Groundwater & Ecosystem Services

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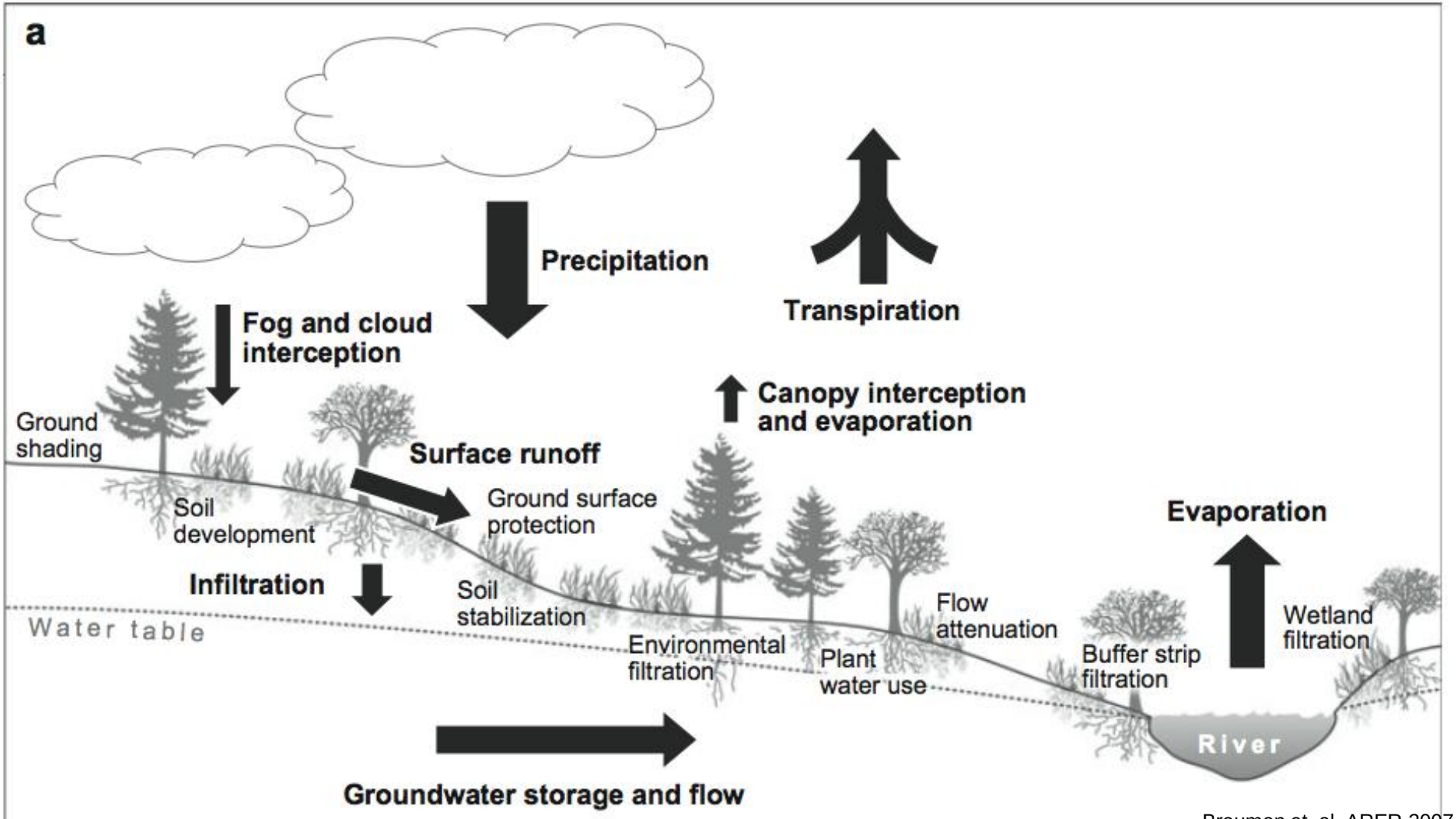
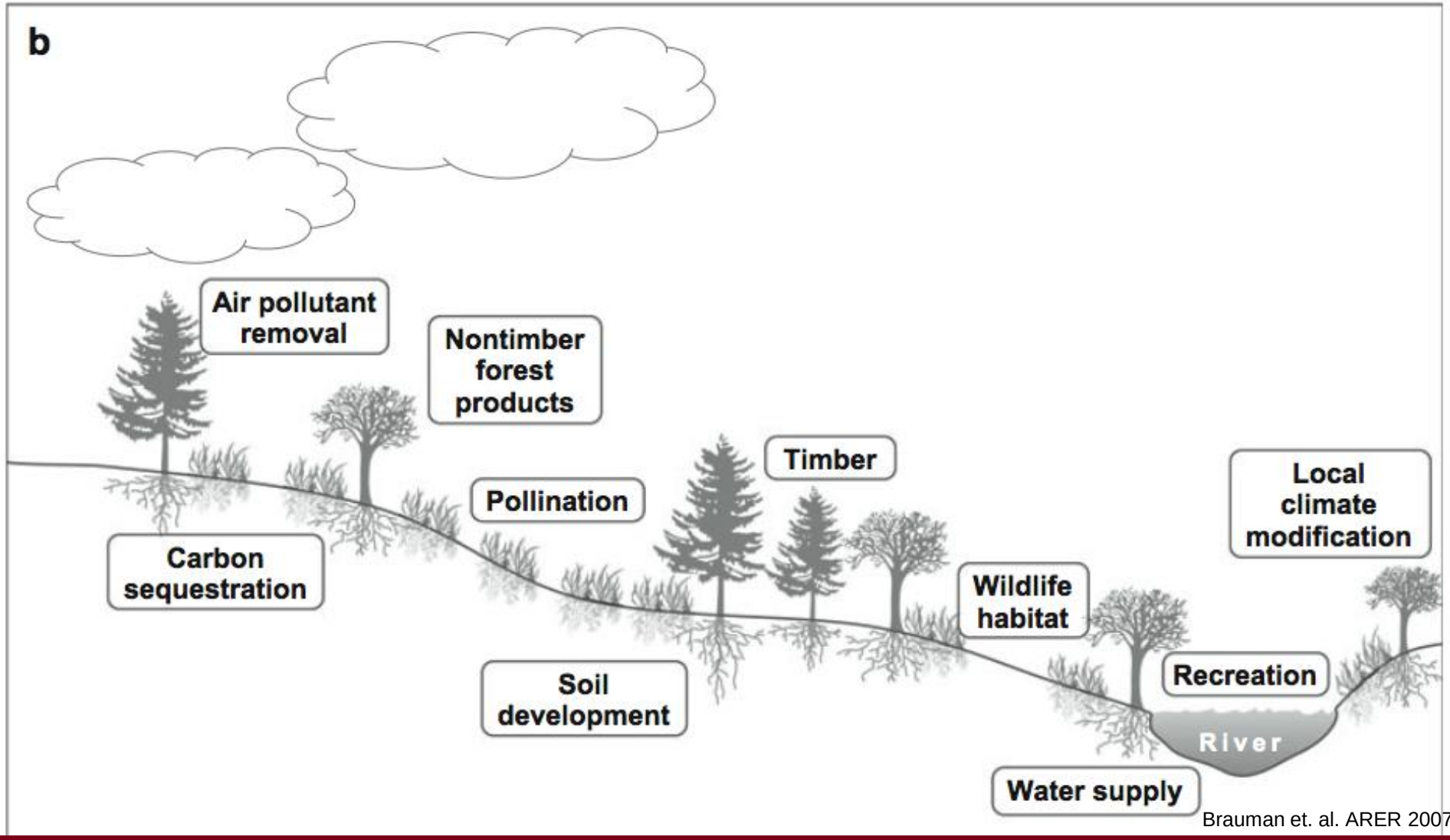
Driven to Discover℠

