



ENVIRONMENTAL POLICY  
**INNOVATION**  
CENTER

**Mission: to build policies that deliver spectacular improvement in the speed and scale of conservation.**

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# Project Finance & Impact Investment

|   |   |
|---|---|
| External Revolving Loan Funds             | Fed/State Revolving Loan Funds                |
| Internal Land Trust Loan Funds            | Tax-Exempt Debt                               |
| Foundations (Program Related Investments) | Environmental Impact Bonds                    |
| Conservation Lenders & Guarantors         | Non-market Mitigation Services                |
| Commercial & Farm Credit Lending          | Mitigation Banks                              |
| Seller Financing                          | Water Funds                                   |
| Conservation Development                  | Certifications & Labelling = Product Premiums |
| Ecosystem Service Markets                 | Pay-for-Success                               |
| Impact Partnerships                       | Impact Investment                             |
| Timber Investment Management Organization | Blended Finance                               |
|   | Sponsorship Projects                          |





# The difference between "funding" and "financing"

**Funding:** Providing “one-way” financial resources to support a need, program, or project. This term is used when 1) the entity fills the need for funds by generating its own internal revenues and reserves. The use of taxes, sales revenues, rate revenues, cash reserves, and fees is referred to as “pay as you go” or “Pay Go” funding, and 2) the recipient obtains a grant or similar form of funds that do not require repayment and do not carry an interest expense.

**Financing:** The “two-way” acquisition of money for a program or project. The term financing is used when the monetary resource need is filled from borrowed money where principal and interest are owed to the source of funds. This includes loans, municipal bonds, and other sources of monetary resources that require repayment of principal and interest. Typically these resources will tie to a capital asset (like a farm BMP) and will not be available for supporting ongoing operational expenses.

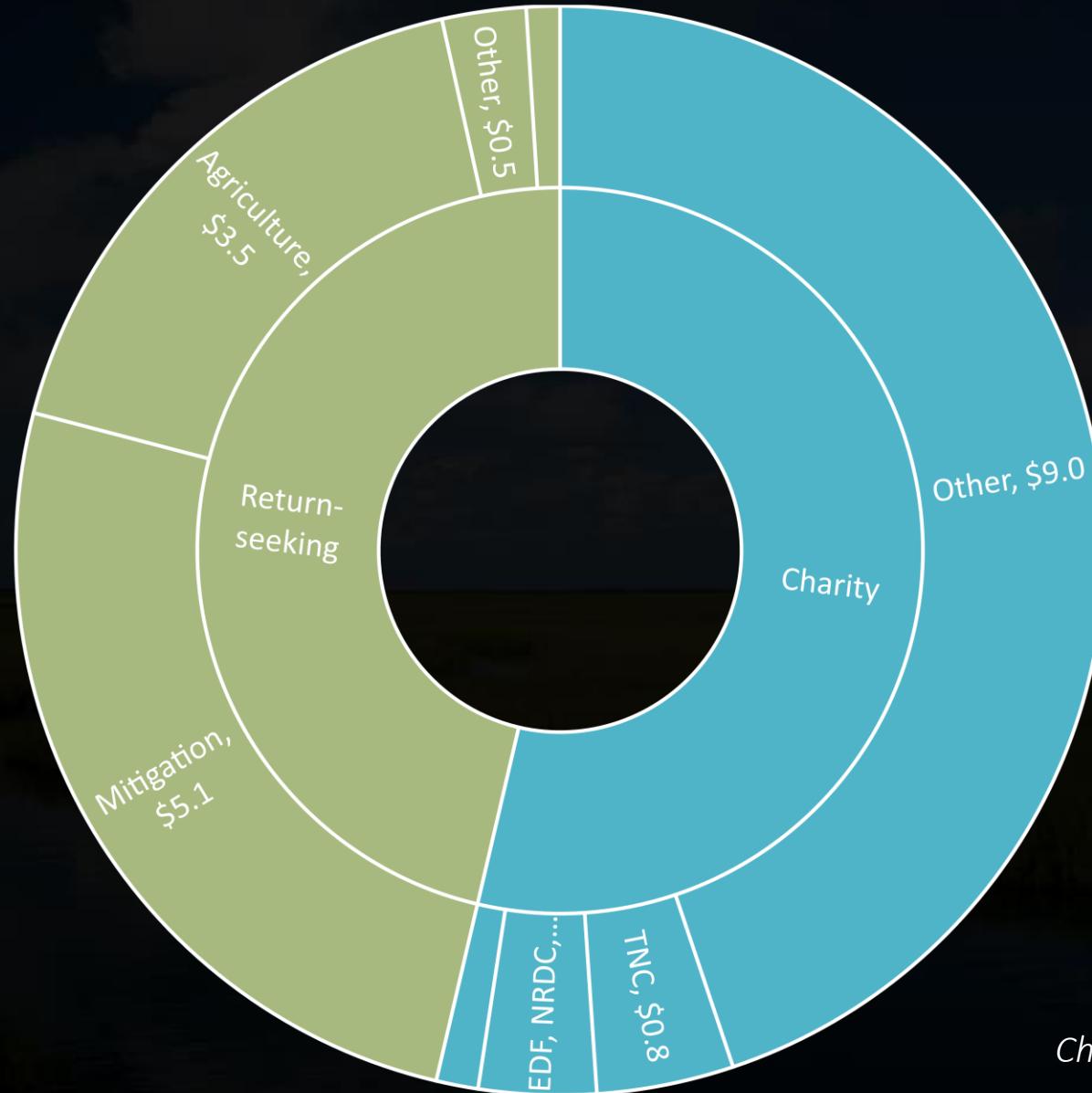
| Approach   | Funding/Revenue Approach | Financing | Procurement Mechanism |
|--|--------------------------|-----------|-----------------------|
| <u>General Fund Appropriations</u>                                   | X                        |           |                       |
| New Taxes  | X                        |           |                       |
| Stormwater Utility Fees  | X                        |           |                       |
| Special Purpose District   | X                        |           |                       |
| Source water or Watershed Protection Fee                             | X                        |           |                       |
| Permit Review, Development Inspection, and other Special Fees        | X                        |           |                       |
| Innovative Revenue Generating Approaches                             | X                        |           |                       |
| Municipal Bonds  |                          | X         |                       |
| Clean Water and Drinking Water State Revolving Funds                 |                          | X         |                       |
| WIFIA  |                          | X         |                       |
| USDA Rural Development Water and Waste Disposal Loan & Grant Program |                          | X         |                       |
| Joint Benefits Authority   |                          |           | X                     |
| Pay-For-Success Contracts/Bonds                                      |                          | X         | X                     |
| <u>Private Financing</u>   |                          | X         |                       |
| Public Private Partnerships  |                          | X         | X                     |
| Direct Procurement   |                          |           | X                     |
| Pooled Water Fund  |                          |           | X                     |
| Water Quality Trading  | X                        |           | X                     |
| Revolving Water Fund   |                          |           | X                     |

