Blue Carbon Accounting Protocols

Igino Emmer PhD
Silvestrum

Seminar
Blue carbon – what scope for mitigation projects currently?
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Contents

- Methodology requirements under carbon standards

- GHG accounting of coastal wetlands restoration / conservation

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Wetlands GHG accounting under the UNFCCC and in voluntary markets

- UNFCCC
  - National inventories
  - Intended Nationally Determined Contributions (INDCs)
    - IPCC wetlands supplement
- Voluntary Markets
  - Principles taken from ISO 14064
  - Detailed requirements and guidance for project design and GHG accounting
  - Procedures for validation and verification
  - A registry and clearing house for ‘carbon credits’

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Verified Carbon Standard

- Afforestation, Reforestation, Revegetation (ARR)
- Agricultural Land Management (ALM)
- Improved Forest Management (IFM)
- Reduction Emissions from Deforestation and Degradation (REDD)
- Avoided Conversion of Grasslands and Shrublands (ACoGS)
- Wetlands Restoration and Conservation (WRC)

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Typical project activities

- Conservation of mangrove vegetation and soil: REDD + WRC
- Improved management of mangroves: IFM +WRC
- Restoring mangroves incl. hydrology and soil: ARR + WRC
- Restoration or conservation of natural vegetation of wetlands: ARR or ACOGS + WRC
- Restoration of sediment supply on tidal marshes: WRC

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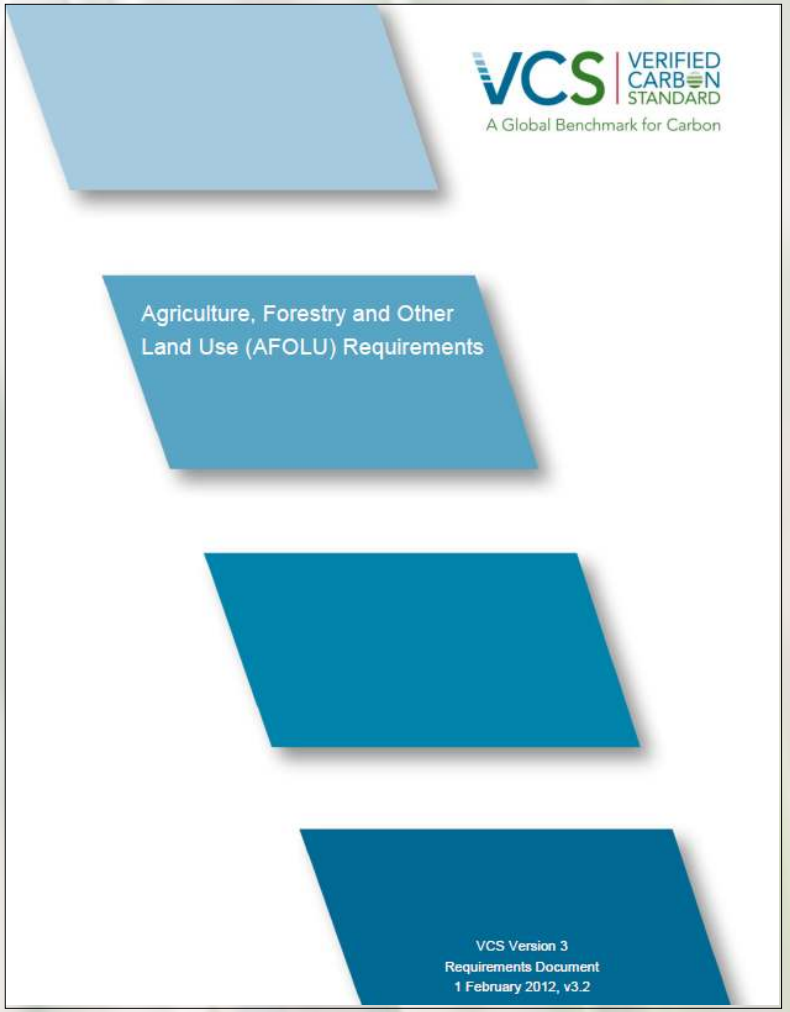
VCS AFOLU Requirements

- Project Requirements
- Methodology Requirements
- Validation Verification Requirements



