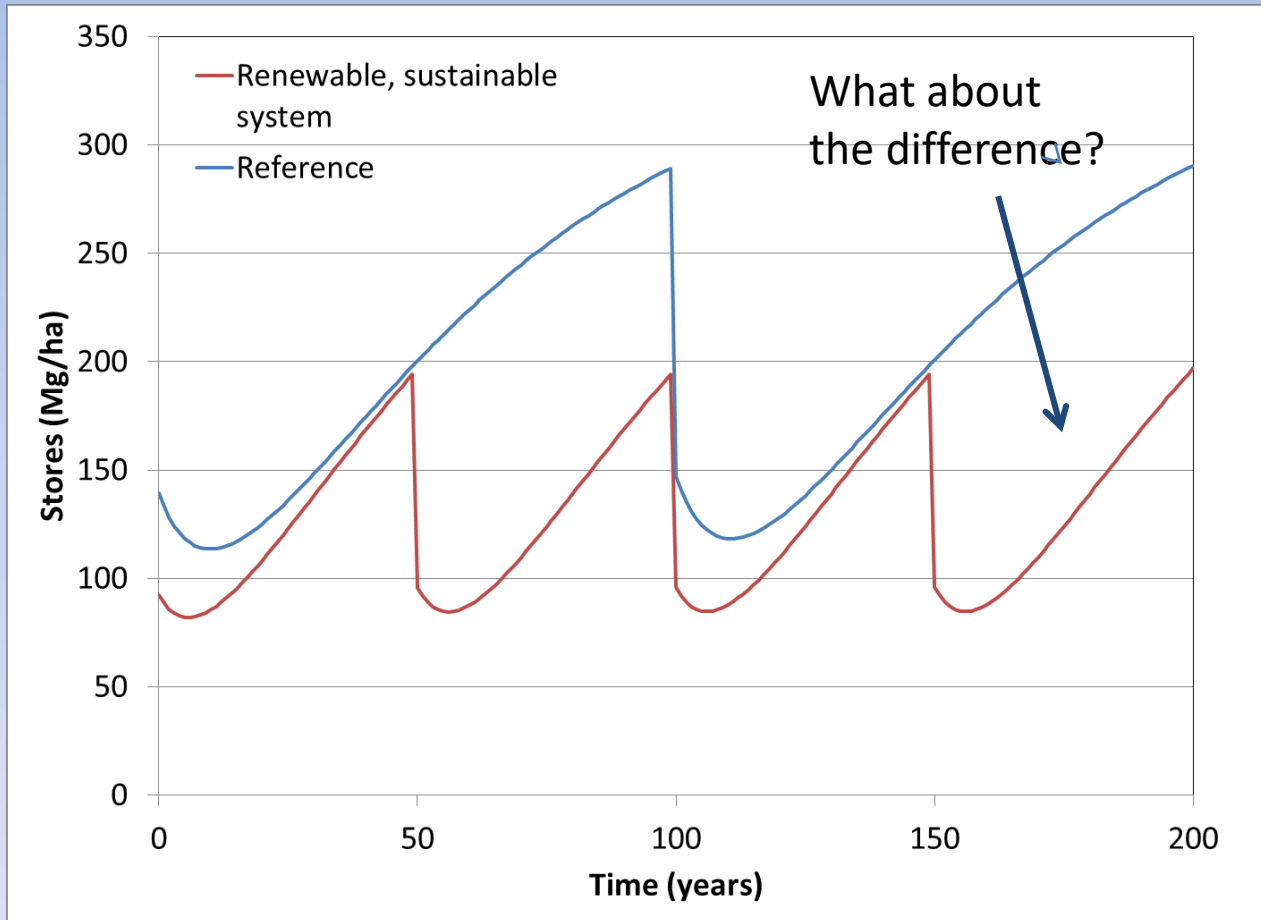
Where does this carbon go?