Someone must pay for the environmental good or service.



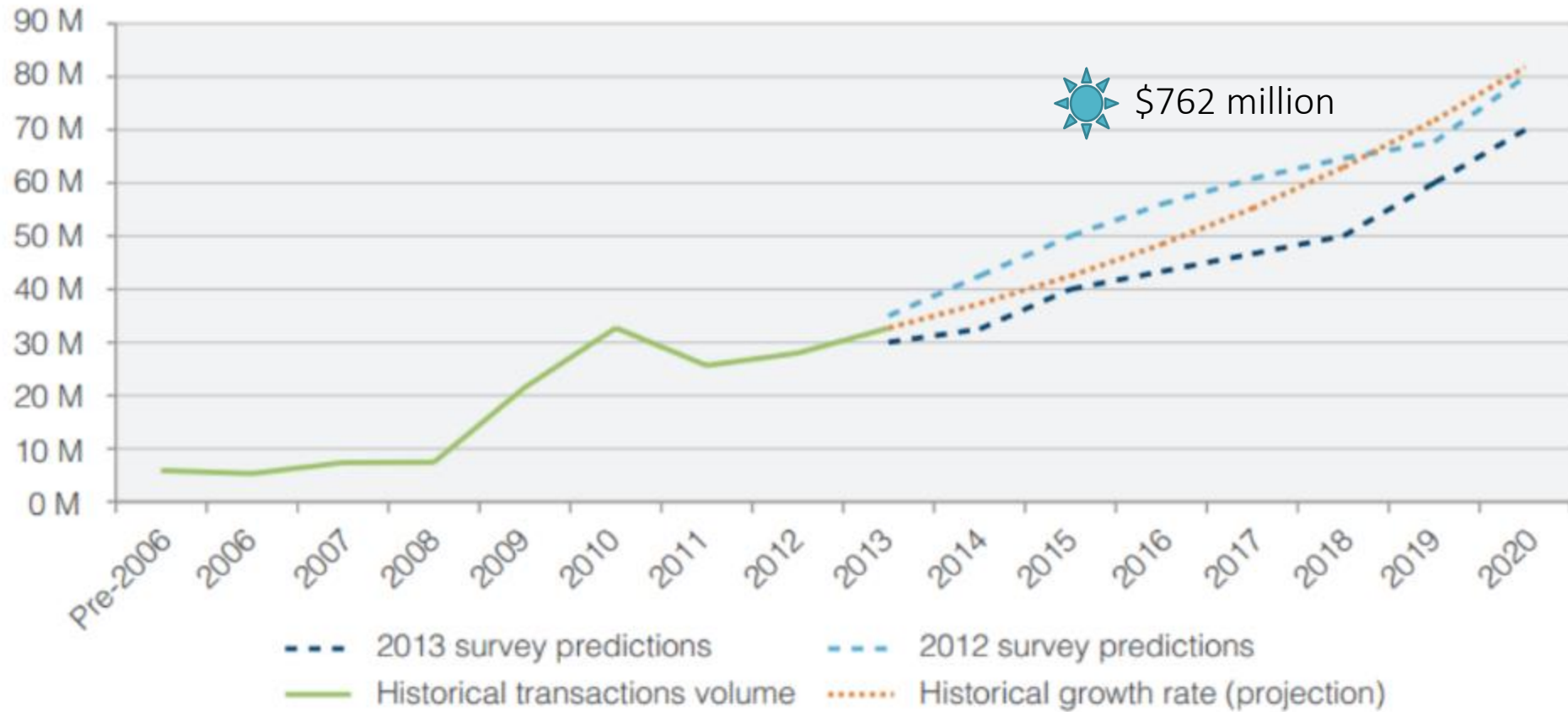


# \$20 B(*mostly*) US Private Funding and Finance for Conservation



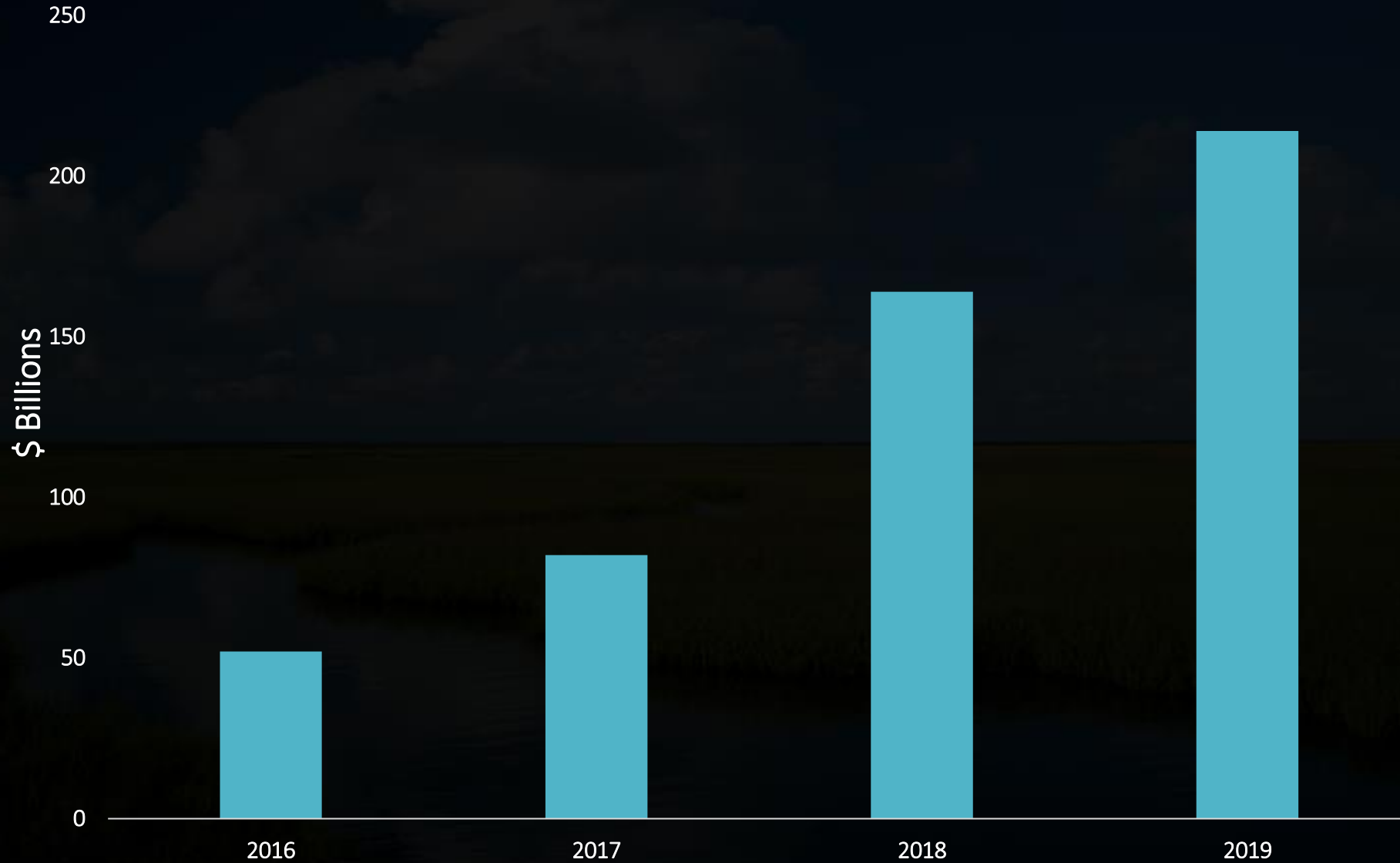
Charity = \$12/\$430B or 3%

# Forest carbon transaction growth

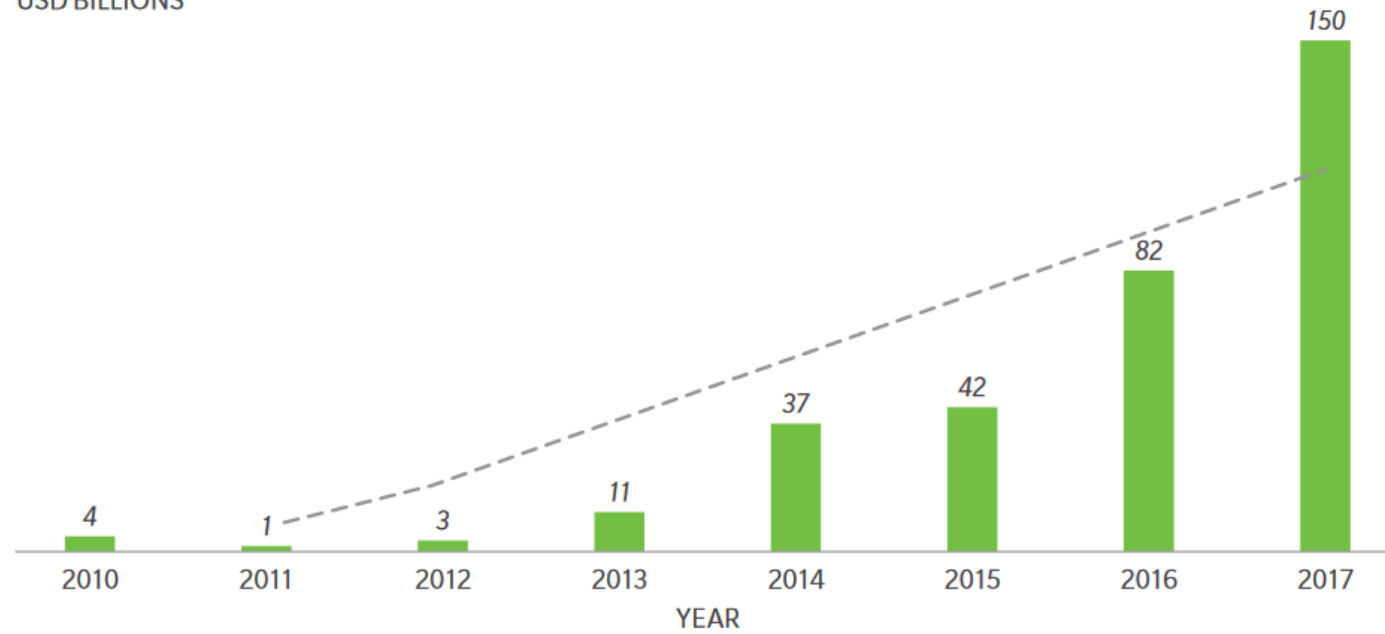




# Global Carbon Revenue



USD BILLIONS

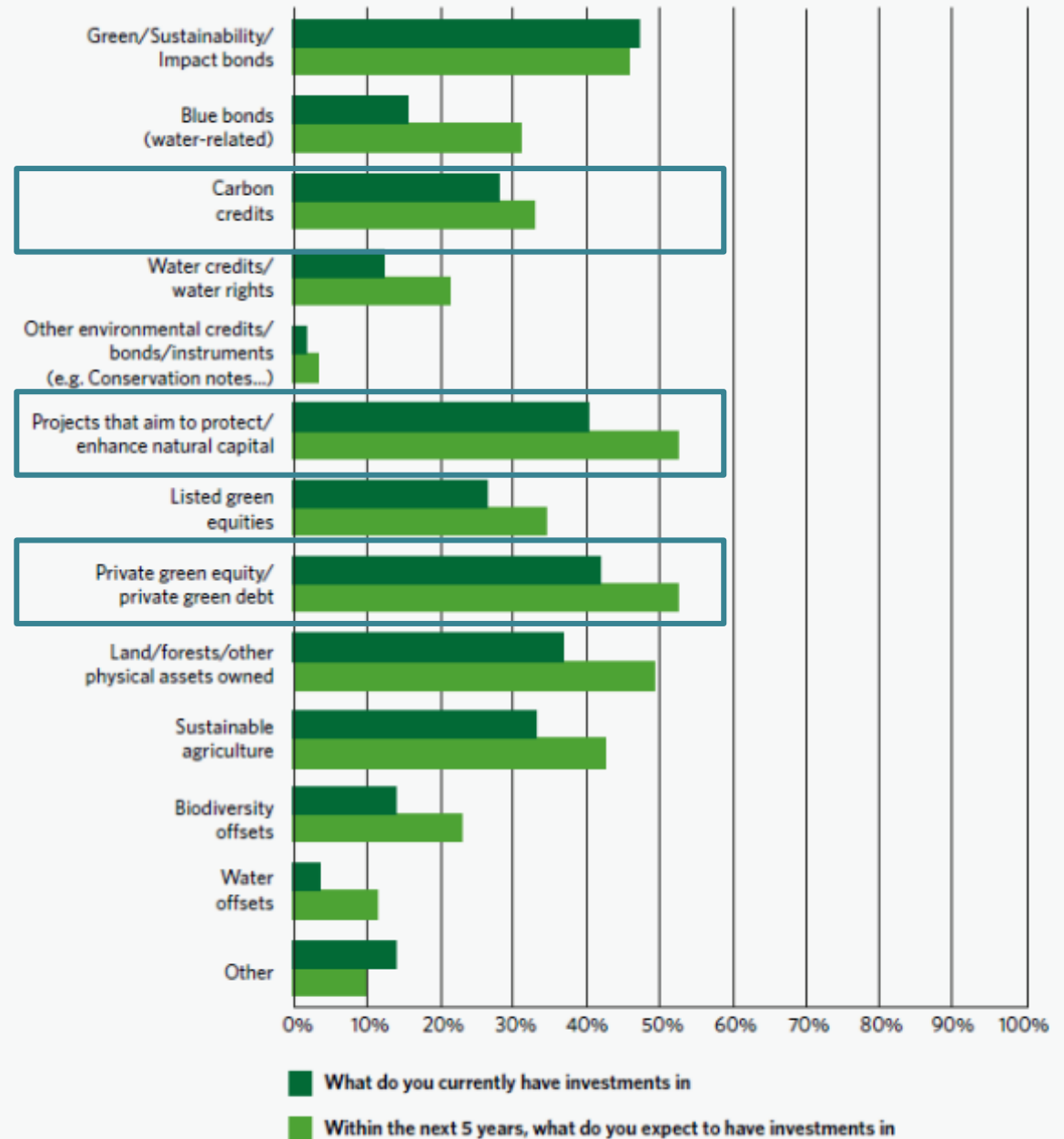


Source: Climate Bond Initiative

