

Dual Benefits of Intensification

From Possible to Practical





Objective



Put a question before you

Is it time for a serious examination of
intensifying forest *management* to meet
wood supply and *conservation* goals?

- **Some context**
- **Recap a success story**
- **NB possibilities**
- **Implementation realities**
- **Pre-requisites for success**

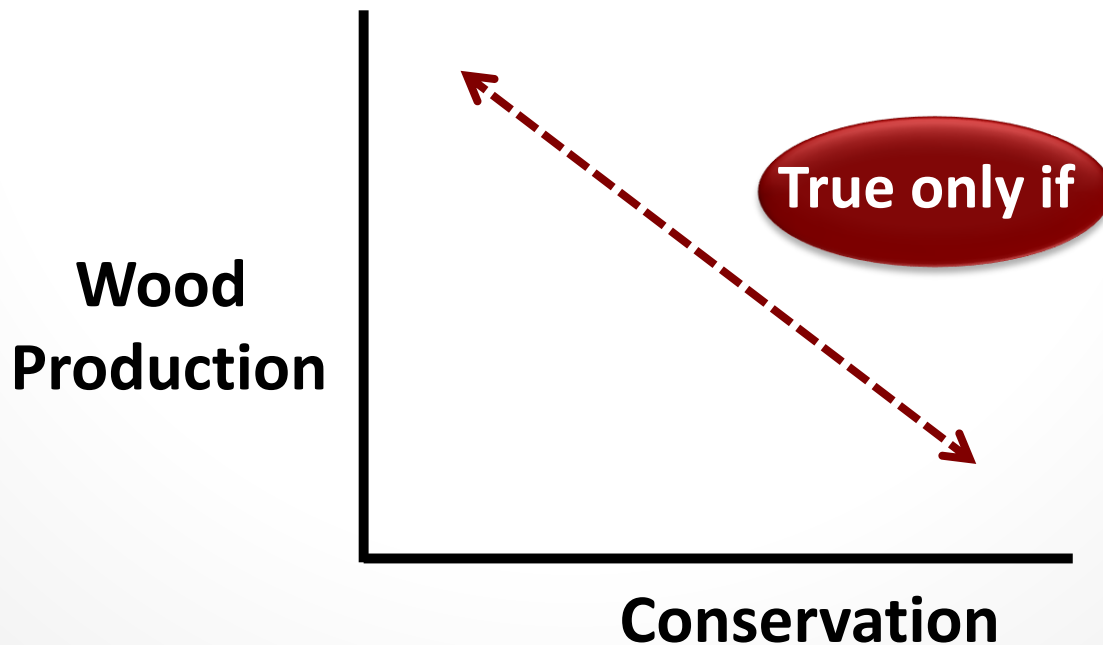


Some Context



3 Constants

- We want more wood & more forest conservation
- More wood supply = less conservation forest
- More conservation forest = less wood supply





Some Context



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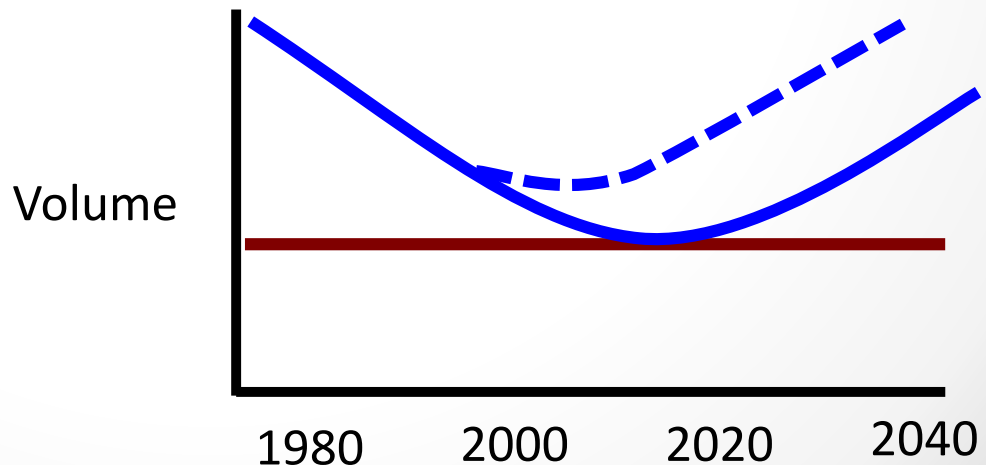
True only if

2

Growth rates
are fixed

1

Growing stock
constraint exists



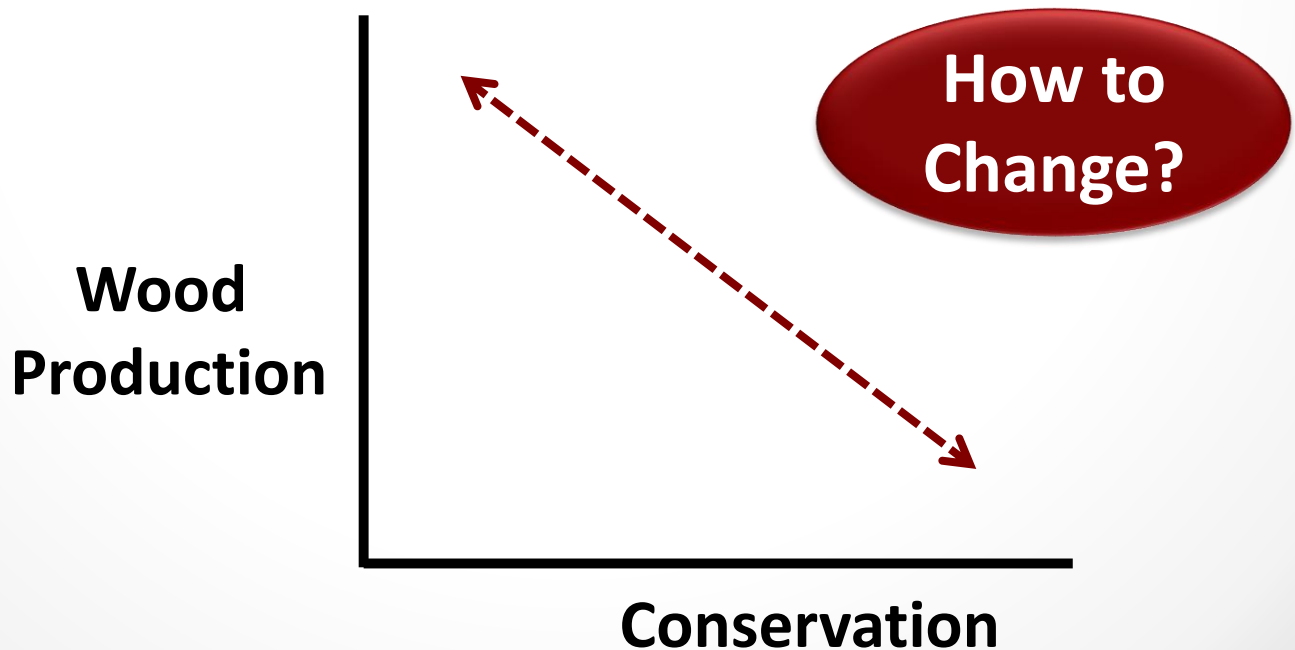


Some Context



3 Constants

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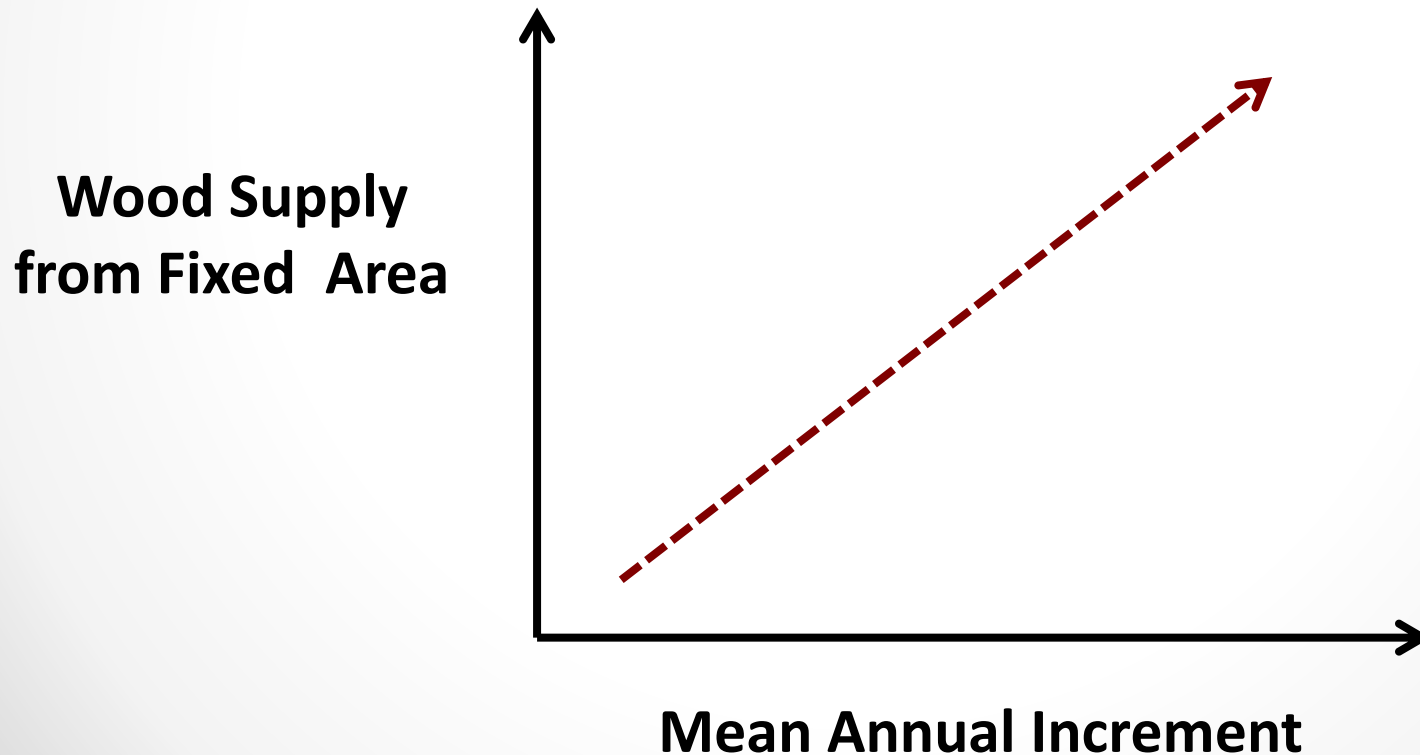
Some Context



Increase growth rate



More wood supply on fixed area



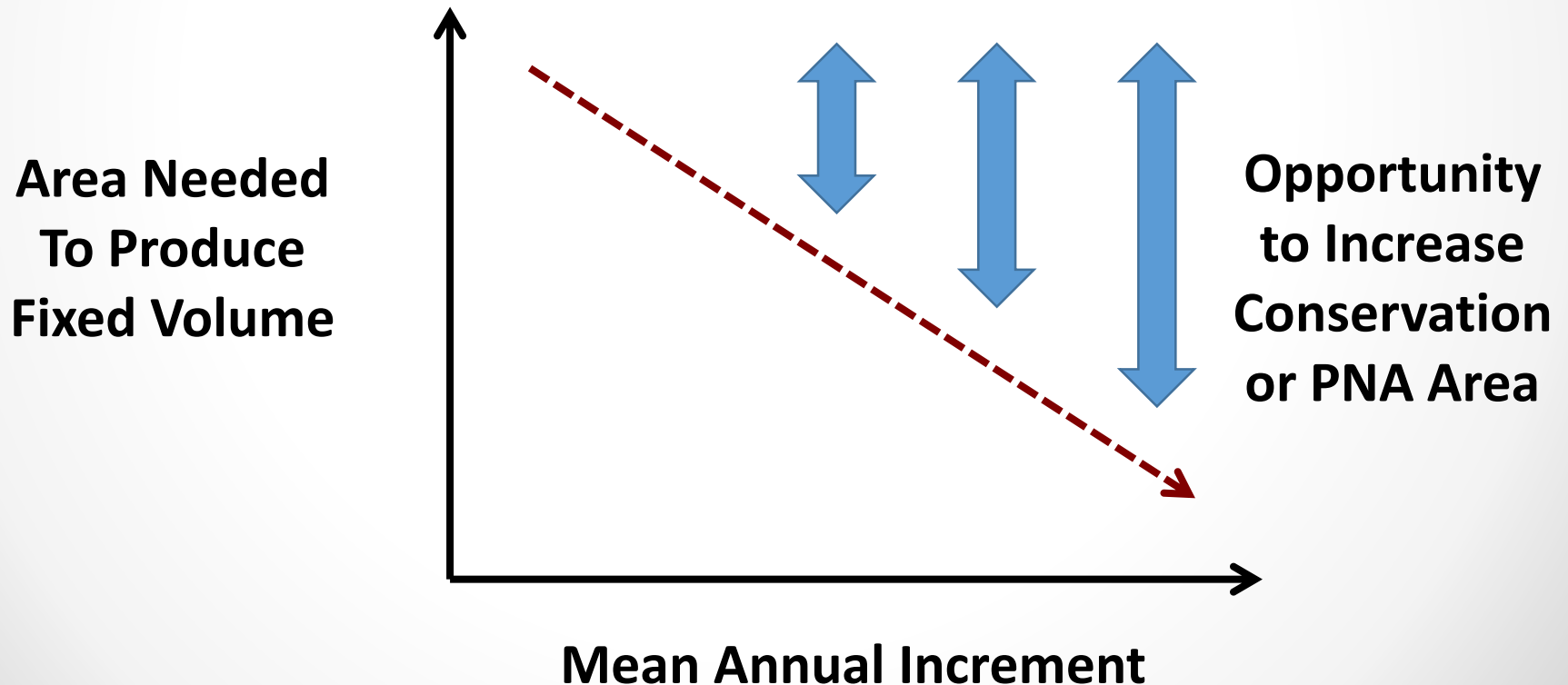


Some Context



Increase growth rate

- More wood supply on fixed area
- Less area for a fixed wood supply



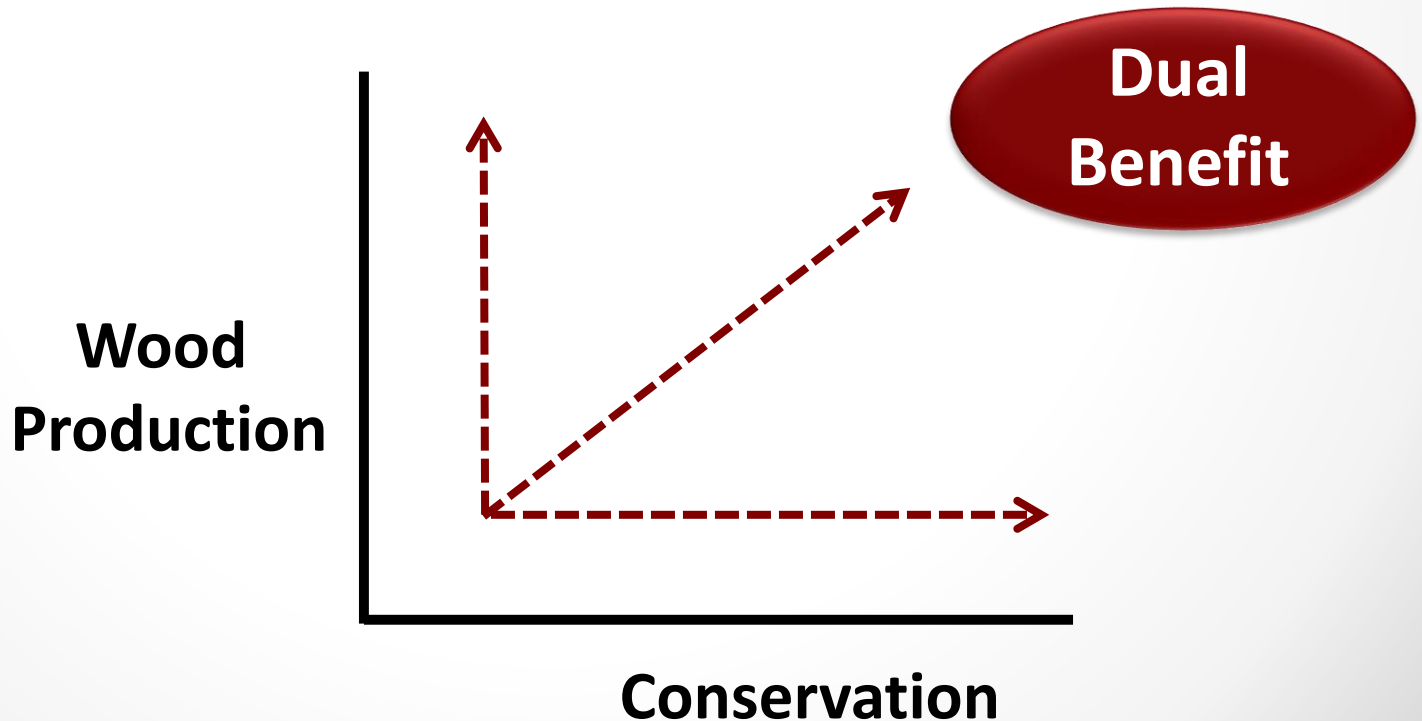


Some Context



Potential solution

- If growth rates are significantly increased
- More wood supply
- More conservation/PNA forest



- **Some context**
- ***Recap a success story***
- **NB possibilities**
- **Implementation realities**
- **Pre-requisites for success**



New Zealand





New Zealand



Forest = 9.5 million ha

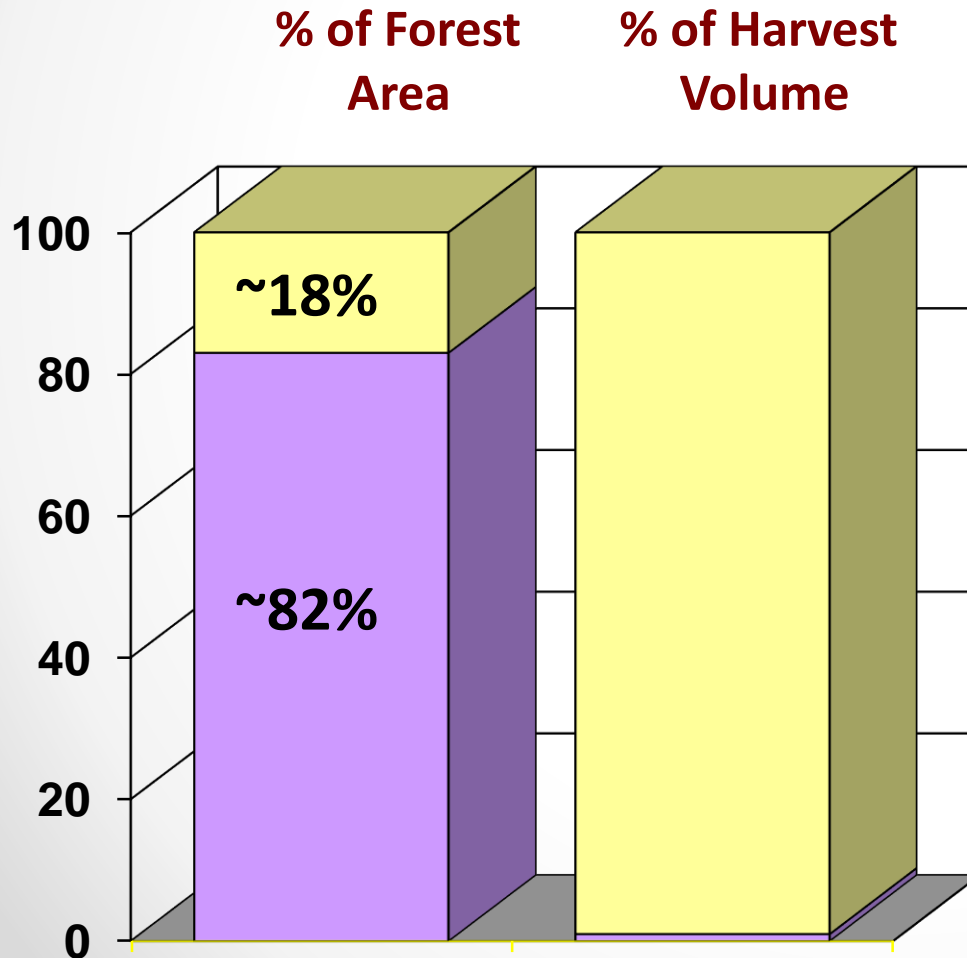


Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, C



Plantation Forest



Natural Forest
(conservation)



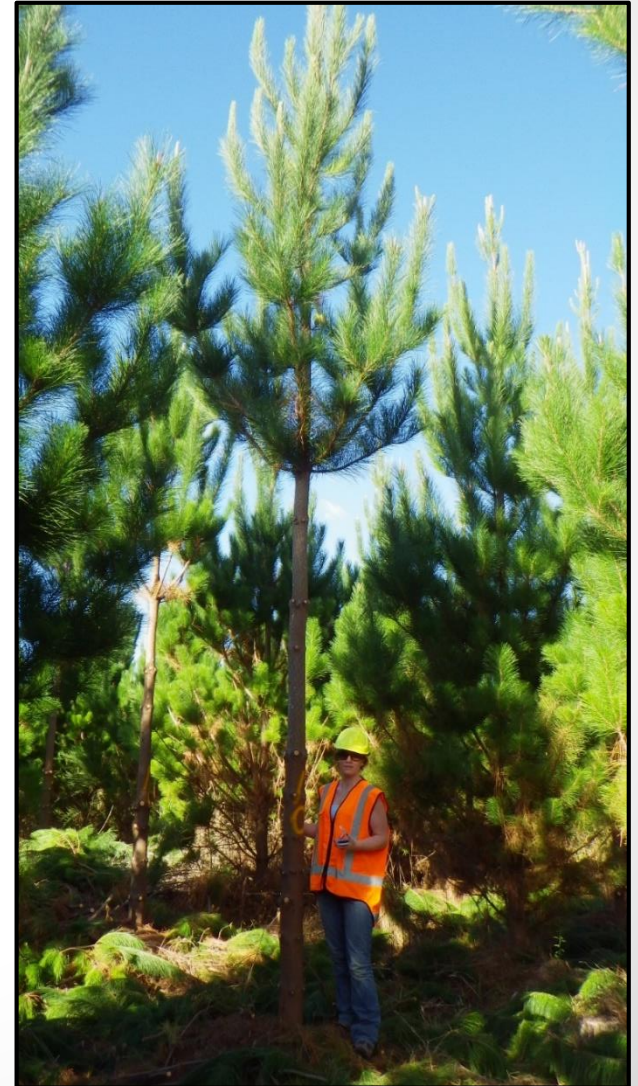
New Zealand

- Plantation Forest = 1.7 million ha
- Intensive management

100% exotic species (*P. radiata*)

Site prep with
herbicides

improved stock
(3x generation)





