

Estimating Project Returns



The Role of Estimating Project Returns

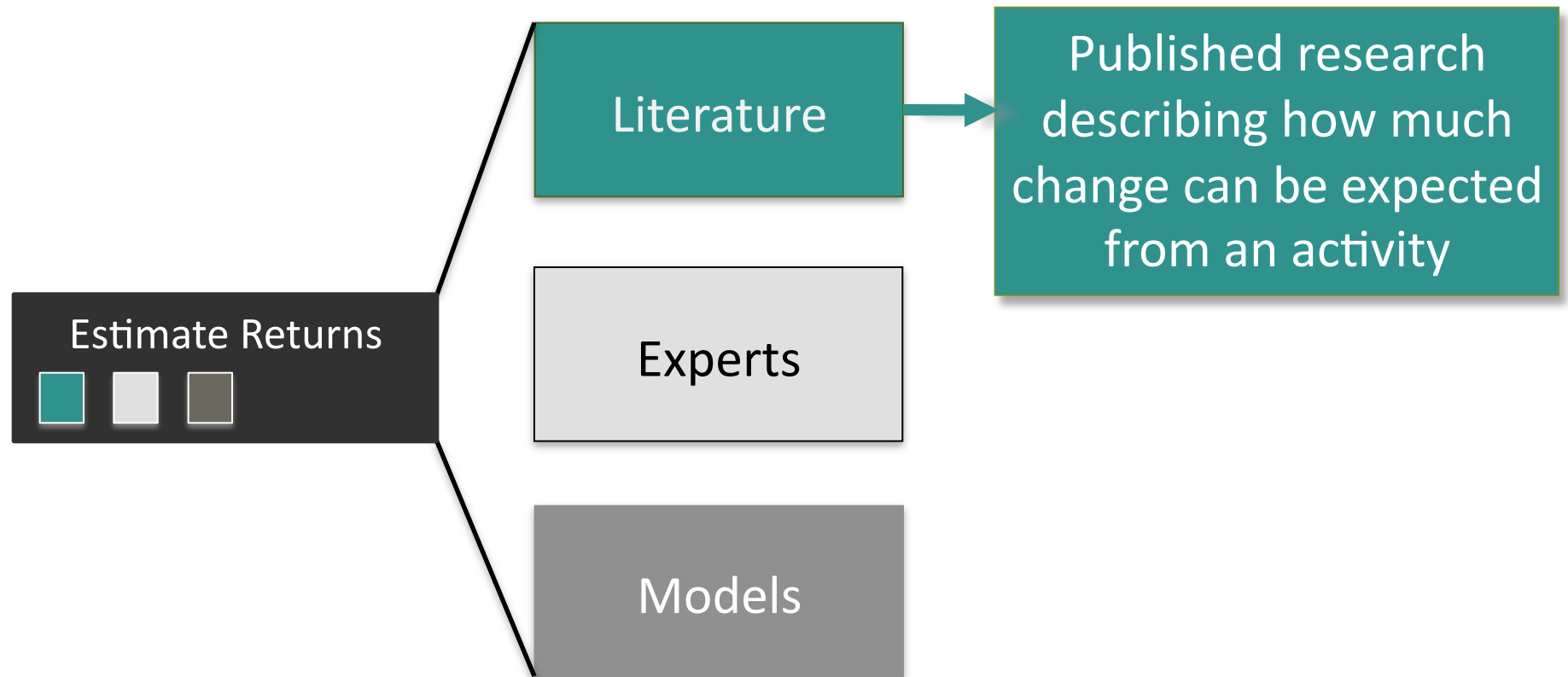
Give contributors or other audiences a sense of return on investment (and its certainty!)

Identify metrics and hypotheses for monitoring

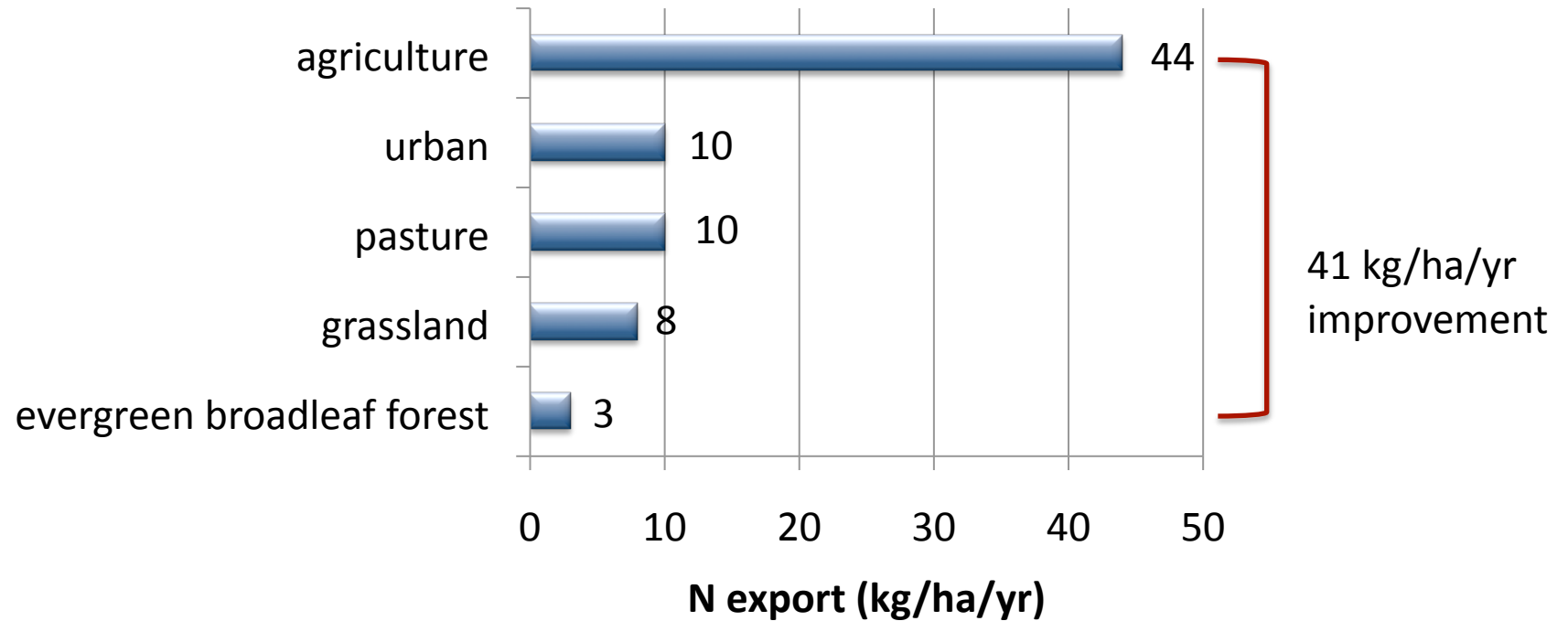
Allow comparison with other approaches such as grey infrastructure