# Global Investment

2019 survey of 62 investors with more than \$3 trillion in assets invested

*(pension funds, Goldman Sachs, Credit Suisse, big banks, institutional investors, etc.)*







\$4.8 billion





# Finance Innovation Chesapeake Bay

PA (SRF) Revolving Fund Forest Protection  
*PA Clean Water Procurement Program?*

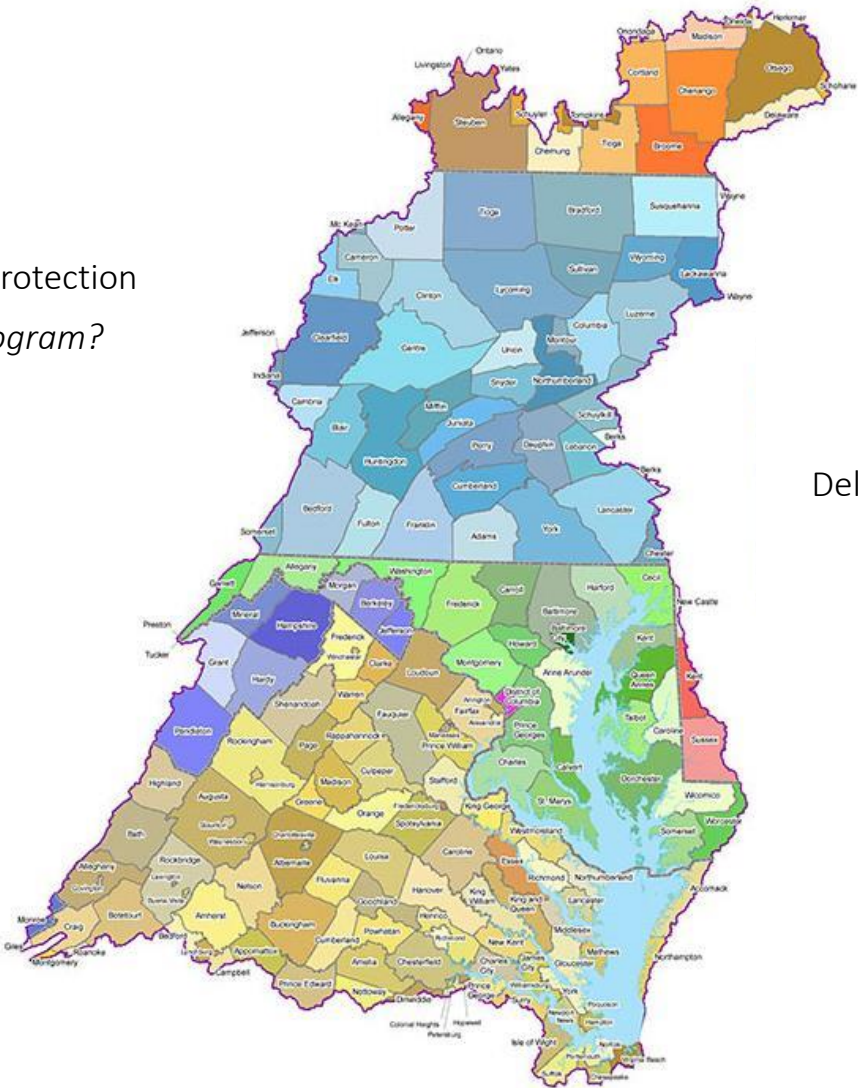
VA Wetlands Banking

VA DEQ Nonpoint Source Nutrient  
Trading (160 banks)

DC Stormwater Credit Price Floor

DC Stormwater Retention Credits

DC Green Bank



Delaware Revolving Water Fund

MDOT Advance Stream Credit Procurement  
MDOT Smart Ponds

MD Clean Water Commerce Act

MD Forest Banking

Prince Georges P3 – biggest environmental P3 in US

Anne Arundel Full Delivery Credits

| Traditional Grants and contracts       | Performance contracts/full delivery contracts |                           | Pay for Success        |                  |
|--|---|---------------------------|------------------------|------------------|
| Pay for activities                     | Pay for completed construction                | Pay for immediate outputs | Pay for strong outputs | Pay for outcomes |
| Incentive bonus for higher performance |   |                           |                        |                  |







