

Valuing the Environment in Agricultural Landscapes

The Case of Soil Health

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The Questions

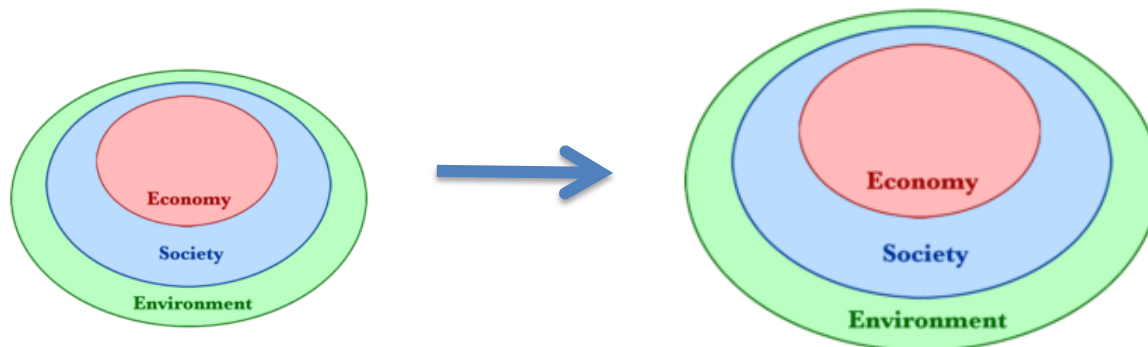
- What is the BIG challenge?
- How does the SOIL HEALTH challenge fit in?
- What is BEST for farmers and BEST for society?
- **What does Private-Public WIN-WIN look like?**
- Why do we need to account for values?
- How do we fill the values knowledge gaps?
- What do we need to do?

What is the Big Picture Challenge?

How do we collectively achieve sustainable prosperity?

- How can we manage the transition to a high-growth, internationally competitive, but also low net carbon economy?

How can we best manage our Natural Capital for growth and wellbeing?



Natural Capital

... are we doing the best we can?

- Endowed wealth
 - Renewables and non-renewables
 - Sustains life and wellbeing
 - A factor in Canada's comparative advantage in trade
- Can invest in ... and/or deplete the stock

‘Think’ Quantity and Quality

Minerals, Fish, Water... Soil...

The Case of Soil Health

Soil is ...

- ✓ a renewable **natural capital asset**
- ✓ a privately held national asset
- ✓ soil requires stewardship, just like all **assets**

Soil health is the basis of agricultural output...growth...wellbeing
i.e., income, jobs *and* nutrition

- Farmers benefit from improved soil health
- On balance, society benefits if private stewardship leads to social goals



Potential for Private-Public Win-Win Outcomes

Soil Health Questions

- What is the 'best' way to improve soil health?
 - Short run and long run costs and benefits.
- What are the externalities of what is done now and what could be done?
 - On-farm practices that have costs and benefits on the farm and off the farm.
- How much improvement is best for the farmer?
- How much improvement is best for those off farm?

Public Decisions

Duty of Care

for environmental stewardship for good of all of society for now and into the future.

Keep making changes
until incremental benefit of the change = cost
i.e., until Marginal Social Benefit = Marginal Social Cost

$$\text{MSB} = \text{MSC}$$

This is the social optimum=best

This equality is the basis of Cost-Benefit Analysis (CBA)

Private Decisions

- Should a farmer invest more in improving soil health?
- Only if the addition to benefits exceeds the addition to cost – same rule.