New Zealand

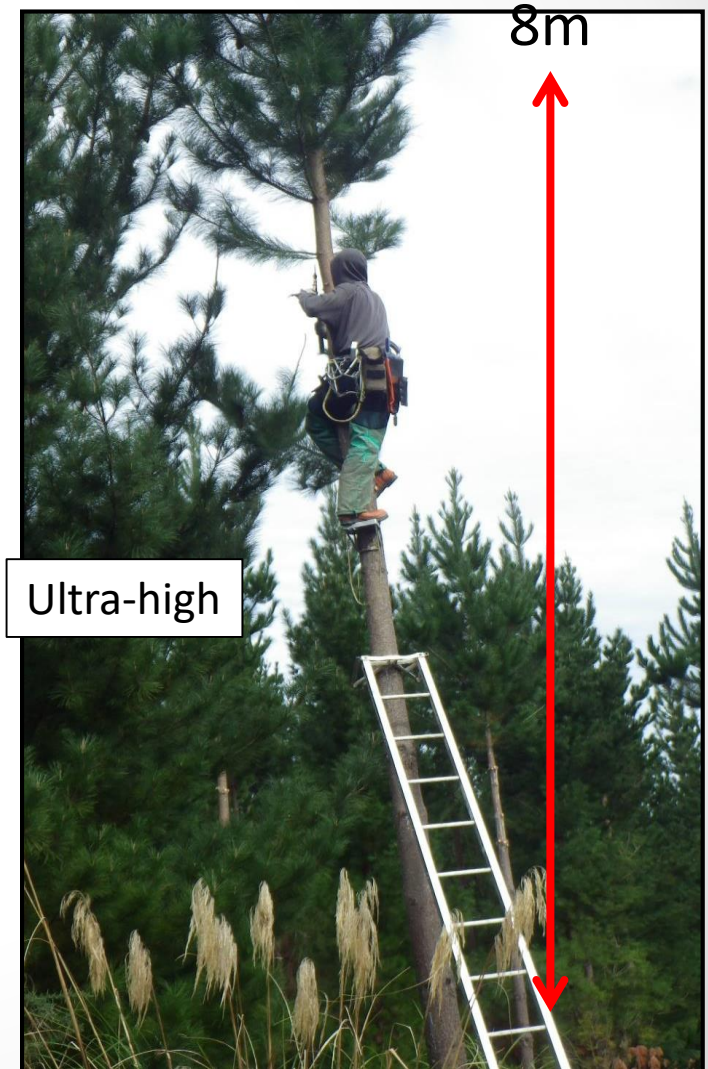
- Plantation Forest = 1.7 million ha
- Intensive management

Intermediate treatments

pruning

thinning

both





New Zealand

- Plantation Forest = 1.7 million ha
- Intensive management

Rapid growth

High yields (20-25 m³/ha/yr)

Short rotations



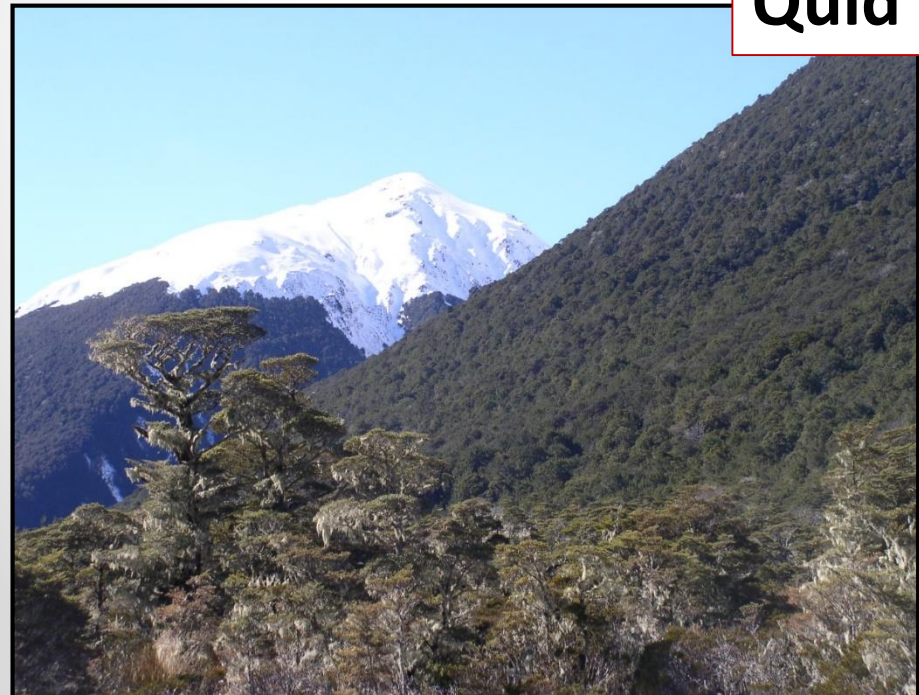


Quid Pro Quo





Quid Pro Quo





Quid Pro Quo





New Zealand

● Peaceful (& productive) Co-existence

- Conserved **native forest**
> 4x **production forest**

- **Vibrant forest economy**
(on 18% of forest)

- **NZ is a tourism mecca** (largely
because of its **environment**)

- **Very aggressive timber**
management regimes

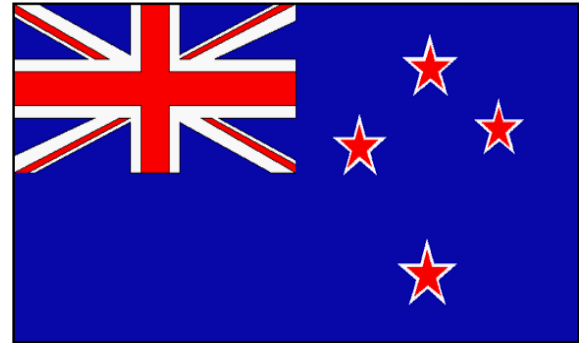
- **Tourism = #2 \$ contributor**
to economy

- **Forestry = #3 \$ contributor**
to economy

- **Some context**
- **Recap a success story**
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NB Possibilities



But can we capture the dual benefit of intensification?



NB Possibilities



Current AACs

**Crown AAC
(million m³/yr)**

Cedar

0.15

White Pine

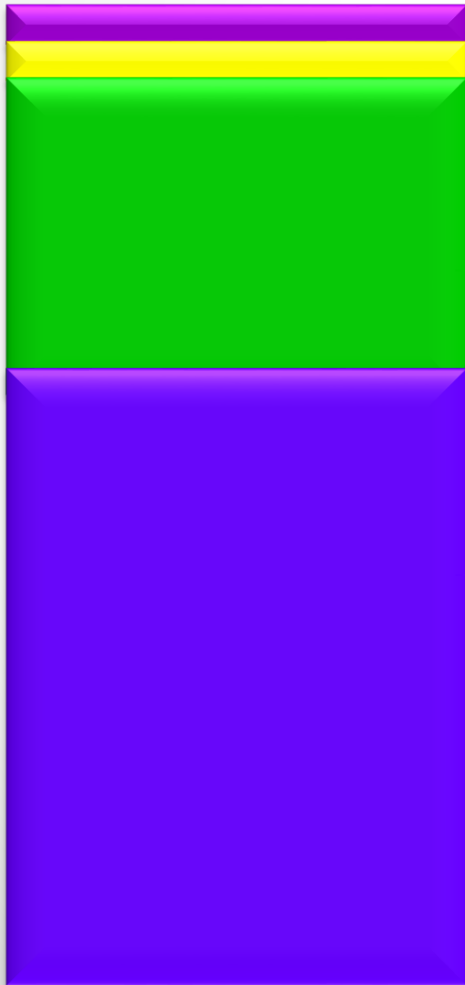
0.16

Hardwood

1.90

SFjP

3.95

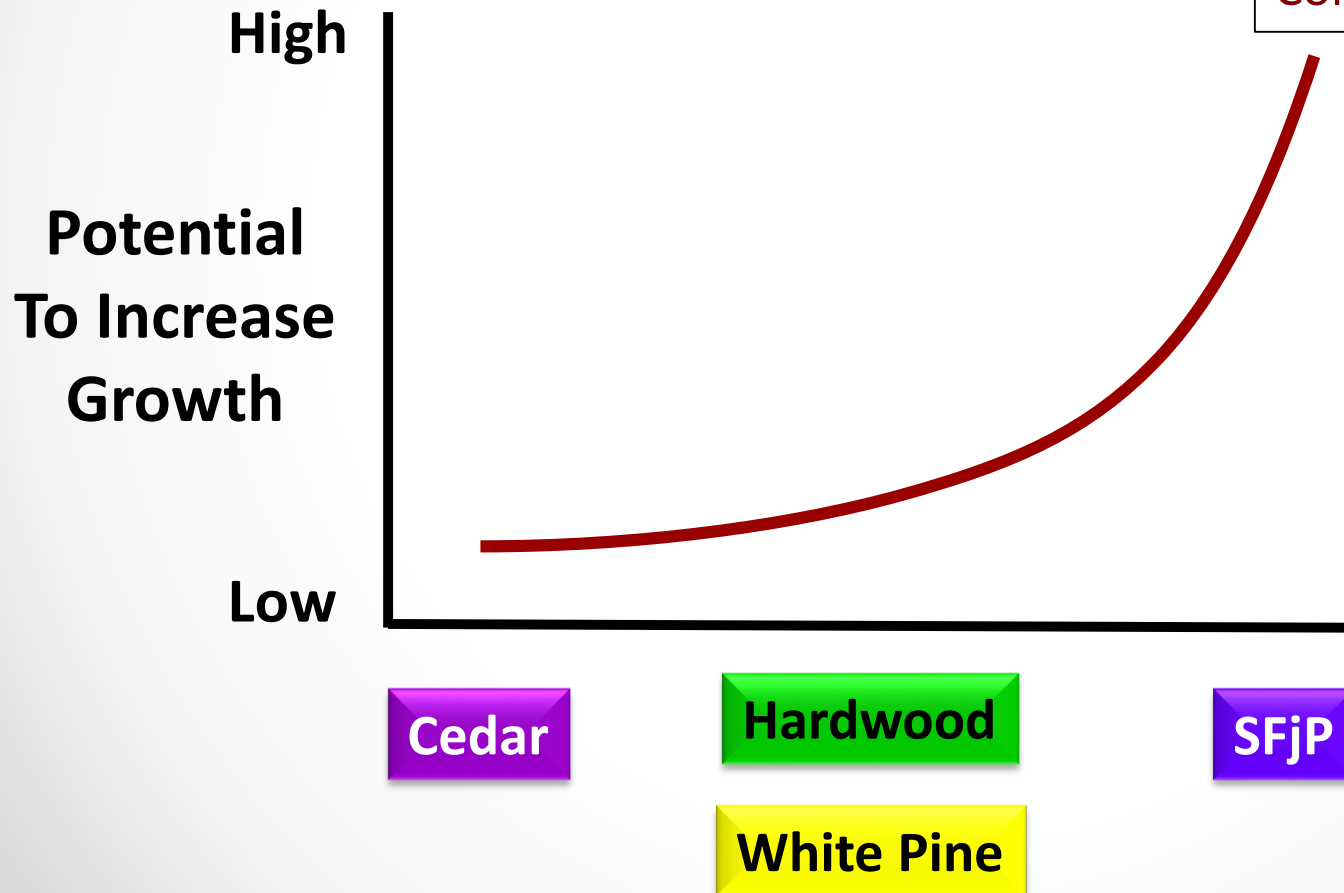




NB Possibilities



Intensification Potential

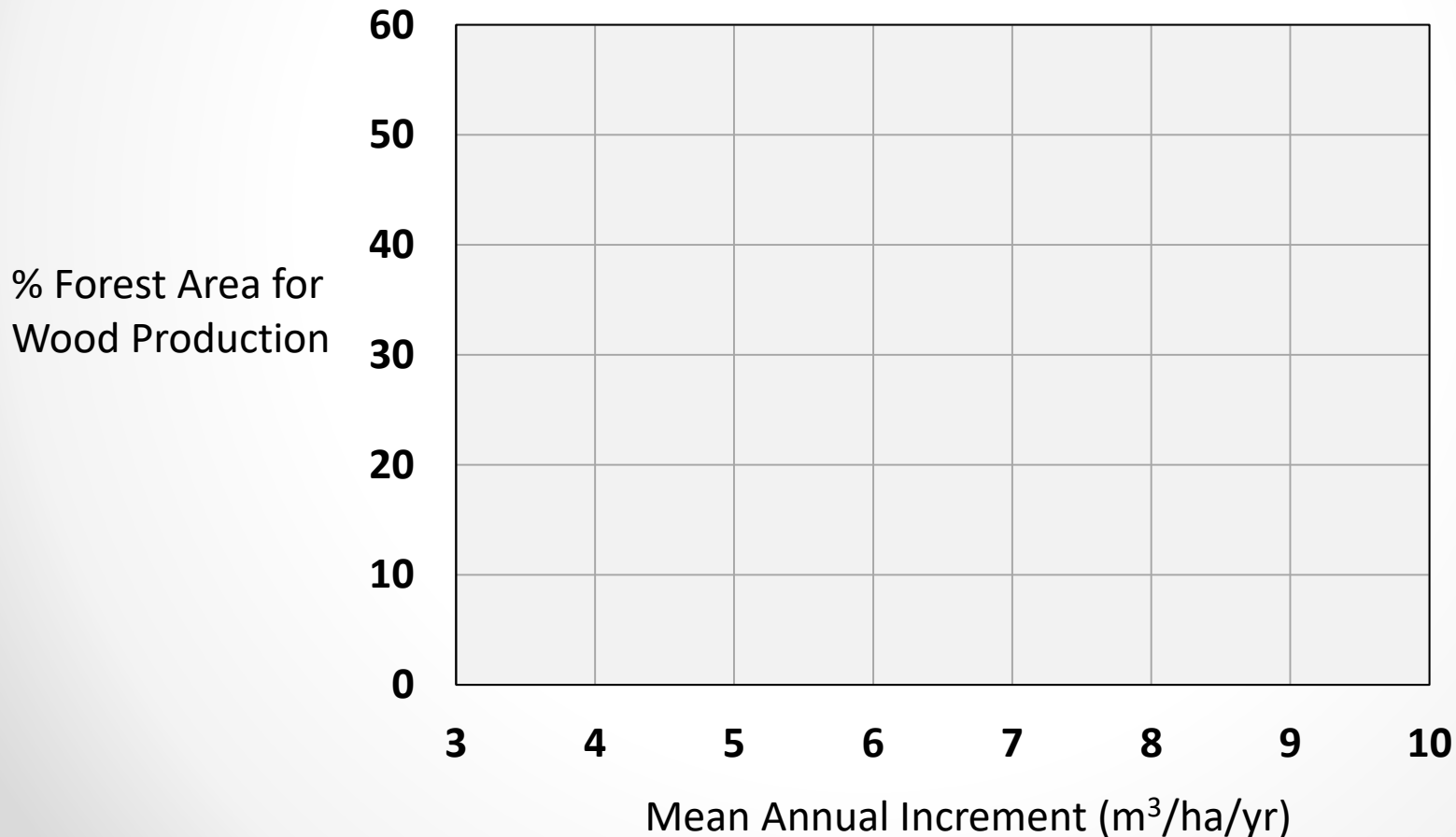


Site selection
Site prep
Improved stock
Density/stocking control
Competition control



NB Possibilities

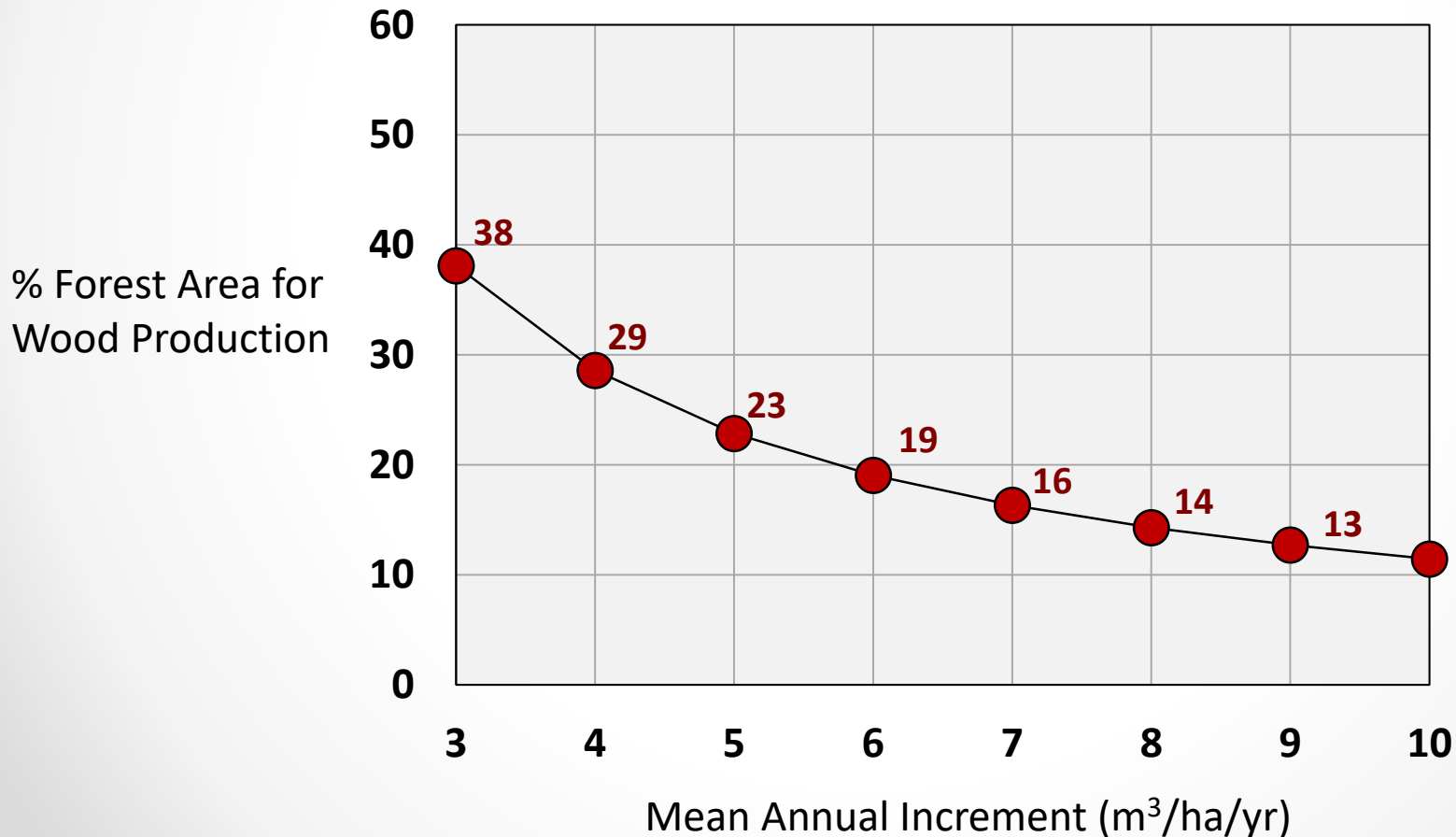
- Growth vs Area for Wood Production
- To produce **4 million** m³/yr (current SFjP AAC)





NB Possibilities

- Growth vs Area for Wood Production
- To produce **4 million** m³/yr (current SFjP AAC)