Options for Estimating Project Returns



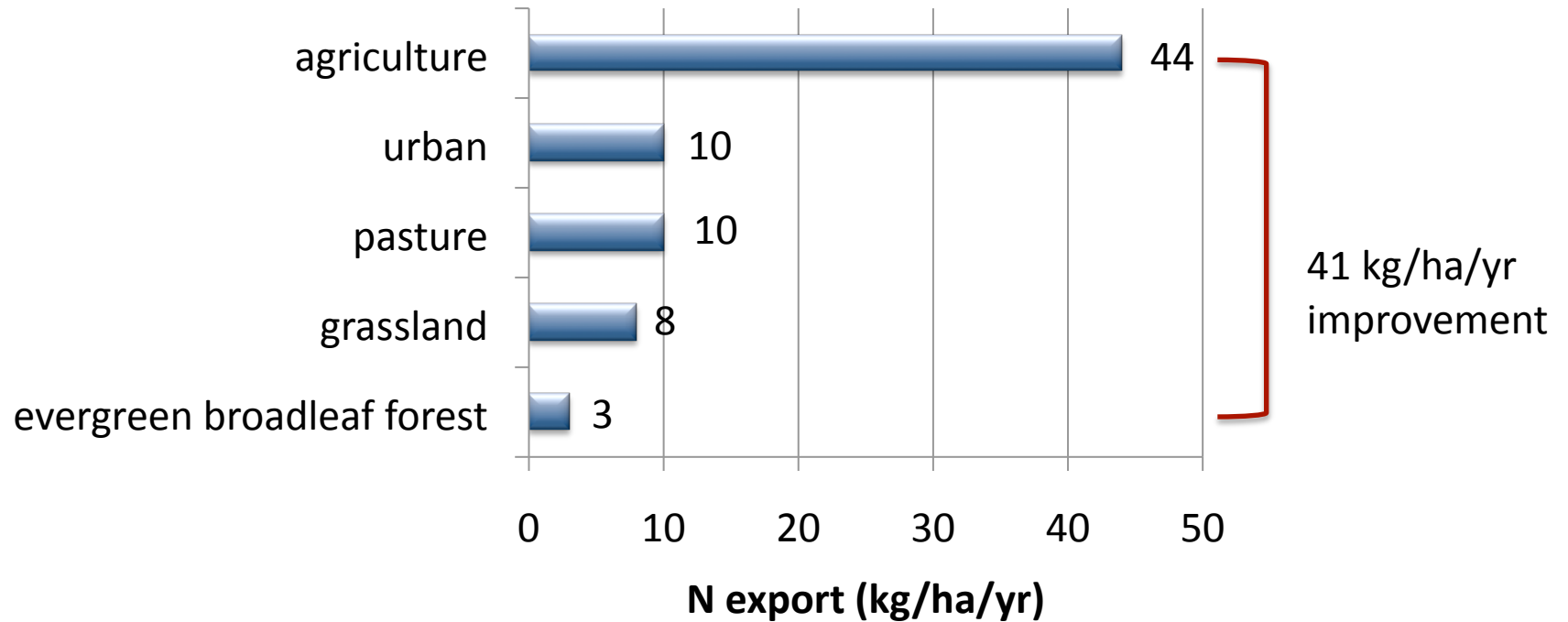
Literature for Estimating Project Returns



