Nicholas Institute for Environmental Policy Solutions
Duke University

Coastal Blue Carbon – Economics and Policy

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Based on work by
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The Blue Carbon Story

- Coastal ecosystems have value
  - "blue carbon"
  - ecosystem services
- Conversion due to economic pressures (aquaculture, agriculture, development,…)
- Climate Policy: New incentives to protect?
  - Payments for reducing conversion and restoration
  - Similar to forests (REDD+)
  - Could be through carbon market or intergovernmental transfers

What May Be Eligible for Crediting?

Potential Credit Source	Time Period	Ecosystems
Avoided Loss of Sequestration Flux	Perpetuity*	Seagrasses Tidal Salt Marshes Mangroves
Avoided Emissions from Soil Carbon	Several Years to Decades	Seagrasses Tidal Salt Marshes Mangroves
Avoided Emissions from Biomass (REDD)	Immediate	Mangroves

* Based on input from science team that blue carbon systems continue to sequester without saturation

NICHOLAS INSTITUTE REPORT

Green Payments for Blue Carbon
Economic Incentives for Protecting Threatened Coastal Habitats

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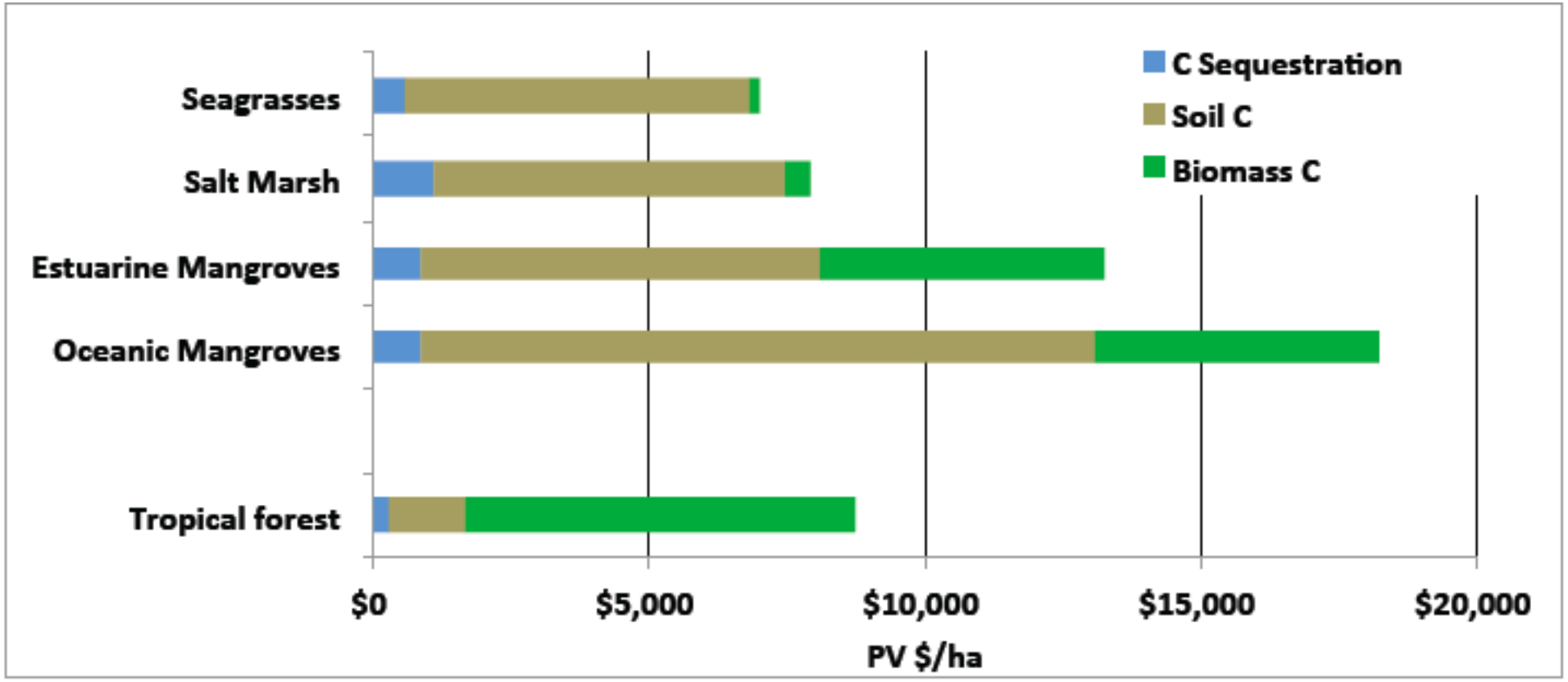
Biophysical/Economic Context