NB Possibilities

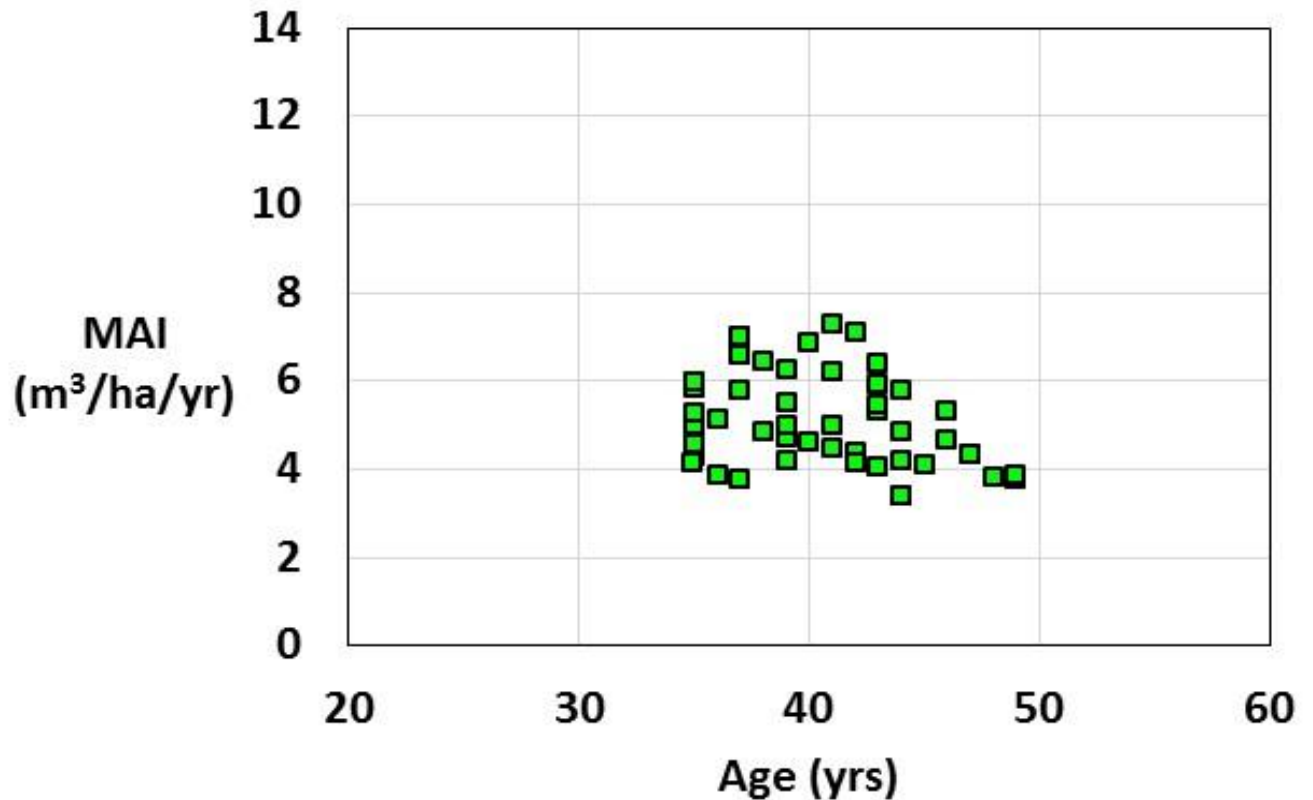


Black Spruce



Intensification Potential

JDI
Plantation
Data





NB Possibilities



Intensification Potential

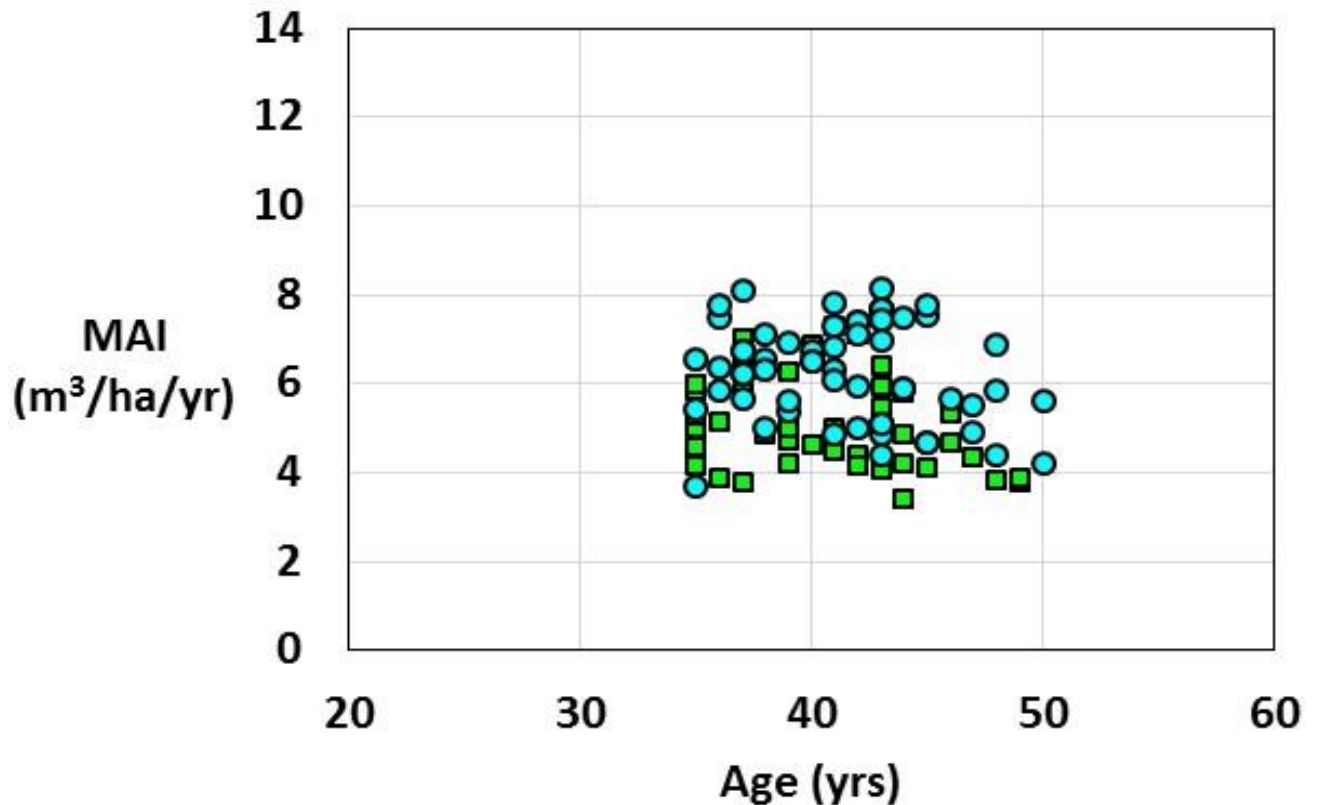


Black Spruce



White spruce

JDI
Plantation
Data





NB Possibilities



Intensification Potential



Black Spruce

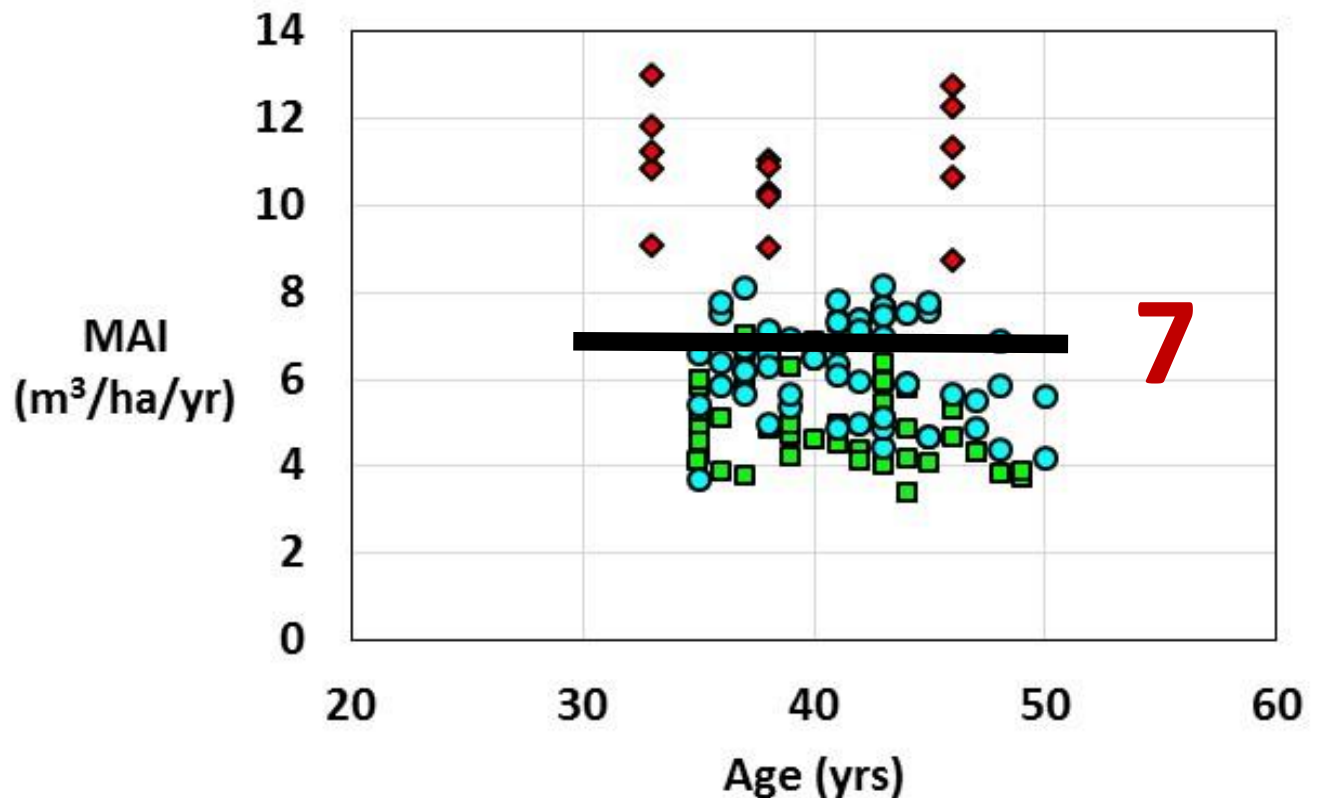


White spruce



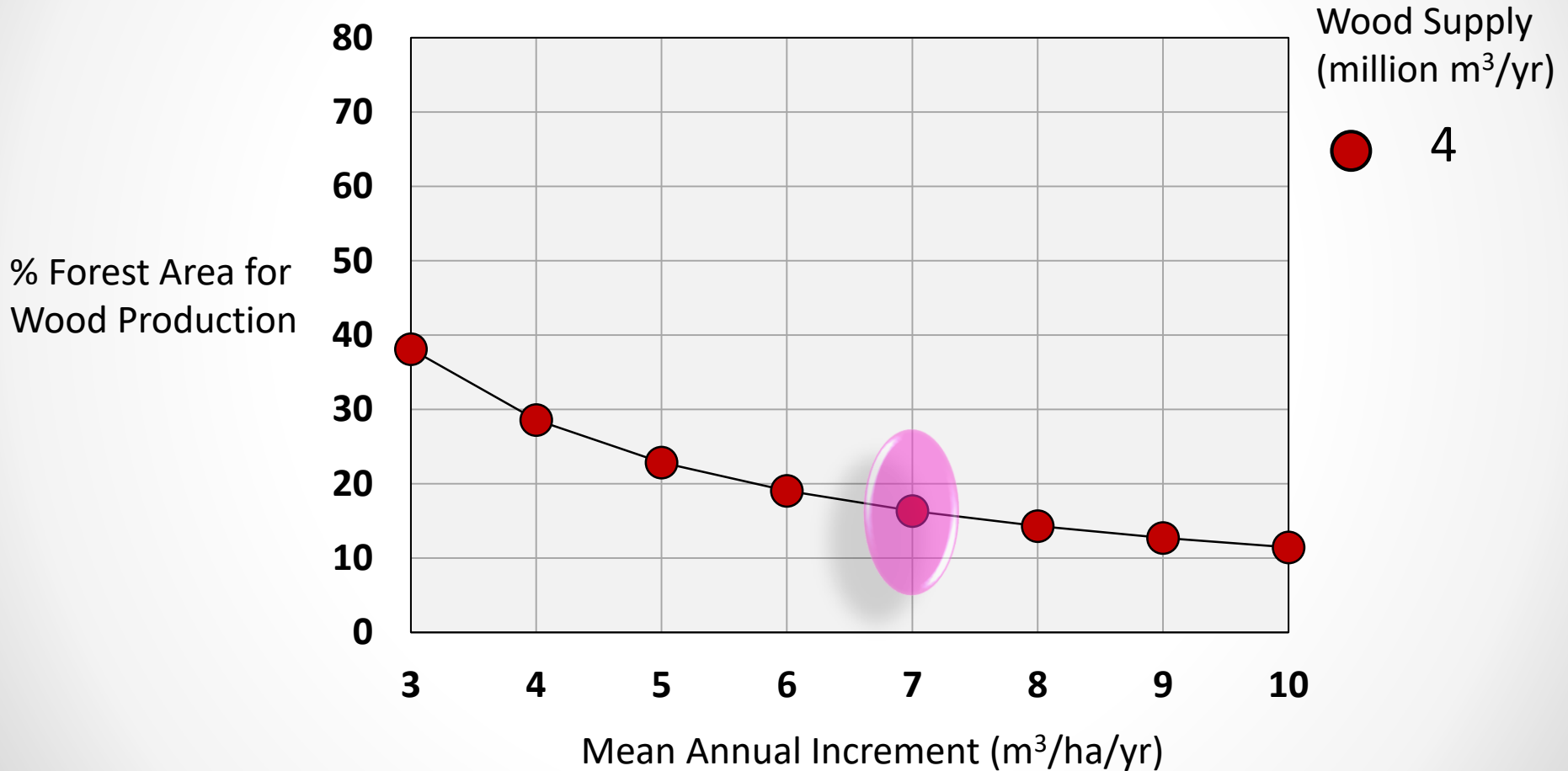
Norway Spruce

JDI
Plantation
Data



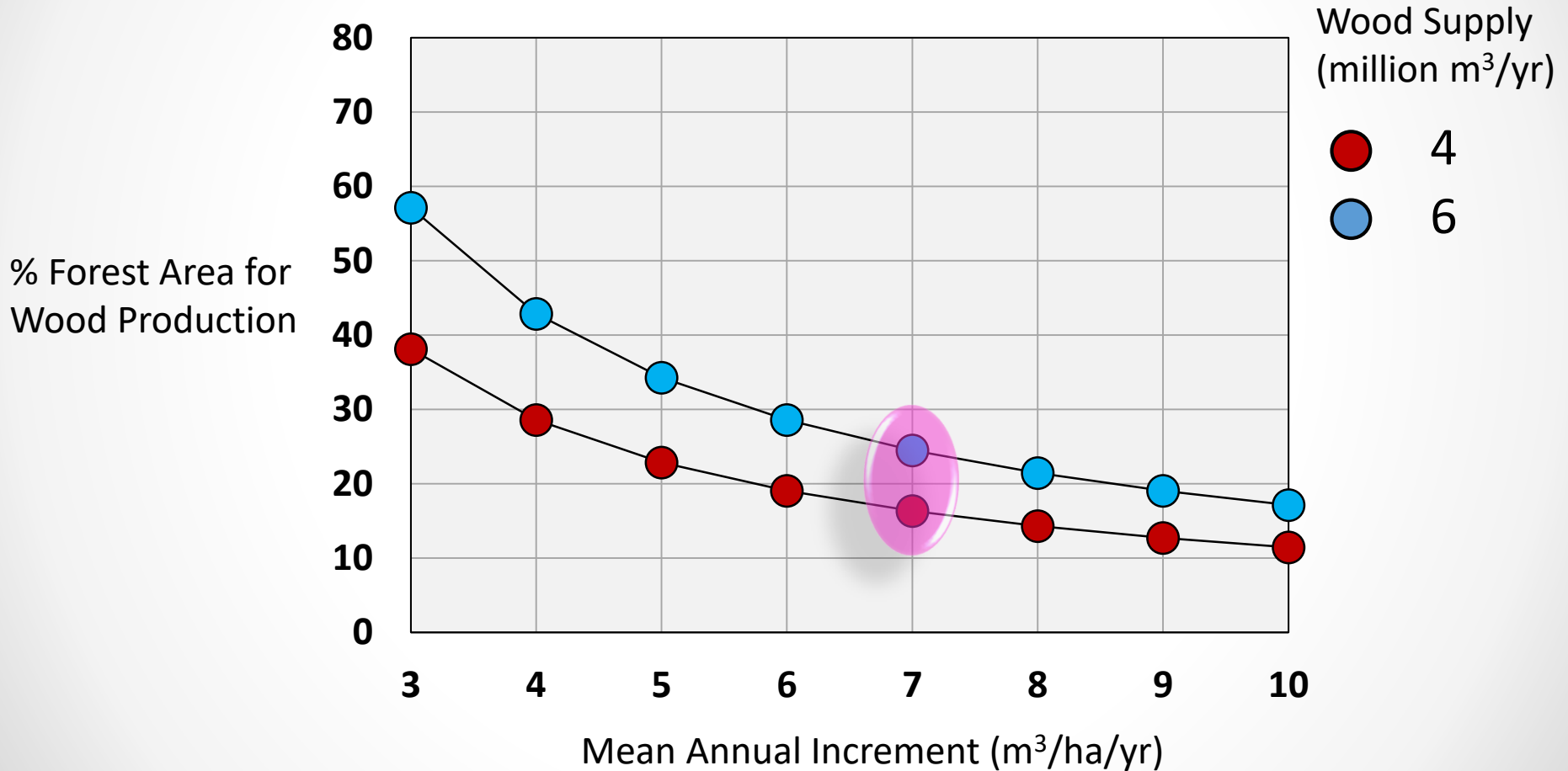
NB Possibilities

Growth vs Area for Wood Production



NB Possibilities

Growth vs Area for Wood Production

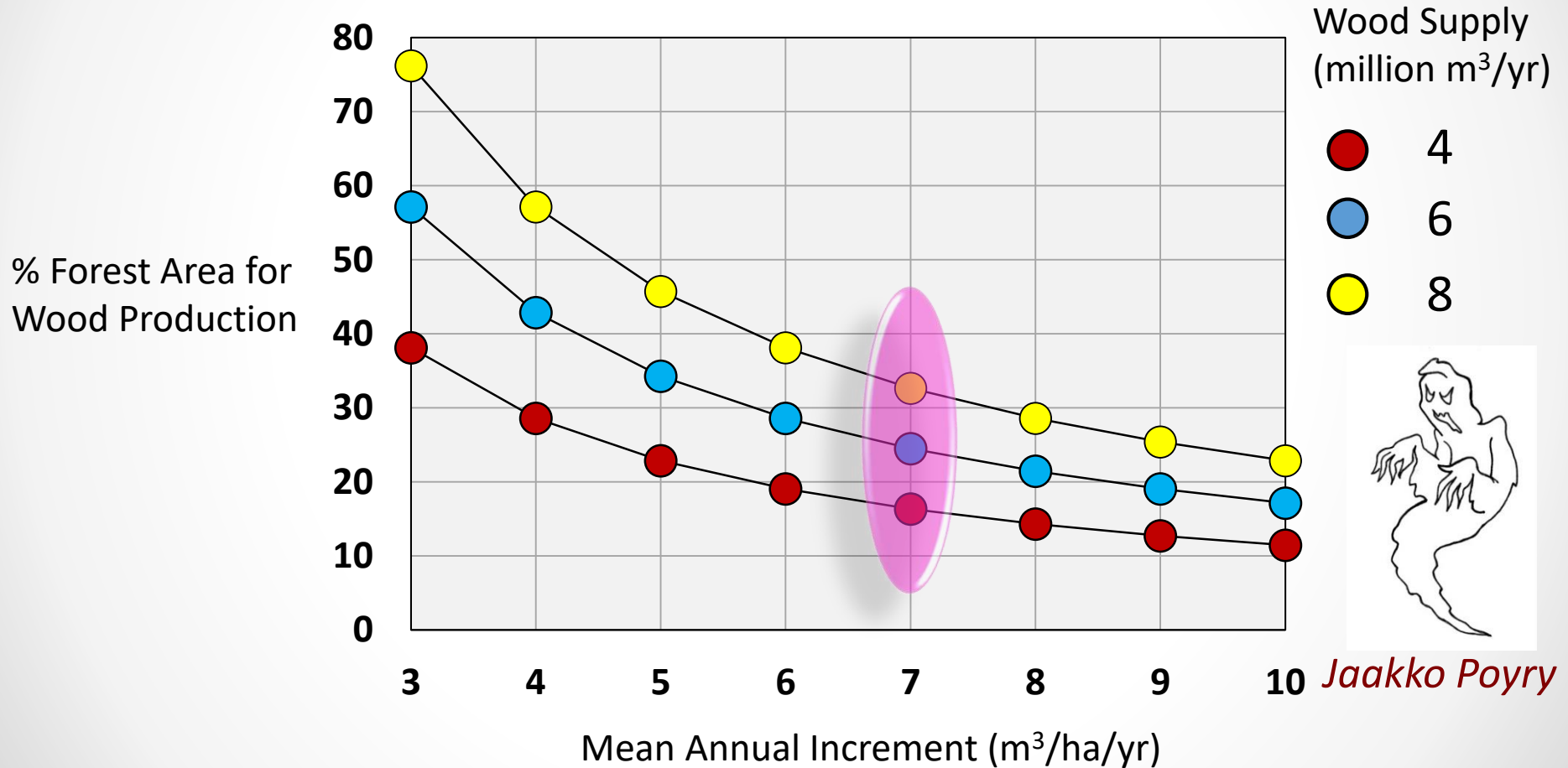




NB Possibilities



Growth vs Area for Wood Production





NB Possibilities



Some Scenarios & Assumptions

Cedar

White Pine

Hardwood

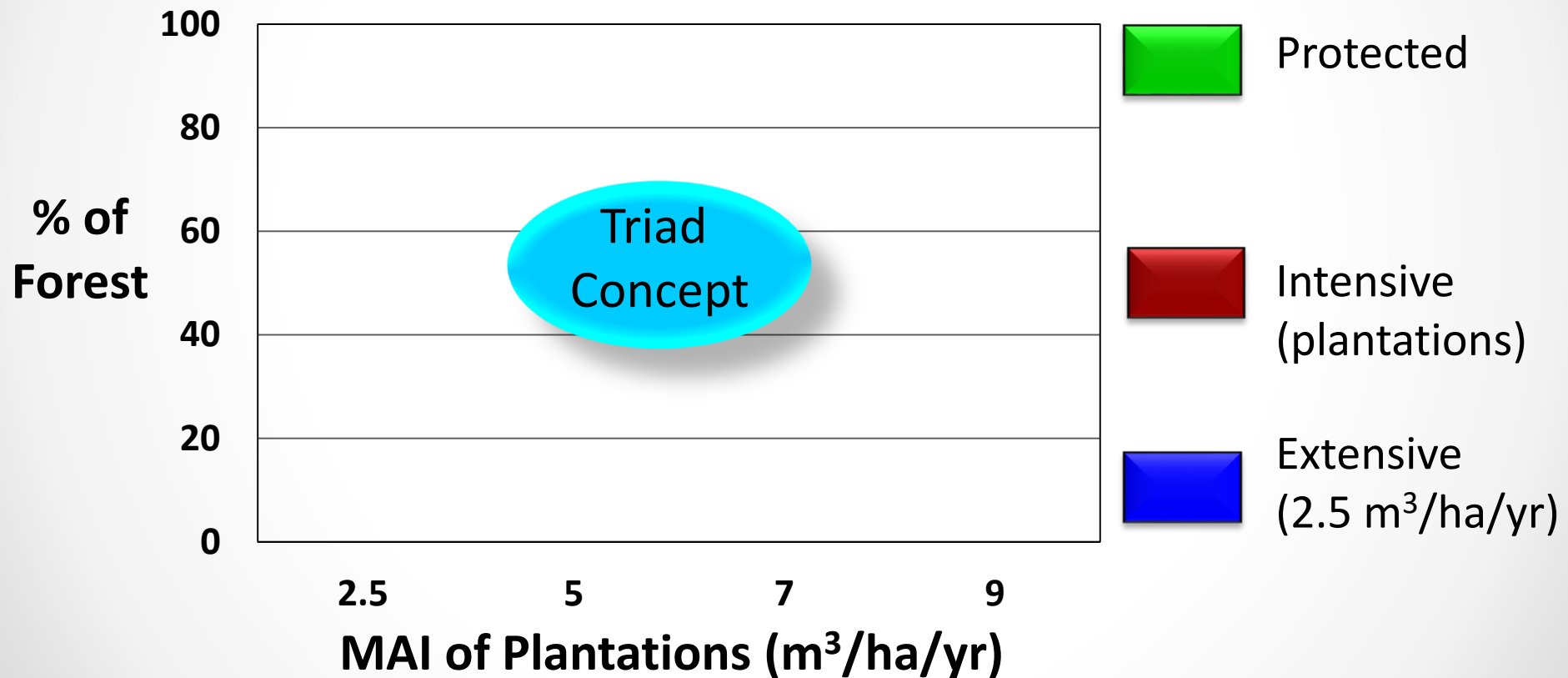
SFjP

- No intensification for these species
 - Realize MAI of **2.5** m³/ha/yr (***Extensive***)
 - **0.88 million ha** to meet combined AAC (**26%** of Crown forest)
-
- Maintain at **4 million** m³/yr (current)
 - Increase to **6 million** m³/yr
 - Increase to **8 million** m³/yr