Current Basin Export to Treatment Plant = 750,000,000 kg/yr

Project Investment = Convert 1000 ha agriculture to forest

Literature for Estimating Project Returns



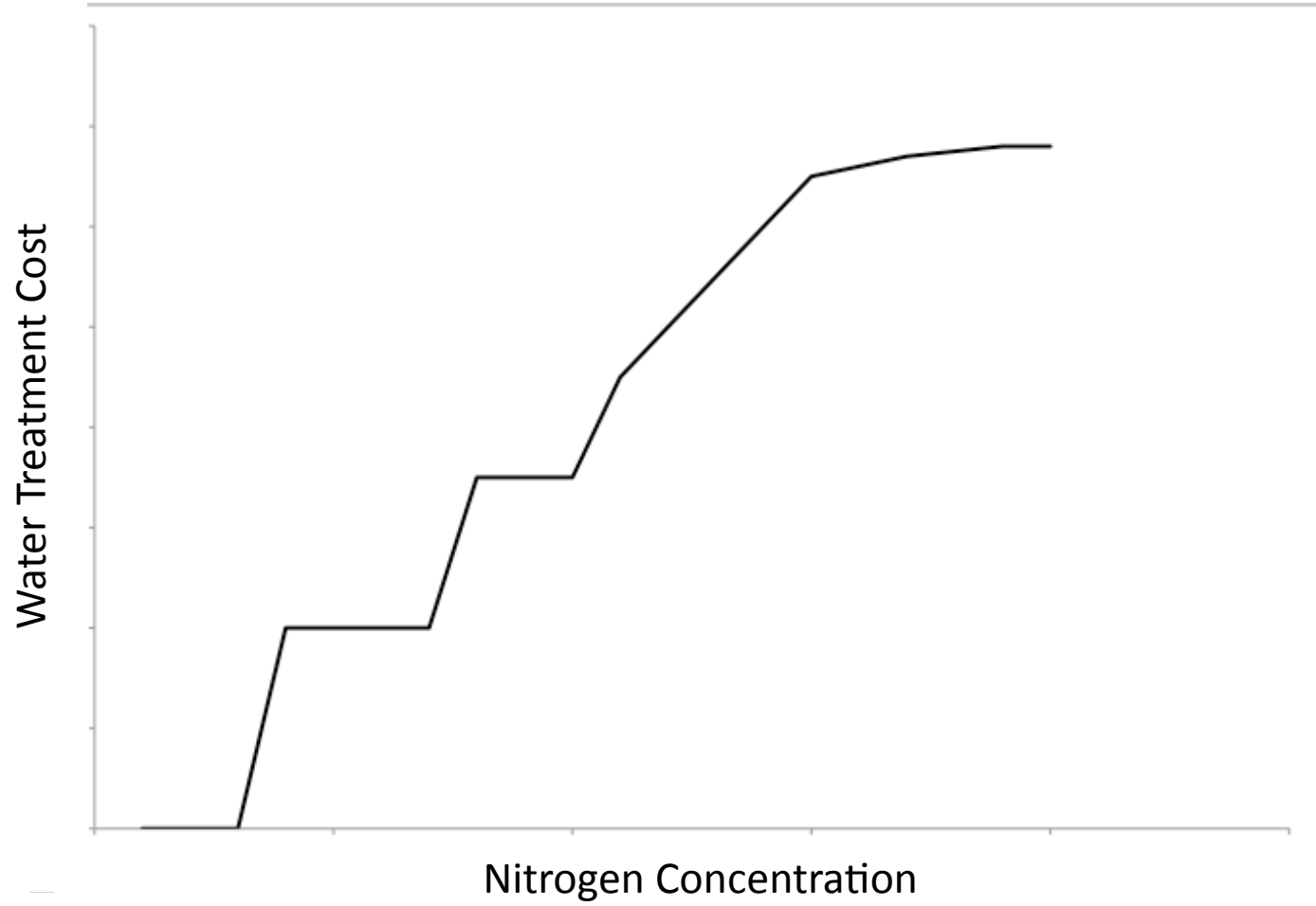
Current Basin Export to Treatment Plant = 750,000,000 kg/yr

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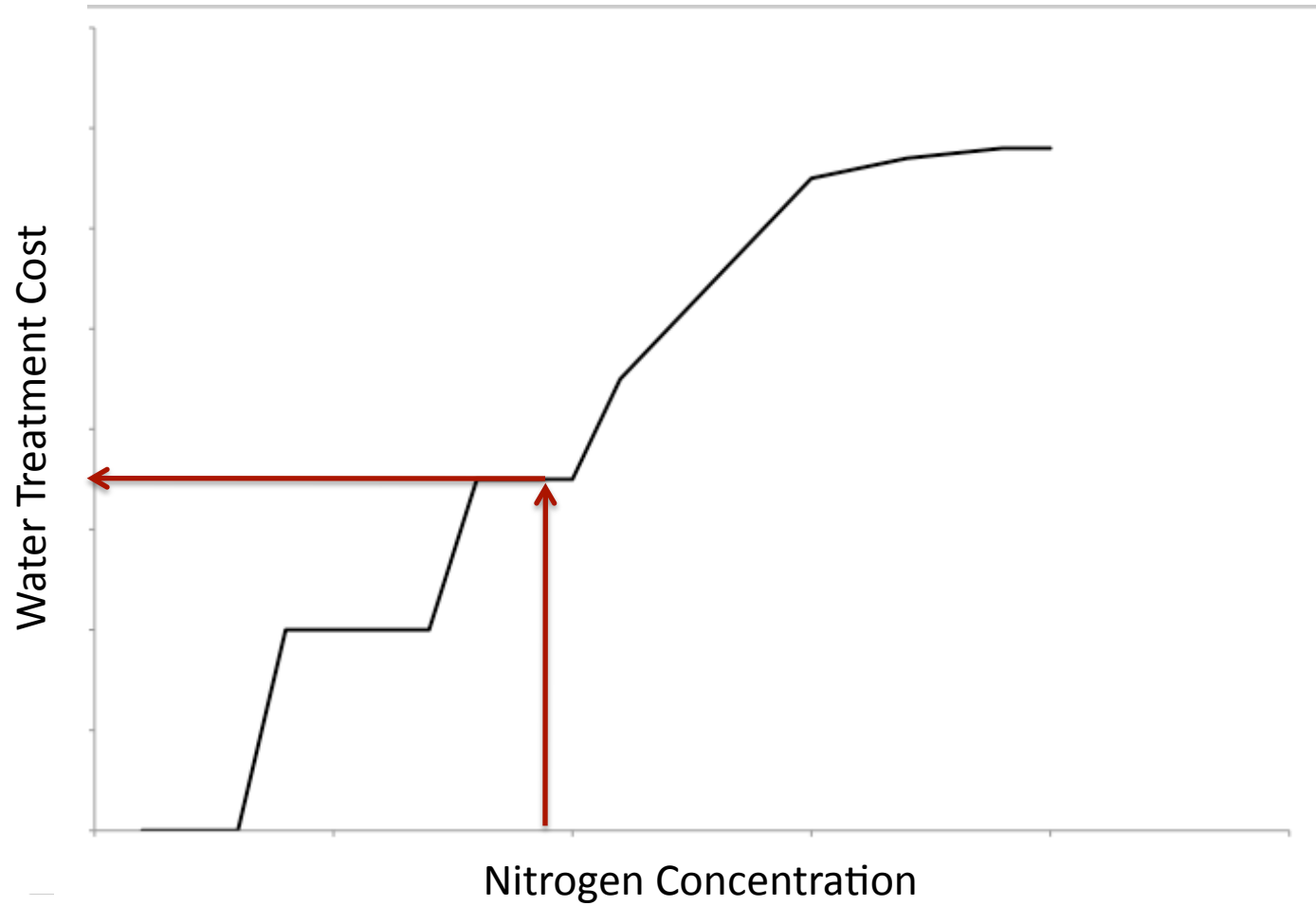
Post-project export = $750,000,000 - (41 * 1000) = 749,959,000$