Store →

Time →

Criteria for Assessment

- **Use science-based methods such as a control or reference**
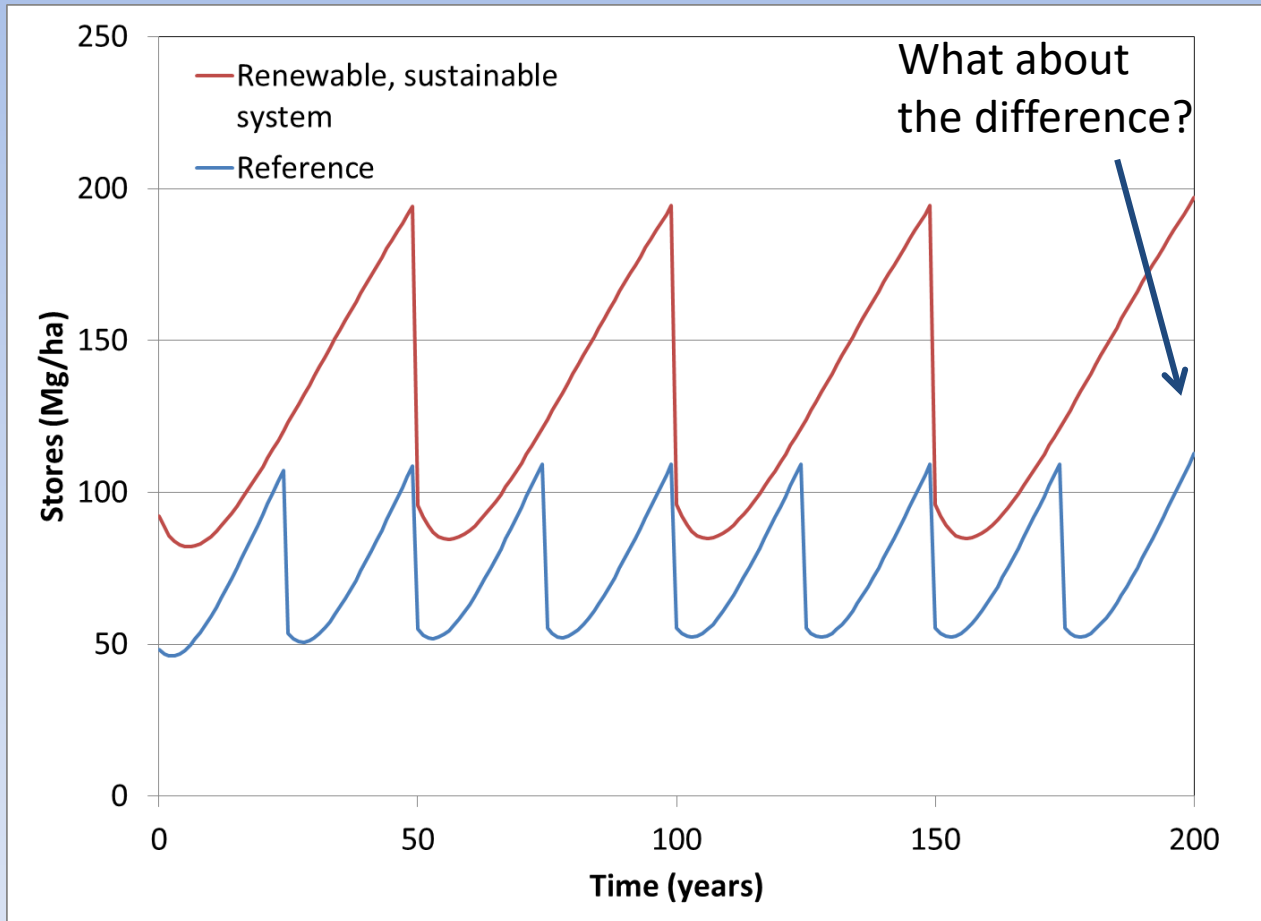
Criteria for Assessment

35% less than the reference on average

Criteria for Assessment

76% more than the reference on average

Criteria for Assessment

- **Invoke actual, complete science-based mechanisms**
  - Methane is produced in decomposition
  - Methane is 28 times stronger than carbon dioxide
  - Slash must be removed to reduce production of methane: 1 ton removal avoids 28 tons of GWP emissions

