



# U.S. AND AUSTRALIAN ENVIRONMENTAL CONSERVATION PROGRAMS: CONTRASTS IN HISTORY, PROPENSITY TO CONSERVE AND FOCUS

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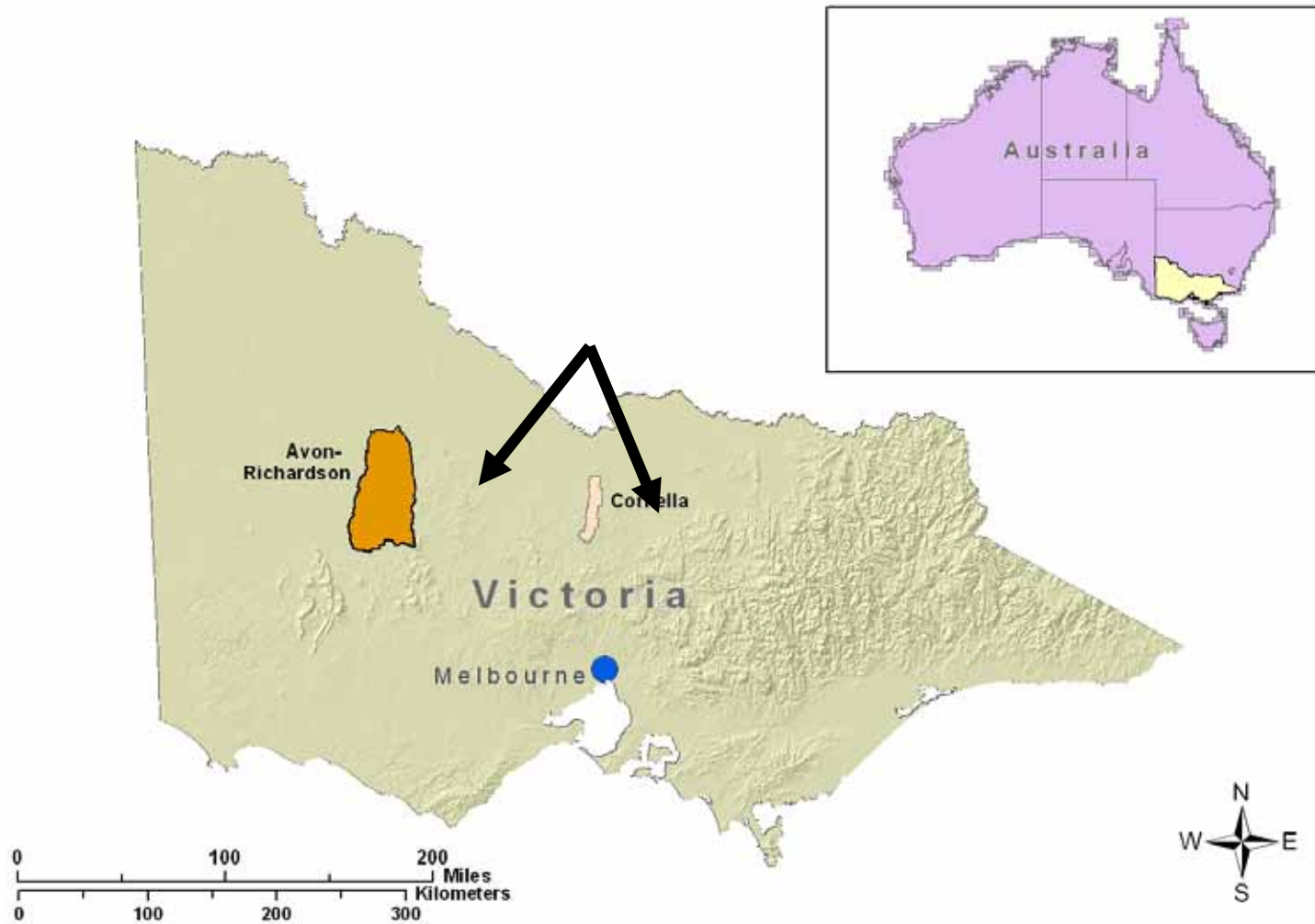
# CONTRASTS IN PROGRAM ENVIRONMENTS

- ◆ U.S.; More Bound by Equity Concerns
- ◆ Australia; Not Bound – Environmental Impact Based

# THE AUSTRALIAN ECO TENDER

- ◆ Based on Successive Pilot Projects
- ◆ Experimental Economics Foundation
- ◆ Robust Database

# EcoTender Catchment Locations



# Market Based Instruments: Auctions

- ◆ Can implement MBIs if:
  - Define property rights (contracts)
    - Use – rights and obligations\*
    - Transferability
  - Reveal asymmetric information (new mechanisms)
    - Auction – farmers costs
  - Reveal missing/unknown information
    - Systems to support the application of new mechanisms
    - Replicable measures of environmental outcome/s

# Auctions & Ecological Goods and Services (EGS)

- ◆ *BushTender (Stoneham et al 2003)*
  - single dimension (terrestrial biodiversity) auction created the supply side of the market
  - demonstrated the capacity for cost savings
- ◆ Growing recognition there are linkages between environmental outcomes
  - joint production
  - Avoidance of undesirable outcomes (revegetation & water harvesting)