Project impact = $750,000,000 - 749,959,000 = 41,000$ kg/yr reduction (0.01%)

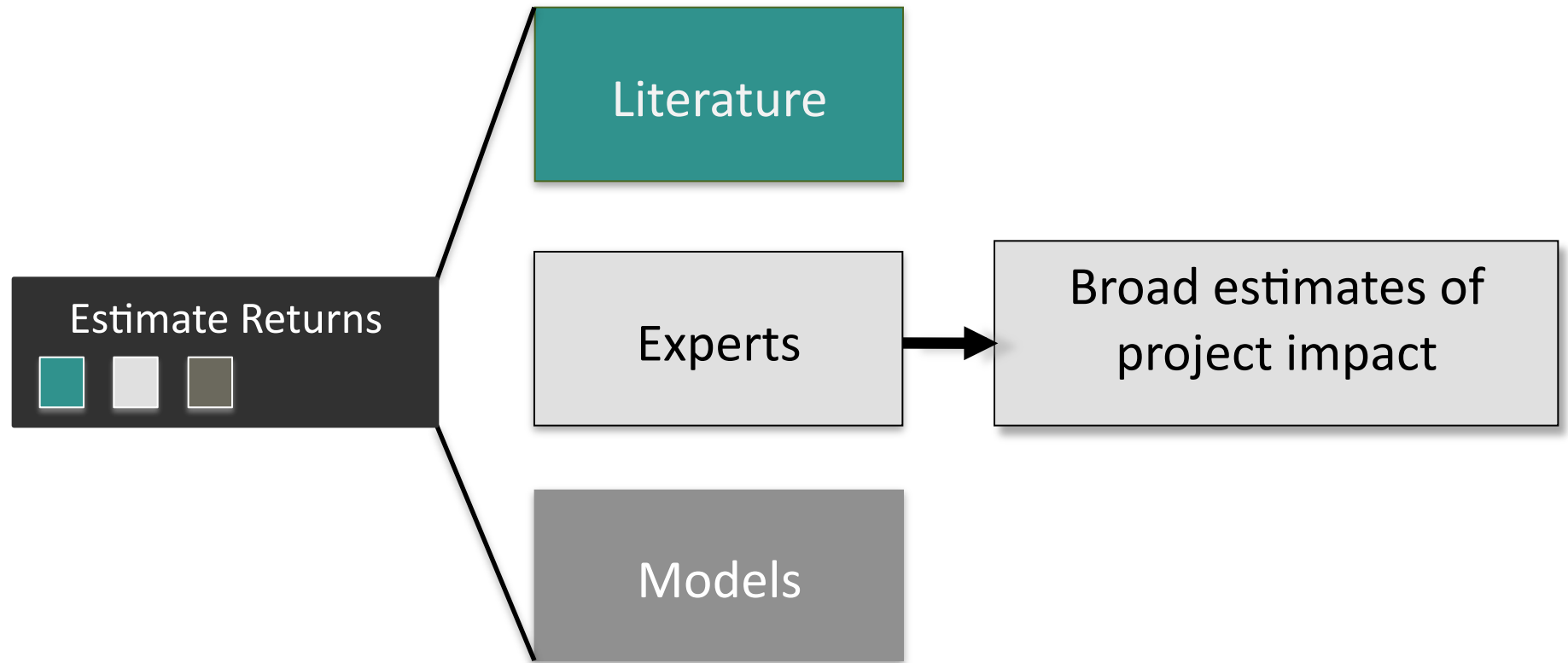
Literature for Estimating Project Returns