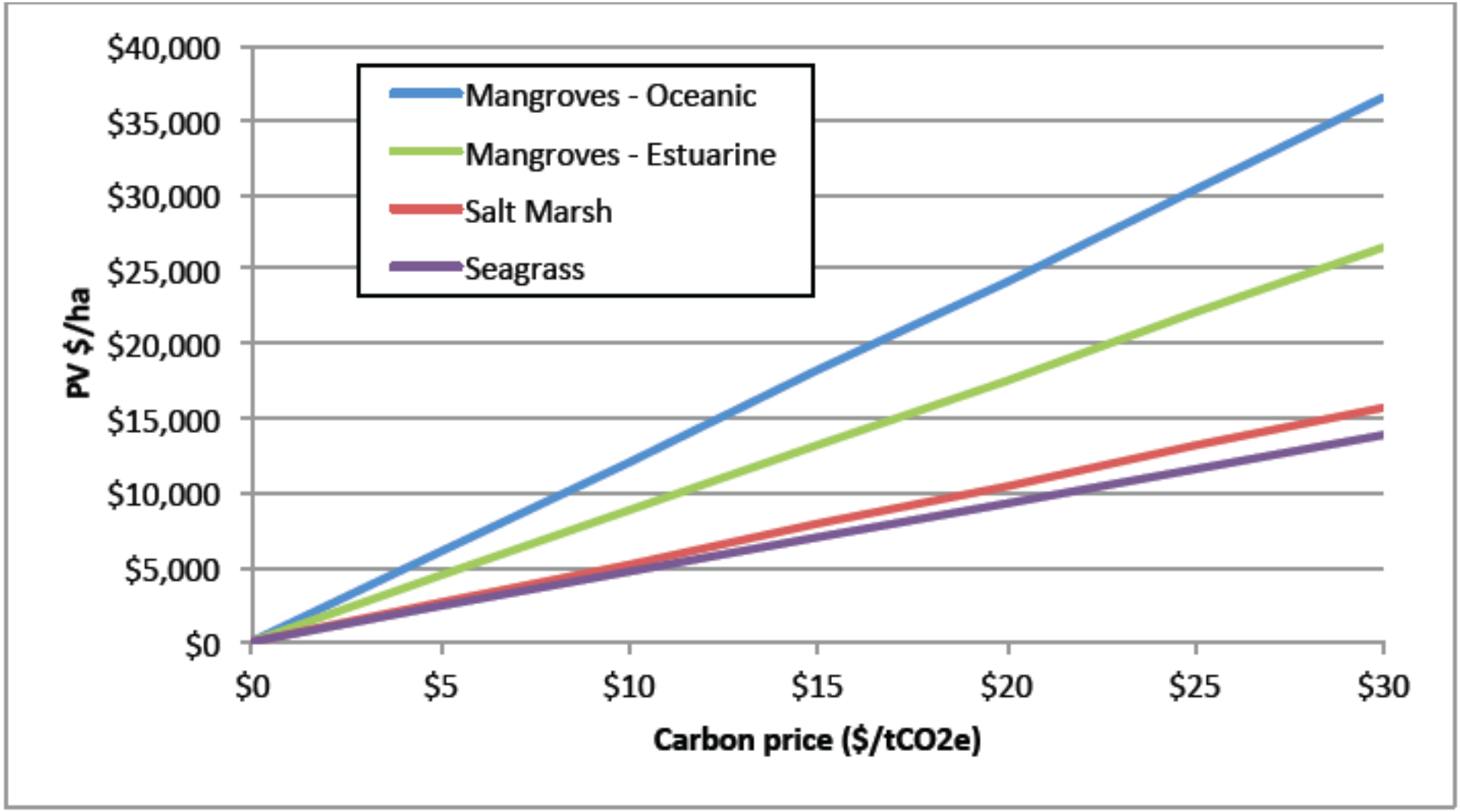
- Estimated annual blue carbon losses (all 3 systems) ~ 300-900 MM tons CO2e/yr
  - Roughly = industrial emissions from Poland-Germany
  - ~ 10% of emissions from tropical forest loss
  - Per ha loss ~ 2-3 times as tropical forest
- “Social cost” of blue carbon losses at $5-35 billion/year
- No current economic incentive to stop loss