Pay-for-success stream restoration project on a private dairy cow farm in Cecil County along Principio Creek



# Per Impervious Acre Credit



# Nonpoint Source Nutrient Trading

December 6, 2016

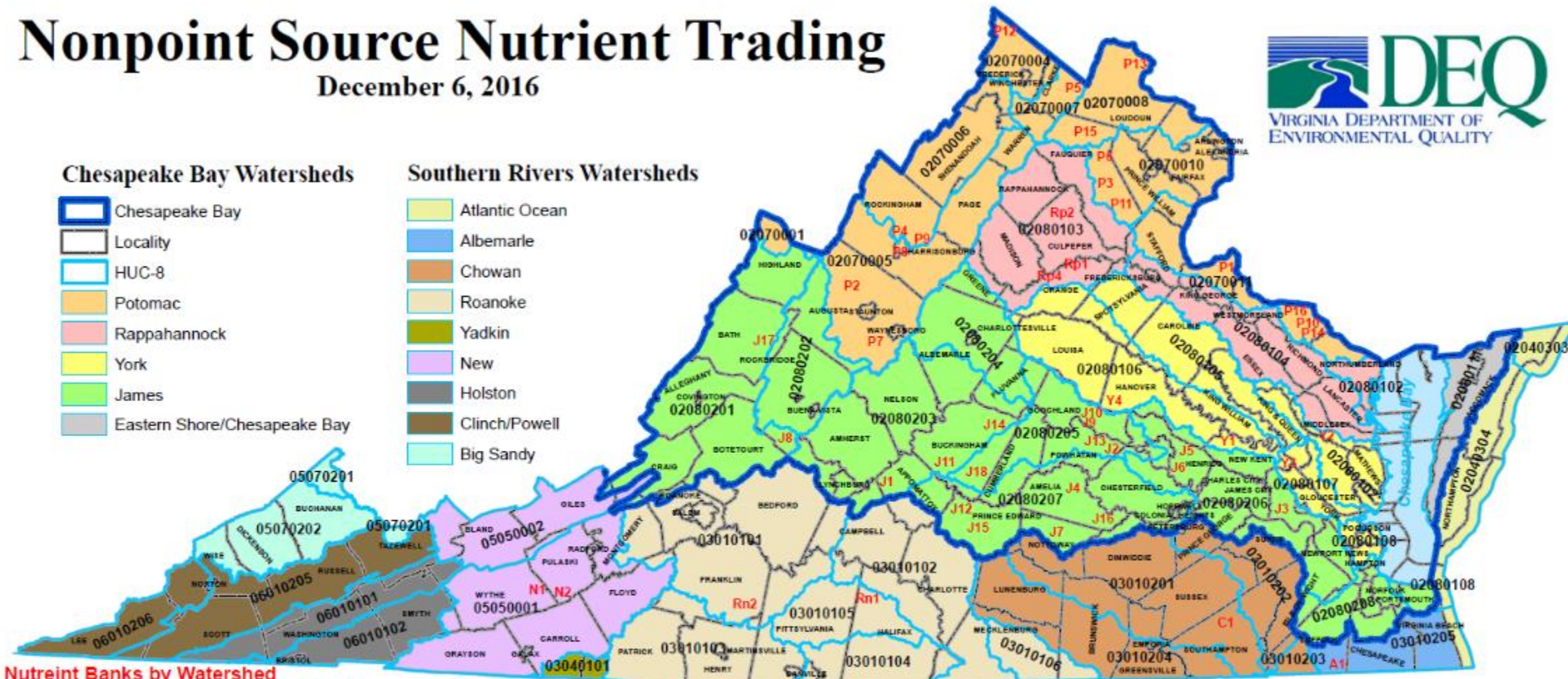


## Chesapeake Bay Watersheds

- Chesapeake Bay
- Locality
- HUC-8
- Potomac
- Rappahannock
- York
- James
- Eastern Shore/Chesapeake Bay

## Southern Rivers Watersheds

- Atlantic Ocean
- Albemarle
- Chowan
- Roanoke
- Yadkin
- New
- Holston
- Clinch/Powell
- Big Sandy



## Nutrient Banks by Watershed

### POTOMAC:

- P1 - Buena Vista
- P2 - Swinging Bridge
- P3 - Elk Run
- P4 - Wampler Road
- P5 - Holy Cross Abbey
- P6 - Midland
- P7 - South River
- P8 - Autumn Lane
- P9 - Wentworth Road
- P10 - Bowen
- P11 - Owl Run
- P12 - Cross Junction

### P13 - Red Hill Farms

- P14 - Kinsale
- P15 - Edgecliff
- P16 - Montross
- RAPPAHANNOCK:
- Rp1 - Rappahannock
- Rp2 - Culpeper
- Rp4 - Pristine Waters
- YORK:
- Y1 - Pamunkey Farms
- Y2 - Healy's Pond
- Y3 - York
- Y4 - Clover Creek