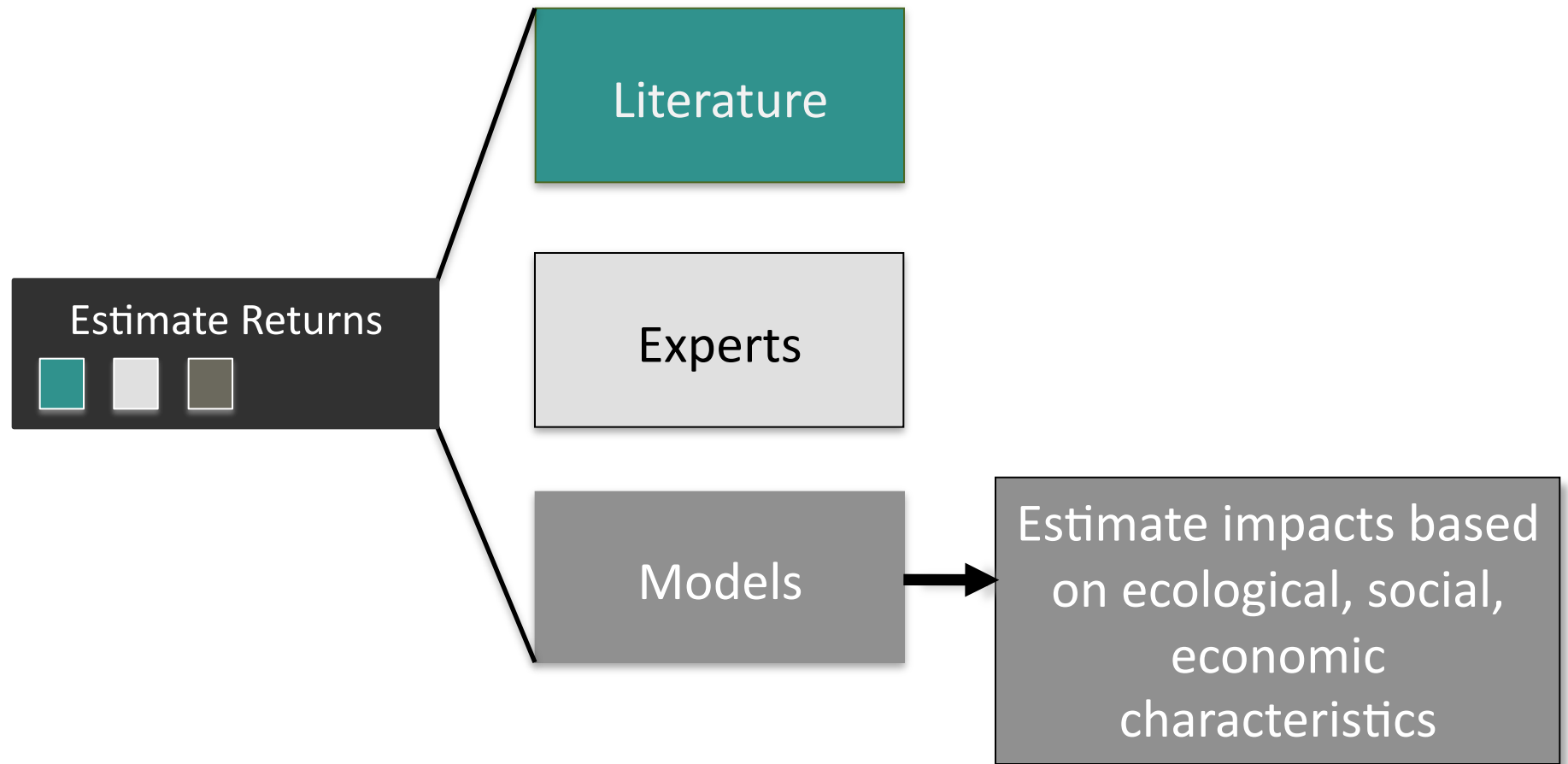
Literature for Estimating Project Returns



Options for Estimating Project Returns



Options for Estimating Project Returns



Models for Estimating Project Returns

Biodiversity:

InVEST, single species models, community models

Water-related Ecosystem Services:

InVEST, SWAT, FIESTA, HEC-RAS, MODFLOW, WEAP, etc.

Economic:

InVEST, benefit transfer (AIRES)

Social:

Agent-based models, breakout group to discuss



Models for Estimating Project Returns

natural capital PROJECT

InVEST Tier 1 Tools

WOODS INSTITUTE FOR THE ENVIRONMENT STANFORD UNIVERSITY
WWF
The Nature Conservancy
INSTITUTE ON THE ENVIRONMENT UNIVERSITY OF MINNESOTA Drive to Discover

INVEST 2.0 BETA USER'S GUIDE: INTEGRATED VALUATION OF ECOSYSTEM SERVICES AND TRADEOFFS

A modeling suite developed by the Natural Capital Project to support environmental decision-making

Editors: Heather Tallis, Taylor Ricketts, and Anne Guerry

Contributing Authors: Erik Nelson, Driss Ennaanay, Stacie Wolny, Nasser Olwero, Kari Vigorstad, Derric Pennington, Guillermo Mendoza, Juliann Aukema, John Foster, Jessica Forrest, Dick Cameron, Katie Arkema, Eric Lonsdorf, Christina Kennedy, Gregory Verutes, Chong-Ki Kim, Gregory Guannel, Michael Papenfus, Jodie Toft, Matthew Marks, and Joey Bernhardt.

Citation: Tallis, H.T., Ricketts, T., Guerry, A.D., Nelson, E., Ennaanay, D., Wolny, S., Olwero, N., Vigorstad, K., Pennington, D., Mendoza, G., Aukema, J., Foster, J., Forrest, J., Cameron, D., Lonsdorf, E., Kennedy, C., Verutes, G., Kim, C.K., Guannel, G., Papenfus, M., Toft, J., Mark, M., and Bernhardt, J. 2011. InVEST 2.0 beta User's Guide. The Natural Capital Project. Stanford.

Steve Polasky, Erik Nelson, Guillermo Mendoza, Driss Ennaanay, Stacie Wolny, Heather Tallis, Marc Conte, Manu Sharma, Jim Regetz, Peter Kareiva, Taylor Ricketts, Gretchen Daily, Mary Ruckelshaus, Anne Guerry, Katie Arkema, Greg Guannel, Jodie Little, Chong Ki Kim, Mike Papenfus, Apollo Qi, Nasser Olwero, Nirmal Bhagabati, Robin Naidoo, Eric Lonsdorf, Kai Chan, Rebecca Shaw, Dick Cameron, Neil Burgess, Andrew Balmford