BUT

My Favorite Non-science in the Last Year

- Slash decomposition releases huge amounts of methane (not really, see previous slide)
- Fires consume 50-85% of tree aboveground mass (you can still see most of the trees)
- Thinning increases live stores relative to not thinning (major review by Zhao et al indicates the opposite)
- Mortality is an emission to the atmosphere (decomposition and combustion are the only emissions)
- Burning biomass is not an emission to the atmosphere, it is a store (combustion is an emission, it is stored in the atmosphere)
- Dead carbon cannot be stored (then why do we have fuel build-ups?)
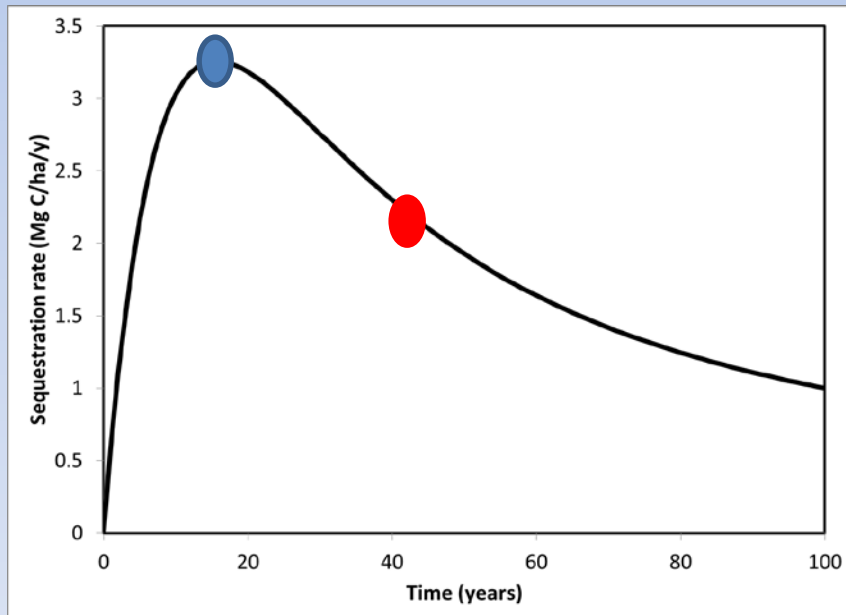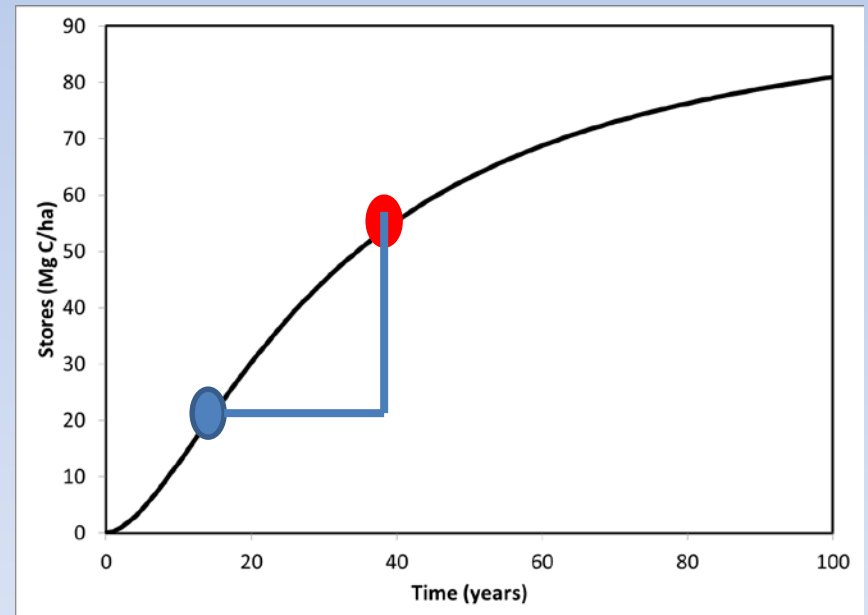
50-85% combusted?

Criteria for Assessment

- **Focus on the critical parameter, not the one that justifies a policy**
- Interesting but not definitive
  - Flows, sequestration
  - Stores

- Critical to assessing a policy
  - Changes in stores (conservation of mass)
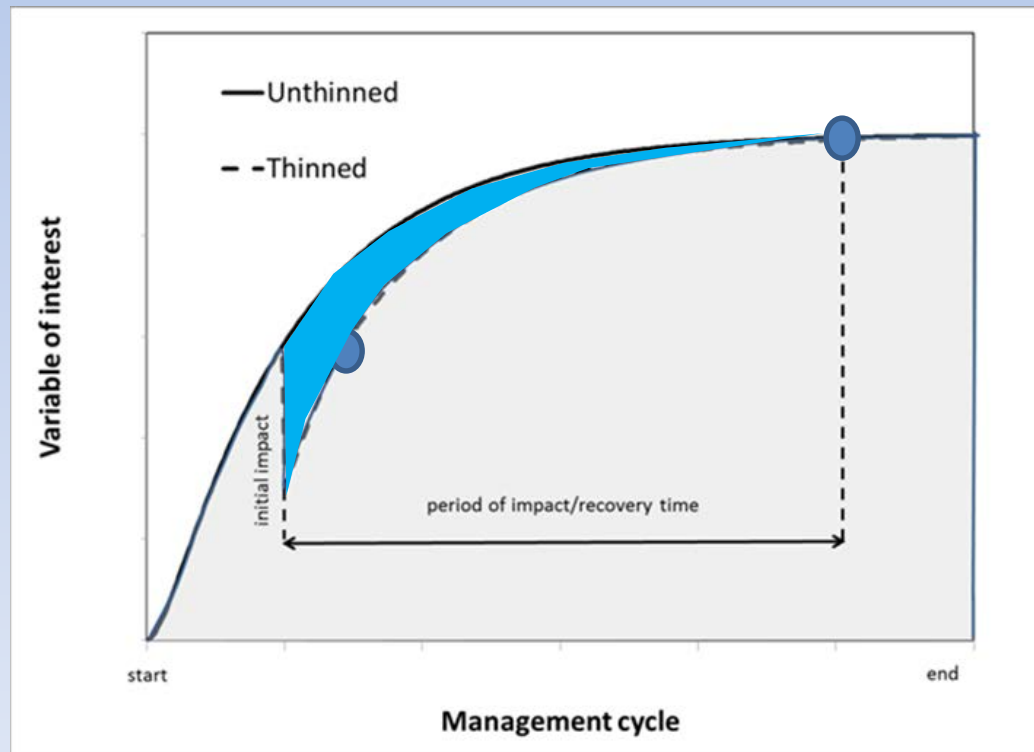
System average (all ages)