NB Possibilities

- SF AAC @ 4 million m³/yr
- Growth vs Land Allocation





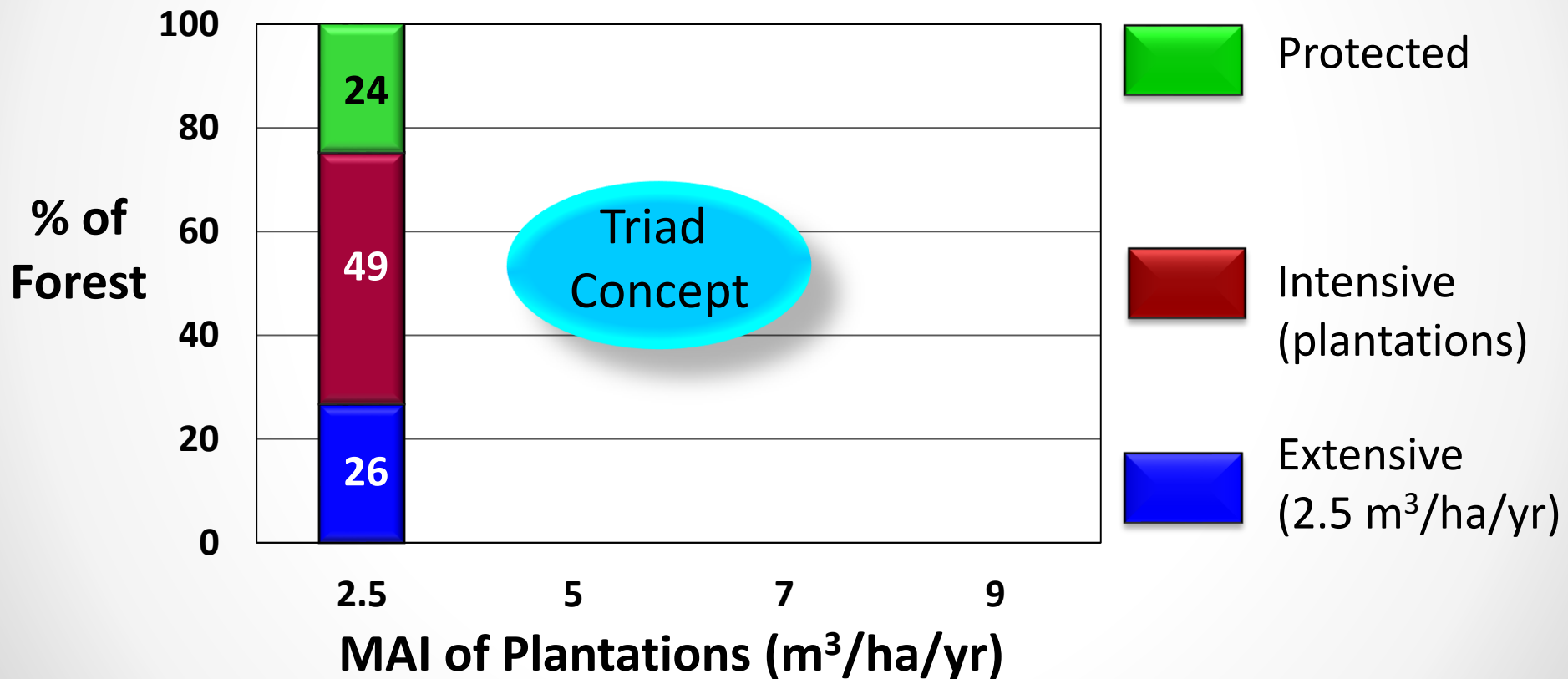
NB Possibilities



SF AAC @ 4 million m³/yr



Growth vs Land Allocation





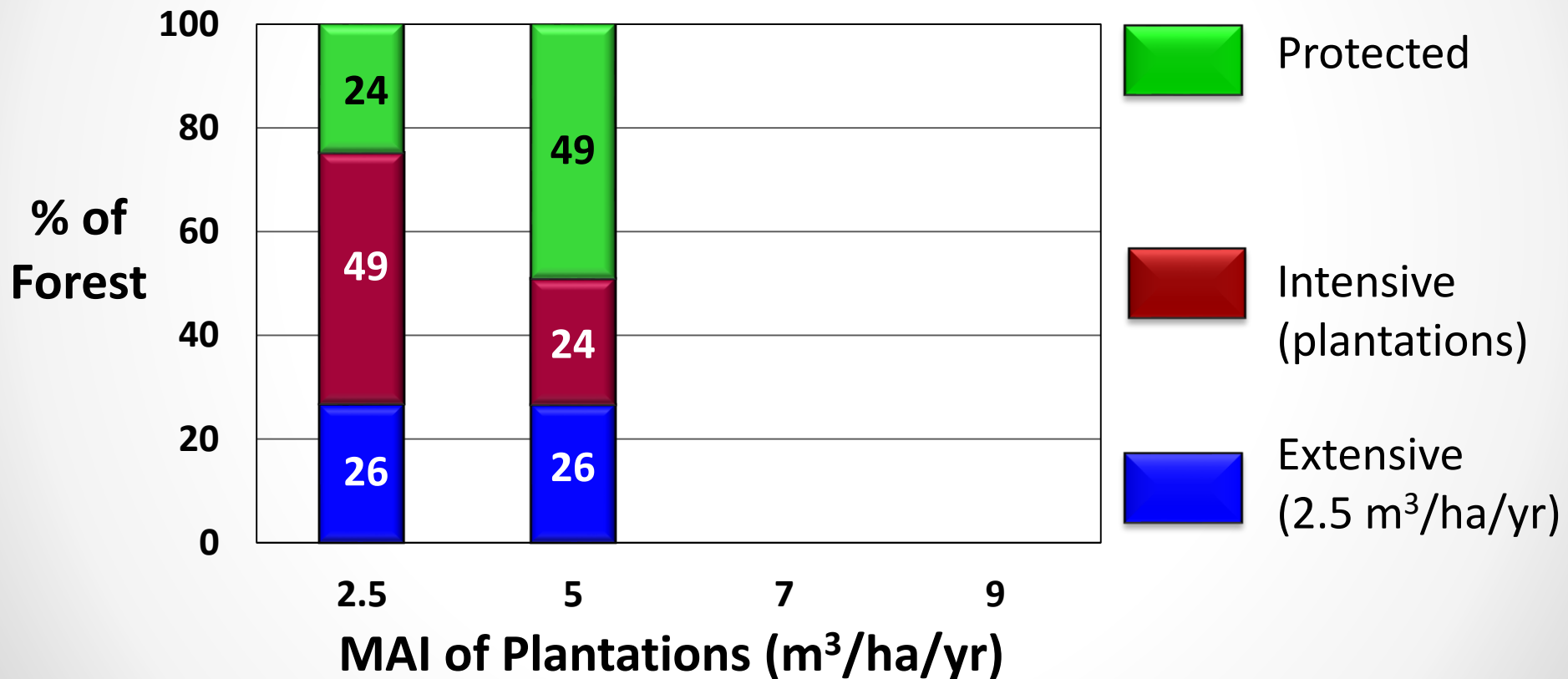
NB Possibilities



SF AAC @ 4 million m³/yr



Growth vs Land Allocation





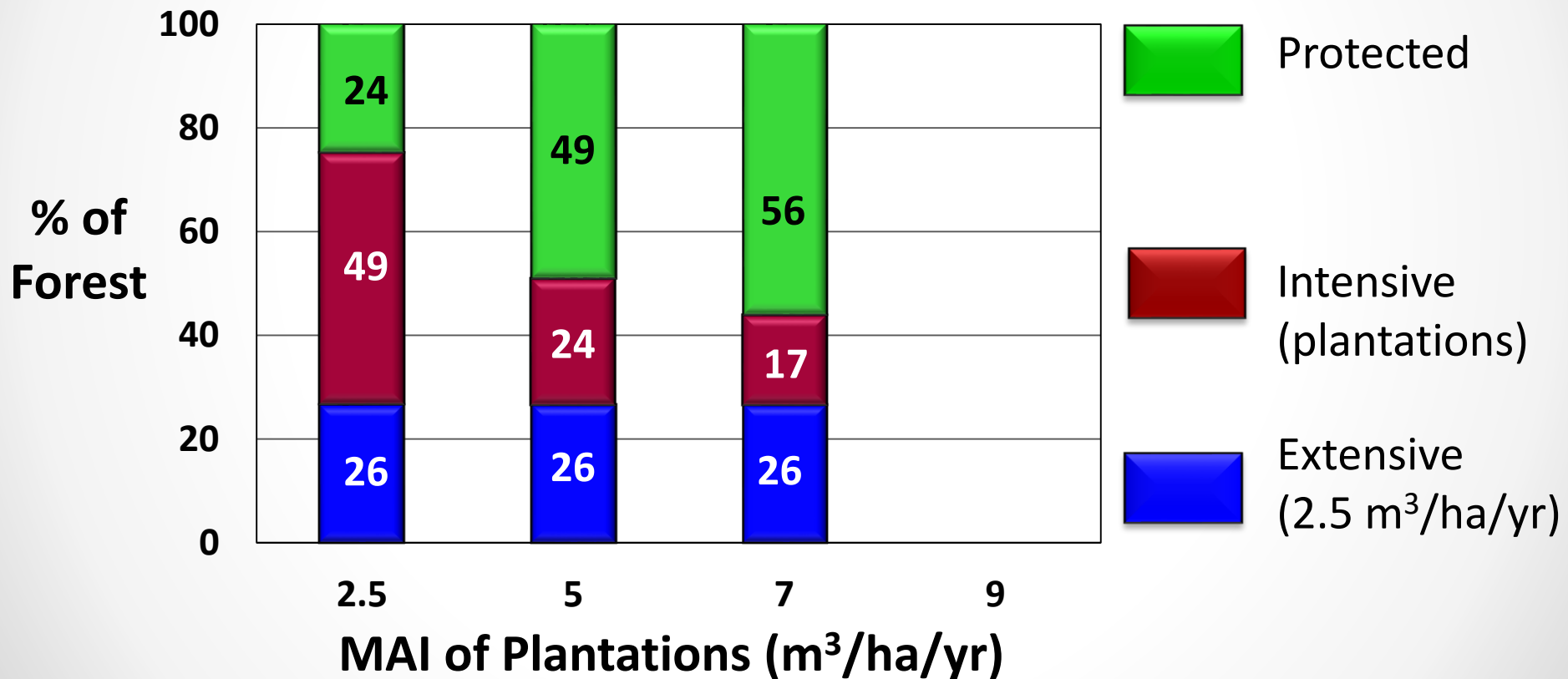
NB Possibilities



SF AAC @ 4 million m³/yr



Growth vs Land Allocation





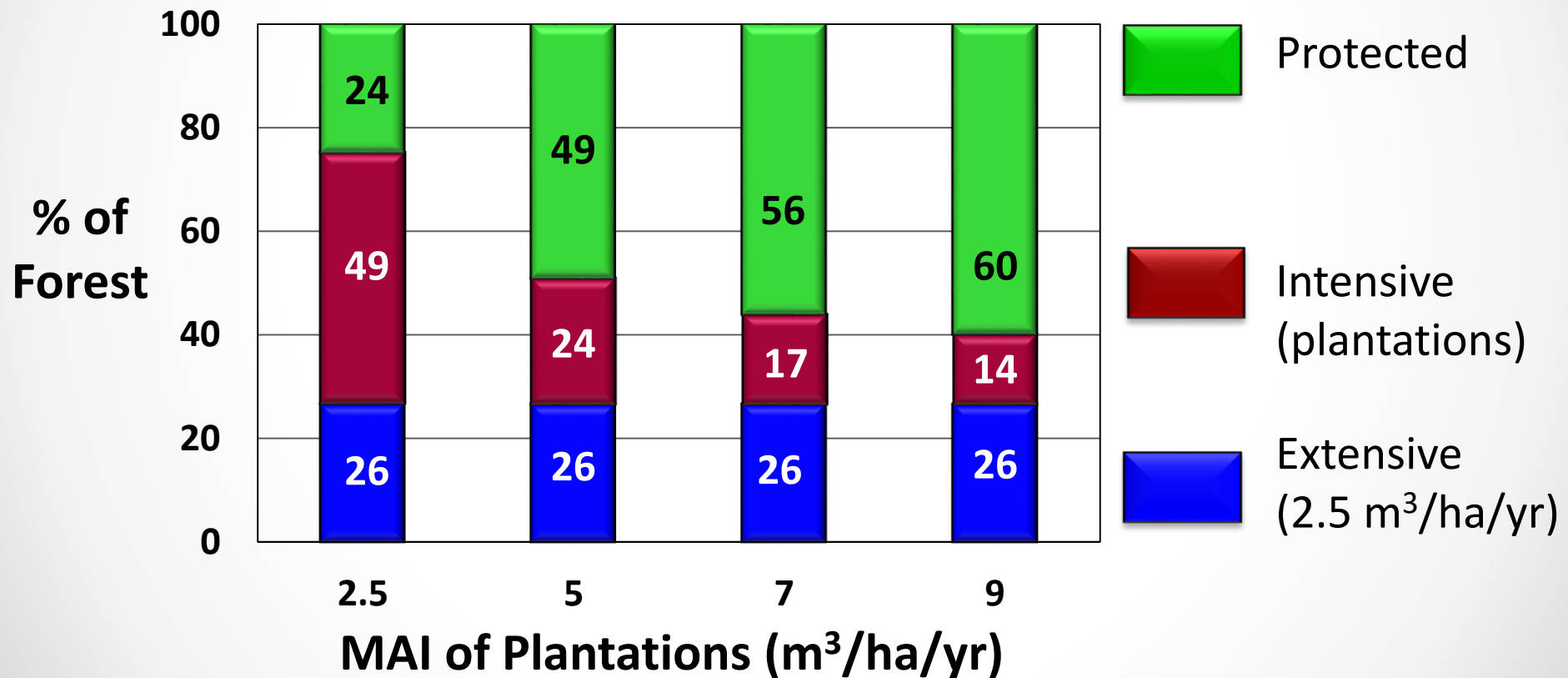
NB Possibilities



SF AAC @ 4 million m³/yr



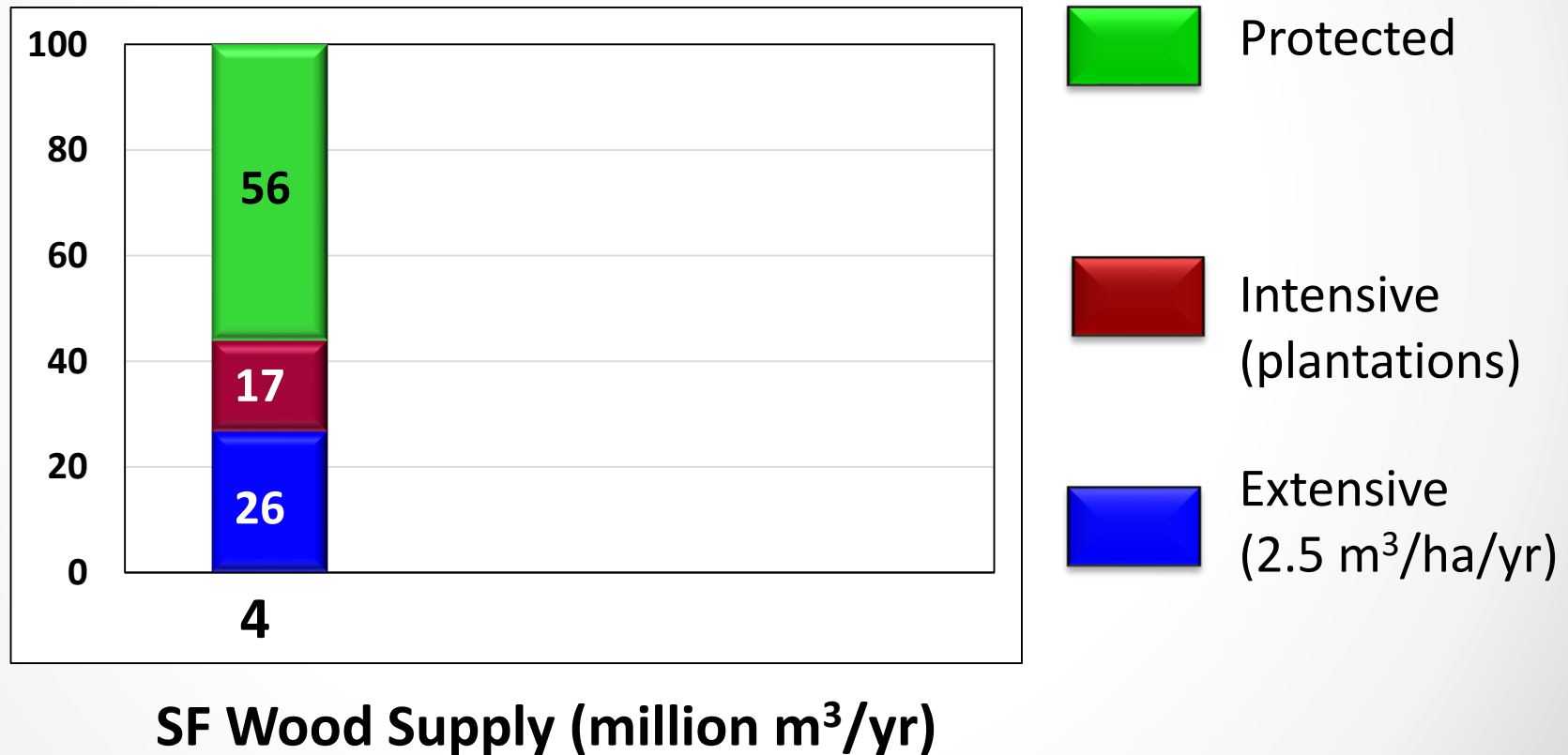
Growth vs Land Allocation





NB Possibilities

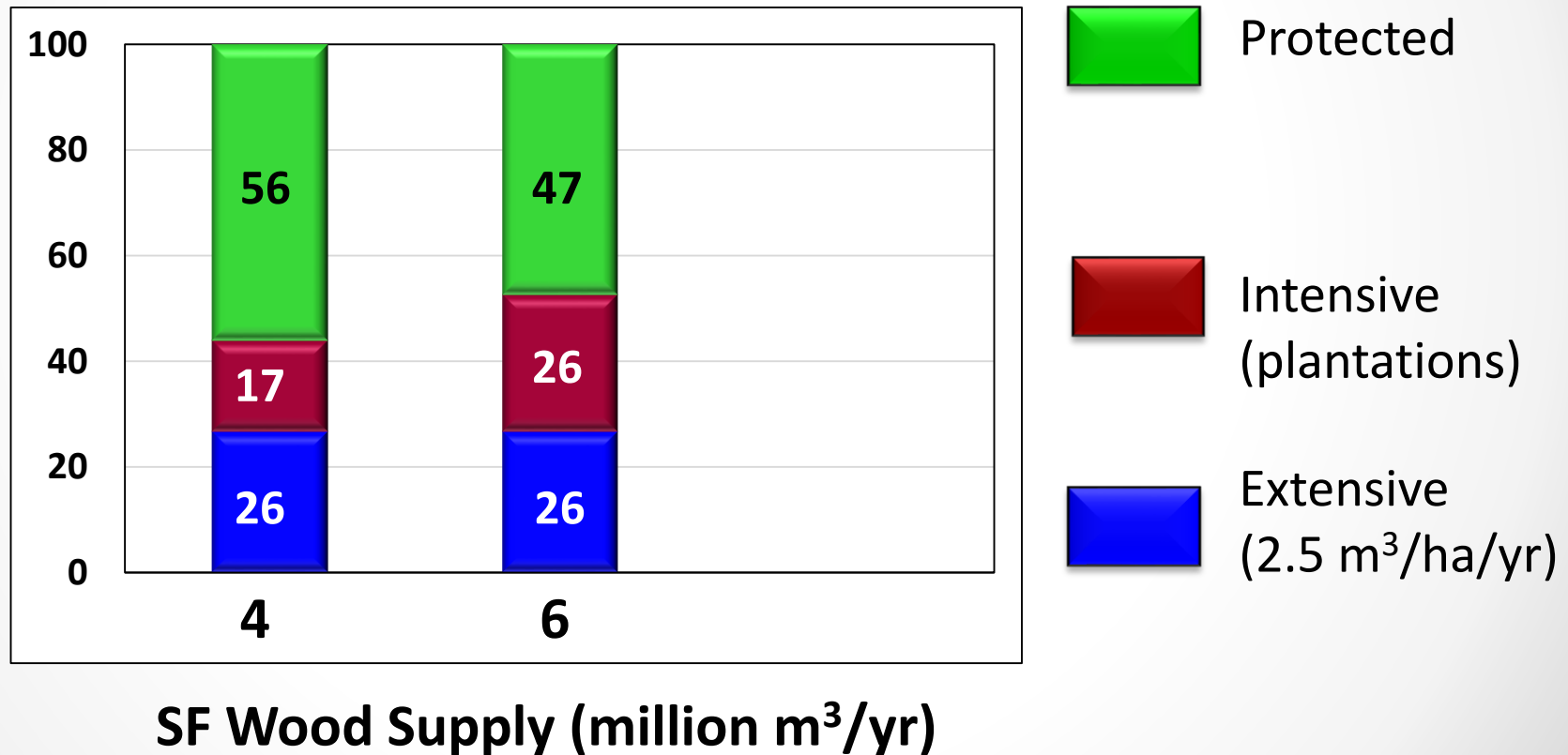
- Intensive: growth at $7\text{m}^3/\text{ha}/\text{yr}$
- Land Allocation at Different AACs





NB Possibilities

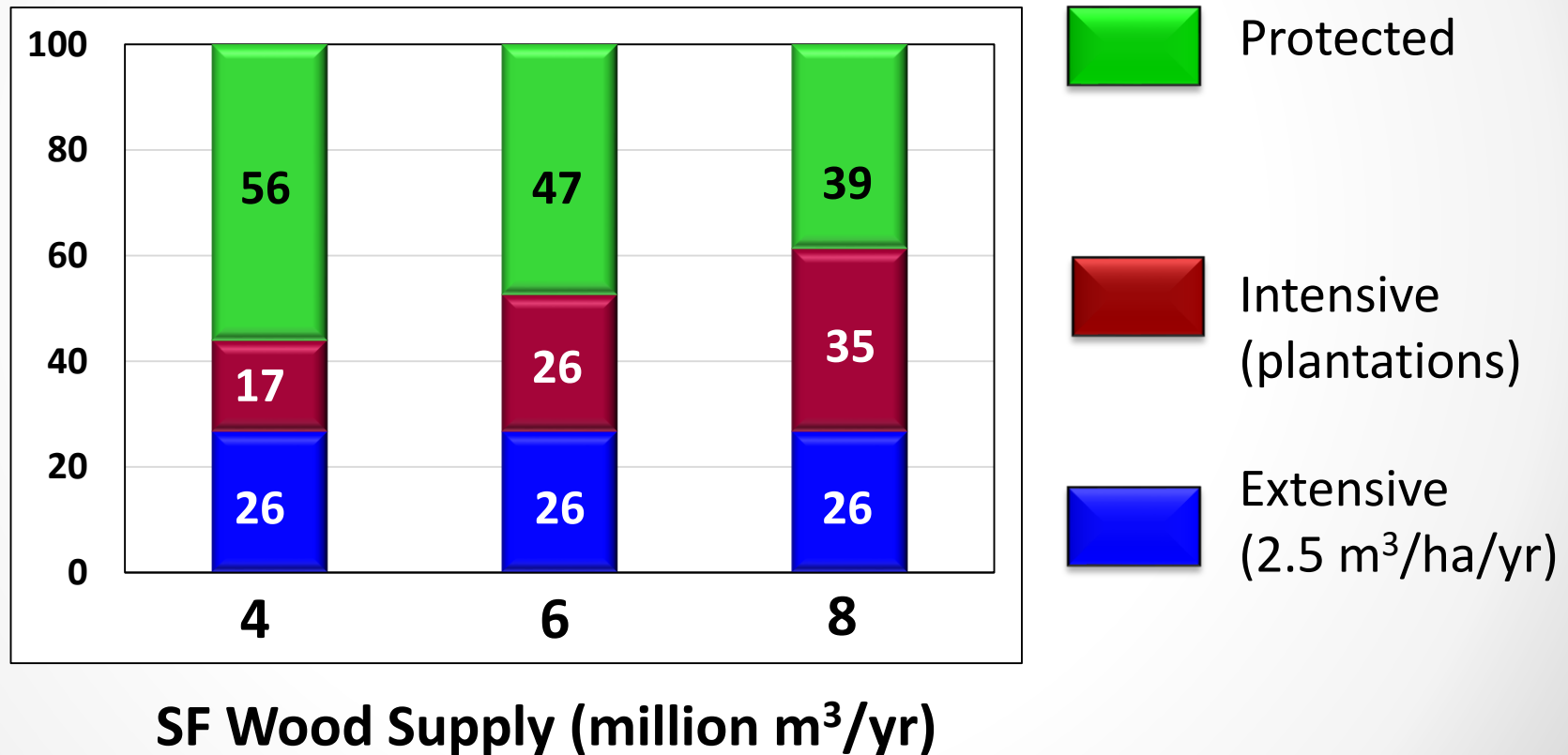
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- Land Allocation at Different AACs