Ecohydrologic Processes



Brauman et. al. ARER 2007

Desired Outcomes = Watershed Ecosystem Services

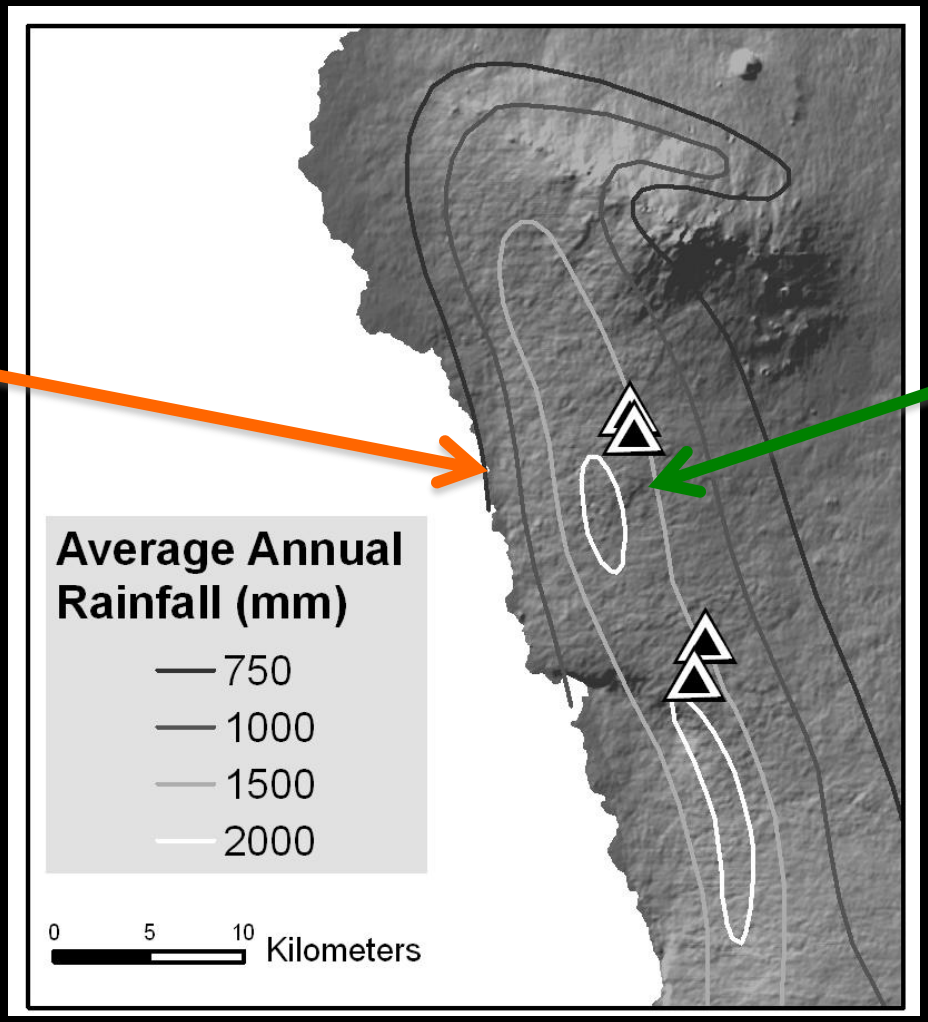


Brauman et. al. ARER 2007