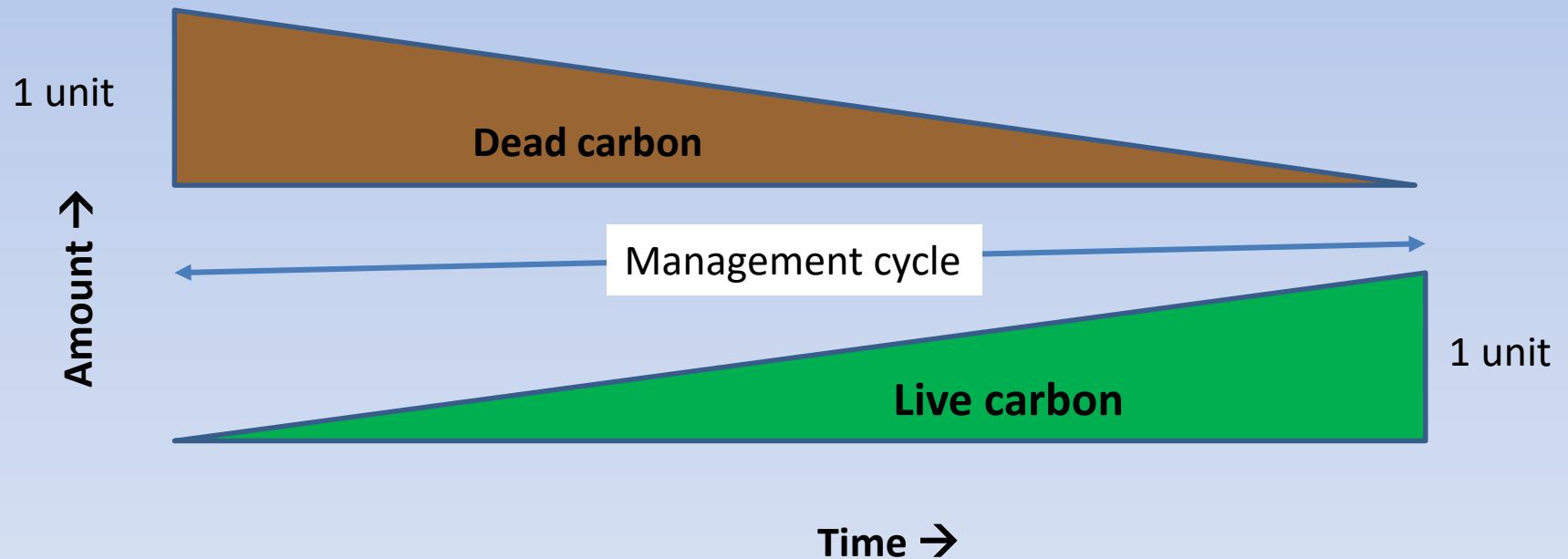**Sequestration rate**   **Stores**

Criteria for Assessment

- **Use the scale at which the policy implications are clear (not the ones needed to promote a policy)**

Is it true pools that decline over time cannot store carbon?

Criteria for Assessment

- **Consider pools that are truly verifiable, not ones that exist in theory**
- Substitution: use of wood leads to less fossil carbon being released
  - But:
    - Which form is displaced exactly?
    - Where is it stored exactly?
    - When will it be used by others?

- If you can't answer these questions, then how could you possibly know?

To Sum Up

- We need to shift the conversation from winner take all to everyone do what they can

- We need to follow some basic scientific criteria if policy is to be credible and effective

Thanks!