### JAMES:

- J1 - Wildwood Farm
- J2 - Malvern
- J3 - Cranston Millpond
- J4 - Swiss Dixie
- J5 - Eastern Henrico
- J6 - Layne
- J7 - Leinster
- J8 - Stone Tavern
- J9 - Dungeness
- J10 - Shaefer
- J11 - Buckingham
- J12 - Prince Edward

### J13 - Greyfields

- J14 - Gold Hill
- J15 - Farmville
- J16 - Namozine
- J17 - Millboro
- J18 - Willis River
- ALBEMARLE:
- A1 - Pigeon Hill
- CHOWAN:
- C1 - Dillon Grove

### ROANOKE:

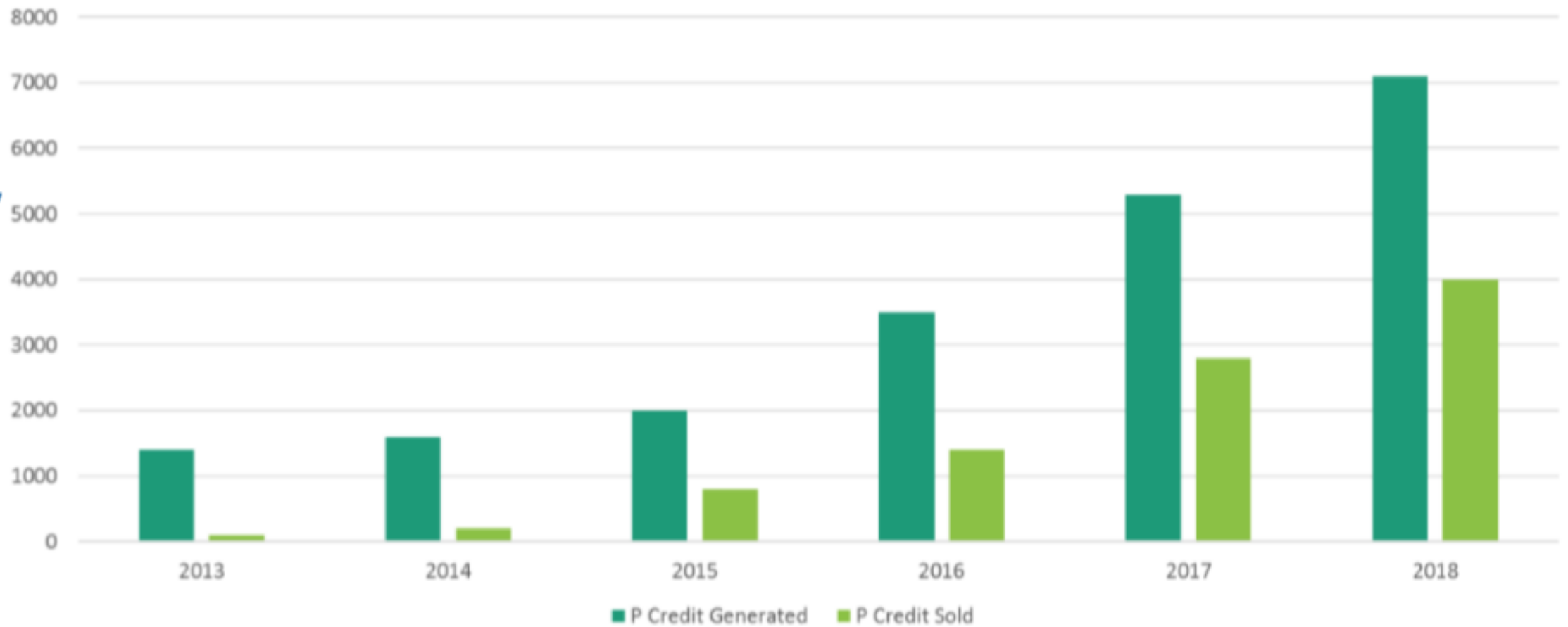
- Rn1 - Hawkins Forest
- Rn2 - Glade Hill
- NEW:
- N1 - Stallone Farms
- N2 - Hiwassee