NB Possibilities

- Intensive: growth at $7\text{m}^3/\text{ha}/\text{yr}$
- Land Allocation at Different AACs



- **Some context**
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- **NB possibilities**
- ***Implementation realities***
- **Pre-requisites for success**



Implementation Realities



Some Problems/Challenges to Consider



timing



transition



space (location)



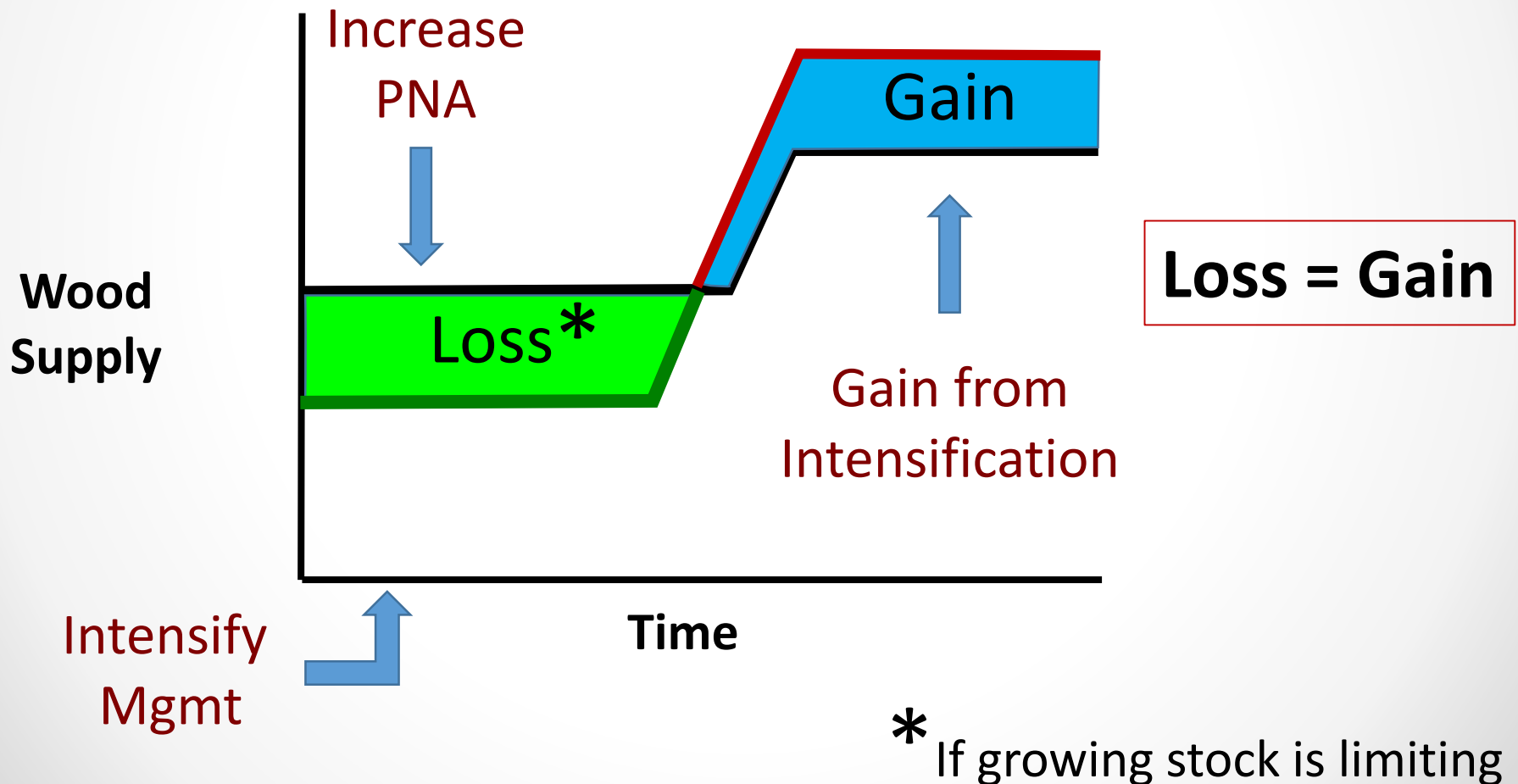
collateral impacts



performance

Implementation Realities

● Problem of Timing





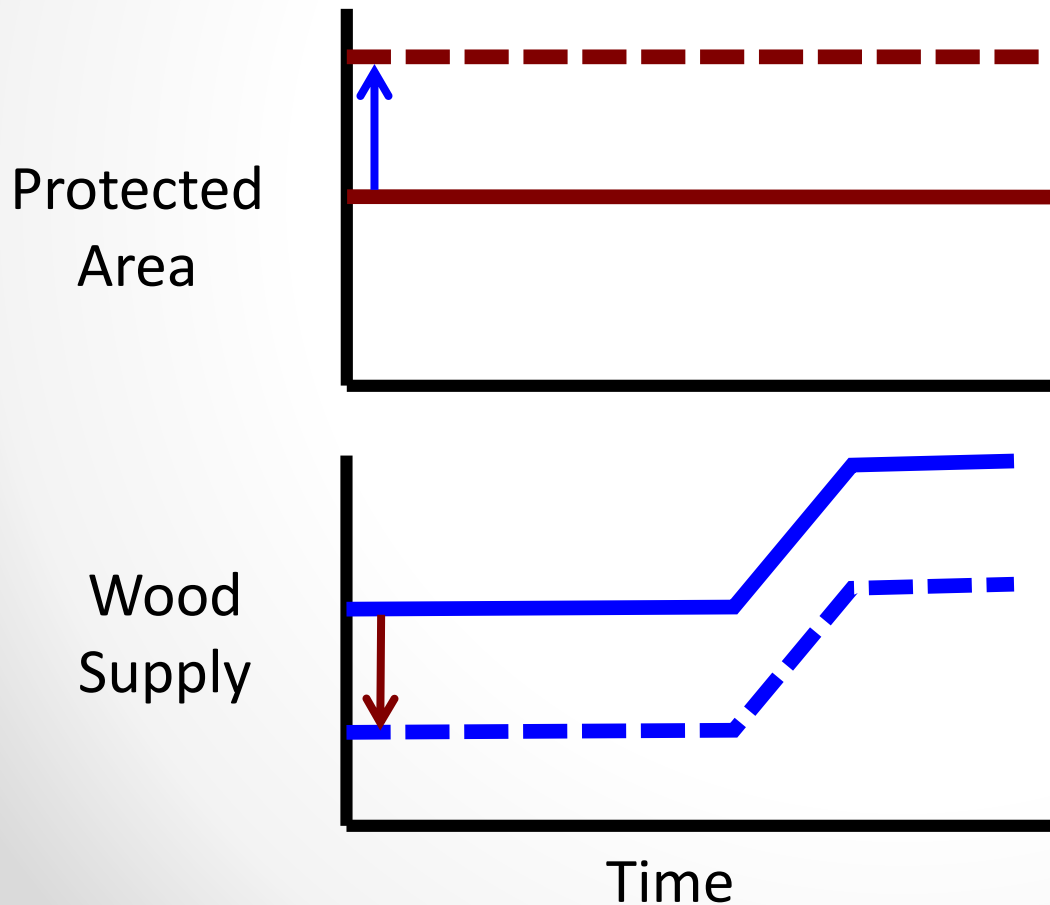
Implementation Realities



Problem of Timing



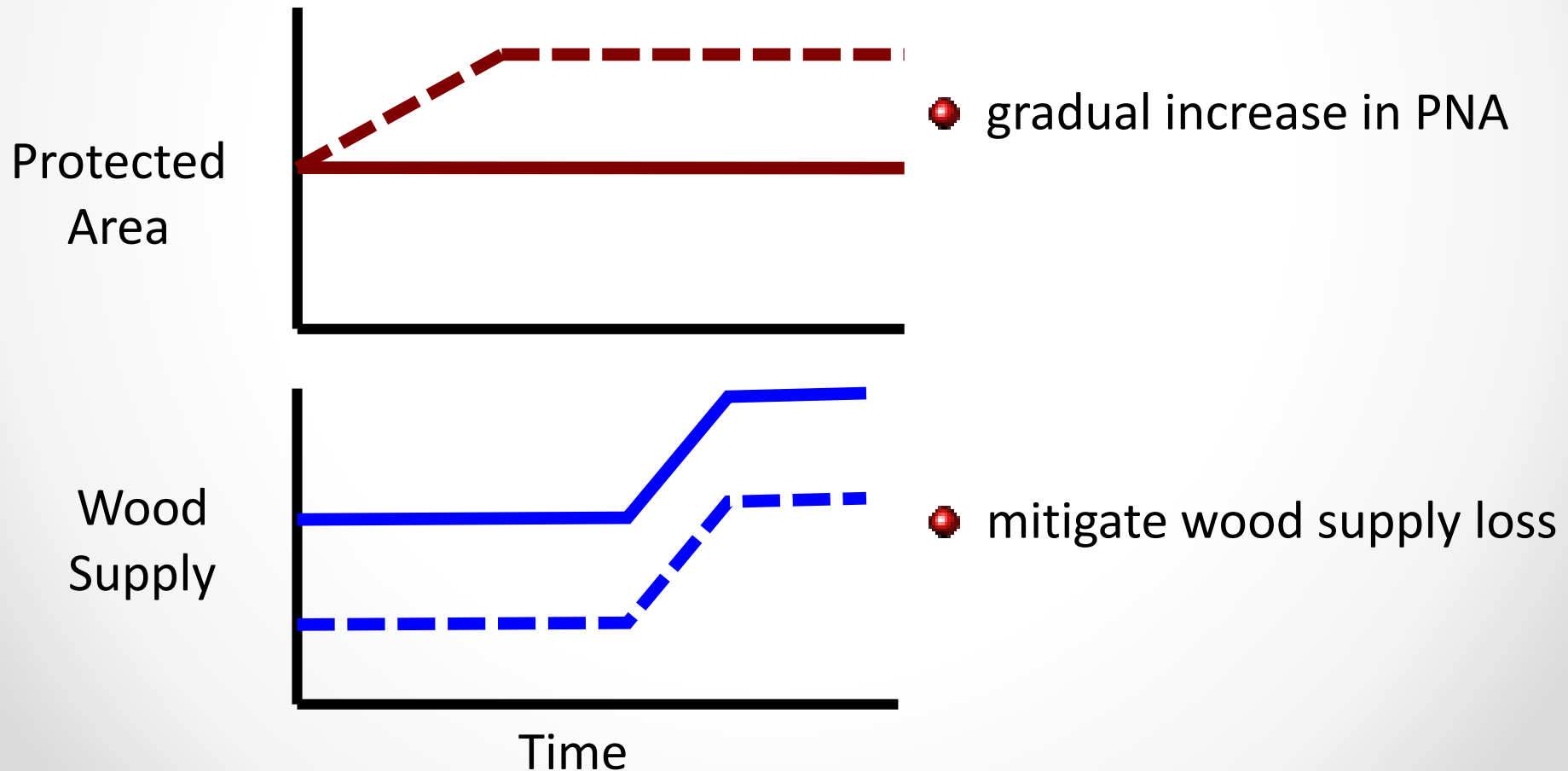
how to increase PNA & maintain wood supply?



Implementation Realities

Problem of Timing

harvest some area then assign to PNA



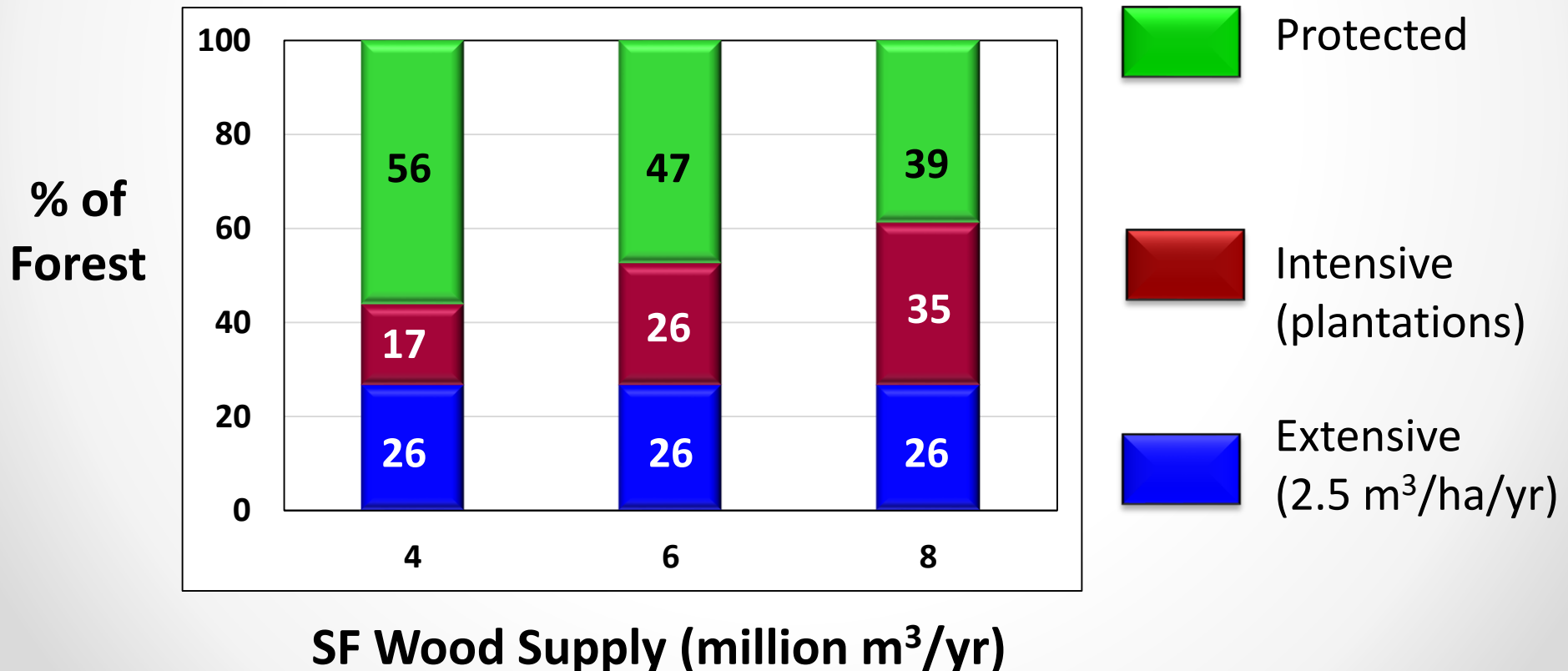


Implementation Realities



Problem of Transition

- if plantations can fully provide SF supply
- how to source supply until full reliance on plantations?





Implementation Realities



Problem of Transition

to sustain
4.2 mill m³/yr

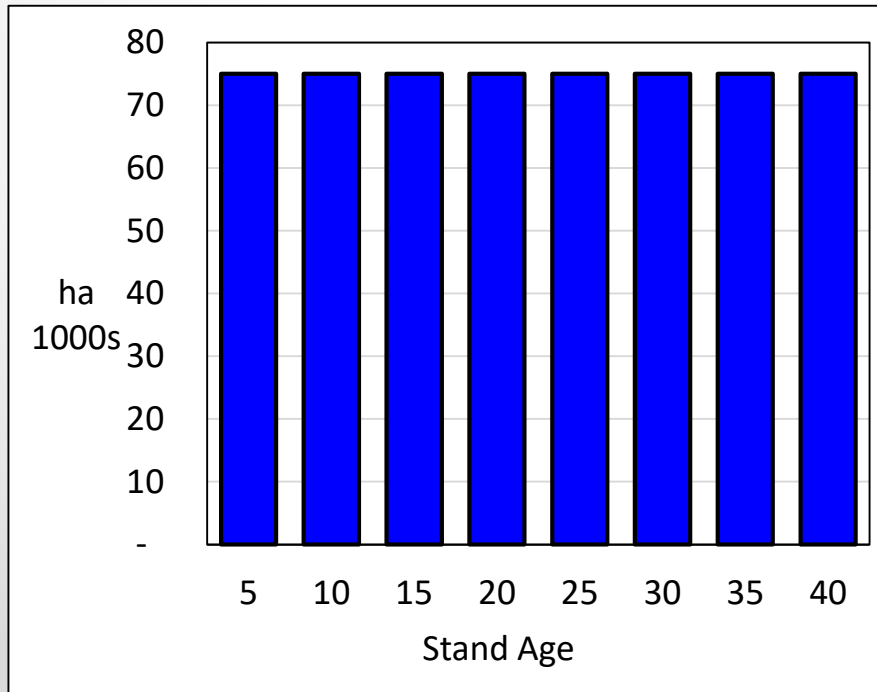
● 7 m³/ha/yr MAI

● 40 year rotation

● plant 15 000 ha/yr

● 600 000 ha (17%)

Required plantation age structure





Implementation Realities



Problem of Transition

to sustain
4.2 mill m³/yr

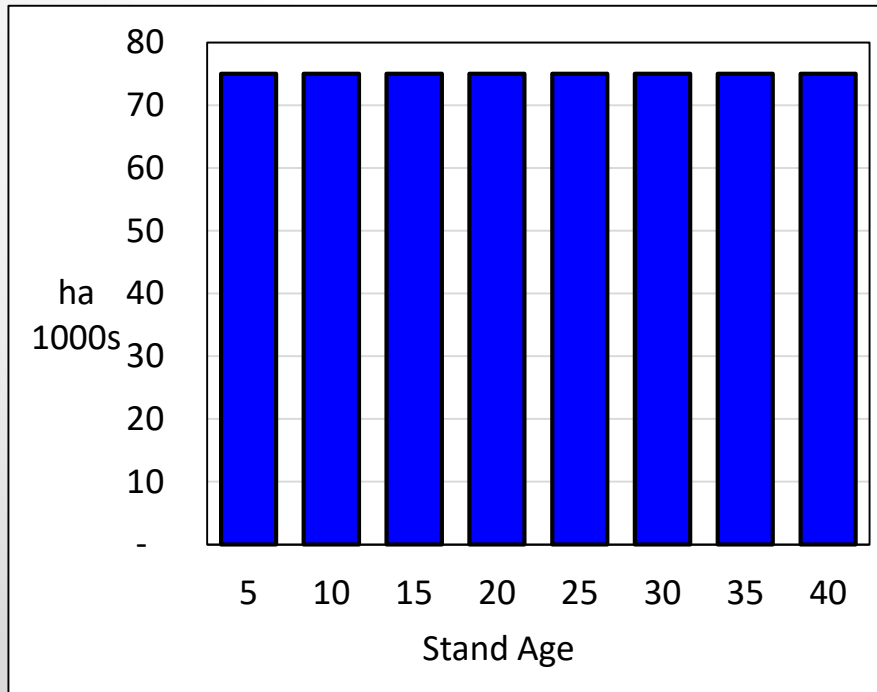
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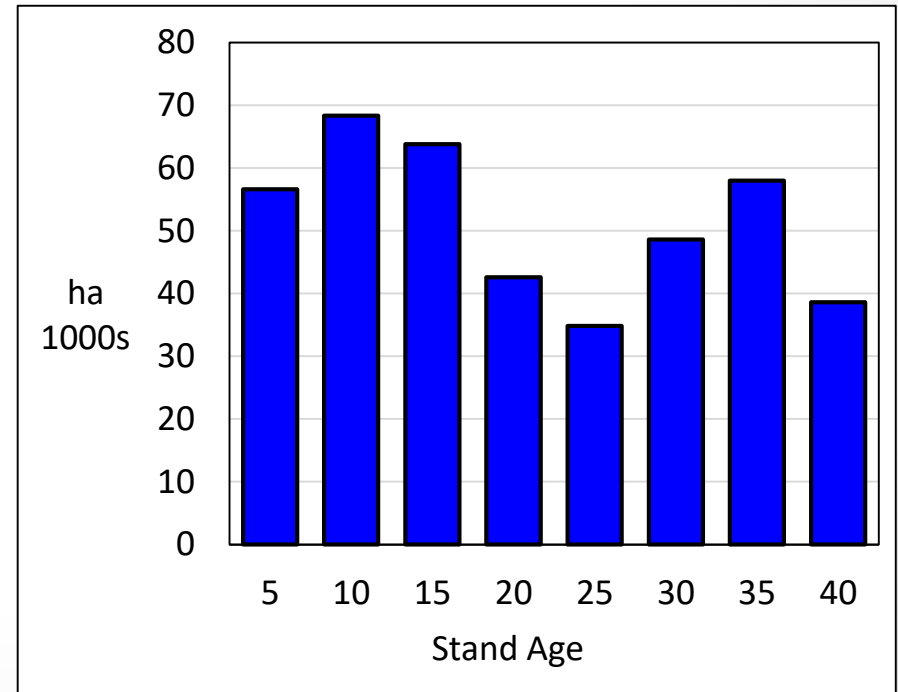
● 40 year rotation

● 600 000 ha (17%)

Required plantation
age structure



Current plantation
age structure





Implementation Realities



Problem of Transition

to sustain
4.2 mill m³/yr

● 7 m³/ha/yr MAI

● 40 year rotation

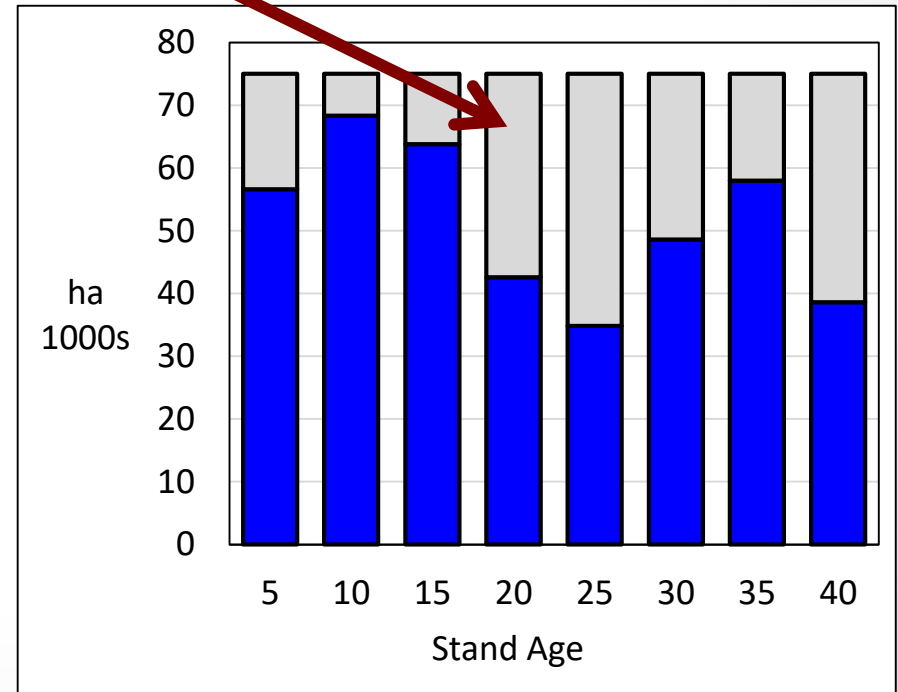
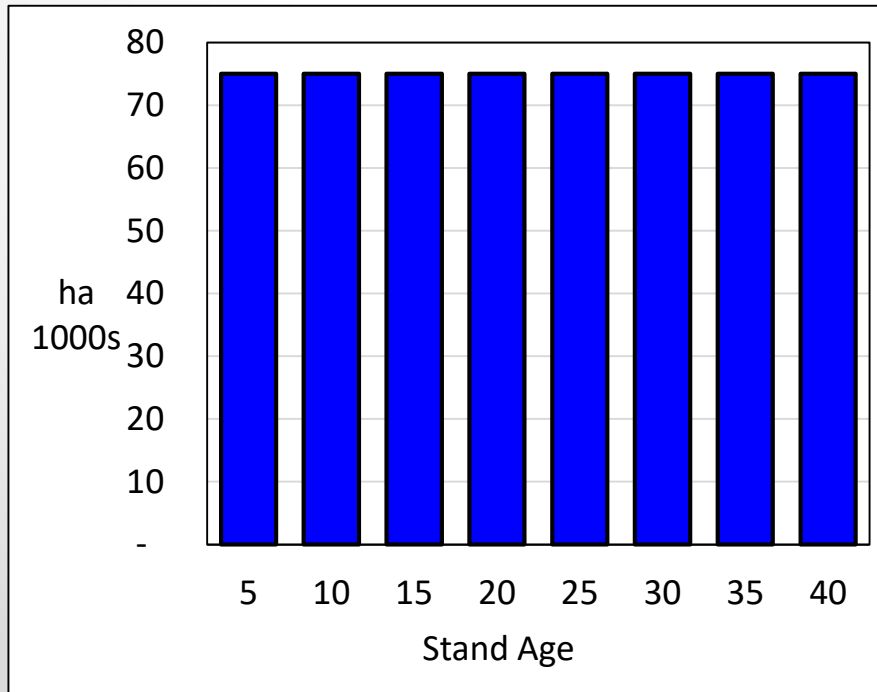
● plant 15 000 ha/yr