Potential Carbon-Credit Revenues at $15/ton CO2e



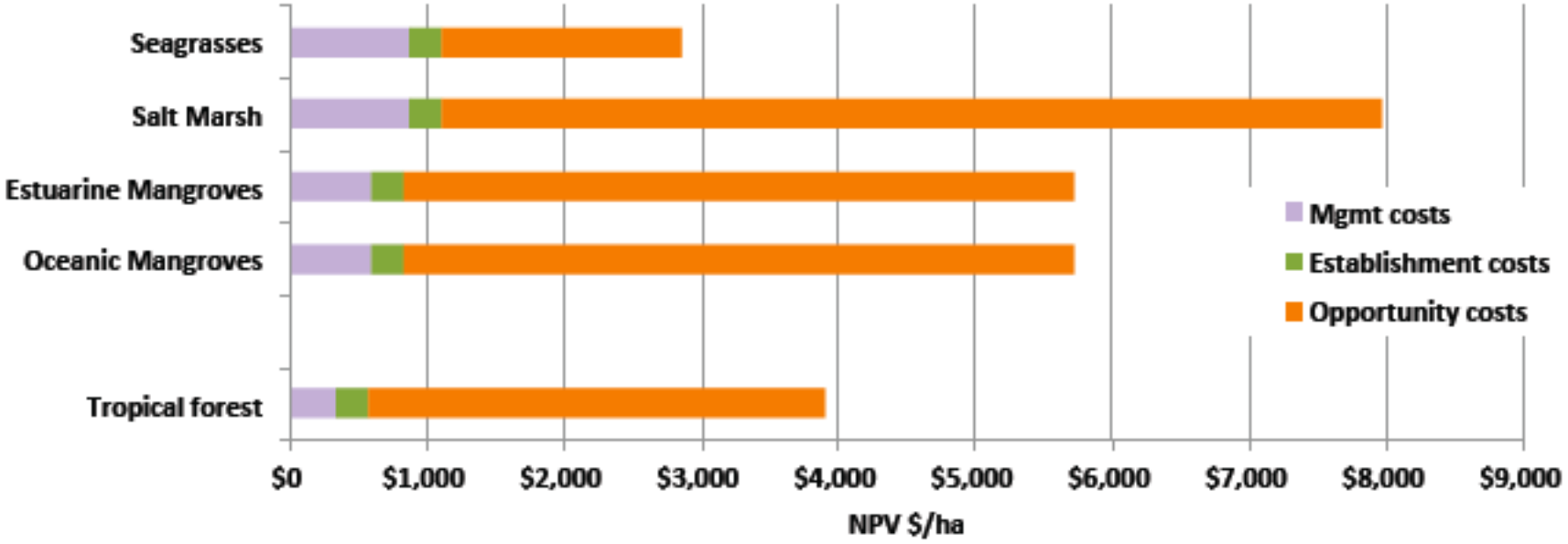
Source: Authors:

Gross Financial Returns

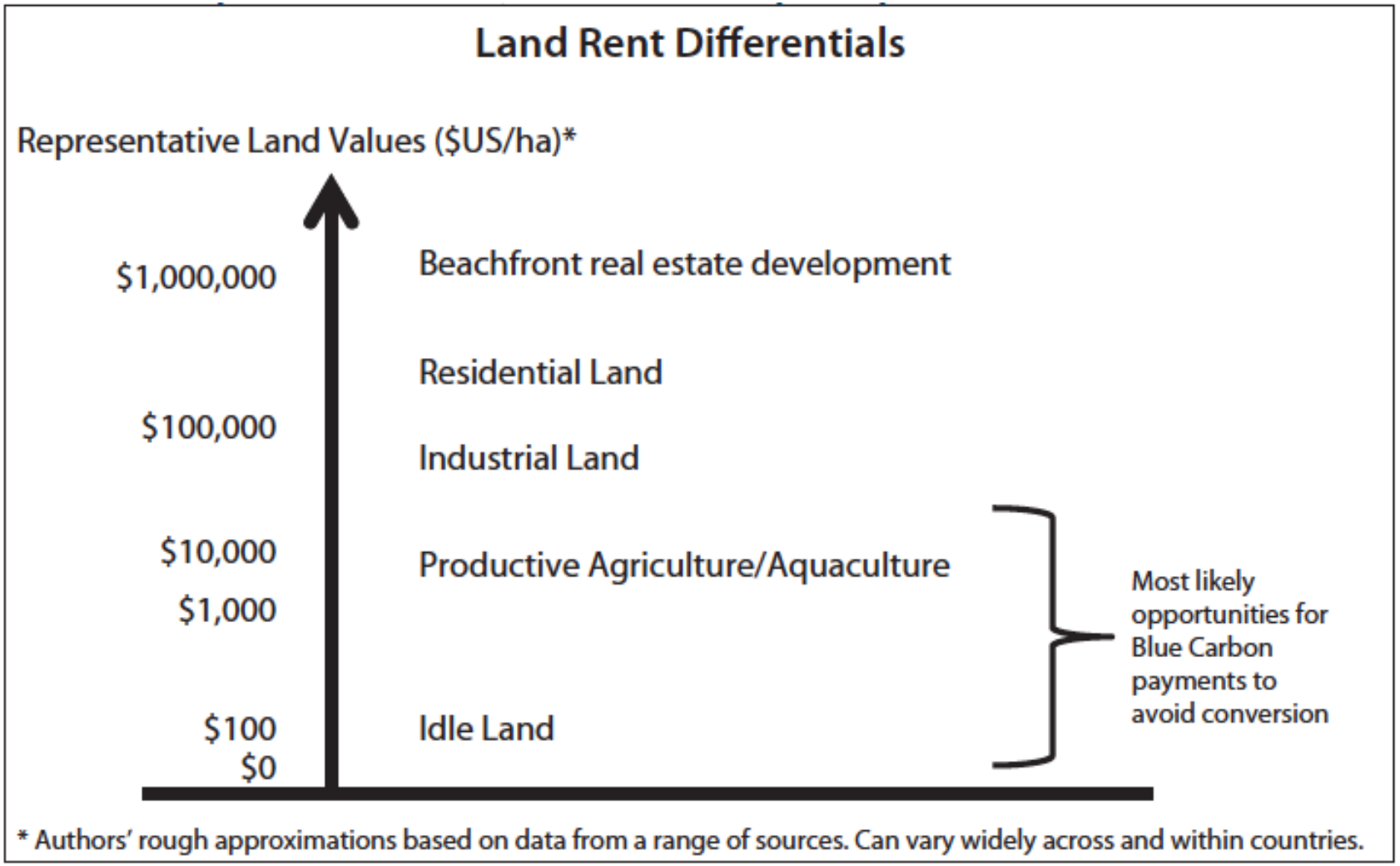


Source: Authors.