Ecosystem Services in Hawai’i

Water Flow in Kona

Coast:
Water Use



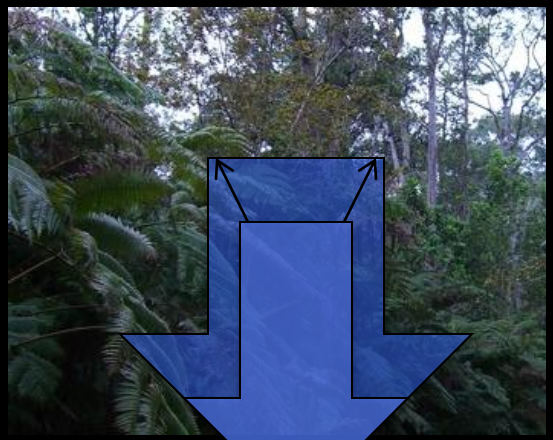
Upland:
Water Source

Plausible Land Use Transitions

Pasture to Timber

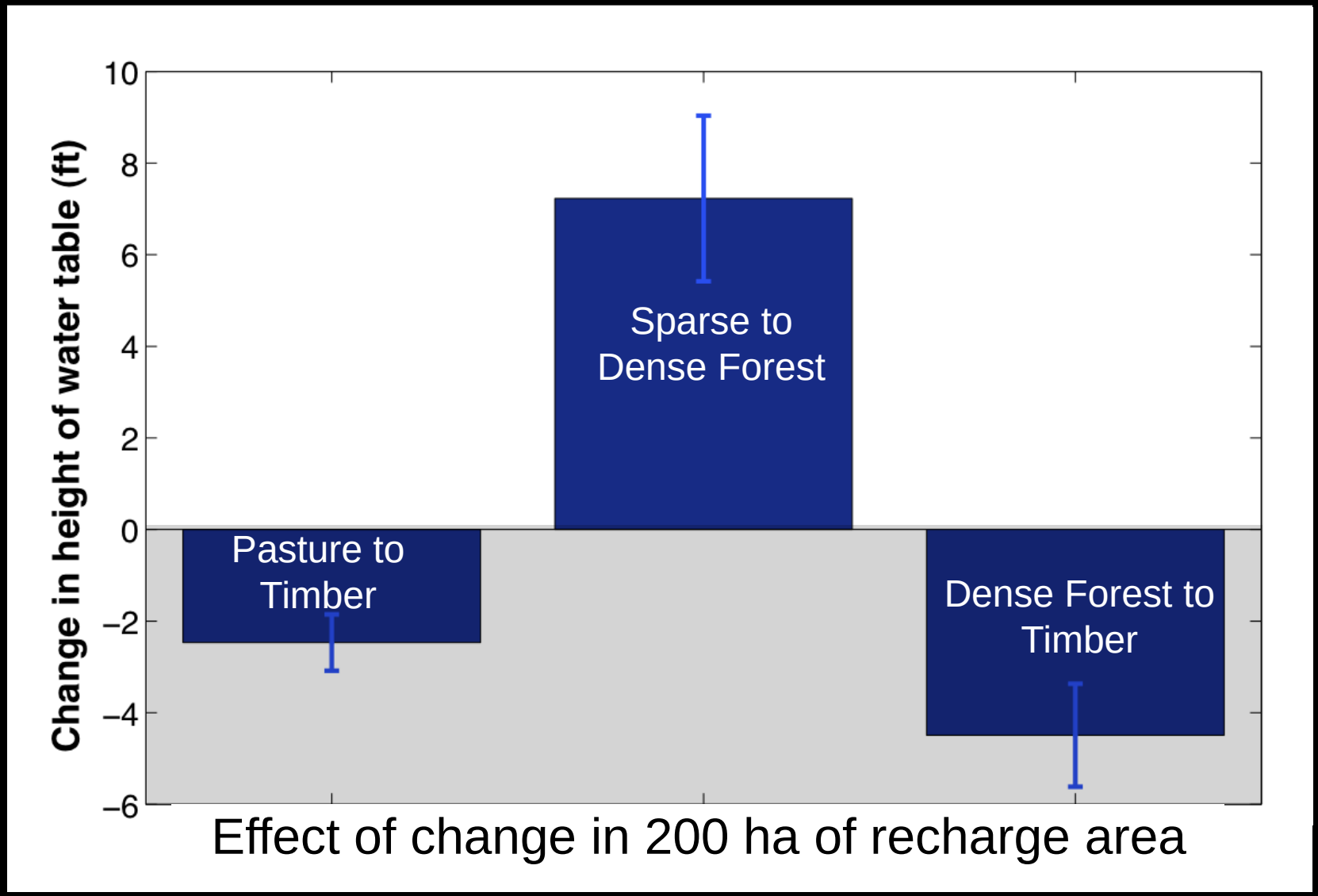
Sparse to Dense Forest

Dense Forest to Timber



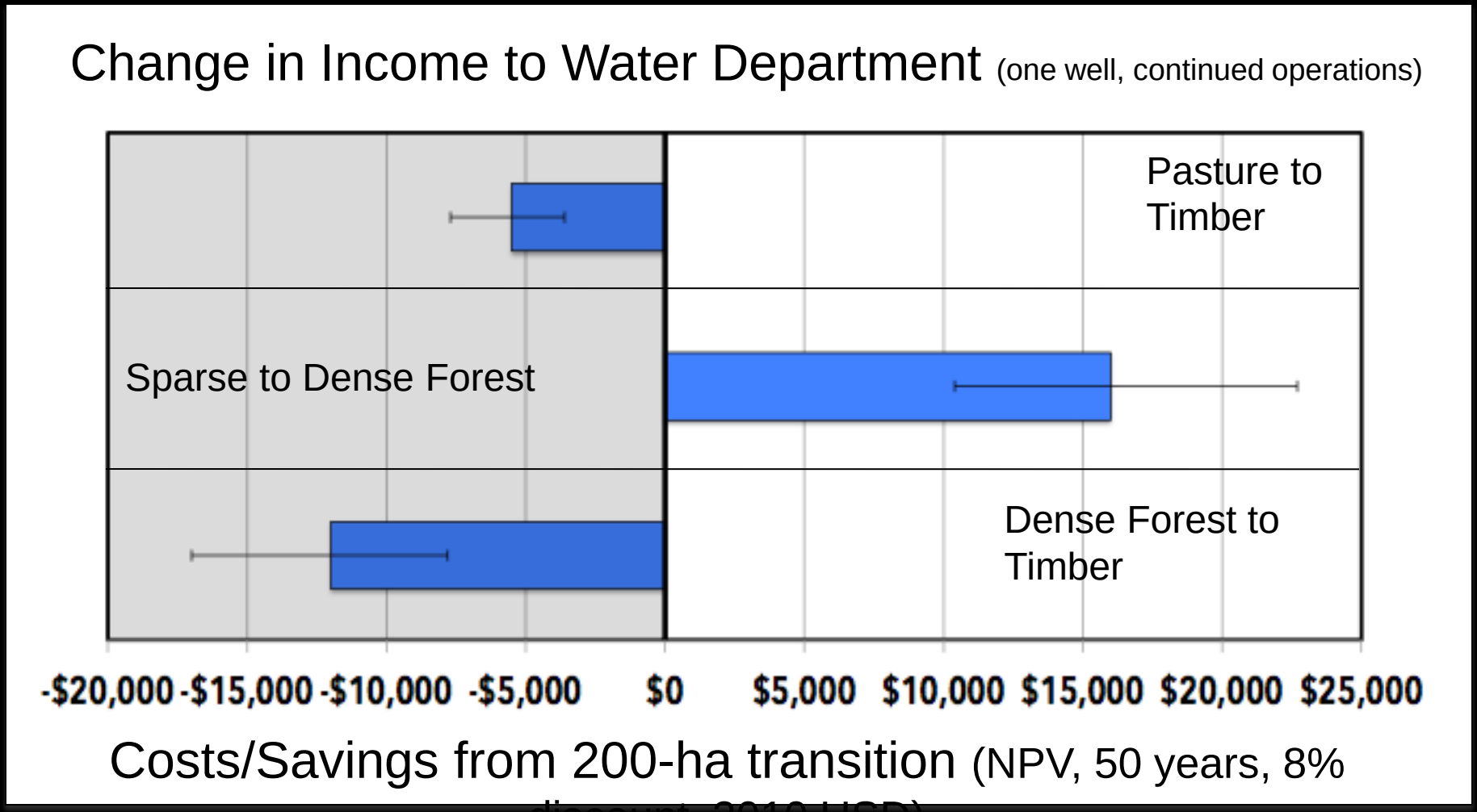
Brauman et al. (2010) Ag Forest Met
Brauman et al. (2011) Ecohydrology

