



# Oregon Indicators of Forest Sustainability

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# Background

- Board adopted the concepts of sustainability as guiding principles in 2003
- Feedback on whether FPFO goals and objectives are being met
- Basic information on changes in conditions and trends
- Early warning system
- Presented to the Board in Sept. Odd years as input into planning process
- Do the indicators meet the Board's needs?



# Presentation Outline

- Sustainability
  - What is sustainability?
  - Sustainability and the Board
- Indicators
  - How do we measure sustainability?
  - Indicators and the Board
  - Summary of the indicators
    - Current
    - Characteristics of good indicators
    - Caveats
- Recommendation(s)



# Sustainability

- What is sustainability?
- Sustainability and the Board



# What is sustainability?

Sustainability is:

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission Report)

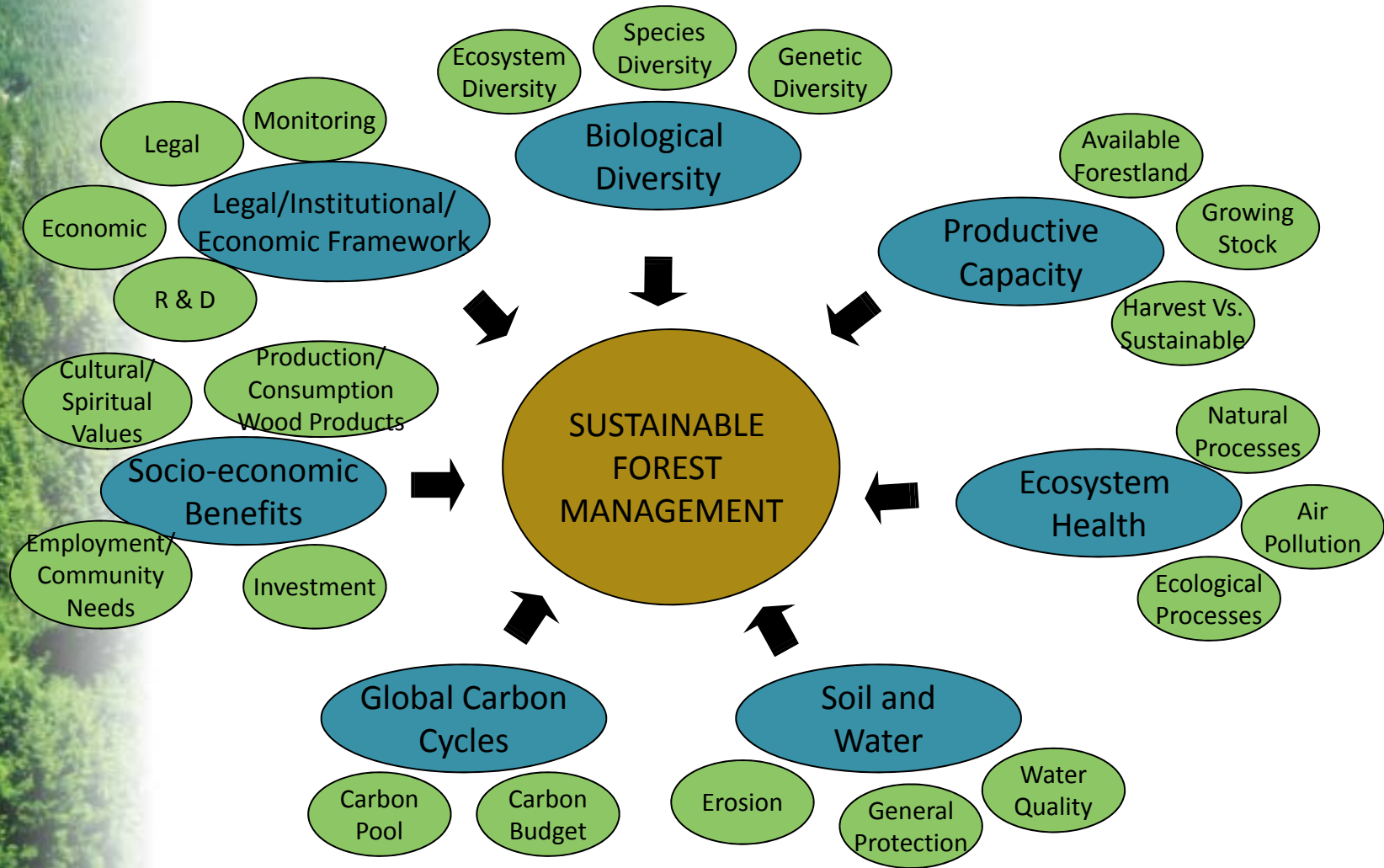
In the context of Forest Management

“Sustainable forest management” means . . .