InVEST

Model, map and value ecosystem service change



Multi-Service Approach

Biodiversity



Carbon seq & storage



Managed timber production



Crop pollination



Erosion control



Water purification: nutrient retention



Water yield for hydropower production

Spatial Data Inputs on Natural Capital

Land Use



Soil type



Topography



Spatial Data Inputs on Built Capital

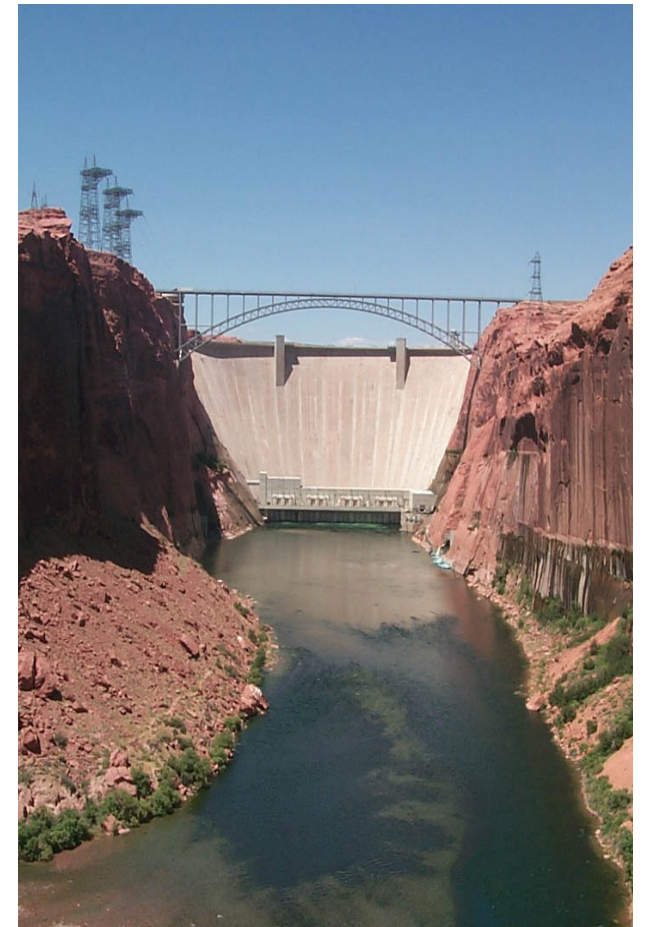
Roads



Cities



Infrastructure



InVEST Outputs

Supply → Service

Ecological functions
Ecosystem elements

Supply
+
Location and activity of
beneficiaries



InVEST Outputs

Supply \longrightarrow Service \dashrightarrow Value

Ecological functions
Ecosystem elements

Supply
+
Location and activity of
beneficiaries

Service
+
Social preference

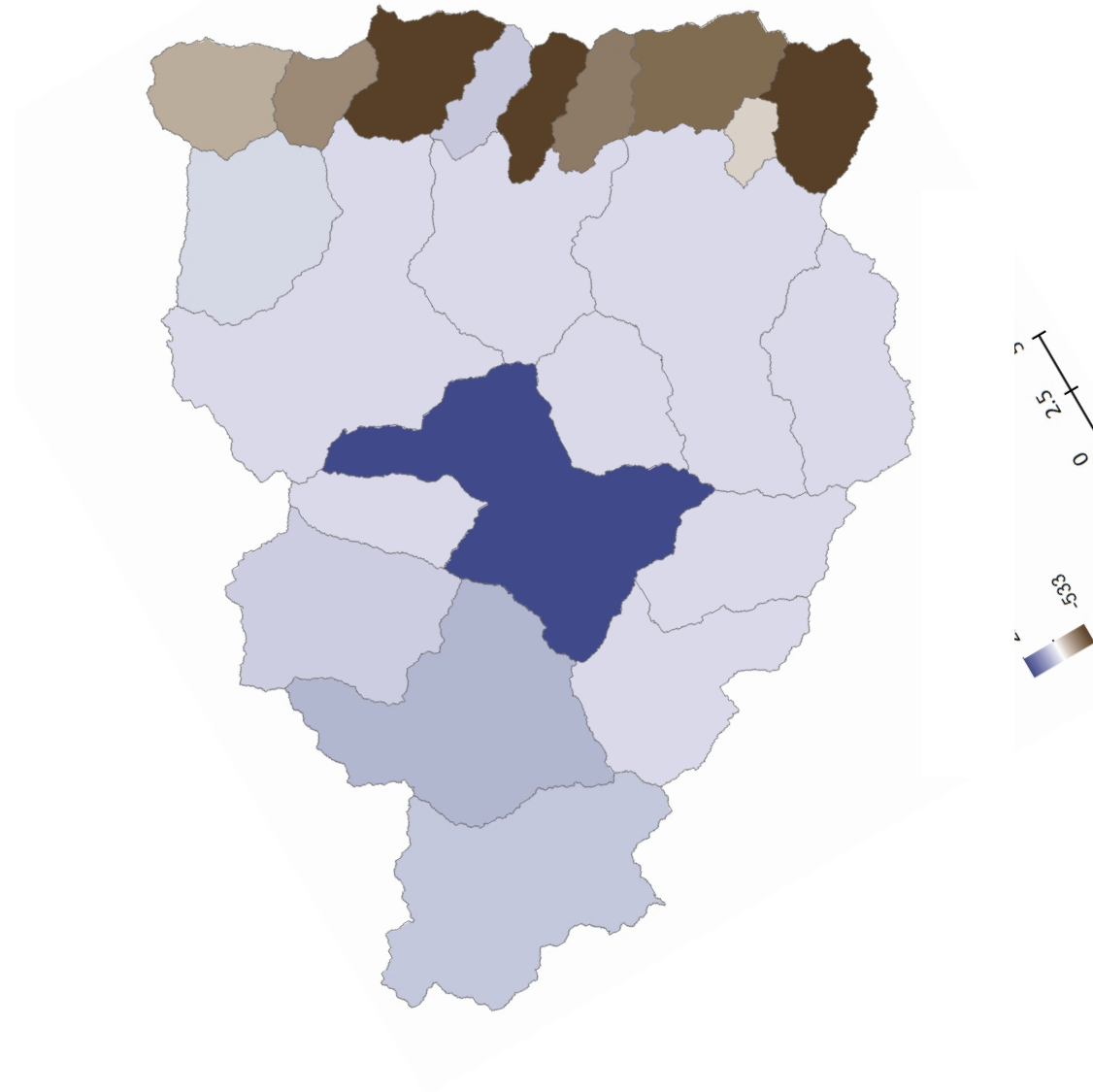
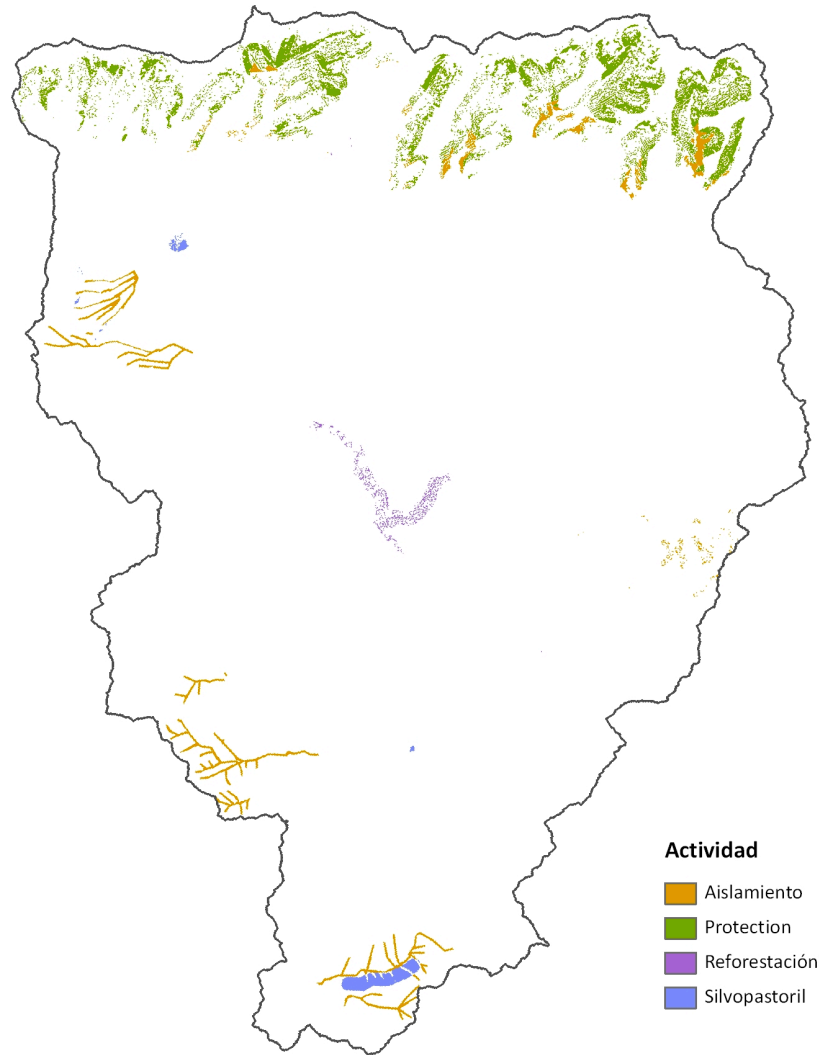