Cost of Protection

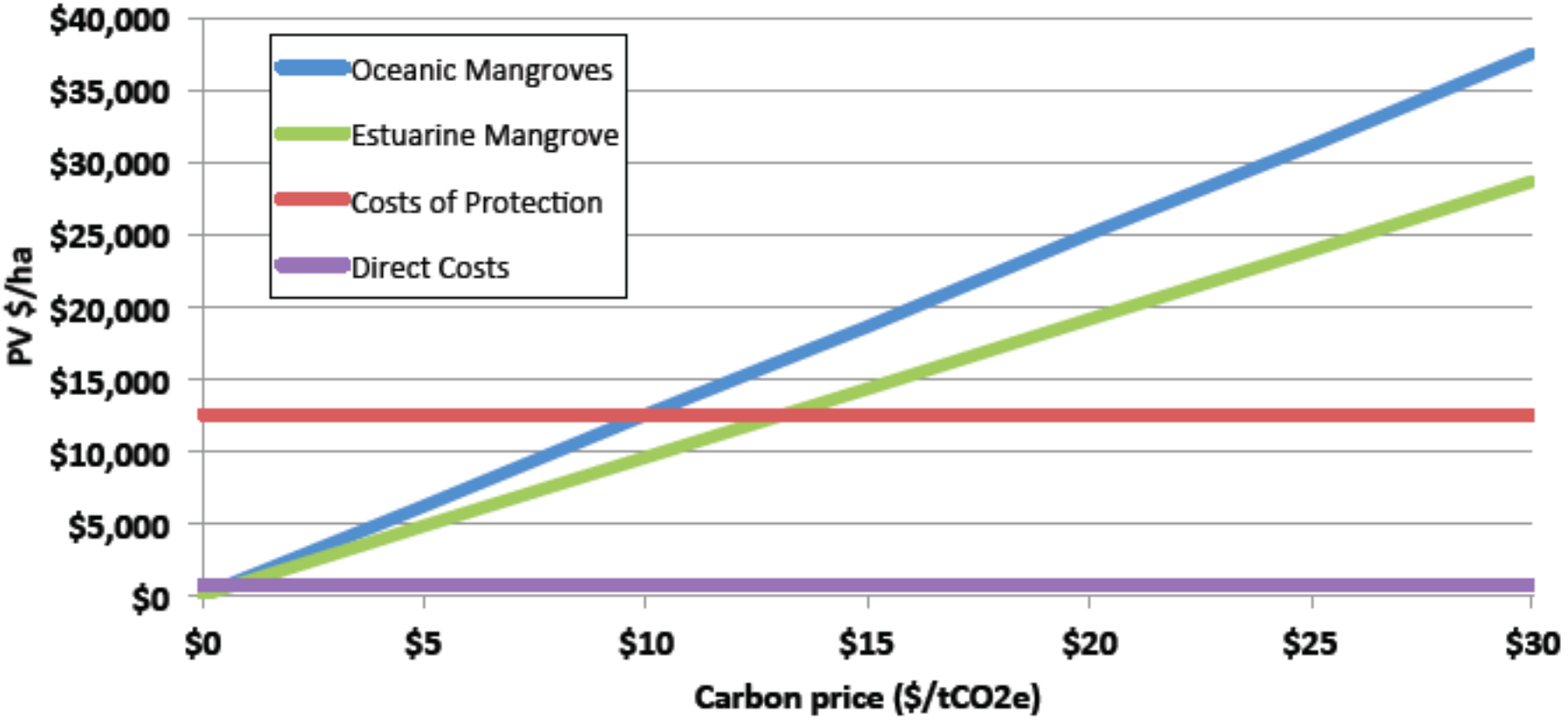