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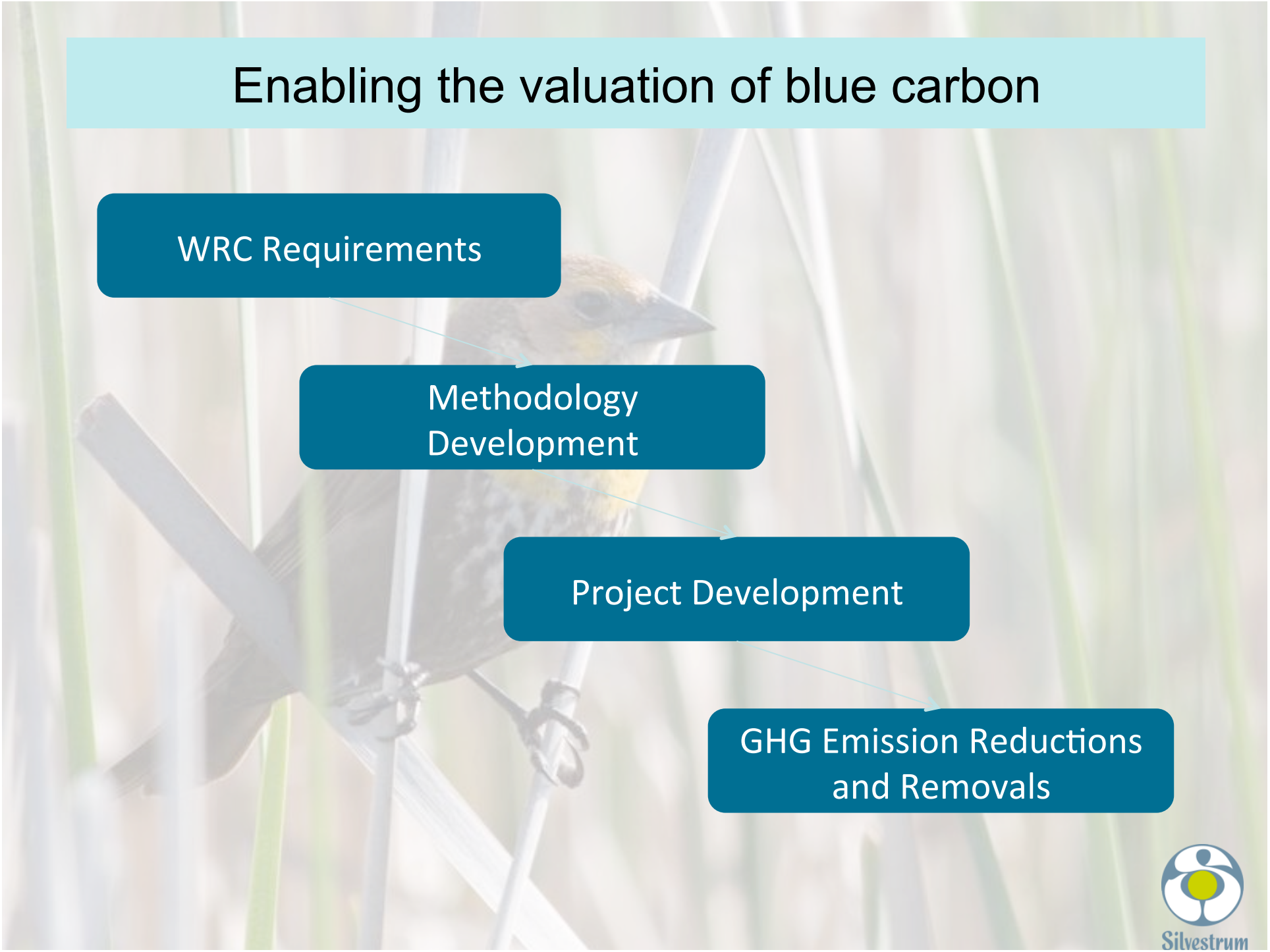
Enabling the valuation of blue carbon



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Project accounting and documentation

- Methodologies are step-by-step explanations of how emission reductions or removals are to be estimated in line with the requirements following accepted scientific good practice