Economic Valuation Methods

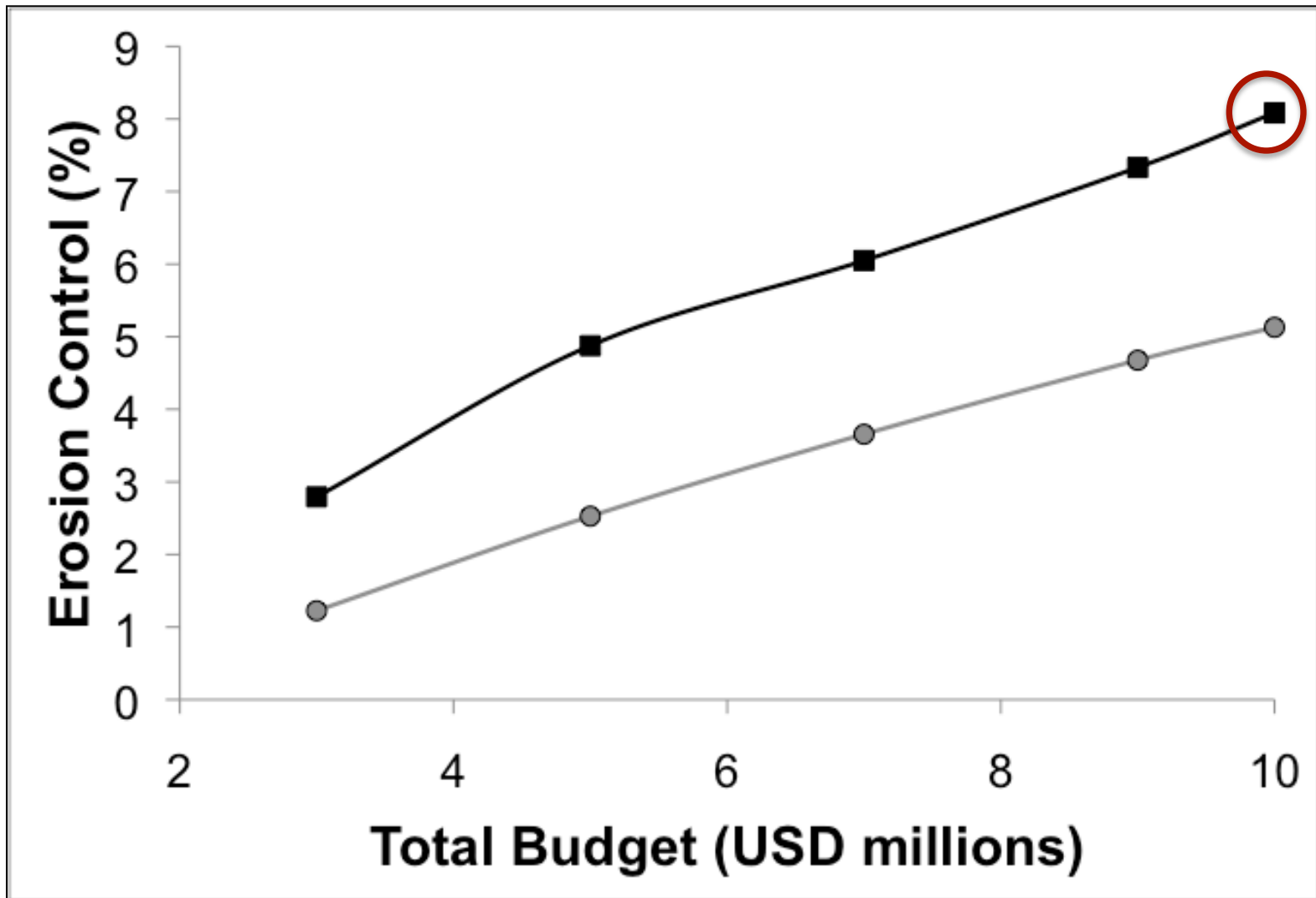
- Market valuation
 - Hydropower
- Avoided damage costs
 - Water purification
 - Flood mitigation
 - Avoided reservoir sedimentation
- Production Economics
 - Water for irrigation