Opportunity Cost



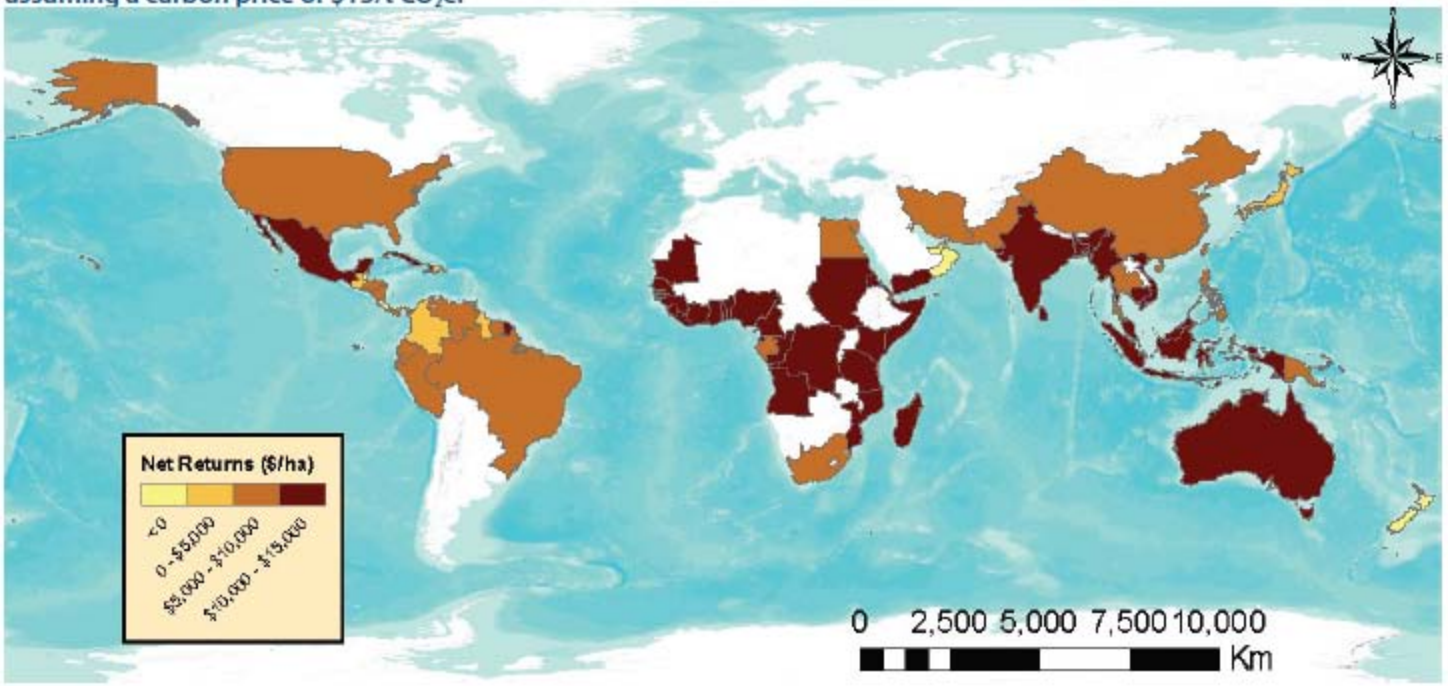
Source: Authors.