- Project description or design documents provide information on how a specific project complies with the requirements and applies the methodology

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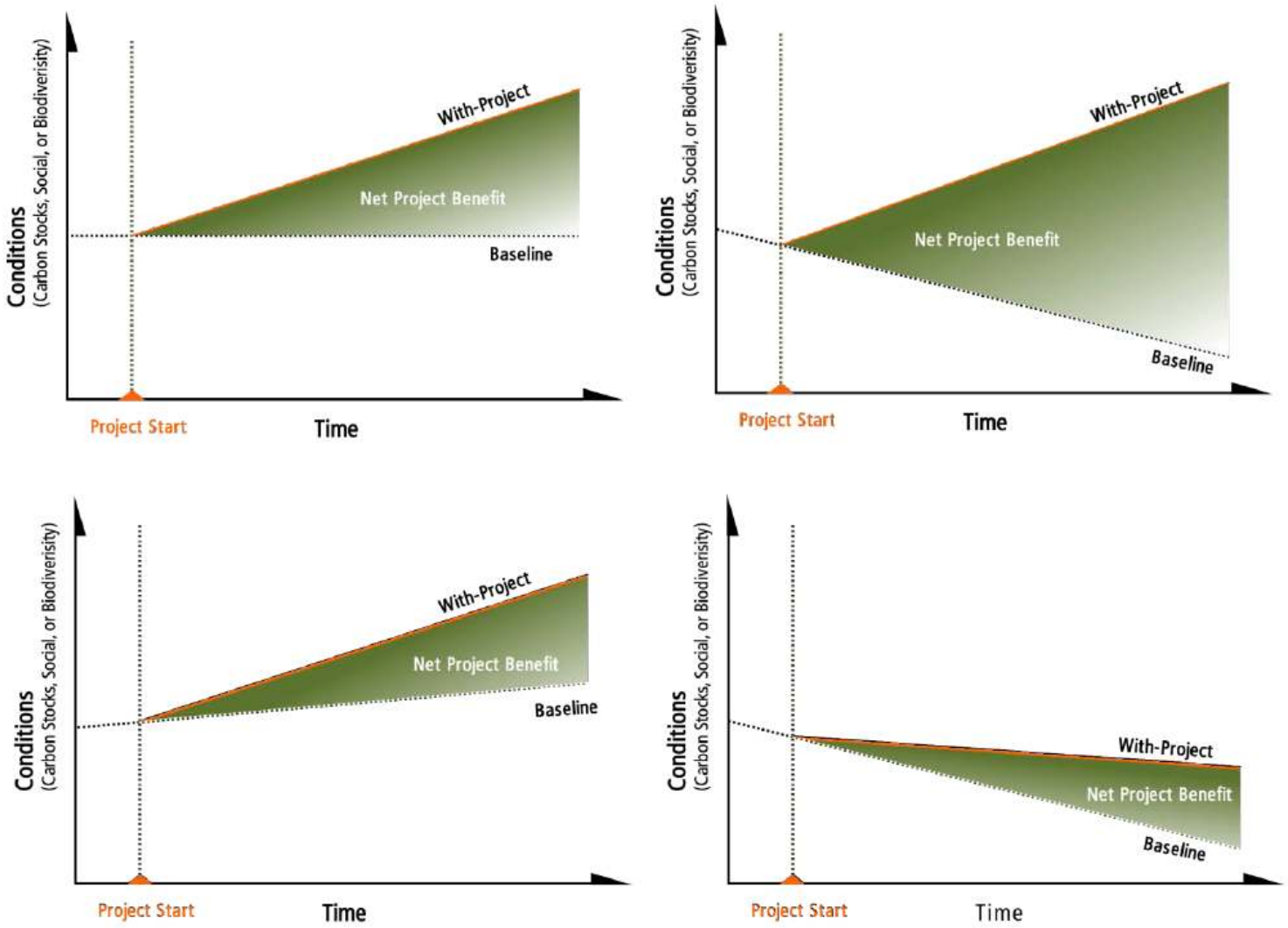
General Methodology Requirements

- Project boundaries
  - Geographical – temporal – carbon pools – GHGs
- Baseline scenarios and additionality
- Baseline GHG accounting
- Project GHG accounting including leakage
- Permanence
- Monitoring protocol

