Update on the Forest Resilience Bond (FRB)

Prepared for the Amador-Calaveras Consensus Group

February 19th, 2020
North Fork, Feather River 1890-1993

Photo Credit: George E. Gruell, Fires in the Sierra Nevada, 2001
USFS: Rising Cost of Fire Suppression

Vicious cycle in which USFS is forced to pay for today’s fires out of the funds designed to prevent tomorrow’s

16%  
52%  
67%  

FISCAL YEAR 1995  
FISCAL YEAR 2015  
FISCAL YEAR 2021
Forest Restoration as a Solution

Overgrown

Restored
Collaboration Is Hard, Let’s Make It Easier

Financial resources are limited

Human resources are stretched

Implementors rely on reimbursable public funds

Public/Private entities with different budgets, schedules, requirements, and definitions of success
Goals of the Forest Resilience Bond

Support Collaboration

Accelerate Forest Management

Create Value for all Stakeholders

SOCIAL
- Rural job creation & community development
- Community resilience

ENVIRONMENTAL
- Reduced fire severity
- Protected water resources
- Protected habitat

FINANCIAL
- Value for beneficiaries
- Taxpayer/ratepayer savings
- Investor returns
Utility Benefits of Forest Restoration

**Water Utilities**

- Reduces fire risk to water quality and infrastructure
- Potential to increase water quantity

**Common Watershed Challenges**

- Fire risk
- Infrastructure damage
- Water quality
- Sedimentation
- Declining yield
- Environmental regulations
- Regulated land use
- Insect and disease
- Timing of flows/runoff
- Flood control

**Electric Utilities**

- Protects against reservoir sedimentation
- Potential to increase utilization of cheap, carbon-free hydropower
Meadow
Degradation and Restoration

Artwork by Restoration Design Group
Opportunity for Private Capital

USFS 2017 Restoration Budget: $424 million
Undeployed Capital for Conservation: $3.1 billion

Highest Priority Projects: $11B
Total Need for Restoration: $58B

Advantages of Private Capital:
- Infusion of capital
- Cost sharing
- Larger projects
- Project catalyst
- Ex-post payments
FRB Projects Allow For Greater Efficiency

Contractors paid on time

Larger projects enable concurrent biomass facility financing

Supports rural economic development

Long term predictable employment
Connecting Investor Capital to Conservation

**Forest Resilience Bond**

- **Evaluation of Benefits**
  - Quantifies benefits to stakeholders

- **Innovative Contracts**
  - Monetizes benefits as payments

- **Financial Vehicle**
  - Payments to investor returns

**Forest Management**
- Fire, water, rec, & job benefits

**Investor Capital**
- Immense capital for projects
The Forest Resilience Bond & Collaboration

- Research Partners
- Community Groups
- Implementation Partners
- Development Team
- Investors

- Beneficiaries
  - USFS
  - Utilities
  - State Governments
  - Private Land Owners
  - Private Companies

Blue Forest Conservation
World Resources Institute
How the Forest Resilience Bond Works

Investors → Forest Resilience Bond → Implementation Partners → Restoration Activities

Outbound Cash Flow → Inbound Cash Flow → Resource Flow

Fire Suppression and Water Benefits
Sources of Repayment

\[
\text{Principal} + \text{Interest} = \text{Utility Contract} + \text{State/USFS Contributions}
\]
Criteria for Success

<table>
<thead>
<tr>
<th>Landscape</th>
<th>NEPA-ready landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identified need for forest restoration (high fuel load, wildfire risk, etc.)</td>
</tr>
<tr>
<td></td>
<td>Existing plan to implement forest restoration</td>
</tr>
<tr>
<td>Leadership</td>
<td>Strong FS leadership, with interest in innovation at multiple levels</td>
</tr>
<tr>
<td></td>
<td>Champions at other beneficiaries</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Compelling business case for involvement of multiple beneficiaries</td>
</tr>
<tr>
<td></td>
<td>Existing local collaborative structures with history of success</td>
</tr>
<tr>
<td></td>
<td>Strong cross-boundary relationships</td>
</tr>
<tr>
<td>Capacity</td>
<td>NF with capacity to prioritize partnership-building for the FRB</td>
</tr>
<tr>
<td></td>
<td>Project implementer(s) with capacity and expertise to undertake restoration</td>
</tr>
<tr>
<td>Data</td>
<td>Baseline ecological and economic data in place</td>
</tr>
<tr>
<td></td>
<td>Ability to quantify future ecological and economic outcomes</td>
</tr>
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</table>
The Yuba Project, Tahoe NF
Yuba Project