● 600 000 ha (17%)

Required plantation
age structure

Structural
deficit

Current plantation
age structure





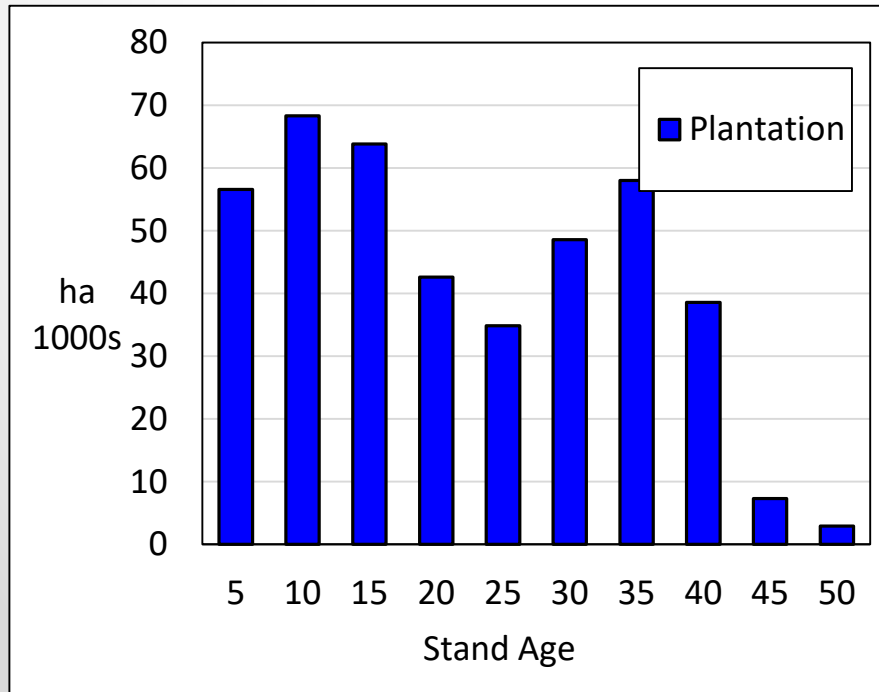
Implementation Realities



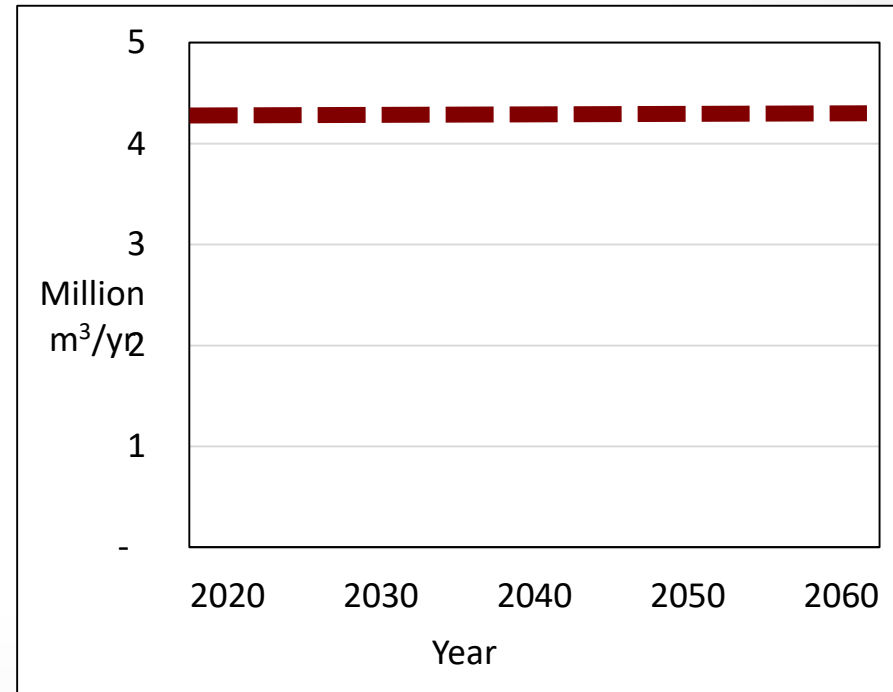
Problem of Transition

4.2 mill m³/yr

Current plantation
age structure



Harvest from
existing plantations





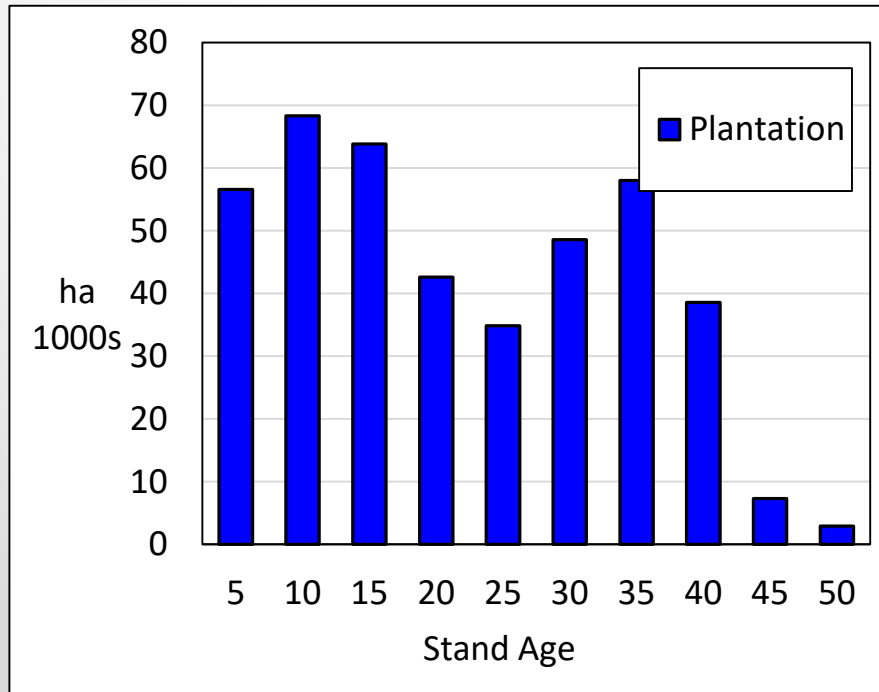
Implementation Realities



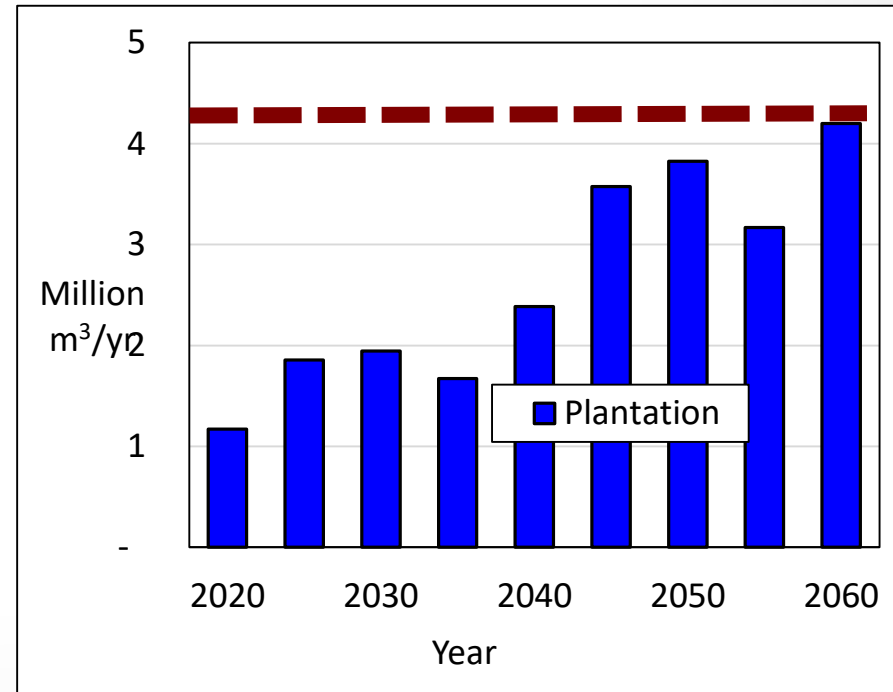
Problem of Transition

4.2 mill m³/yr

Current plantation
age structure



Harvest from
existing plantations





Implementation Realities



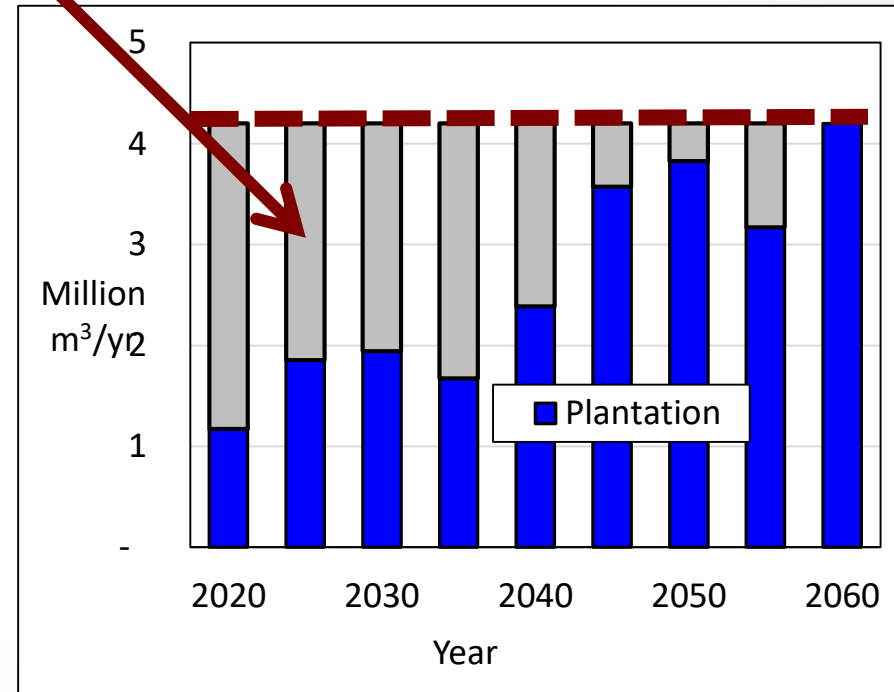
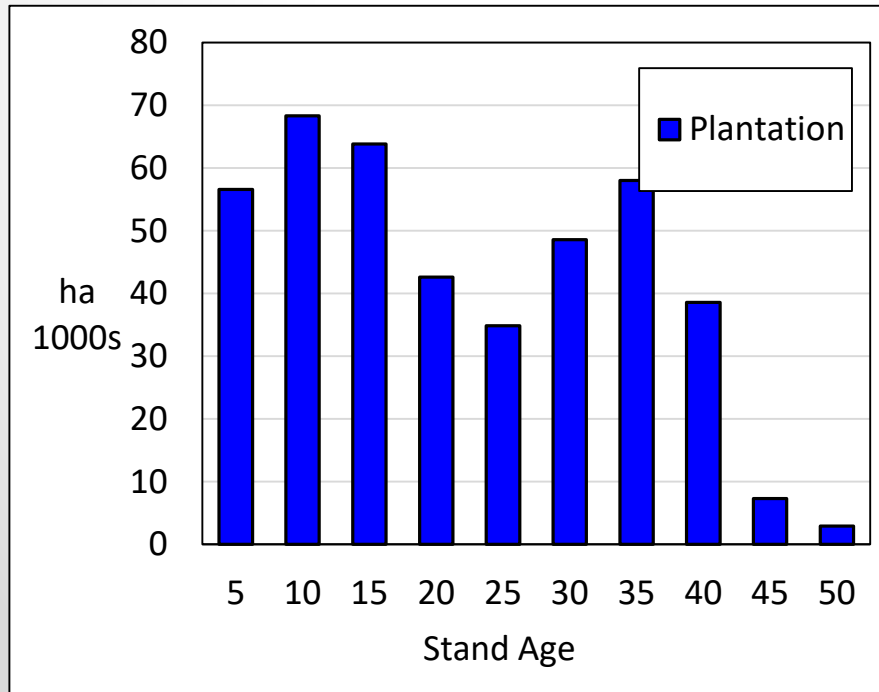
Problem of Transition