Project versus baseline scenarios

Figure 1. Four Hypothetical Baseline Scenarios that Illustrate the Net Positive Impacts of a Project



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WRC Methodology Requirements

- Hydrology
  - Water table
  - Sediment transport
  - Hydrological connectivity
  - Sea level rise
- Organic soils
- CH_4 and N_2O
- Leakage: ecological leakage
- Permanence (100 years)

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Content of methodologies

- Applicability conditions
  - Relate procedures provides to specific project circumstances
- Project boundaries
  - Geographical – temporal – carbon pools – GHGs
- Baseline scenarios and additionality
- Baseline GHG accounting
- Project GHG accounting including leakage
- Permanence
- Monitoring protocol

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Project (Design) Document

- Shows how the methodology is applied
  - Chapters +/- as in methodology
- Identifies the Project Proponent with title to the carbon credits issued
  - ‘Right of use’
  - National public law and procedures, and private law
- Environmental and social impacts and their mitigation

Additionality

i.e. the project would not have happened without the intervention of the carbon market, based on an analysis of barriers to implementation of the project activity

1. Project method
   a. Identification of alternative baseline scenarios
   b. Regulatory surplus test
   c. Common practice test
   d. Implementation barrier test
2. Standardized method
   a. Performance method - benchmarks
   b. Activity method
      - Activity penetration = low adoption rate
      - Financial viability = less financially attractive
      - Revenue streams = no other significant revenues

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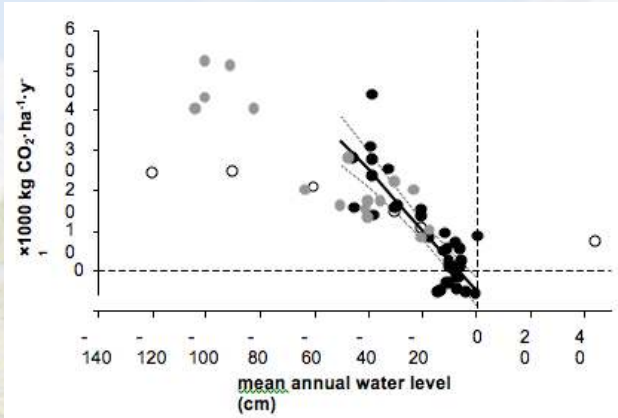
GHG accounting

- Spatial and temporal dimensions
- Direct measurements (fluxes) or
- Proxies
  - Carbon stock changes
  - Water level
  - Salinity and others…
- Leakage
- Uncertainty versus conservativeness
  - Avoid complex/expensive measurements by conservatively neglecting pools and fluxes and/or using default factor



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Poorly constrained issues in coastal wetlands

- Origin and fate of carbon
  - Allochthonous carbon sources
  - Fate of eroded carbon pools
- Trace gas emissions

Solutions for GHG accounting can be found in conservative default values and proxies