Net Benefits of Blue Carbon: mangroves



Comparative opportunities - Mangroves

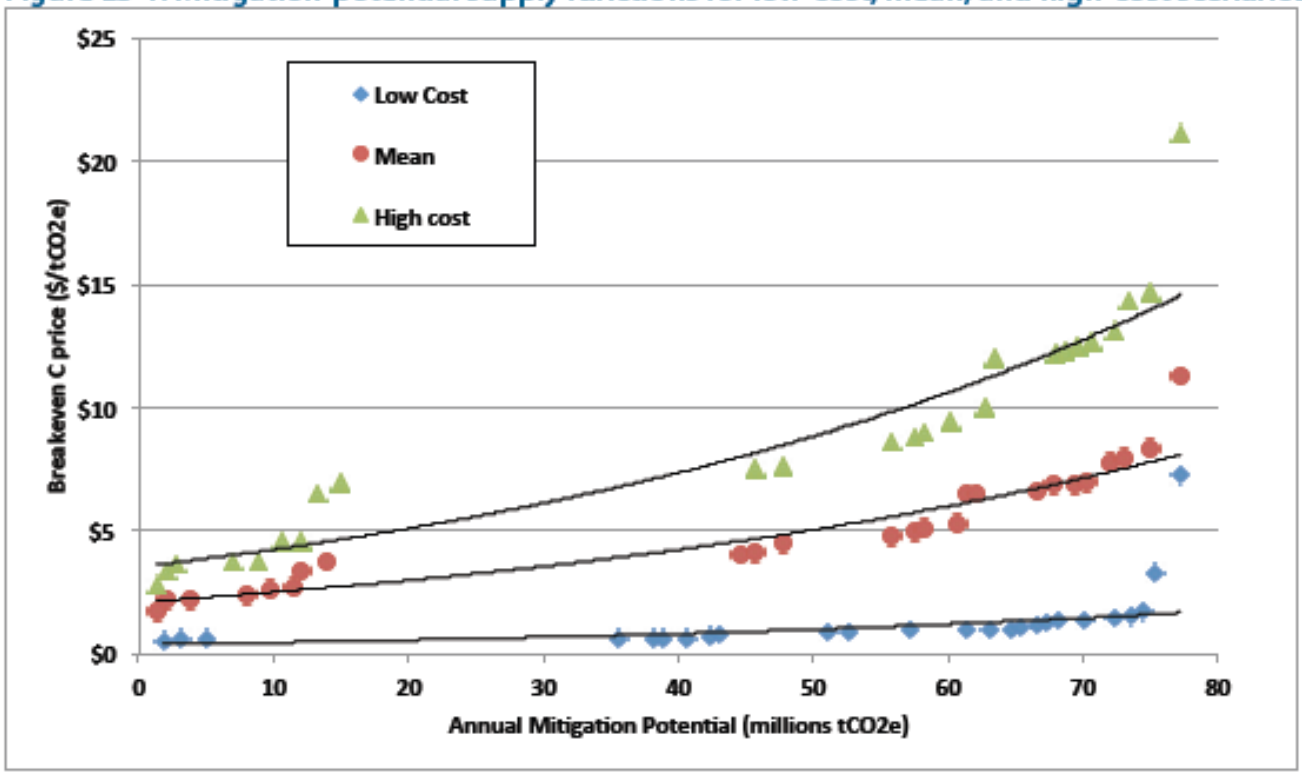
Figure 21. Net returns ($/ha) to mangrove avoided-conversion efforts per hectare for all mangrove countries of the world, assuming a carbon price of $15/t CO_2e.