# EcoTender

- ◆ Auction for multiple ecological goods and services
  - aquatic function, Terrestrial biodiversity, saline land, carbon
- ◆ Exploit joint production of environmental goods - reduce costs
- ◆ Reduce transaction costs - farmer interface, EGS estimation
- ◆ Reveal unknown information
  - Develop and apply an approach to estimating environmental outcomes as a result of landuse change
  - *Non-Point environmental production function*

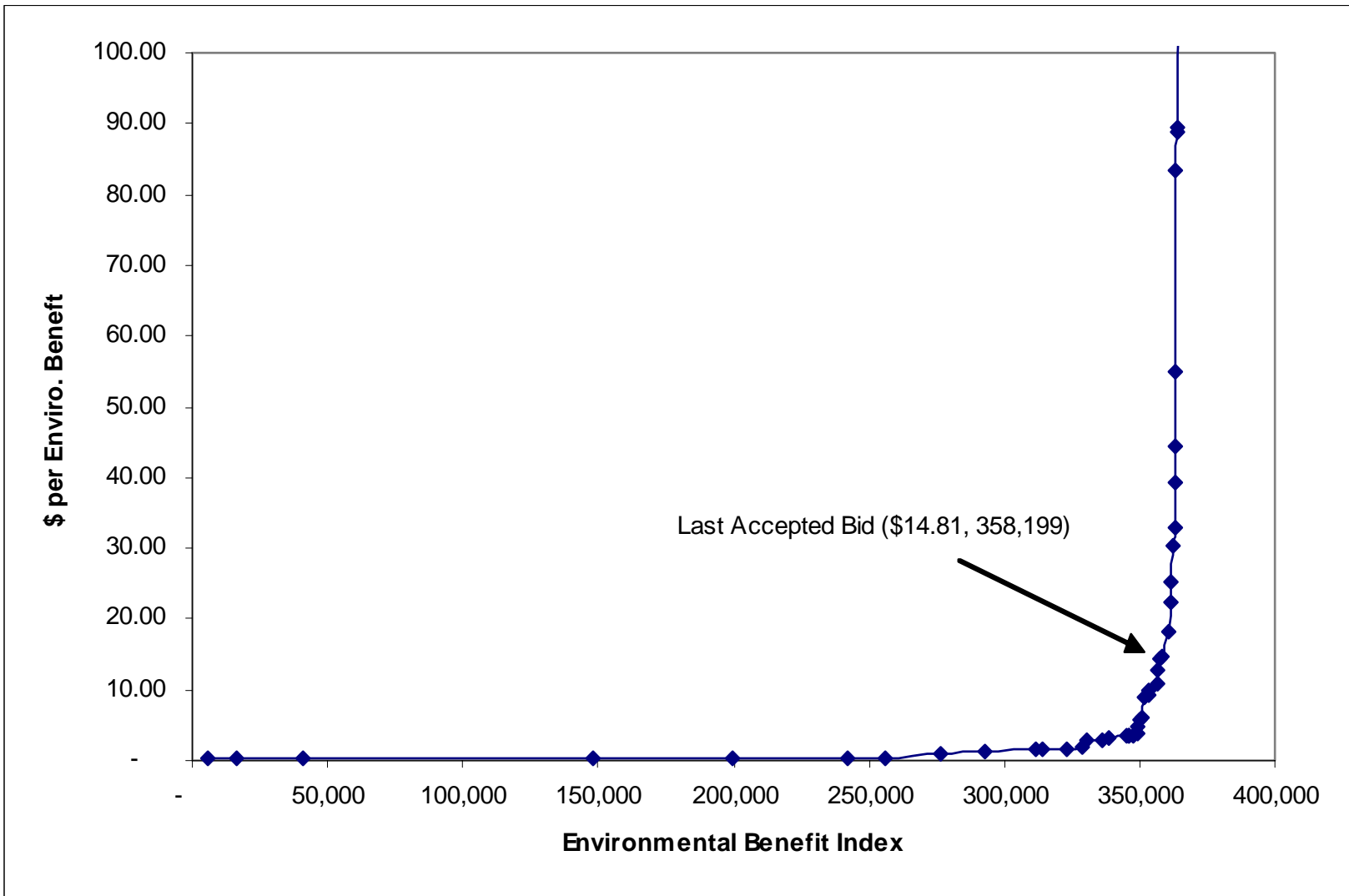
# Catchment Modelling Framework

- ◆ Spatially explicit farming system models connected to a fully distributed 3D groundwater model
  - operates @ 50\*50 metre resolution
  - Catchment areas 371,000 ha & 47,000 ha
- ◆ Explicit relationships between landuse (cropping, grazing, forestry, other) and the environment
  - explicit representation of plant, land and water processes
  - links site with offsite impacts (farm to catchment)
  - site and spatially accessible data for interrogation
- ◆ Eco-System algorithms
  - landscape context (current)
  - spatial preference (future)