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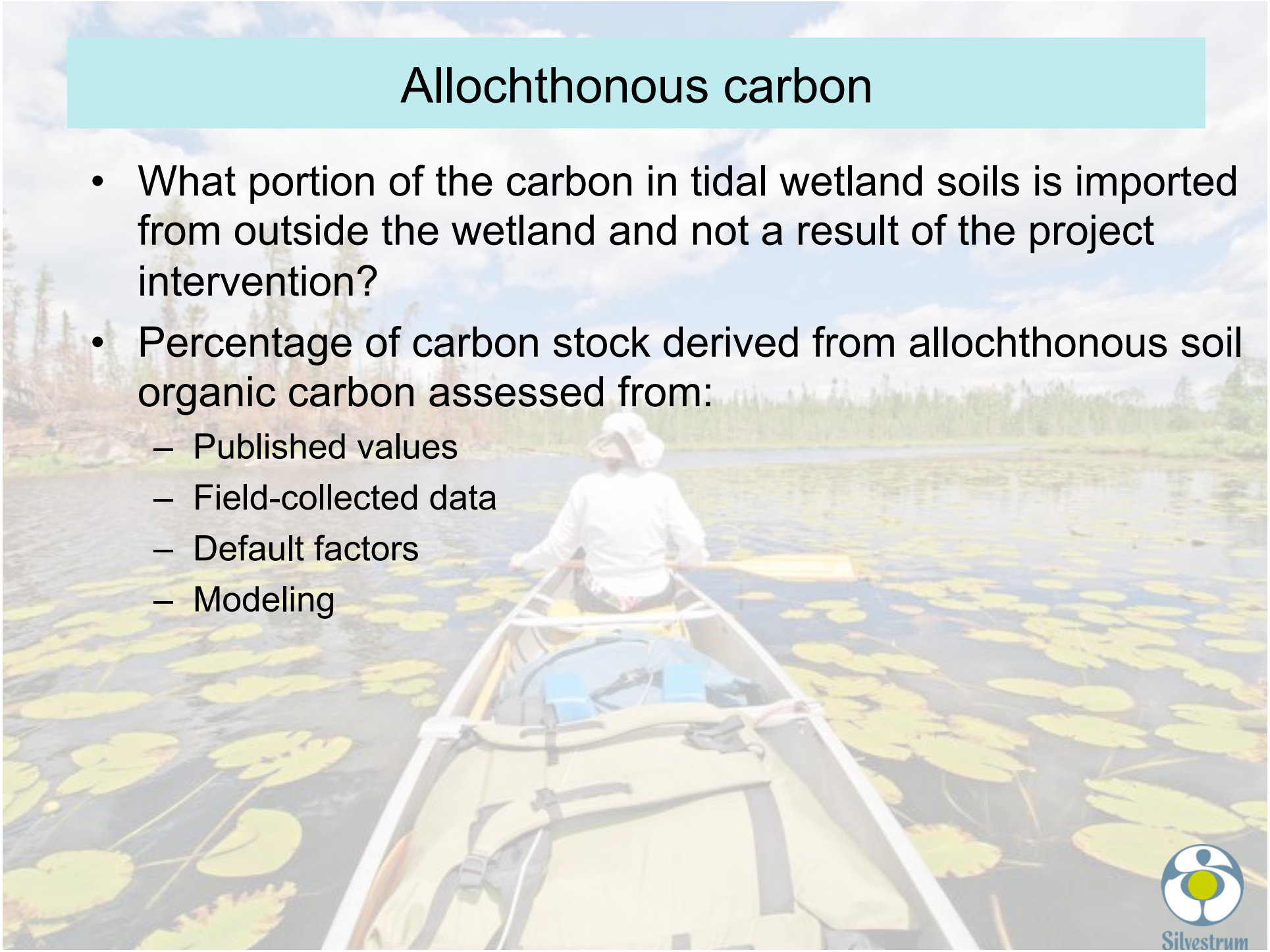
Allochthonous carbon

- What portion of the carbon in tidal wetland soils is imported from outside the wetland and not a result of the project intervention?
- Percentage of carbon stock derived from allochthonous soil organic carbon assessed from:
  - Published values
  - Field-collected data
  - Default factors
  - Modeling



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Fate of carbon in inundating tidal wetlands

The consequences of submergence of project area due to sea level rise are:

- Carbon stocks from aboveground biomass are lost to oxidation
- Soil carbon:
  - Drowning out: the loss of SOC can be assumed to be insignificant.
  - Wave action: sediment will erode and carbon will be removed. Applicable to both project and baseline scenarios.

When carbon erodes:

- Project: conservatively assume that all carbon is oxidized.
- Baseline: assuming that all carbon is oxidized (and consequently claim all carbon conserved) is not conservative.

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Methane & Nitrous Oxide

- Wetlands emit CH_4 and N_2O - can this undermine carbon crediting?
- Science: CH_4 emissions are low at high salinity. Nitrous oxide emissions are low if nitrate loading is low.
- Conservative Approach: Assume zero baseline emissions. Measure project emissions at times and places where they will be highest.
- Assessment based on:
  - Proxy-based approaches
  - Published values
  - Field-collected data
  - Default factors
  - Modeling