Basic Rule: Best to invest if
Marginal Private Benefit > Marginal Private Cost

Stop investing when
 $MPB = MPC$
This is the Private optimum=best

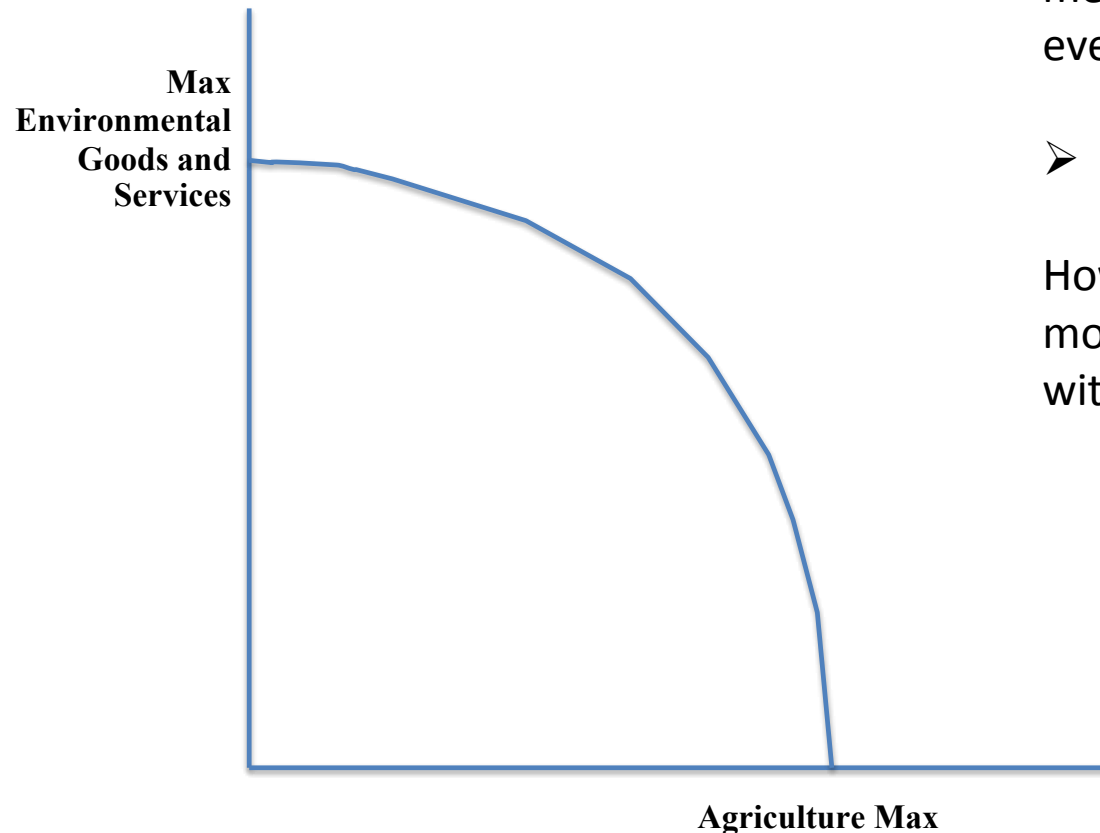
- BUT: What about public values for long run soil health?
- What if all costs and benefits of actions do not stay on the farm?

Externalities drive a wedge between private and public goals

Private decisions may not lead to the social optimum.

Public and Private Decision Space – Choices

Consider a hypothetical world with the environment and agriculture



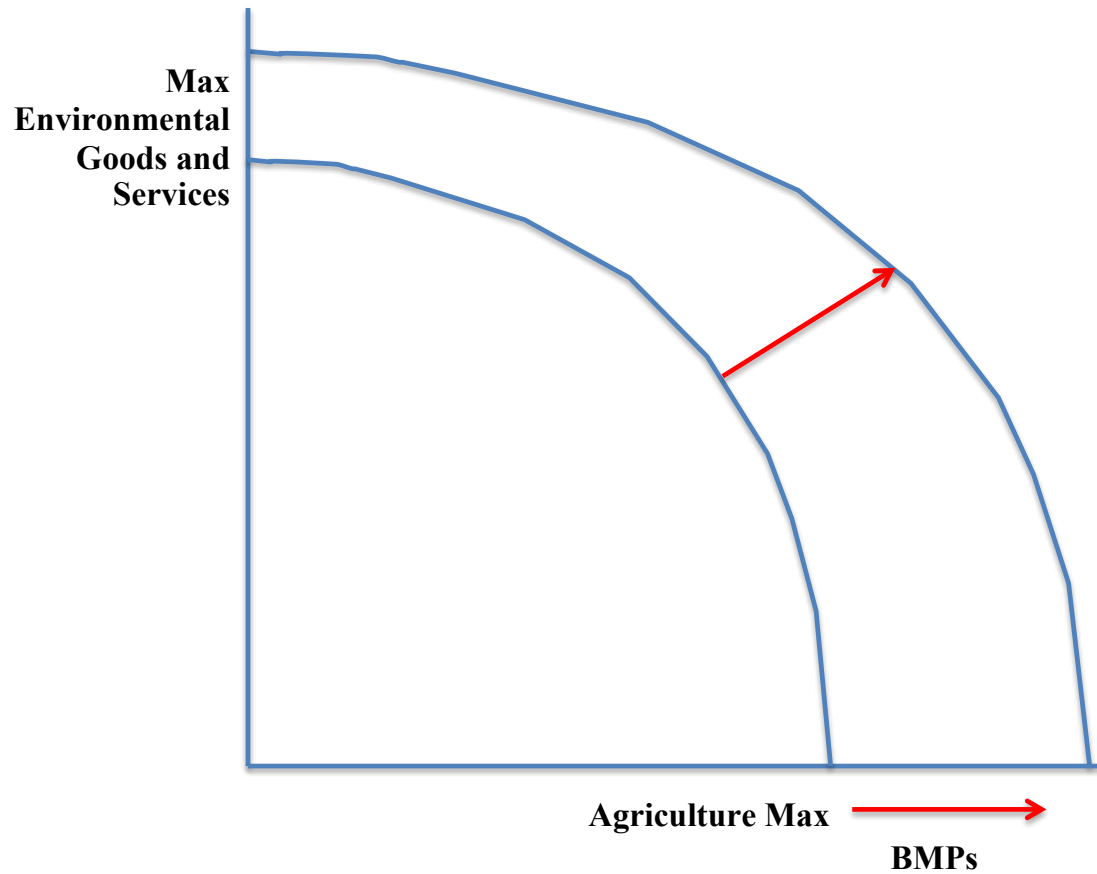
Scarcity of Natural Capital means we can't have everything we want.