Land Use Change Affects Aquifer Height



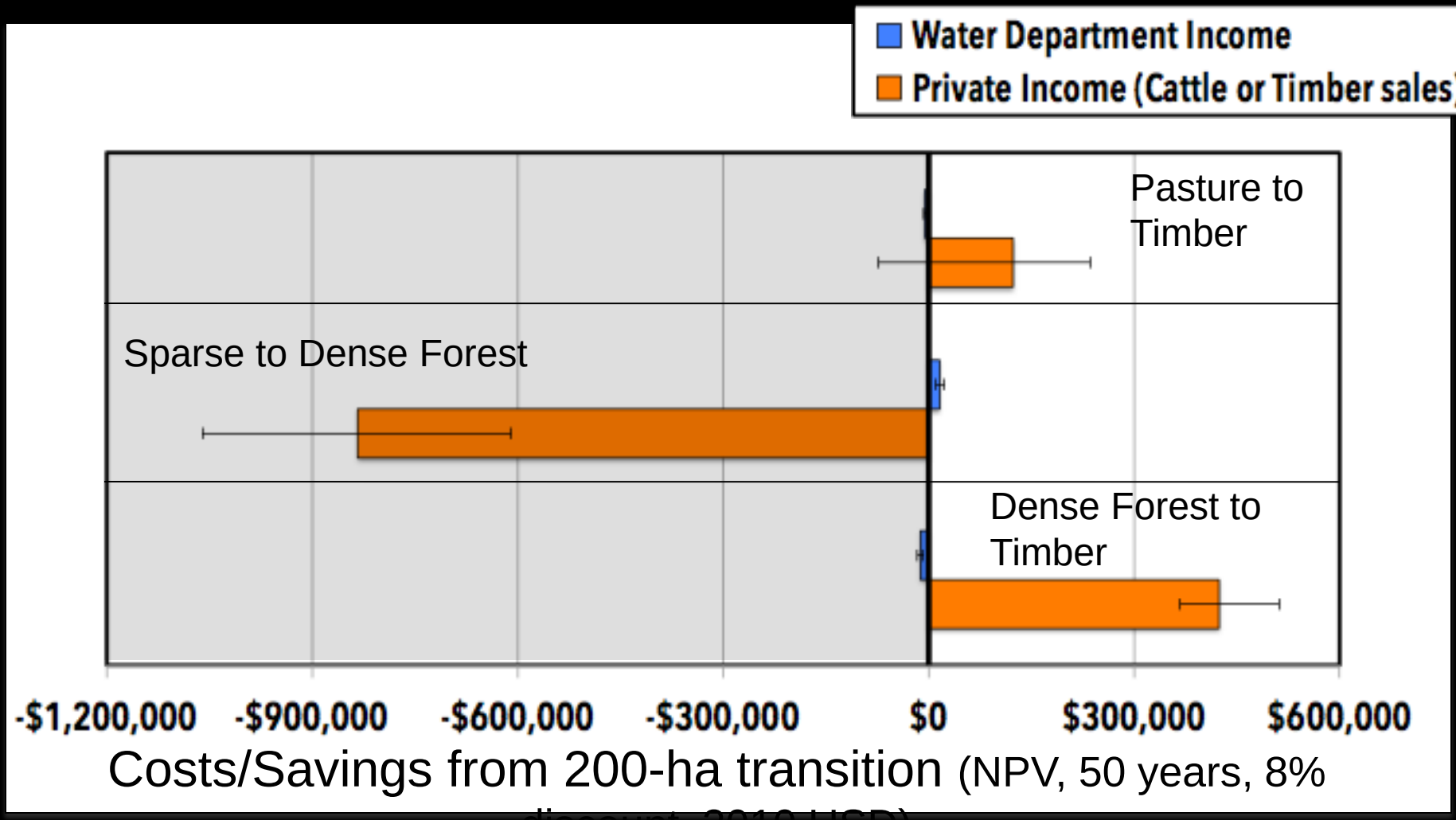
Brauman et al. (2011) Ecohydrology