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Guidance on GHG accounting

- Methodologies
  - CDM A/R Mangrove restoration methodology
  - Methodology for Coastal Wetland Creation
  - GHG Accounting Methods for Tidal Wetlands and Seagrass Restoration (under development)
  - Extension of a REDD+ modular methodology including tidal wetlands restoration and conservation (under development)
- Blue Carbon as an Ecosystem Service - User Manual (RAR, Silvestrum – expected June 2015)
- Guiding Principles for Delivering Coastal Wetland Carbon Projects (UNEP, CIFOR 2014)
- Coastal Blue Carbon - methods for assessing carbon stocks and emissions factors in mangroves, tidal salt marshes, and seagrass meadows (CI, IUCN 2014)

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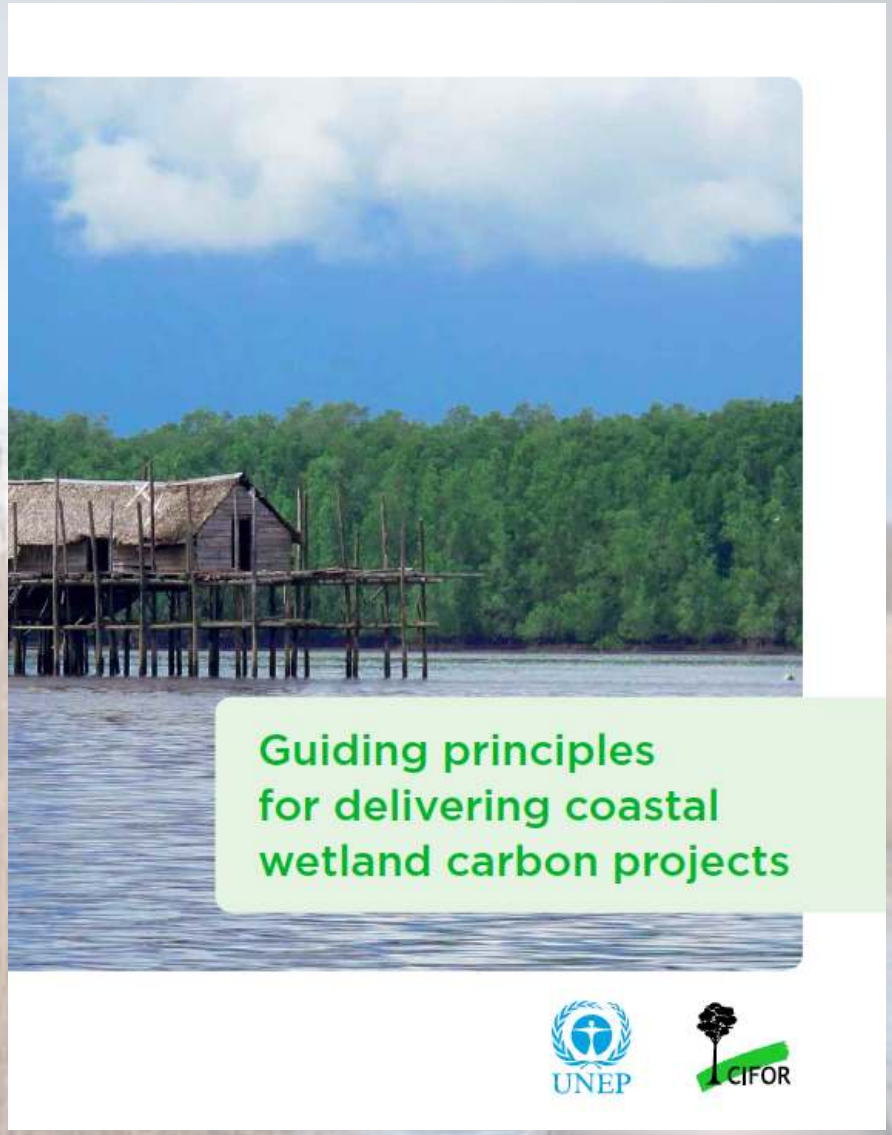

- State of Knowledge on Coastal Blue Carbon
- Lessons Learned from Previous Projects
- Planning a Blue Carbon Project