➤ Tradeoffs

How is it possible to get more environmental G & S without sacrificing Ag?

Innovation

Win-Win



Is it worth it?

‘We can’t value what we can’t measure.’

Benefits of change are the hardest to measure.

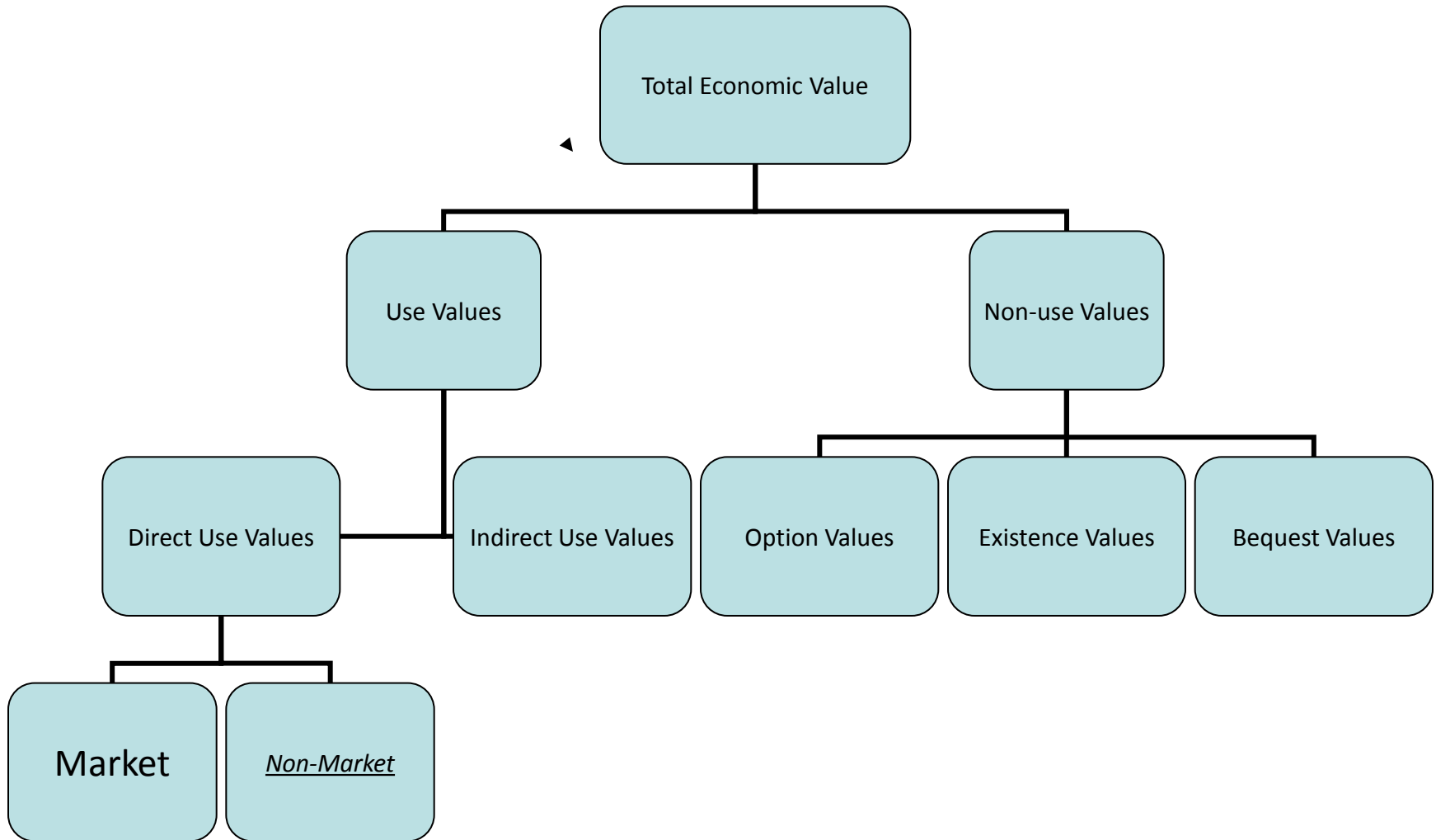
Valuing the Environment in Agricultural Landscapes

- What do we mean by values?
 - Caring
 - Stewardship
 - Prioritizing
 - **Benefits** – \$ value and non-market value and biophysical value
 - Benefits can include non-market values of good stewardship
 - Willingness to Pay \$
 - Private – foregone profits? Higher profits? Long run and short run.
 - Public – is private stewardship achieving what society wants now and into the future?
 - Others?