Forest resources are used, developed, and protected at a rate and in a manner that enables people to meet their current environmental, economic, and social needs, and also provides that future generations can meet their own needs (based on ORS 184.421)

# What is sustainability?

A visual aid:



Example from Montreal Process



# Sustainability and the Board

From the 2011 FPFO, the Board is trying to achieve “the triple bottom line”.

From the previous definition of Sustainability, the triple bottom line is managing for environmental, economic, and social needs

The Montreal Process’ seven criteria provide a framework for the Board to organize and understand Oregon forest issues.



# Indicators

- How do we measure sustainability?
- Indicators and the Board
- Summary of the indicators
  - Current
  - Characteristics of good indicators
  - Caveats





# How do we measure sustainability?

## Forestry Program for Oregon Goals:

Goal A: Promote a fair legal system, effective and adequately funded government, leading-edge research and education, and publicly-supported environmental, economic, and social policies.

Goal B: Ensure that Oregon's forests make a significant contribution towards meeting the nation's wood product needs and provide diverse social and economic outputs and benefits valued by the public in a fair, balanced, and efficient manner

Goal C: Protect and improve the productive capacity of Oregon's forests.

Goal D: Protect and improve the physical and biological quality of the soil and water resources of Oregon's forests.

Goal E: Conserve diverse native plant and animal populations and protect and improve their habitats in Oregon's forests.

Goal F: Protect and improve the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds.

Goal G: Improve carbon sequestration and storage and reduce carbon emissions in Oregon's forests and forest products.



# Indicators and the Board

The purpose:

The goals and their associated indicators are meant to serve as a metric for measuring sustainability and to serve as a calculus that the Board uses to identify pertinent issues, measure performance, and make policy, regulatory, and management decisions.

The nineteen indicators gives the Board a metric to assess whether they are achieving the Triple Bottom Line.

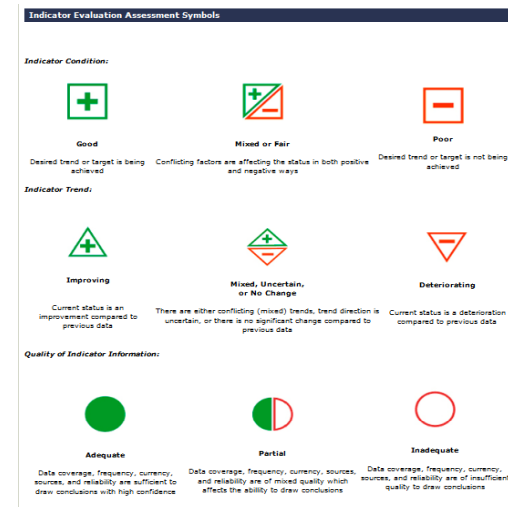
# Summary of the indicators

Goal A. Promote a fair legal system, effective and adequately funded government, leading-edge research and education, and publicly supported environmental, economic, and social policies:

A.a. Ability to measure and report on all other Oregon sustainable forest management indicators

A.b. Development and maintenance of sustainable forest management knowledge

A.c. Compliance with forestry regulations



# Summary of the indicators

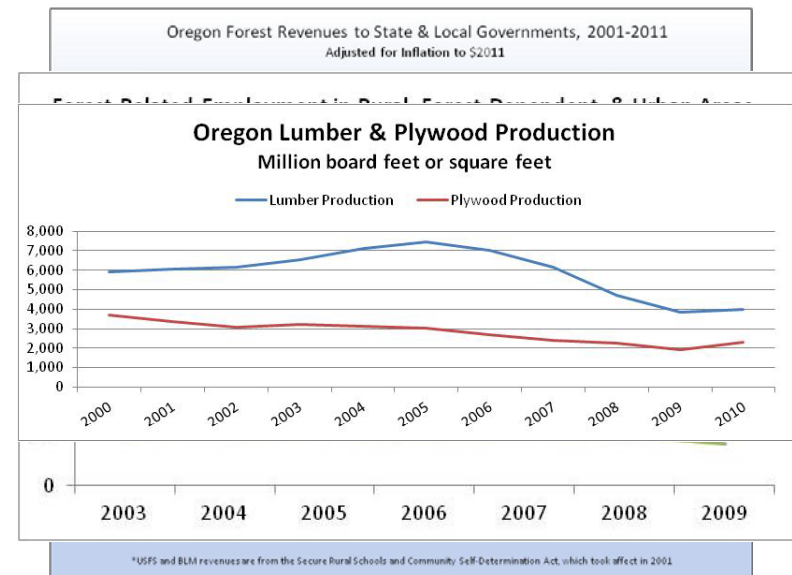
Goal B. Ensure that Oregon's forests make a significant contribution towards meeting the nation's wood product needs and provide diverse social and economic outputs and benefits valued by the public in a fair, balanced, and efficient manner:

B.a. Forest revenues supporting state and local government public services

B.b. Forest-related employment and wages

B.c. Forest ecosystem services contributions to society

B.d. Forest products sector vitality

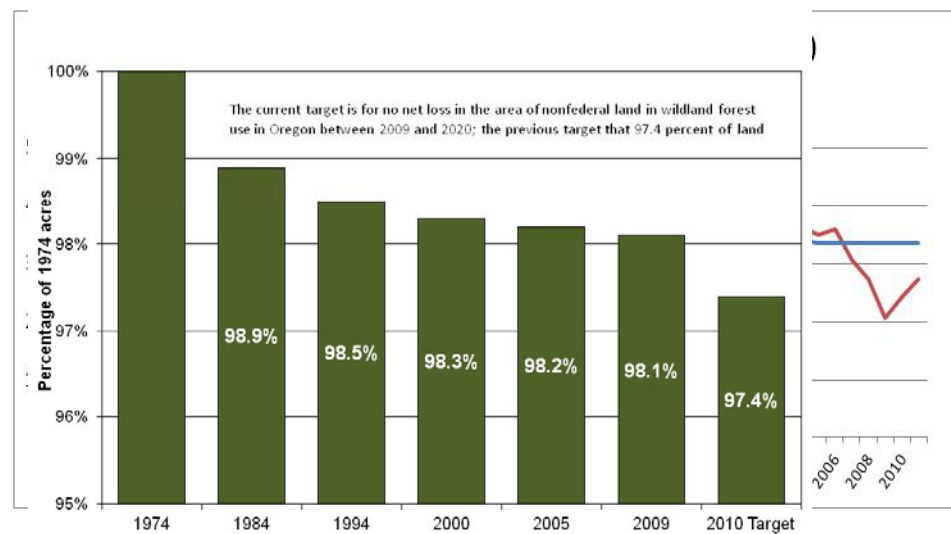


# Summary of the indicators

Goal C. Protect and improve the productive capacity of Oregon's forests:

C.a. Area of non-federal forestland and development trends

C.b. Timber harvest trends compared to planned and projected harvest levels, and the potential to grow wood



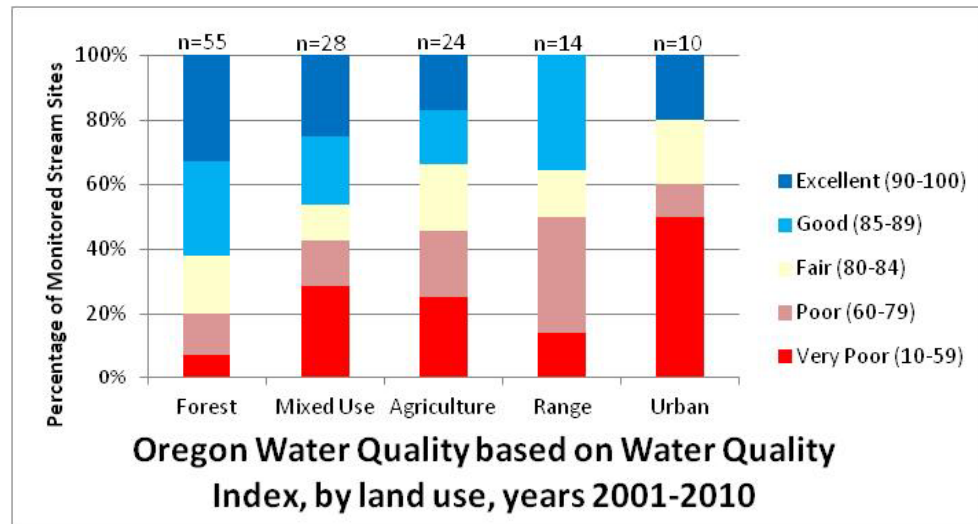
# Summary of the indicators

Goal D. Protect and improve the physical and biological quality of the soil and water resources in Oregon's forests:

D.a. Water quality of forest streams

D.b. Biological integrity of forest streams

D.c. Forest road risks to soil and water resources



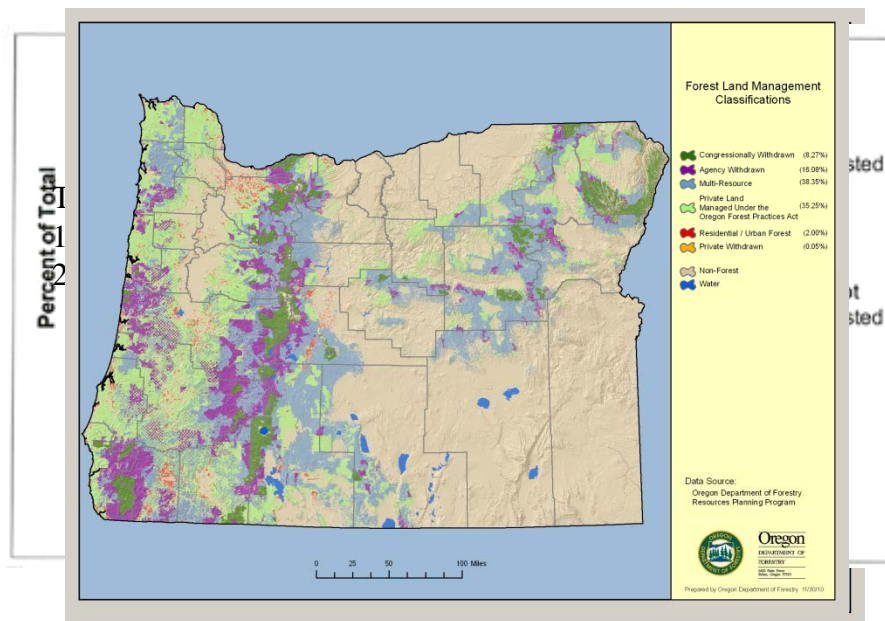
# Summary of the indicators

Goal E. Conserve diverse native plant and animal populations and protect and improve their habitats in Oregon's forests:

E.a. Composition, diversity, and structure of forest vegetation

E.b. Extent of area by forest cover type in protected categories

E.c. Forest plant and animal species at risk



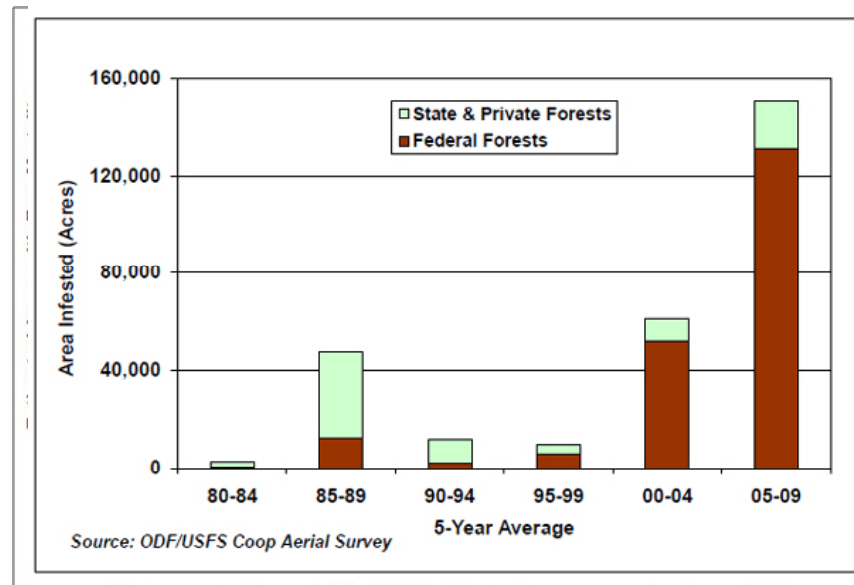
# Summary of the indicators

Goal F. Protect and improve the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds:

F.a. Tree mortality from insects, diseases, and other damaging agents

F.b. Invasive species trends on forestlands

F.c. Forest fuel conditions and trends related to wildfire risks







# Summary of the indicators

Goal G. Improve carbon sequestration and storage and reduce carbon emissions in Oregon's forests and forest products:

## G.a. Carbon stocks on forestland and forest products

**Table 1. Average stores and fluxes of all forest-associated carbon for the four test regions examined at the start and end of the monitoring period.**

<b>Region</b>	<b>Total Store 1961 Mg C/ha</b>	<b>Total Store 2008 Mg C/ha</b>	<b>Flux 1962-67 Mg C/ha/year</b>	<b>Flux 2004-08 Mg C/ha/year</b>
<b>Klamath</b>	315	308	-0.09	0.03
<b>West Cascades</b>	567	529	-0.14	-0.42
<b>East Cascades</b>	357	347	-0.11	0.23
<b>Blue Mountains</b>	310	310	0.15	0.28

# Summary of the indicators

Current update matrix:

Indicator	Leader	Data	Schedule	Comments
<b>A Sustainability</b>				
a Report on indicators		Based on Data from Goals B through G		Updated accordingly as indicators are updated
b Maintenance of data/knowledge				Updated accordingly as indicators are updated
c Compliance w/ regulations		Data not available		FACTS system is not updated and Federal system discontinued
<b>B Social/Economics</b>				
a Revenues to government	BK	Forest Revenues Report	Annual	Data from Counties, State, and Federal. Up to date.
b Forest employment and wages	BK	Department of Employment	Annual	Preparing to update.
c Ecosystem services to society		Data not available		Preliminary data is available on Gales Creek Project - but nothing definitive
d Forest products sector vitality	BK	Mill Study	Annual	Data from Paul Ehinger and Associates.
<b>C Production Capacity</b>				
a Area of non-fed forestland and development	BK	Land Use Study	Periodic (5 yrs)	Data is in shop. Preparing to update.
b Harvest trends	BK	Timber Harvest Report	Annual	Data from Federal, State, and Native American governments. Up to date.
<b>D Water Quality</b>				
a Water quality of forest streams		OWQI Results & Land Use Layer (GIS)		These indicators are currently on hold while assessing classification of DEQ ambient water stations. There is concern that water quality issues attributed to forestry are in fact not forestry related.
b Biological integrity of forest streams		OWQI Results & Land Use Layer (GIS)		
c Forest road risks to resources		Data not available		This can not be done currently due to funding issues.
<b>E Forest Biodiversity</b>				
a Composition, diversity, structure of vegetation	AY	Forest Inventory Analysis & Gradient Nearest Neighbor mapping	FIA = Annual ; GNN < 5 yrs	GNN analysis is based on FIA data. FIA collects 1/10 of all sampling sites each year. GNN analysis can perform modeling and mapping at 1 yr intervals but probably at 5 yrs. There is uncertainty about funding for long-term maintenance of GNN program
b Extent of area by cover type in protected areas	AH	GIS Spatial data: Ownership & USFS Wilderness boundaries	Periodic (5 yrs)	Cover type relies on GNN veg data from USFS. Concern of whether this will continue into the future.
c Forest plant and animal species at risk	AY	Oregon Biodiversity Information Center (ORBIC)	Periodic (3 yrs)	Data and support from ORBIC
<b>F Forest Health</b>				
a Tree mortality from insects/diseases/etc	RF/AK	Aerial Photos (ODF & FIA)		Data is in shop. Up to Date.
b Invasive species trends	RF/AK			
c Fuel conditions	AH	LANDFIRE		
<b>G Carbon</b>				
a Carbon stocks	AY	LandCarb analysis	Annual	The existing information is based on a one-time analysis that has the potential to be updated annually. Current research focuses on integrating LandCarb with LandTrndr analysis-OSU/NASA



## Summary of the indicators

Characteristics of good indicators:

- Relevant
- Understandable
- Practical and feasible
- Measurable
- Sufficient to the purpose
- Compatible
- Scientific merit
- Linkable to environmental, economic, and social models, forecasting, and information systems



## Summary of the indicators

Caveats:

- Is data readily available?
  - Costs
  - Consistency of collection
  - Is the right data being utilized?
- Are current indicators answering the right questions?
  - Are they “good” indicators?
  - Are they effectively adding to the Board’s calculus for making decisions?
- What information would the Board like to see presented to help advise their decision making-process?



# Recommendation(s)

Where do we go from here?:

Staff recommends that revising the indicators be added to the Board's new Emerging and Crosscutting Issues work plan

Staff will periodically revisit the Board to discuss:

Usefulness of current indicators

Alternatives to measuring Goals in FPFO