Δ Aquifer Height = Δ Pumping Cost



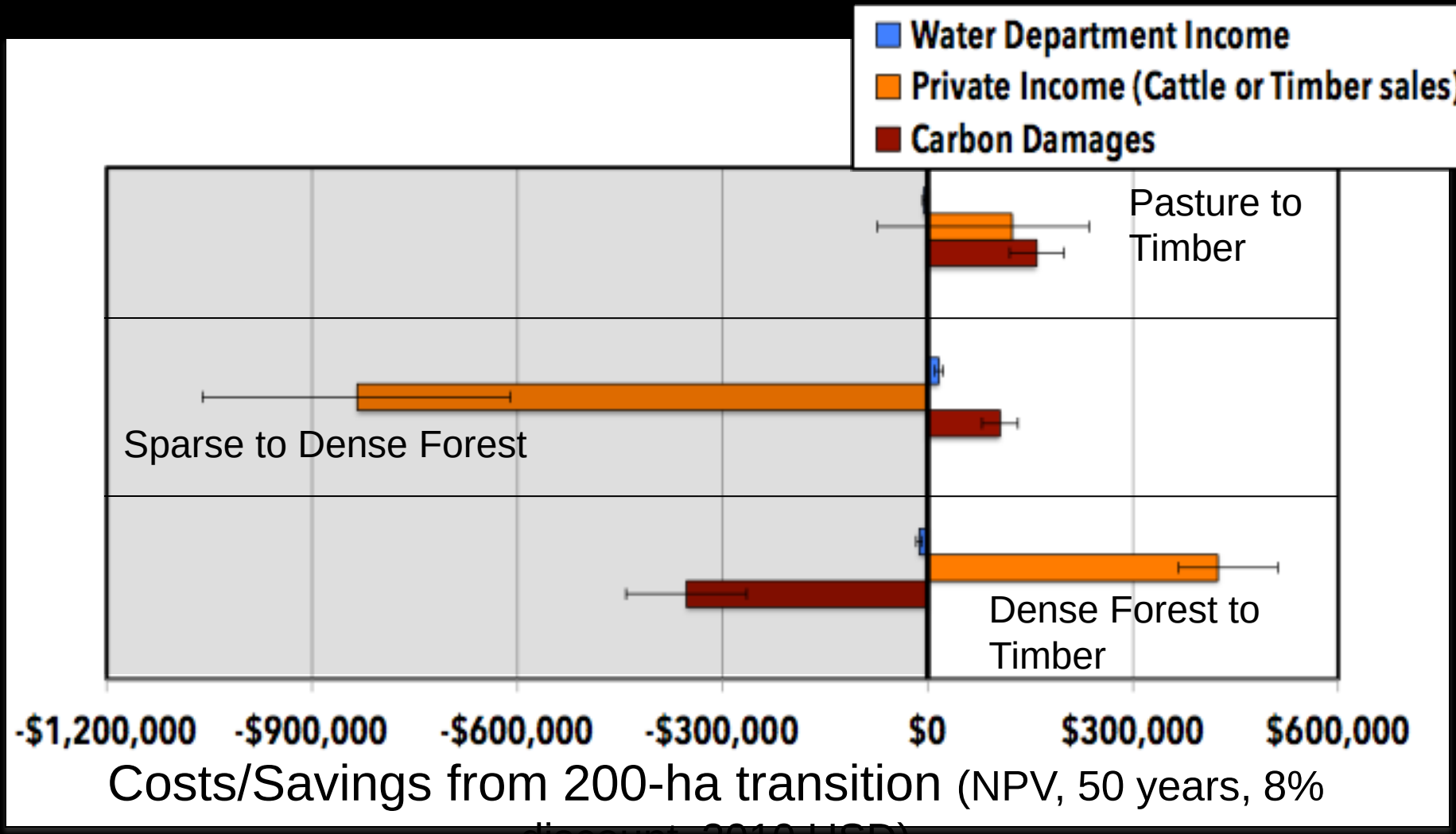
Brauman et al. (*in revision*)