Map created by Tahoe NF
North Yuba Wildfire Risk

Probability of a large fire over the next 30 years

60%
26%
Yuba Restoration Project

<table>
<thead>
<tr>
<th>Treatment (Partial List)</th>
<th>Acres</th>
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<tbody>
<tr>
<td>Aspen Work</td>
<td>404</td>
</tr>
<tr>
<td>Invasive Plant Treatments</td>
<td>89</td>
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<tr>
<td>Meadow Restoration</td>
<td>345</td>
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<tr>
<td>Powerline Hazard Tree/Veg Removal</td>
<td>323</td>
</tr>
<tr>
<td>Prescribed Burn</td>
<td>4,104</td>
</tr>
<tr>
<td>Thinning</td>
<td>1,848</td>
</tr>
<tr>
<td><strong>Total Treatment</strong></td>
<td><strong>7,114</strong></td>
</tr>
</tbody>
</table>
Forest Restoration Benefit to Yuba Water

Reduced fire risk to infrastructure

Reduced woody debris flows

Job creation & economic security

Potential to increase and sustain water quantity

Protected water quality

Yuba River
Partnerships of First Forest Resilience Bond

Yuba Project Consortium: Participants

- Yuba Water Agency
- Blue Forest Conservation
- World Resources Institute
- National Forest Foundation
- Gordon and Betty Moore Foundation
- U.S. Forest Service
- The Rockefeller Foundation
- Sierra Nevada Conservancy
- UC Merced SNP
- Stanford University
- Natural Capital Project
- Brownstein Hyatt Farber Schreck
- Orrick
Yuba Project and Forest Resilience Bond

Yuba Water pays back a portion of cost over time

Yuba Water payment of $300k per year for 5 years

Flexible repayment terms possible

Yuba Water pays below market rates while also benefiting from cost sharing with parties
Project Investors

The Rockefeller Foundation

AAA Insurance

Gordon and Betty Moore Foundation

Calvert Impact Capital
Media Coverage

Los Angeles Times

Start-up Blue Forest secures funding for first privately financed forest fire bond
Yuba FRB First Year Success - 2019

2019 Activities

- Fuels Reduction: 524 acres
- Stream/Riparian: 3 miles
- Invasive Plants: 5 acres
- Road work: 3.4 miles
- Biomass Utilization: 13,750 tons
- Prescribed Fire Prep: 1,200 acres
- Fire Control Line: 19 miles

Figure 3. Probable Change detection for Yuba treatment areas in September 2019. Values are maximum negative standard deviations of the LandSat Normalized Vegetation Difference Index (NDVI) between treatment grid cells and adjacent untreated cells, with lower values indicating a greater likelihood of vegetation change.
MORE THAN FINANCE: THE NON-MONETARY BENEFITS OF THE FOREST RESILIENCE BOND

A finance tool at its core, the Forest Resilience Bond was developed to expedite the availability of funding for forest restoration on National Forest System lands. But as Blue Forest’s pilot project on the Tahoe National Forest is already demonstrating, the benefits of this model extend well beyond finance.

https://www.blueforestconservation.com/#thoughts
Opportunities
Amador-Calaveras Consensus Group
How to Develop an FRB

1. Beneficiaries Identify a Project In Need of Funding
2. Metrics of Success Are Determined
3. Investors Provide Upfront Capital
4. Beneficiaries Sign Contracts
5. Implementation Partners Carry Out Restoration
6. Independent Evaluators Measure Success
7. Beneficiaries Make Payments
8. Investors Are Repaid
Questions to Create any FRB

What is the project?

What outcomes are expected from the project?

Who specifically cares about those outcomes and who might be willing to pay?
ACCG Topics of Interest

Other financial opportunities like the FRB?

Engagement insights of key partners?

Status and implementation challenges?
Appendix
Yuba Project Contracts and Agreements

Legend:
- Green = cash flows
- Orange = contracts

Investors

Yuba Water Agency

FRB Yuba Project I LLC

CA State

National Forest Foundation

US Forest Service

Loan Agreements

Grant Agreement

Stewardship Agreement
Example Contracts and Agreements

Legend:
- **Green** = cash flows
- **Orange** = contracts

1. Lending Investors
2. FRB ACCG Project LLC
3. Non-Profit Implementation Partner
4. Utility Agency
5. Other Beneficiary
6. CA State
7. Other Fire Risk Beneficiary
8. USFS

- **Loan Agreements**
- **Grant Agreement**
- **Stewardship Agreement**
- **Service Contracts**