4.2 mill m³/yr

Volume deficit

Current plantation
age structure

Harvest from
existing plantations





Implementation Realities



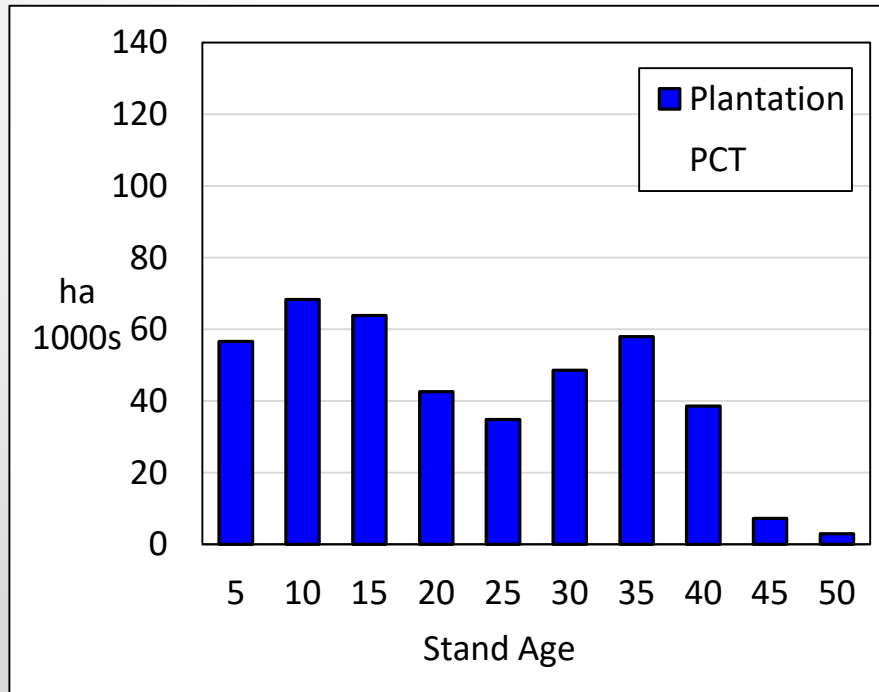
Problem of Transition

4.2 mill m³/yr

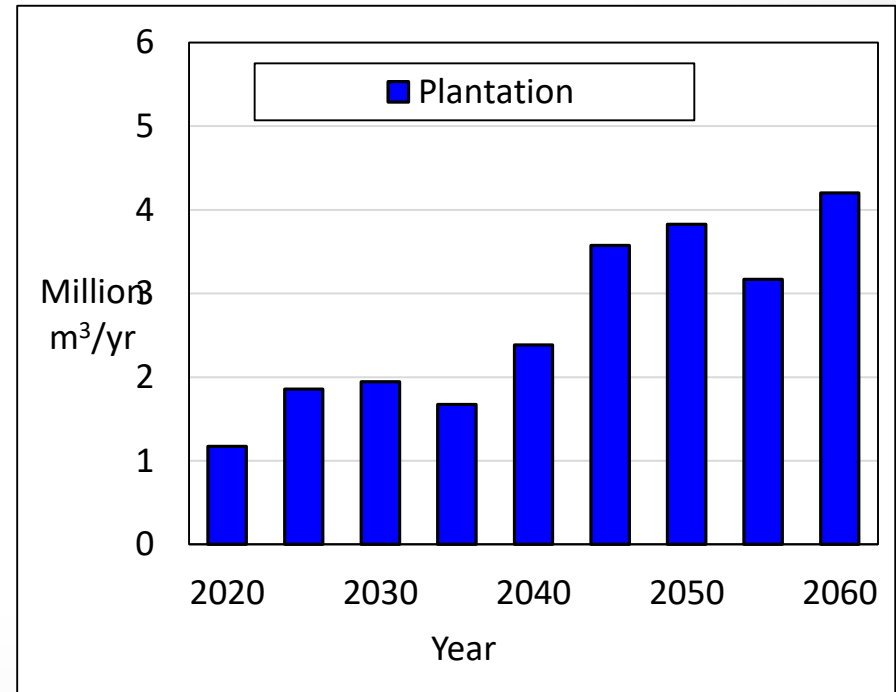


account for PCT area

Current plantation
age structure



Harvest from
existing plantations





Implementation Realities



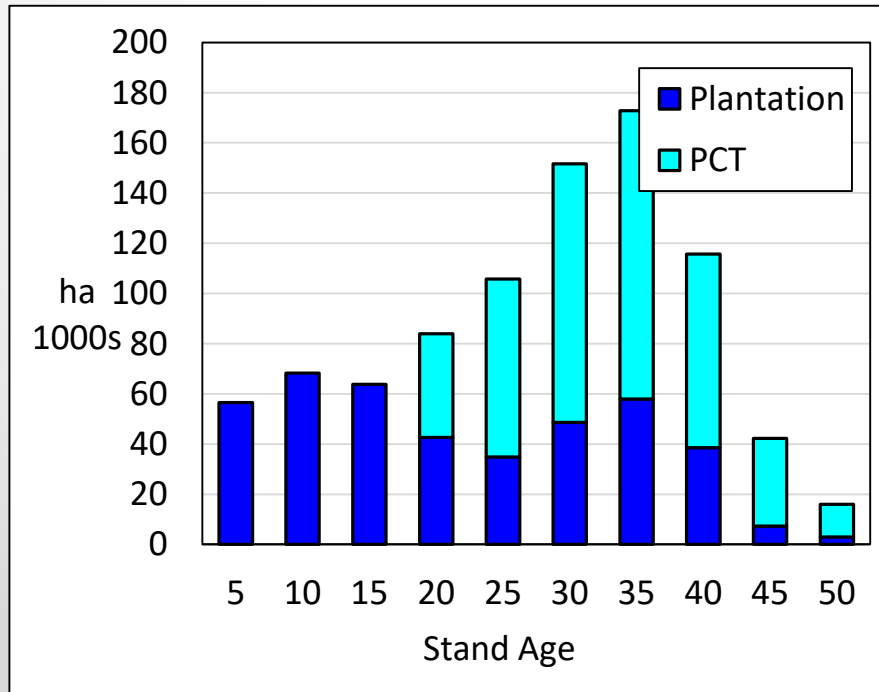
Problem of Transition

4.2 mill m³/yr

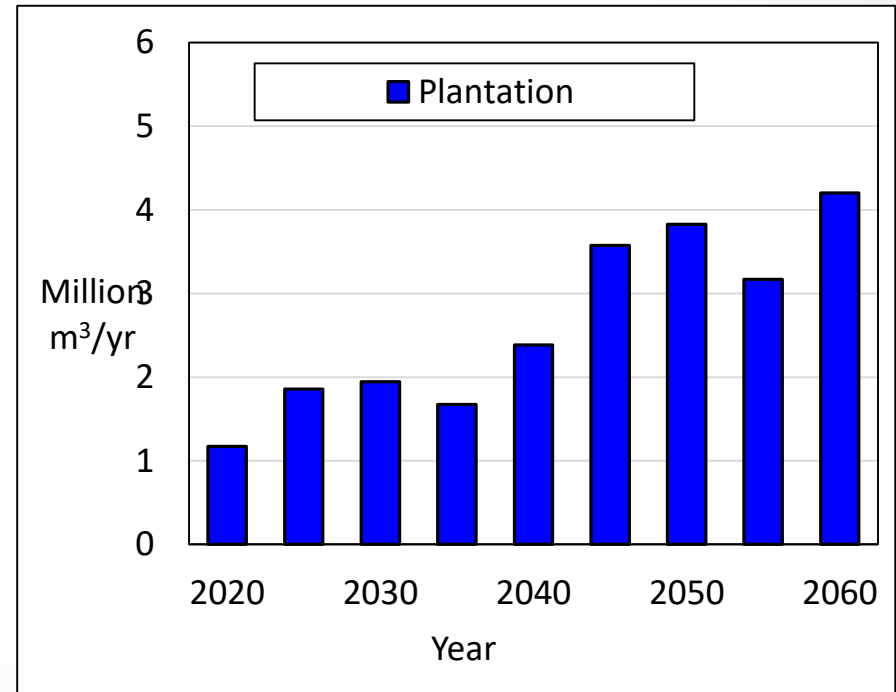


account for PCT area

Current plantation & PCT age structure



Harvest from existing plantations





Implementation Realities



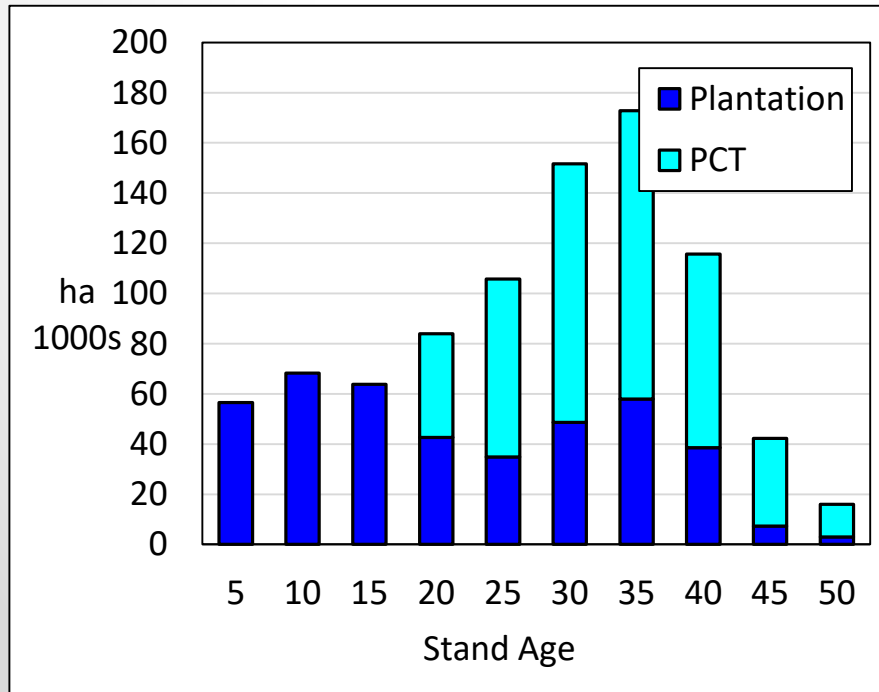
Problem of Transition

4.2 mill m³/yr

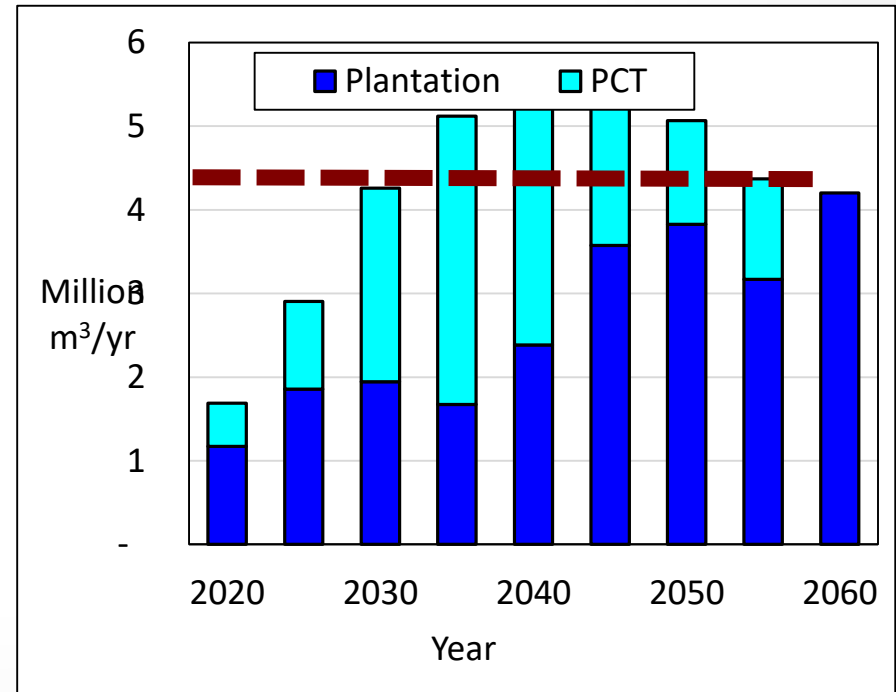
account for PCT area

account for PCT volume

Current plantation & PCT age structure



Volume from Existing Plantations & PCTs





Implementation Realities



Problem of Transition

4.2 mill m³/yr

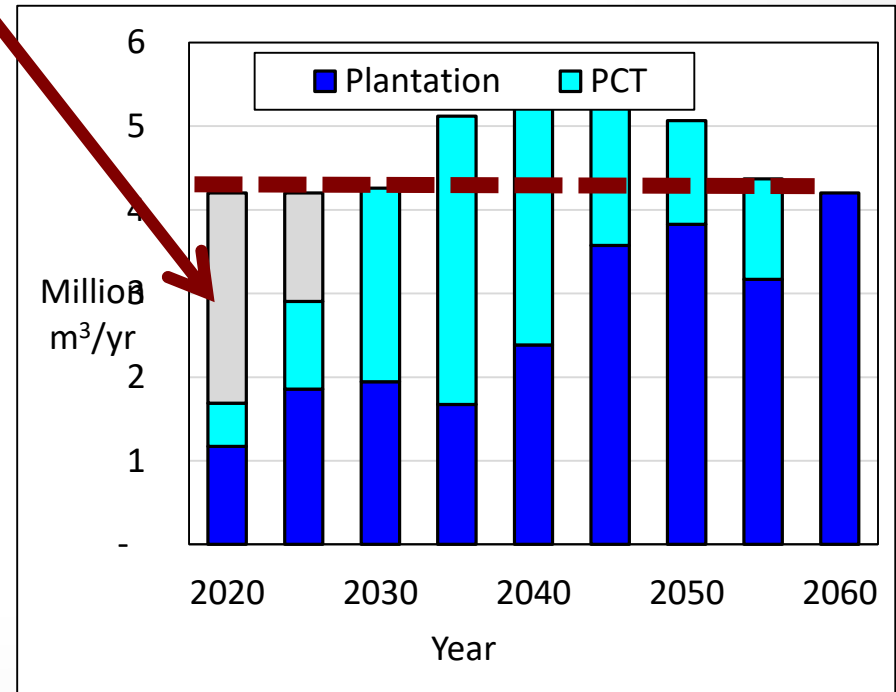
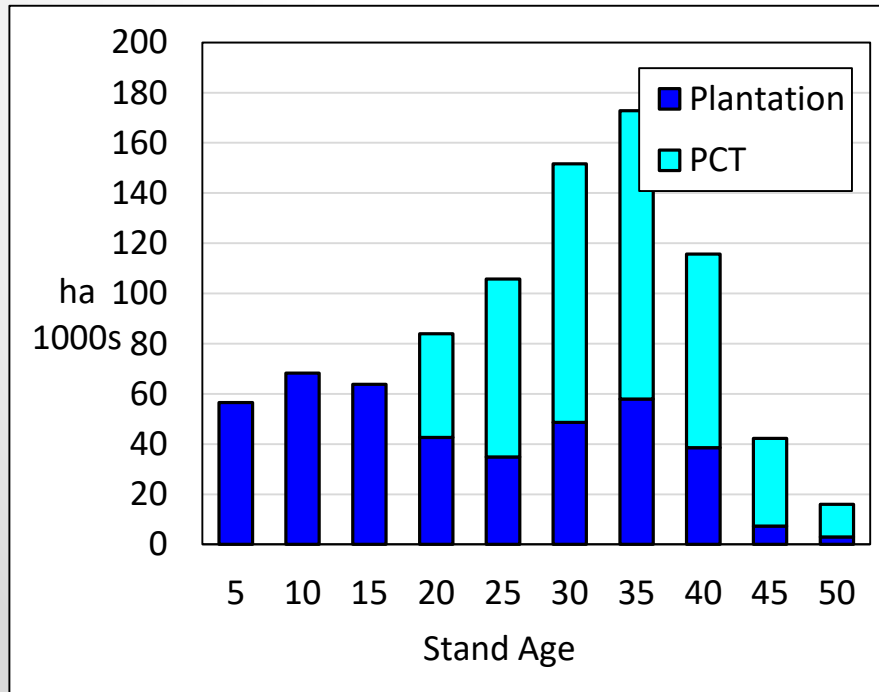
account for PCT area

account for PCT volume

Current plantation
& PCT age structure

Volume
deficit

Volume from Existing
Plantations & PCTs





Implementation Realities



Problem of Transition

4.2 mill m³/yr

Volume
deficit



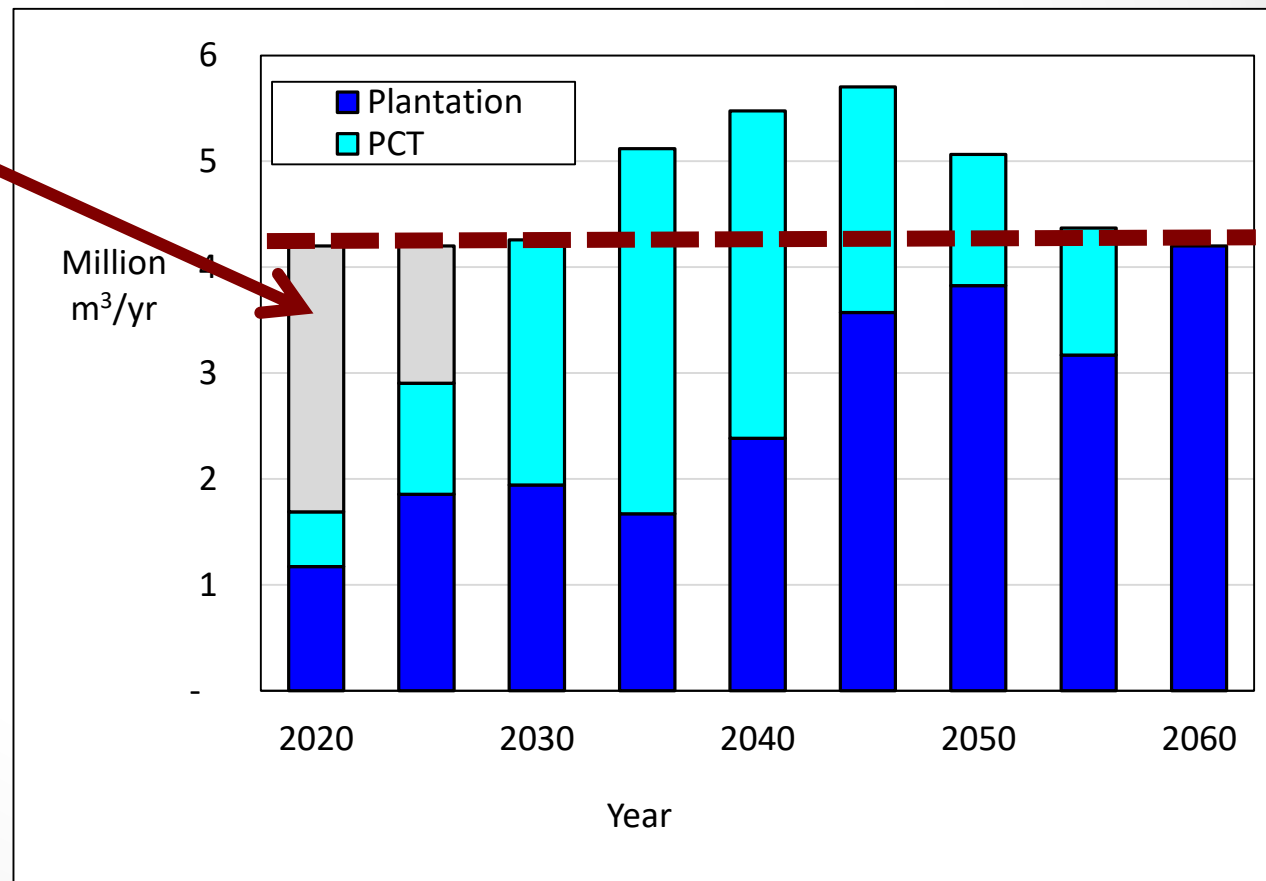
thinnings



natural stands
in general forest



conservation area





Implementation Realities

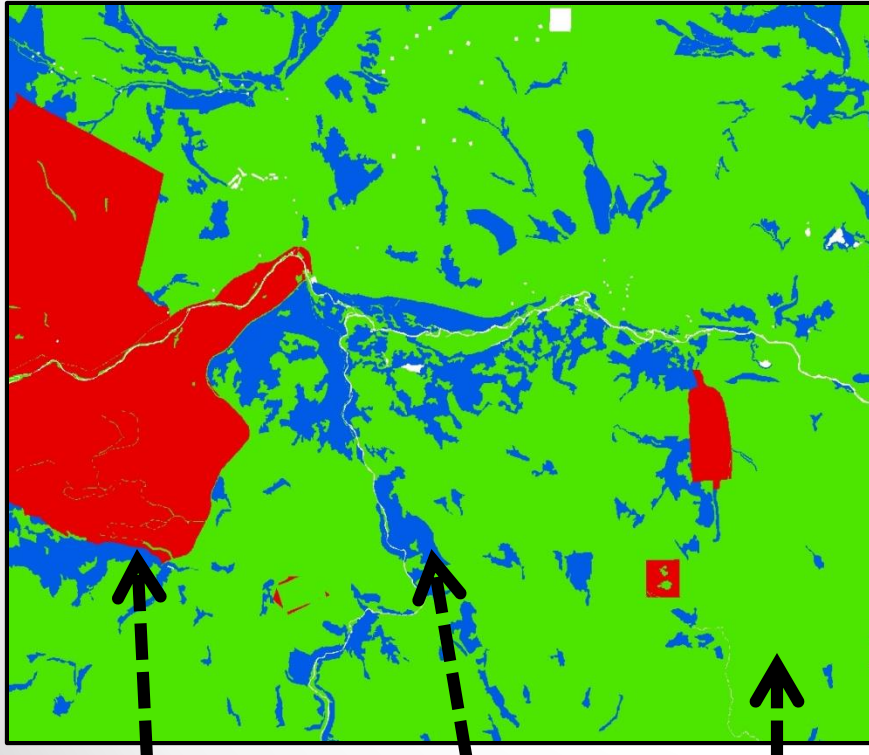
- Possible transition strategy
- Immediate increase in planting levels
 - to **15 000** ha/yr for **4.2** million m³/yr harvest
 - to **21 000** ha/yr for **6.0** million m³/yr harvest
- Immediate, but gradual PNA increase to target
 - how to accomplish that?



Implementation Realities



Possible transition strategy



**Protected
area**

**Conservation
forest**

**General
forest**

**Protected
area**

No harvest

**Conservation
forest**

**Non-timber values
Minimal harvest**

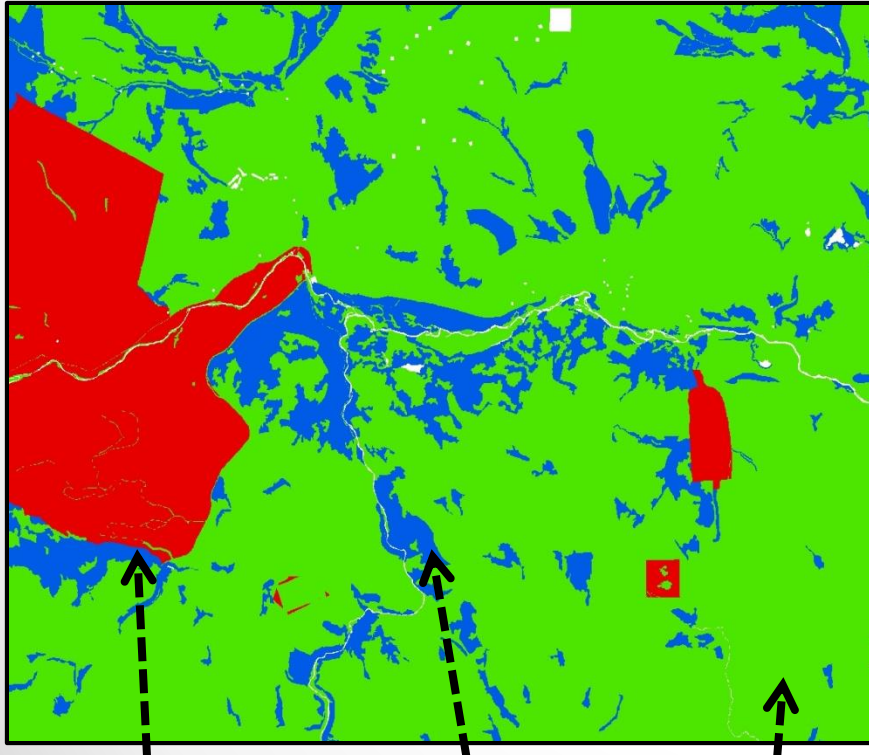
**General
forest**

**Primary objective
of timber harvest**



Implementation Realities

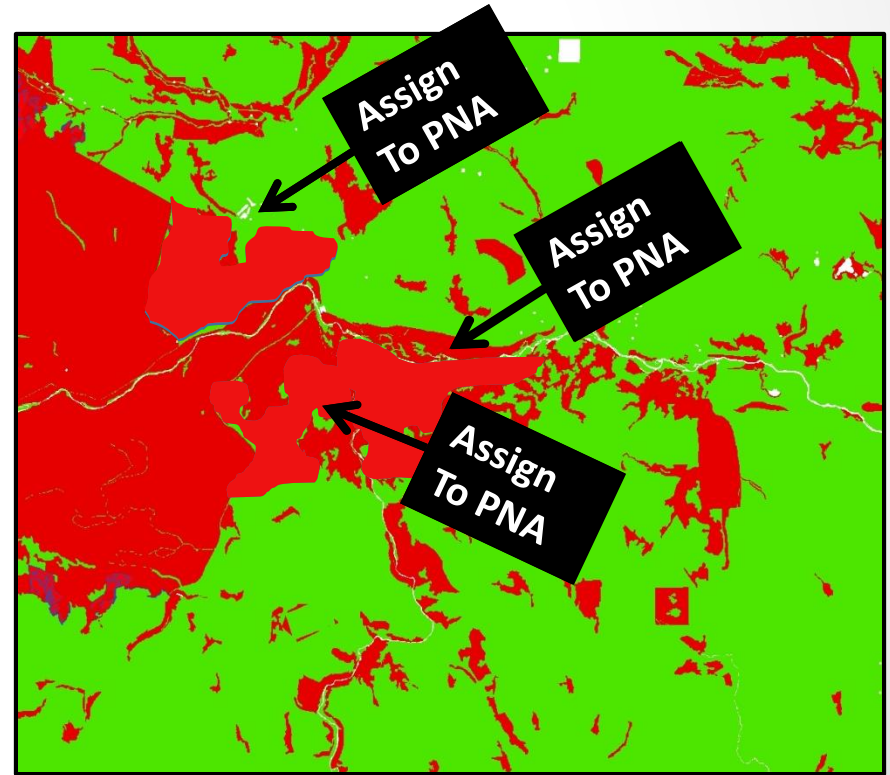
- Conservation forest to PNA after partial harvest
- General forest to PNA after partial harvest



Protected
area

Conservation
forest

General
forest



Implementation Realities

Some consequences

- gradual increase in PNA extent
- partially harvested stands in PNAs
- rich diversity of structure
- future mature & old forest



- expensive & exacting harvests
- mitigate wood supply impacts in transition



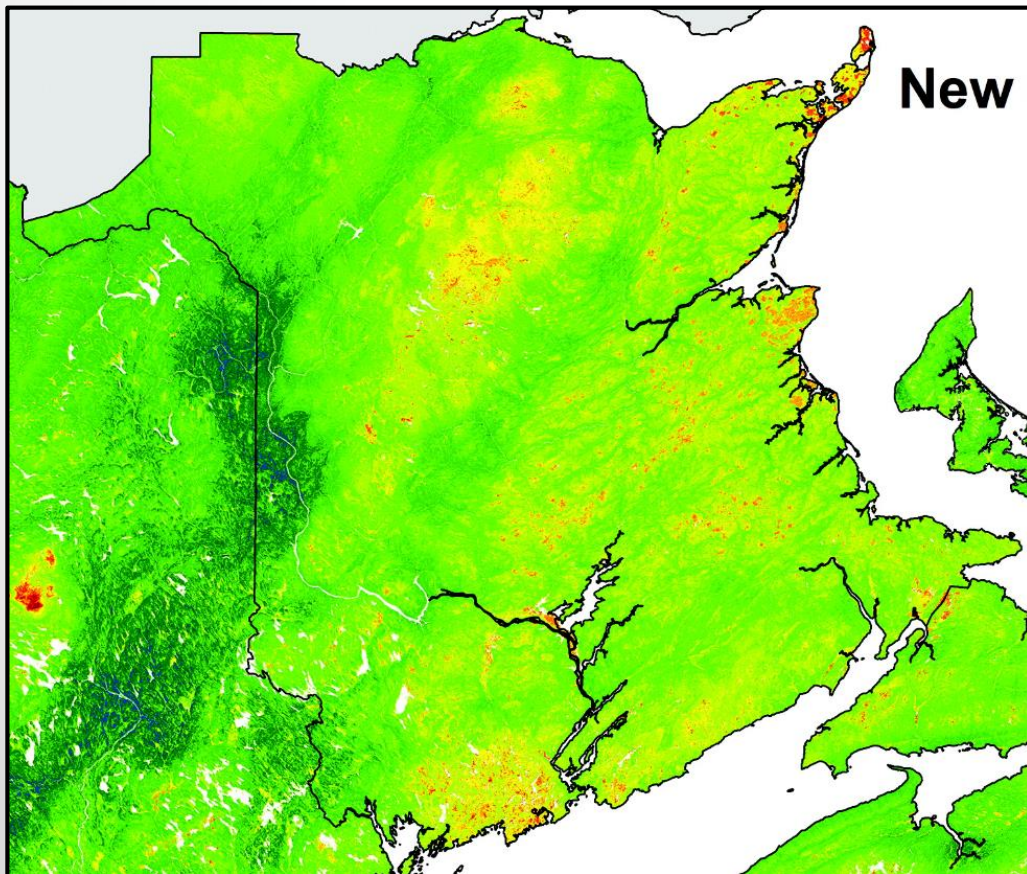


Implementation Realities

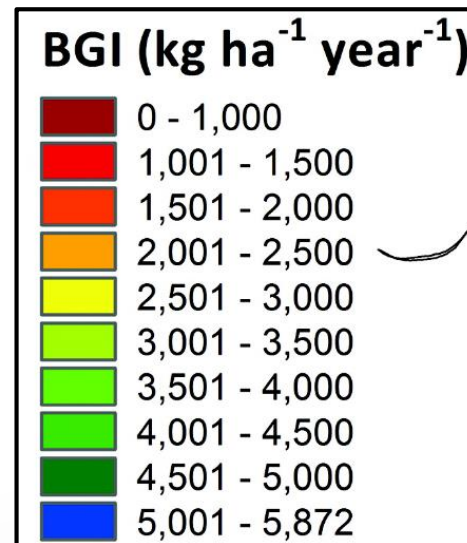


Problem of Space

- where to locate intensive mgmt areas
- high productivity sites not uniformly distributed



- small & scattered?
- few & concentrated?