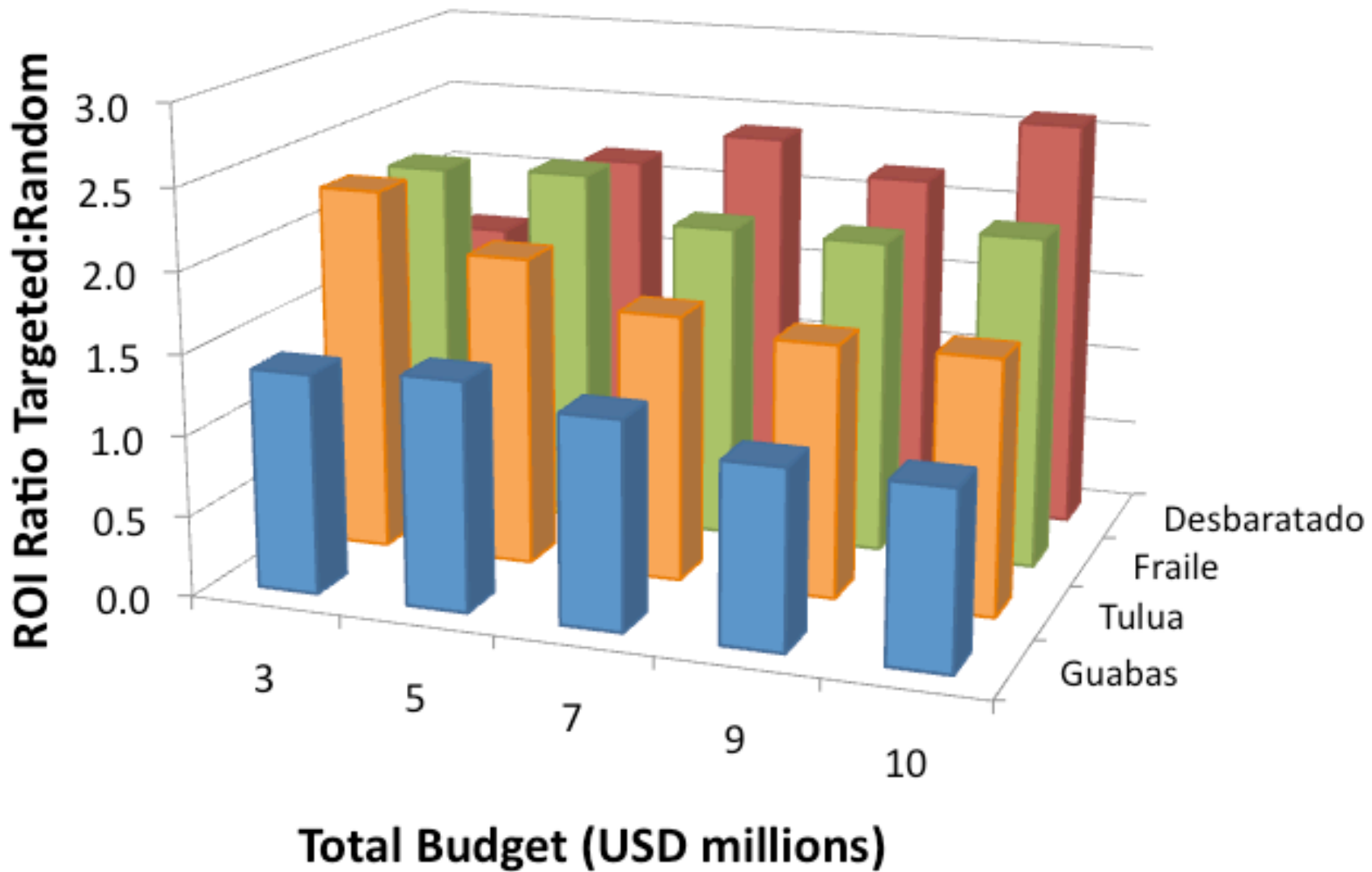
Models for Estimating Project Returns



Erosion Control Returns in Tuluva Watershed



Targeting Investments Gives Better ROI



Discussion on Estimating Project Returns

Breakout groups

1. How much certainty do different audiences need in estimated returns? (Heather)

2. What are the options for estimating social and economic returns? What new methods or tools are most promising for further development? (Supin and Alejandro C.)

3. Which approaches are best under what conditions? Are additional tools or methods needed? (Silvia)