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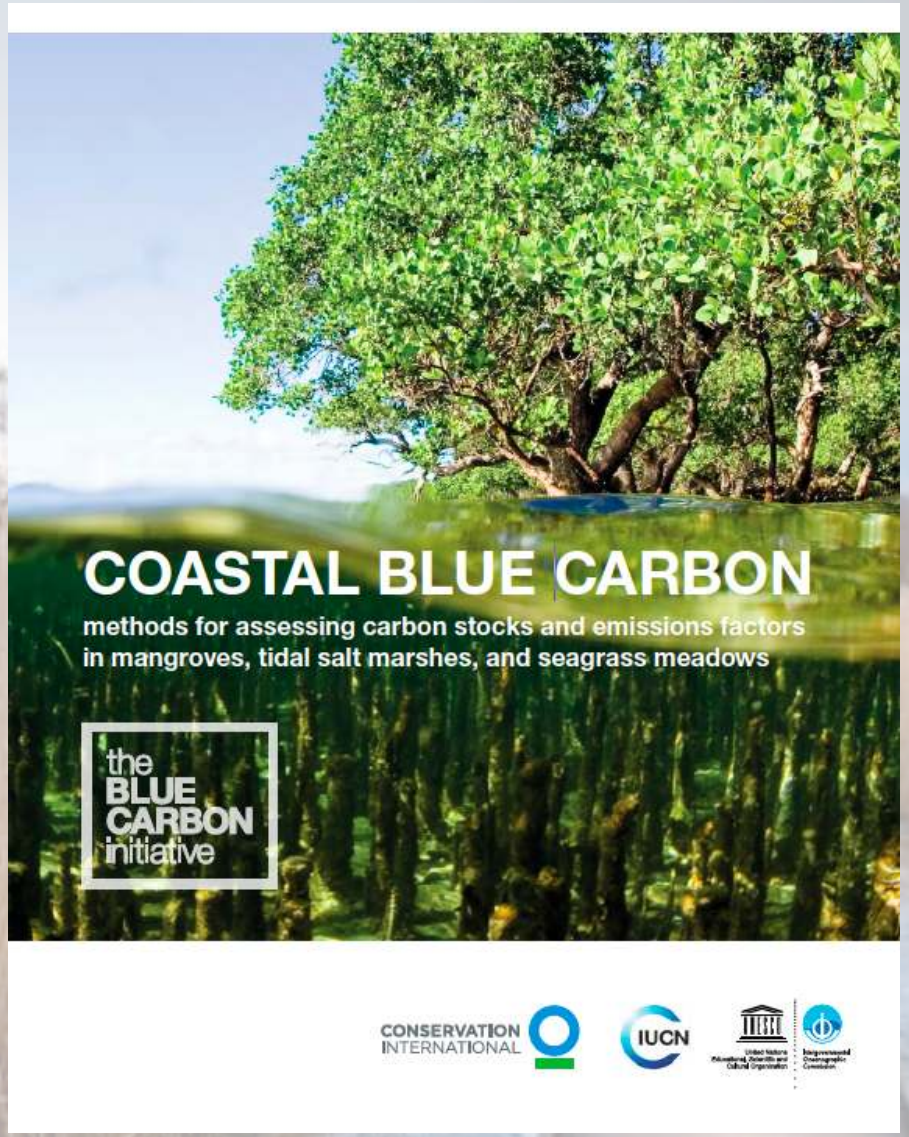

- Why Measure Carbon Stocks
- Conceptualizing the Project and Developing a Field Measurement Plan
- Field Sampling of Soil Carbon Pools in Coastal Ecosystems
- Field Sampling of Vegetative Carbon Pools in Coastal Ecosystems
- How to Estimate Carbon Dioxide Emissions
- Remote Sensing and Mapping
- Data Management

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Coastal Blue Carbon in Practice:

A Manual for using the VCS Tidal Wetland and Seagrass Restoration Methodology

RESTORE AMERICA'S ESTUARIES

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- Carbon Asset (Credit) Generation in the Land-Use and Coastal Wetland Sectors
- Wetlands Restoration and Conservation (WRC) under the VCS: Key Eligibility Considerations
- First Project Steps: Feasibility Assessment, Site Selection and Prioritization
- Using the Tidal Wetland and Seagrass Restoration Methodology
- Grouped Projects: Applicability and Recommendation

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Thank you
igino.emmer@silvestrum.com
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