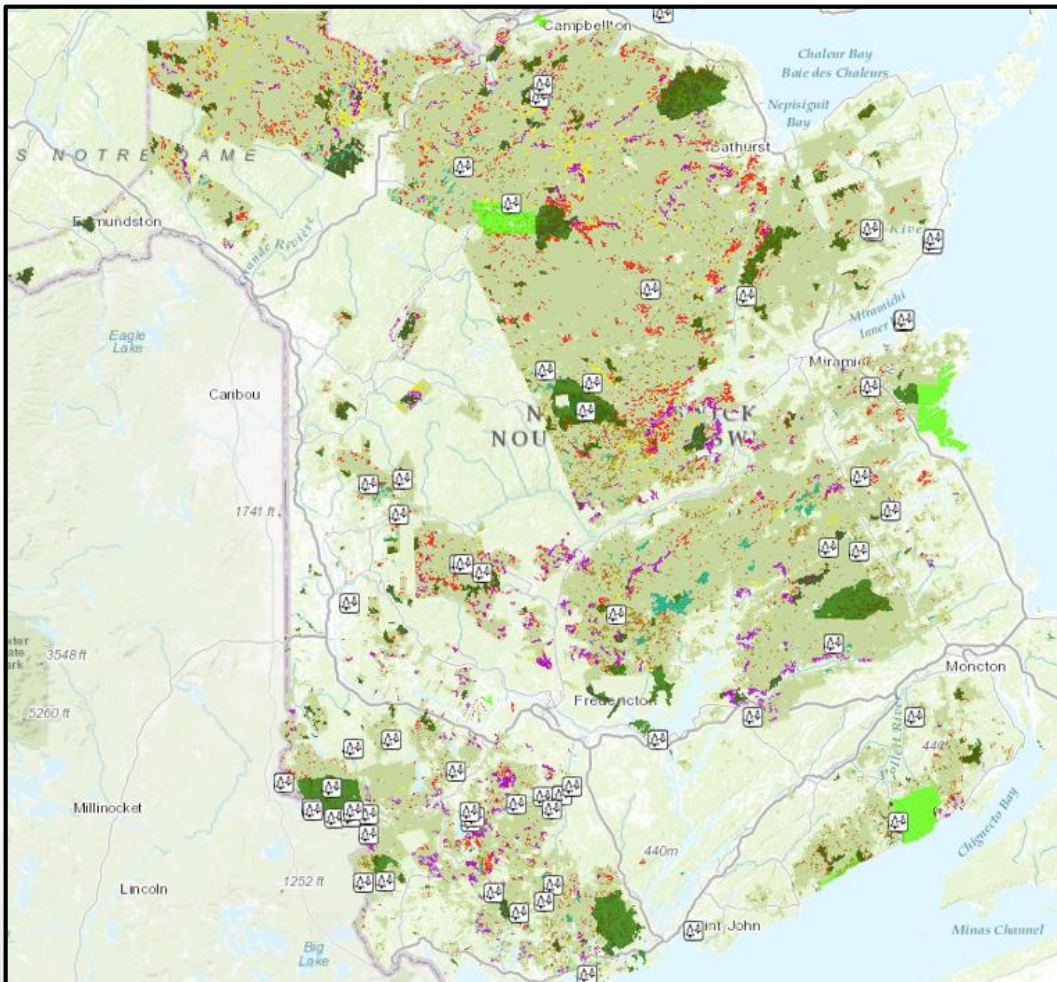
Implementation Realities



Problem of Space



where to locate PNAs?





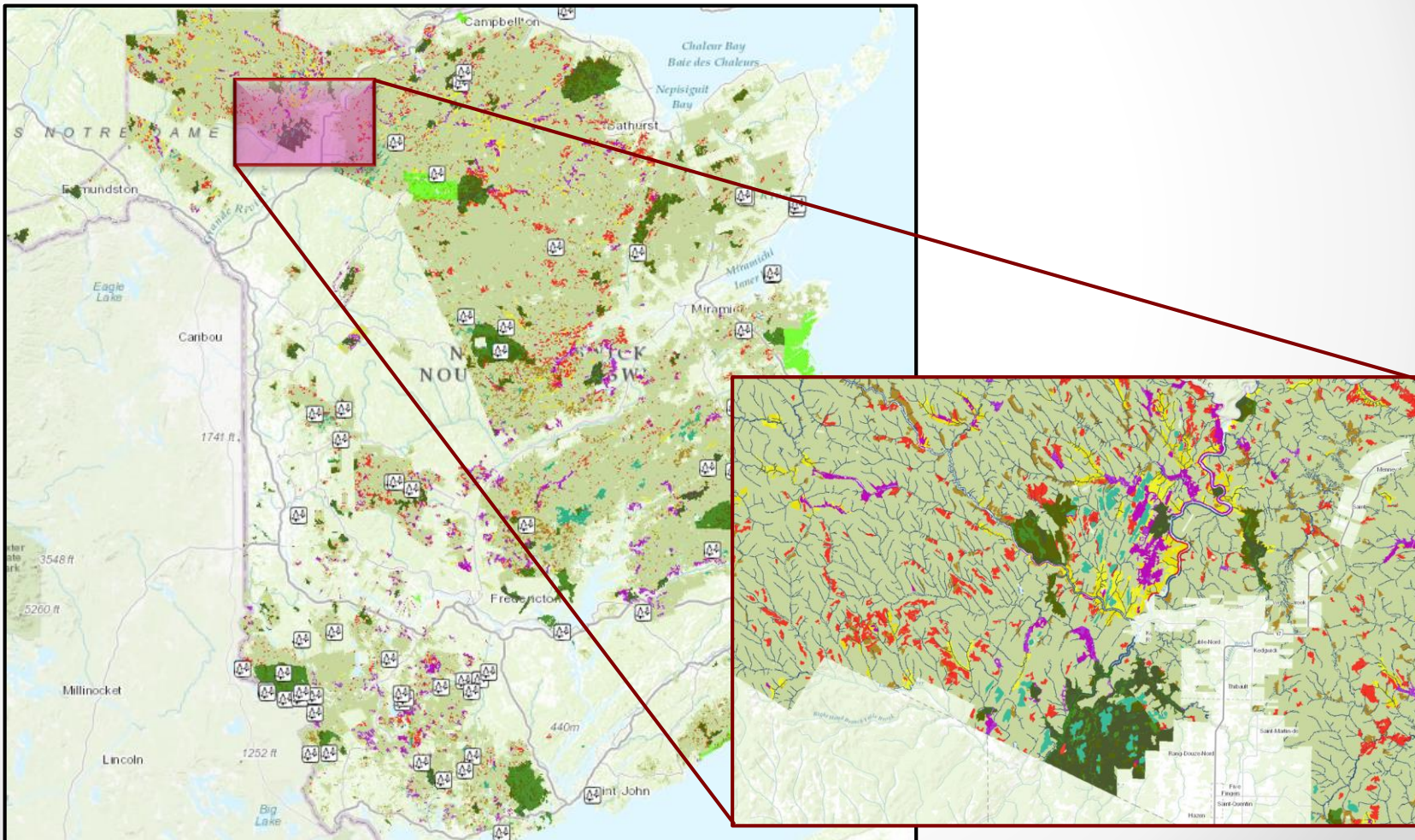
Implementation Realities



Problem of Space



where to locate PNAs?





Implementation Realities



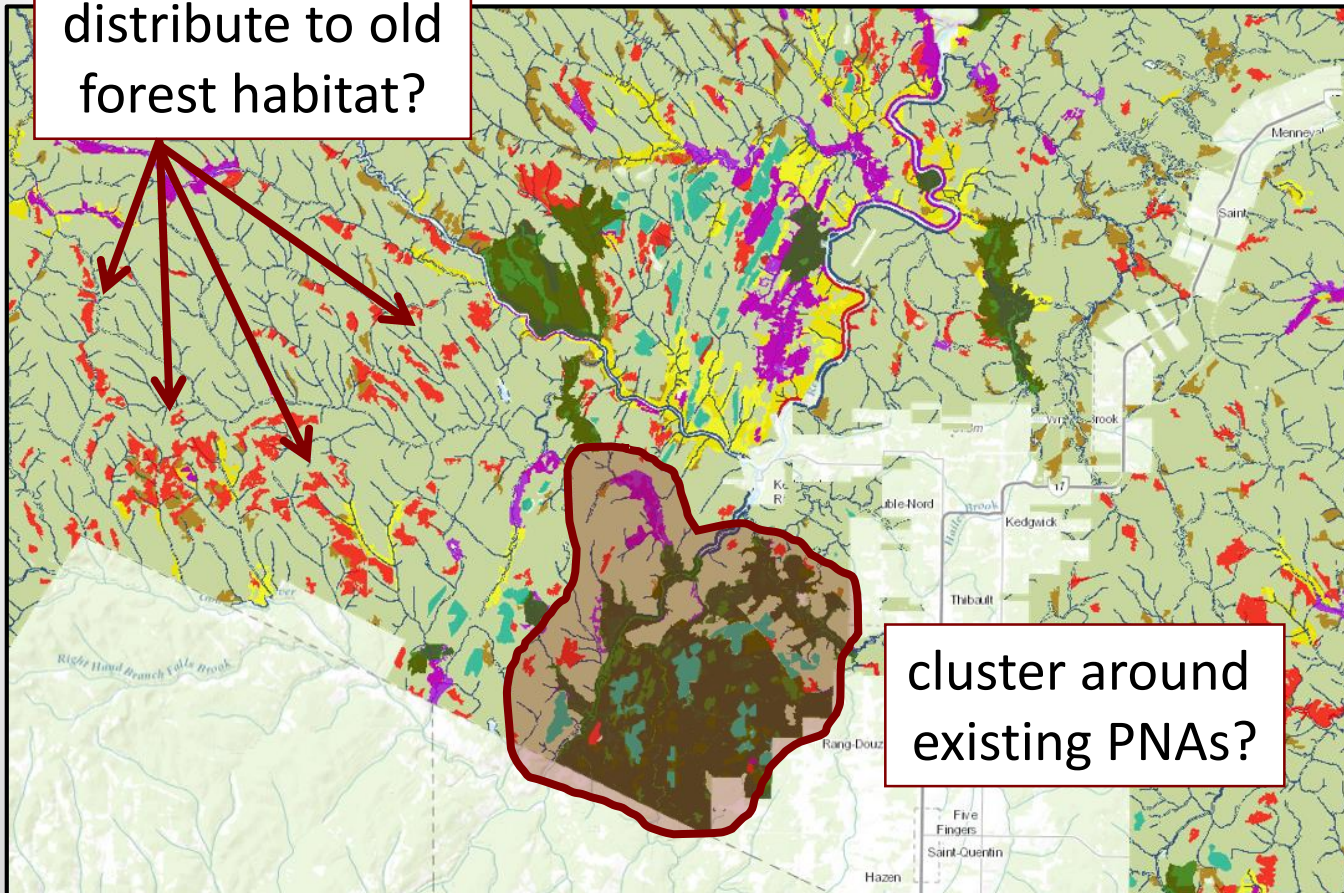
Problem of Space



where to locate PNAs?

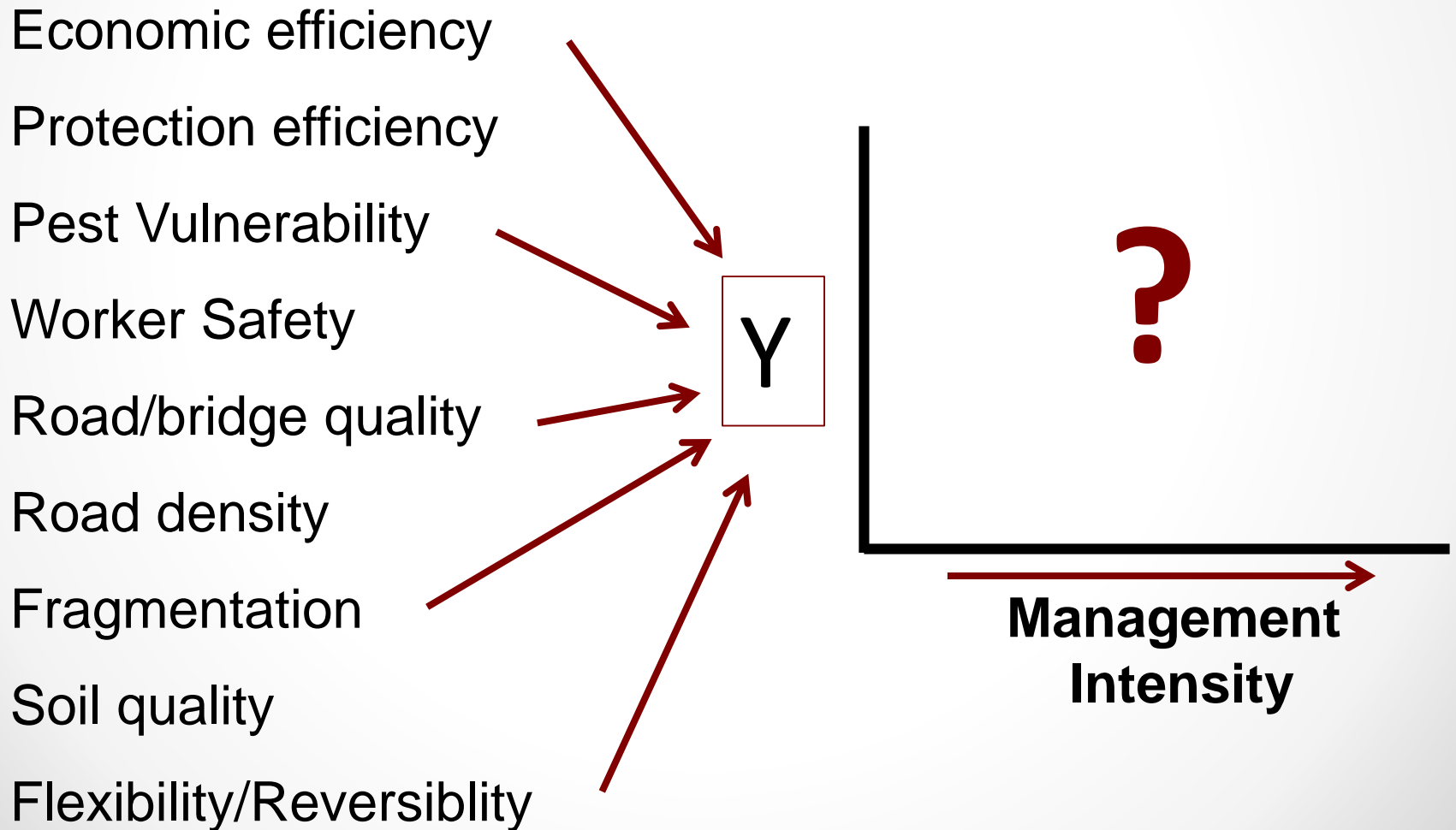
distribute to old
forest habitat?

cluster around
existing PNAs?



Implementation Realities

● Problem of “Collateral Impacts”





Implementation Realities



Problem of Performance

- at top of our silviculture game
- full site occupancy
- minimal loss to roads/landings
- effective competition control



- **Some context**
- **Recap a success story**
- **NB possibilities**
- **Implementation realities**
- ***Pre-requisites for success***



New Zealand



Enabled by 1991 Accord

“landmark document, *ending years of hostility* between conservationists & foresters”

acknowledge existing indigenous forest should be maintained

acknowledge importance of plantation forestry as:

- sustainable source of wood products & energy
- means to promote protection of natural forest

THE NEW ZEALAND FOREST ACCORD

This accord is between the New Zealand Forest Owners' Association (Inc.), the New Zealand Timber Industry Federation, the New Zealand Farm Forestry Association, the New Zealand Wood Panel Manufacturers' Association

and the Royal Forest and Bird Protection Society of New Zealand (Inc.) together with the following environmental or recreational organisations who collectively comprise the New Zealand Rainforest Coalition:

- Environment & Conservation Organisations of N.Z. Inc.
- Federated Mountain Clubs
- Friends of the Earth
- Beech Action Committee
- Pacific Institute of Resource Management
- World Fund for Nature (N.Z.)
- Japan Tropical Forest Action Network
- Tropical Rainforests Action Group

and
Māori Society

OBJECTIVES OF ACCORD

- To:
- define those areas where it is inappropriate to establish plantation forestry
 - recognise the important heritage values of New Zealand's remaining natural indigenous forests and the need for their protection and conservation
 - acknowledge that the existing areas of natural indigenous forest in New Zealand should be maintained and enhanced
 - recognise that commercial plantation forests of either introduced or indigenous species are an essential source of perpetually renewable fibre and energy offering an alternative to the depletion of natural forests

• acknowledge the mutual benefits emanating from an accord between New Zealand commercial forestry enterprises and conservation groups and the example that this unique accord can provide for the international community.

INSTRUMENTS OF ACCORD

1. The parties agree that for the purposes of this accord a native tree is defined as any indigenous woody plant which ultimately forms part of the canopy of a naturally occurring forest in the locality under consideration and also includes any indigenous tree species which attains a diameter at breast height of 30cm or greater.
2. It is the policy of N.Z.F.O.A. that members, when establishing plantation forests, will exclude from land clearing and disturbance all areas of naturally occurring indigenous vegetation with the following characteristics:
 - i. any area of 5 hectares or greater which has an actual or emerging predominance of naturally occurring indigenous tree species of any height.
 - ii. any natural indigenous forest vegetation of between 1 and 5 hectares in area with an average canopy height of at least 6 metres which is practical to protect. This recognises that in some instances small pockets of native vegetation within a commercial forest cannot practically be protected from disturbance. However, visible stands will be excluded from clearance and every reasonable effort made to ensure such areas are not damaged in subsequent forestry operations.
 - iii. any vegetation recommended for protection in a survey report in the Protected Natural Areas Programme or classified as a Site of Special Wildlife Interest (S.S.W.I.) in a published report by the former Wildlife Service.

iv. in ecological districts where such surveys have not taken place, areas that would qualify as a Recommended Area for Protection (R.A.P.) or S.S.W.I. in the professional opinion of the Department of Conservation, using established criteria for such surveys.

3. The parties support the production management and harvest of naturally occurring indigenous forest only where such activity is conducted on a sustainable basis and principally for the production of added value solid wood products in New Zealand. A "sustainable basis" is considered to be a rate and method of tree extraction that does not exceed the replenishment so that the forest ecosystem in the area under consideration is maintained in perpetuity.

4. The conservation groups undertake to:

- acknowledge the importance of plantation forestry as a means of producing wood products and energy on a sustainable basis while promoting the protection and conservation of remaining natural forests, and to promote these understandings both within New Zealand and internationally;

5. The parties agree that this accord excludes high country Crown land, Crown pastoral leases and lands controlled by the Department of Conservation.

6. The parties agree that existing arrangements for the supply of native timber authorised by past Government decisions are not covered by this accord and that this accord will not be used by them to have effect on, nor to influence, negotiations with the Crown for forest arrangements referred to by the West Coast accord and the transitional arrangements in Southland.

7. The parties to this accord agree to meet from time to time to monitor the implementation and address issues which may arise.

Signed by the following parties, in Wellington on the 14th day of August 1991:

 New Zealand Forest Owners' Association (Inc.)	 Environment & Conservation Organisations of New Zealand (Inc.)	 New Zealand Timber Industry Federation
 New Zealand Farm Forestry Association (Inc.)	 Federated Mountain Clubs	 Japan Tropical Forest Action Network
 New Zealand Wood Panel Manufacturers' Association	 Friends of the Earth	 Tropical Rainforests Action Group
 New Zealand Beech Action Committee	 Beech Action Committee	 Māori Society
 Pacific Institute of Resource Management	 Pacific Institute of Resource Management	



Acadian Forest Accord

- Willingness to reach agreement
- Buy-in from all credible quarters
- Acceptance of a quid pro quo and compromise
- Recognition of First Nations' rights
- Trust, goodwill, wisdom & maturity

ACADIAN

THE NEW ZEALAND FOREST ACCORD

This accord is between the New Zealand Forest Owners' Association (NZFOA), the New Zealand Timber Industry Federation, the New Zealand Farm Forestry Association, the New Zealand Wood Panel Manufacturers' Association and the Royal Forest and Bird Protection Society of New Zealand (RFBPS) together with the following environmental or recreational organisations who collectively comprise the New Zealand Environment Coalition:

- Environment & Conservation Organisation of N.Z. Inc.
 - Federated Mountain Clubs
 - Friends of the Earth
 - Beech Action Committee
 - Pacific Institute of Resource Management
 - World Fund for Nature (N.Z.)
 - Japan Tropical Forest Action Network
 - Tropical Rainforests Action Group
- and
Maruia Society

OBJECTIVES OF ACCORD

- To:
- define those areas where it is inappropriate to establish plantation forestry
 - recognise the important heritage values of New Zealand's remaining indigenous forests and the need for their protection and conservation
 - acknowledge that those existing areas of natural indigenous forest in New Zealand should be maintained and enhanced
 - recognise that commercial plantation forests of either introduced or indigenous species are an essential resource for perpetually renewable fibre and energy offering an alternative to the depletion of natural forests

- acknowledge the mutual benefits emanating from an accord between New Zealand commercial forestry enterprises and conservation groups and the example that this unique accord can provide for the international community

INSTRUMENTS OF ACCORD

1. The parties agree that for the purposes of this accord a native tree is defined as any indigenous woody plant which ultimately forms part of the canopy of a naturally occurring forest in the locality under consideration and also includes any indigenous tree species which attains a diameter at breast height of 30cm or greater.
2. It is the policy of N.Z.F.O.A. that whenever, when establishing plantation forests, will exclude from land clearing and disturbance all areas of naturally occurring indigenous vegetation with the following characteristics:
 - i. any area of 5 hectares or greater which has an actual or emerging predominance of naturally occurring indigenous tree species of any height
 - ii. any natural indigenous forest vegetation of between 1 and 5 hectares in area with an average canopy height of at least 6 metres which is practically intact. This requires that in some instances small pockets of native vegetation within a commercial forest cannot practically be protected from disturbance. However, visible stands will be excluded from clearance and every reasonable effort made to ensure such areas are not damaged in subsequent forestry operations.
 - iii. any vegetation recommended for protection in a survey report in the Protected Natural Areas Programme or classified as a Site of Special Wildlife Interest (S.S.W.I.) in a published report by the former Wildlife Service.

- iv. in ecological districts where such surveys have not taken place, areas that would qualify as a Recommended Area for Protection (R.A.P.) or S.S.W.I. in the professional opinion of the Department of Conservation, using established criteria for such surveys.

3. The parties support the production management and harvest of naturally occurring indigenous forest only where such activity is contained on a sustainable basis and principally for the production of added value solid wood products in New Zealand. A "sustainable basis" is considered to be a rate and method of tree extraction that does not exceed the replacement so that the forest ecosystem in the area under consideration is maintained in perpetuity.

4. The conservation groups undertake to:
 - acknowledge the importance of plantation forestry as a means of producing wood products and increasing sustainable base while promoting the protection and conservation of remaining natural forests, and to promote these understanding both within New Zealand and internationally.

5. The parties agree that this accord includes high country Crown land, Crown pastoral leases and lands controlled by the Department of Conservation.

6. The parties agree that existing arrangements for the supply of native timber authorised by past Government decisions are not covered by this accord and that this accord will not be used by them to have effect on, or to influence, negotiations with the Crown for forest arrangements referred to in the Woodland Accord and the transitional arrangements in Southland.
7. The parties to this accord agree to meet from time to time to monitor the implementation and address issues which may arise.

Signed by the following parties, in Wellington on the 14th day of August 1991:

 John Hume New Zealand Forest Owners' Association (NZFOA)	 Carmichael Environment and Conservation Organisation of New Zealand (NZECO)	 John Hume New Zealand Forest Owners' Association (NZFOA)
 John Hume New Zealand Timber Industry Federation (NZTIF)	 John Hume New Zealand Farm Forestry Association (NZFFA)	 John Hume New Zealand Wood Panel Manufacturers' Association (NZWPMA)
 John Hume The New Zealand Forest Bird Protection Society (NZFBPS)	 John Hume New Zealand Environment Coalition	 John Hume New Zealand Environment Coalition
 John Hume The New Zealand Timber Industry Federation (NZTIF)	 John Hume New Zealand Farm Forestry Association (NZFFA)	 John Hume New Zealand Wood Panel Manufacturers' Association (NZWPMA)
 John Hume The New Zealand Forest Bird Protection Society (NZFBPS)	 John Hume New Zealand Environment Coalition	 John Hume New Zealand Environment Coalition



Objective



Put a question before you

Is it time for a serious examination of
intensifying forest *management* to meet
wood supply and *conservation* goals?

What's your *answer*?

Thanks.....

And thanks to NB-ERD

Thomas Baglole

Chris Hennigar

Chris Ward