Private Costs/Benefits > Impact to Water

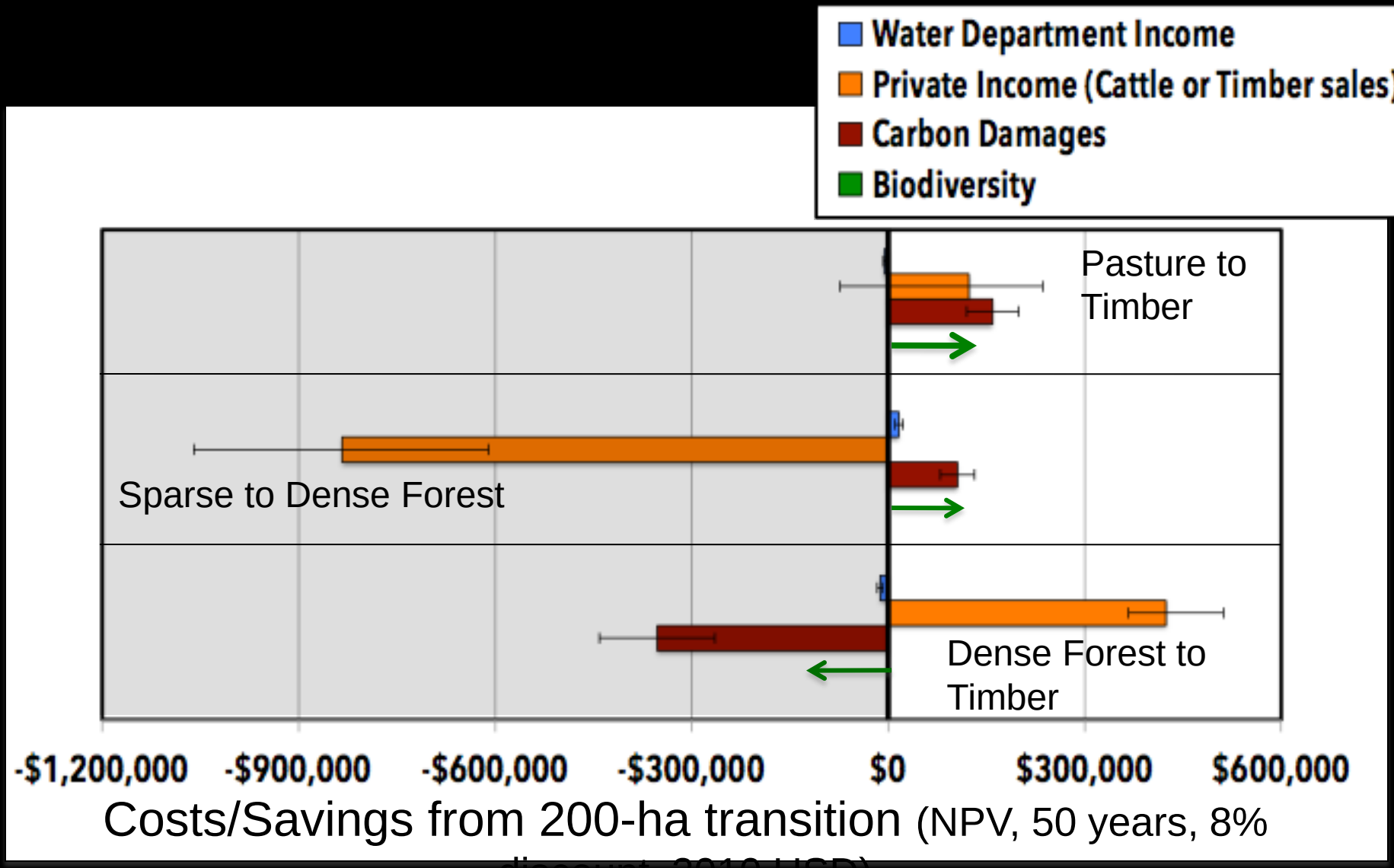


Brauman et al. (*in revision*)

Many Services are Affected



Brauman et al. (*in revision*)



Costs/Savings from 200-ha transition (NPV, 50 years, 8% discount, 2010 USD)

Brauman et al. (*in revision*)

Framework for evaluating multi-dimensional water resource tradeoffs

- ecosystem services define question
- change ~ explicit baselines
- connect biophysical to value-able service