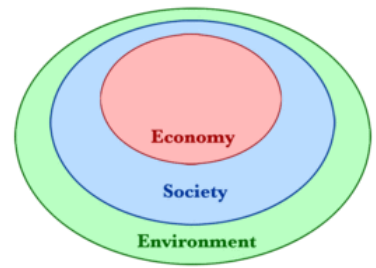
We can't value what we can't measure.

‘We can’t value what we can’t measure’

How does a management change alter benefits?



Measuring Benefits Valuation for the Triple Bottom Line



Biophysical

- Research/Field trials, climate impacts...

Economic

- Market Values \$
- Non-market \$ values
 - Revealed Preference – Hedonic Price, Travel Cost Method...
 - Stated Preference – Contingent Valuation, Choice Modeling...

Social

- Understand people's values, attitudes and beliefs
- Social implications of change – farm communities, farmers...
- Health and wellbeing, and nutrition

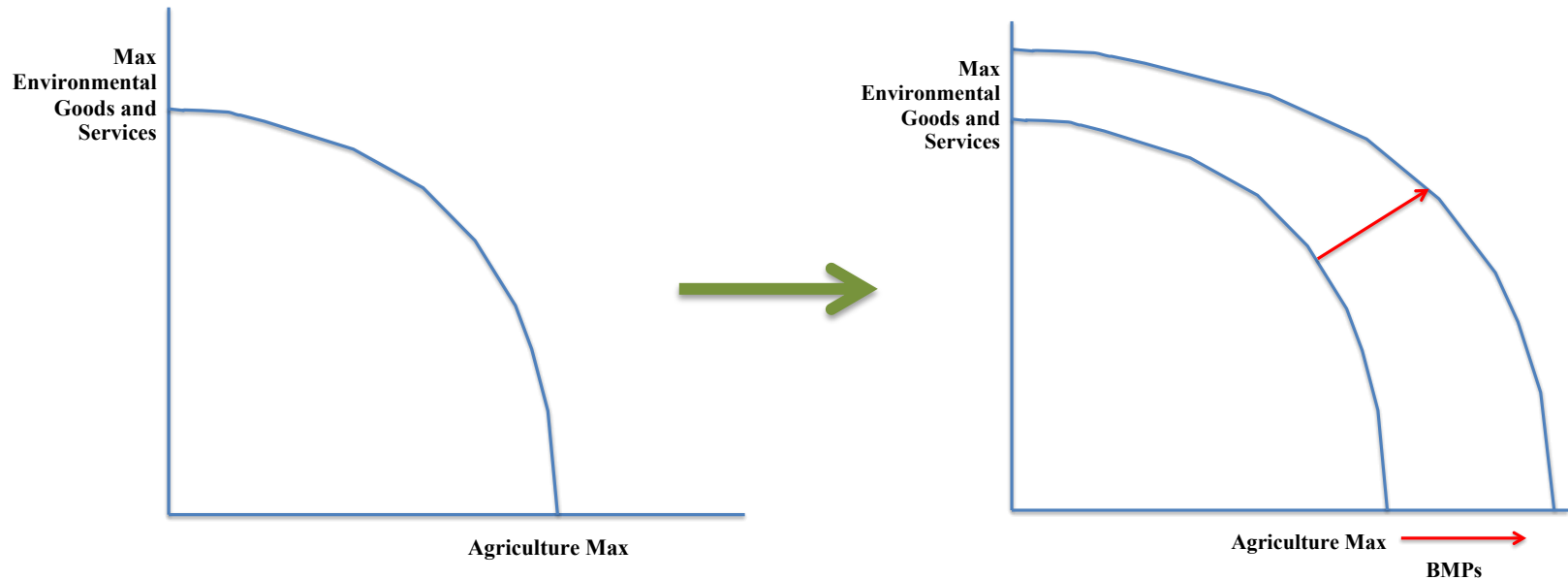
Accounting for the Benefits of Choices

On-farm, Off-farm, Private, Public, monetary \$, non monetary

[illegible]

Better understand consequences of Choices

Where do we choose to be?



How do we get to the Win-Win?

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How do we best 'dance the dance'
between **Private Stewardship** and **Public Duty of Care**?

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Discussion

Thank you