# EcoTender EGS Metrics

<b>EGS Attribute</b>	<b>Change in function</b>	<b>Desirable change</b>
Terrestrial biodiversity	$\Delta$ habitat score (habitat maintained or improved / ha)	increase
Aquatic function	$\Delta$ water "quality" (in tonnes of soil / ha arriving at stream) $\Delta$ water quantity (in mm of water / ha arriving at stream)	decrease
Saline land	$\Delta$ saline land (in ha with groundwater < 2m)	decrease
Carbon sequestration	$\Delta$ carbon seq. (in tonnes / ha)	increase

# EcoTender – Supply Curve



# Observations

- ◆ Low cost approach to estimating EGS
  - environmental outcomes can be assessed in the field
- ◆ Joint production
  - 73% of sites generate 2 or more environmental outcomes
- ◆ Cost effective
  - Recognises the heterogenous character of farmers (cost, spatial)
- ◆ Site based metrics for investment
  - recharge for saline land (27%)
- ◆ *The catchment modelling framework provides government with a replicable transparent evidence-based approach to the procurement of environment outcomes.*

# U.S. HISTORY OF EQUITY BASED PROGRAMS

- ◆ 1930s                      Equity Concern
- ◆ 1985-2002              Move Towards Impact Based
- ◆ 2002 on                    More Concern with Equity

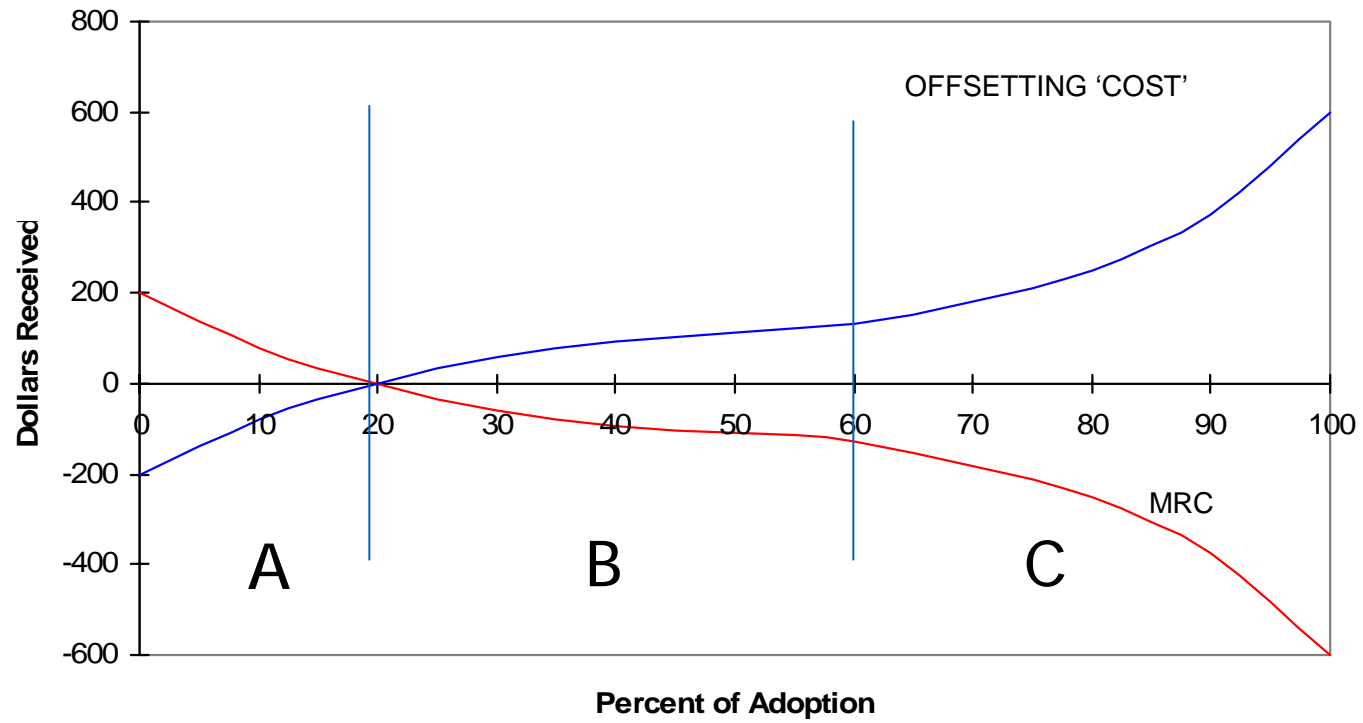
# CREP Type Programs

- ◆ Ultimately Driven by Farmer Calculus of Farm Direct Benefits and Costs in a Known Payment Environment

# WHAT BASIS FOR ALLOCATING CONSERVATION RESOURCES?

- ◆ A Basic Level of Stewardship
- ◆ Highly Differentiated Payments

**Figure 2**  
**Perceived Marginal Return to Conservation**



# MAKING A DIFFERENTIATED “ECO TENDER” BID SYSTEM WORK

- ◆ History and Culture
- ◆ Dense Information
- ◆ Planning, Pilot, Post Mortem