Alaska highlighted only because in US

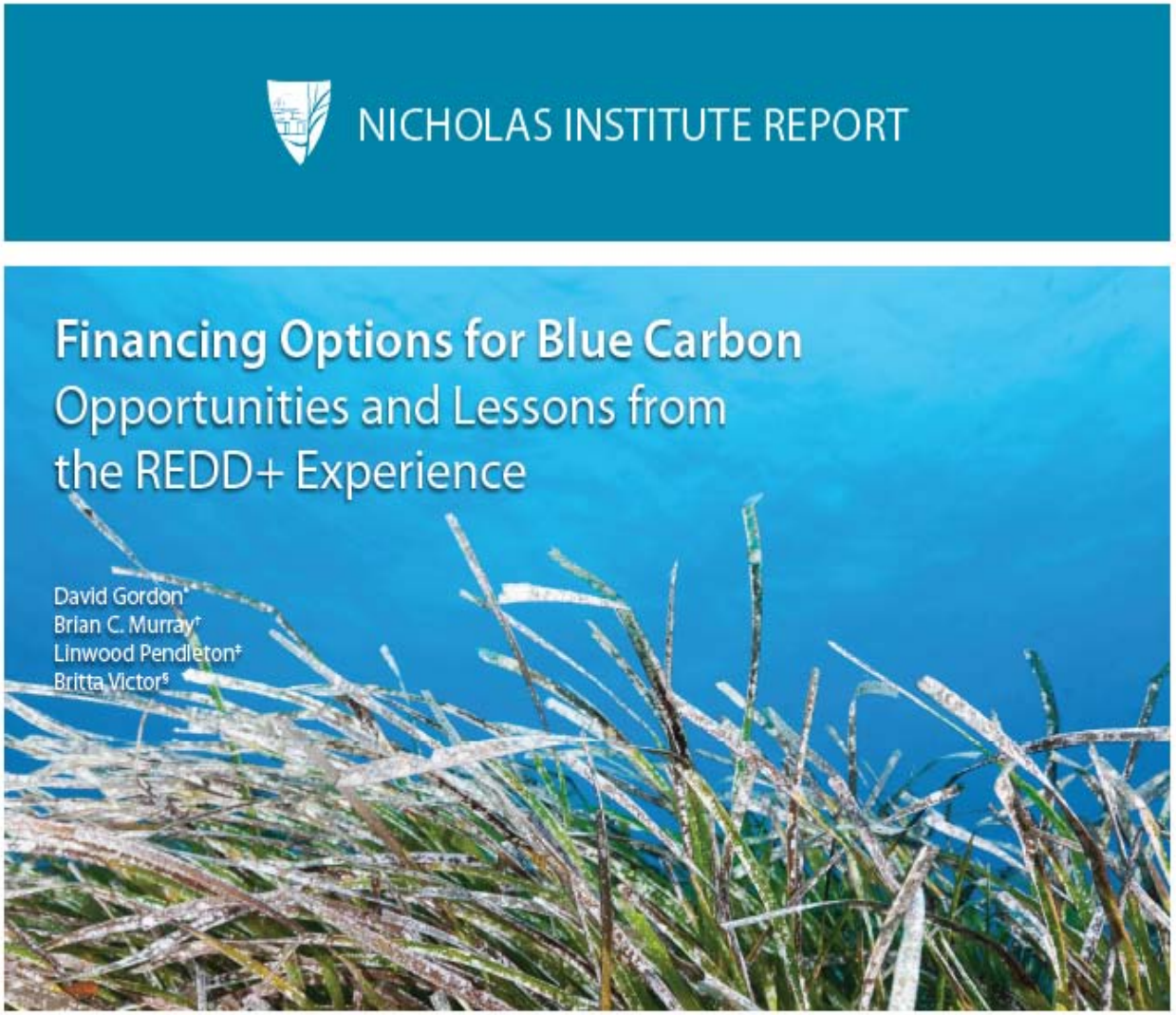
Global supply potential at different prices (mangroves)

Figure ES-1. Mitigation-potential supply functions for low-cost, mean, and high-cost scenarios.



Economics - Conclusions

1) Economic value of blue carbon > financial value
2) Payments of blue carbon ➔ conservation
    - in some cases, but not all
        shrimp farms – YES
        mega hotels – probably not
3) Polluters pay for habitat protection and restoration
4) Value of protection >> Value of restoration
4) Much heterogeneity within countries (case in point – Indonesia)
5) Policy challenges remain
    - protocols (how much, additionality, stacking)
    - tenure



Report published This week

(copies available)

Finance Phases

Planning and institutional capacity building

Activities funded in this category include preparation of readiness plans, stakeholder engagement, data collection, and implementation of new national policies. These activities span the entire first phase of funding as well as part of the second phase.

Pilots and projects

Funded activities include pilot demonstration projects and portfolio development. These activities demonstrate the feasibility of carbon emission reductions from protection and land management, and they build a suite of emissions reductions that can be transferred from developing countries to developed countries.

Verified emissions reductions

Funds in this category pay for performance-based actions—voluntary or compliance driven—to garner emissions reductions.

Take home messages - financing

- Current REDD+ funding presents opportunities and road blocks for blue carbon
- Future funding: Defining predictability
  - Incorporation of blue carbon in the REDD readiness process
  - Inclusion of blue carbon in future REDD+ agreements
    - Compliance/binding agreements
    - Voluntary market
  - Competitiveness of blue carbon sequestration with other land use mitigation activities