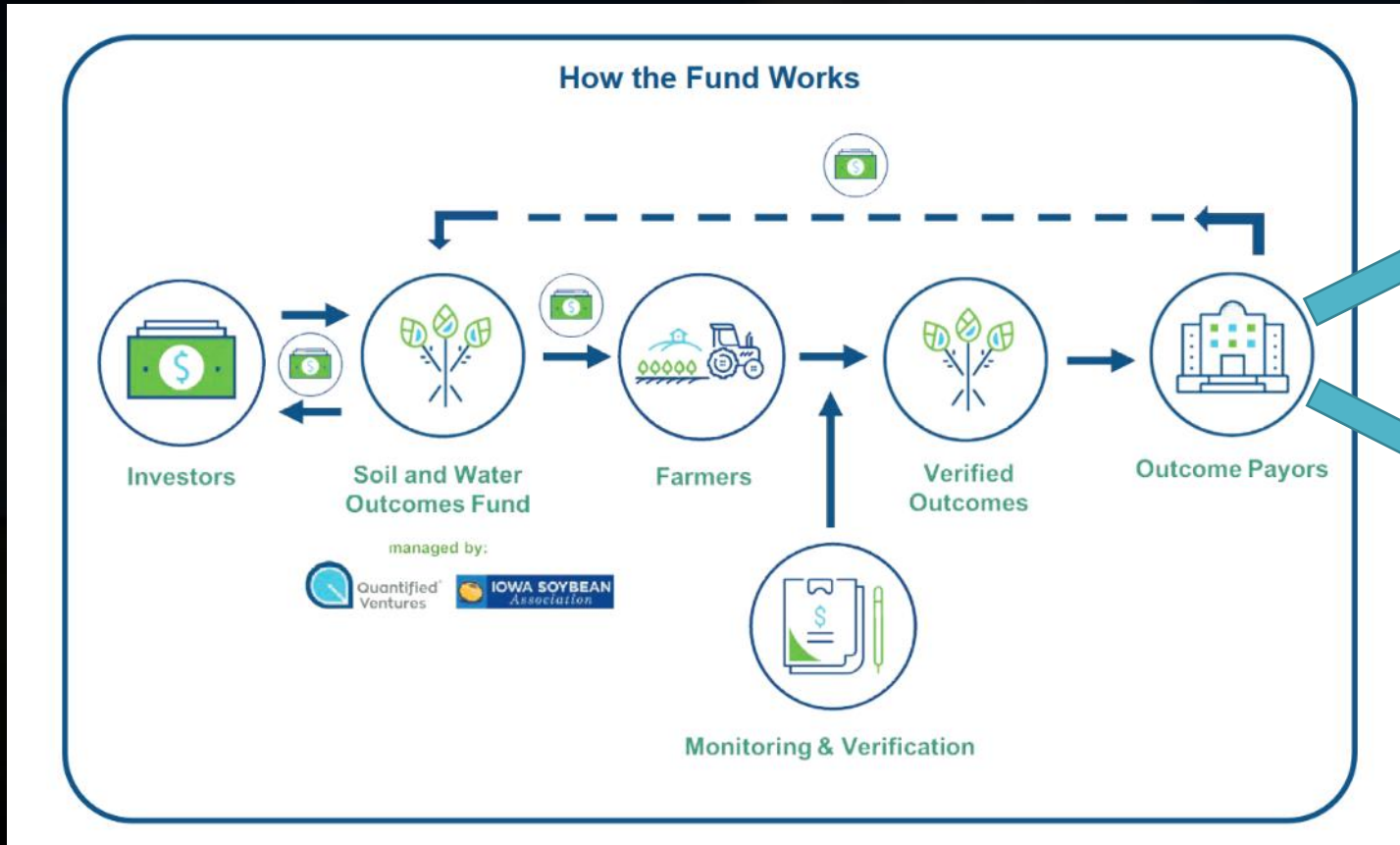
# Virginia Nonpoint Source Trading

- First approved in 2004, policy revisions in 2009; first bank approved in 2008
  - State regulations requiring stormwater mitigation for new construction of 1 acre or greater
  - Operates on a phosphorus basis (i.e. not release greater than .41 lbs/acre/yr)
- Regulate down to a 1/10<sup>th</sup> of pound of estimated phosphorus runoff; under a TMDL
- More than 140 banks
  - Banks take 12-18 months to register; sell out credits within 3-6 months
  - Conversion from agricultural land use to forest (also stream restoration); permanent protection
  - Depending on the watershed, credits sell for \$12,000-\$20,000/lb phosphorus
  - Banks must be in the same HUC 8 watershed (too big)
- Total market is \$15 million/year
- Trades of .01 lbs to 100 lbs at a time (i.e. \$100 - \$2 million), 1,200 lbs/year
- 2016 legislation allows nutrient banks to generate sediment credits for sale to MS4s

\$15 million









# Private Finance of Endangered Species and Forest Conservation

- 2009 -Private investor buys 33,000 acres, including occupied endangered species habitat (20% of salamander's global habitat)
- Separated species habitat from productive forests
- USFWS funds used to acquire many habitat tracts, remaining lands still in working forests or habitat
- 2019-2020 Secured initial government funding and hoping for remaining \$ in 2020 from Forest Legacy to complete the acquisition and transfer of all salamander habitat to a conservation owner
- 10-year process = patient (still profitable) capital



Creating buyers/meeting demand







| Service   | # Installations | Recurrent Flooding |           | Drought |           | Desertification |           | Wildfires |           | Thawing Permafrost |           |
|-----------|-----------------|--------------------|-----------|---------|-----------|-----------------|-----------|-----------|-----------|--------------------|-----------|
|           |                 | Current            | Potential | Current | Potential | Current         | Potential | Current   | Potential | Current            | Potential |
| Air Force | 36              | 20                 | 25        | 20      | 22        | 4               | 4         | 32        | 32        | –                  | –         |
| Army      | 21              | 15                 | 17        | 5       | 5         | 2               | 2         | 4         | 4         | 1                  | 1         |
| Navy      | 18              | 16                 | 16        | 18      | 18        | –               | –         | –         | 7         | –                  | –         |
| Total     | 75              | 51                 | 58        | 43      | 45        | 6               | 6         | 36        | 43        | 1                  | 1         |

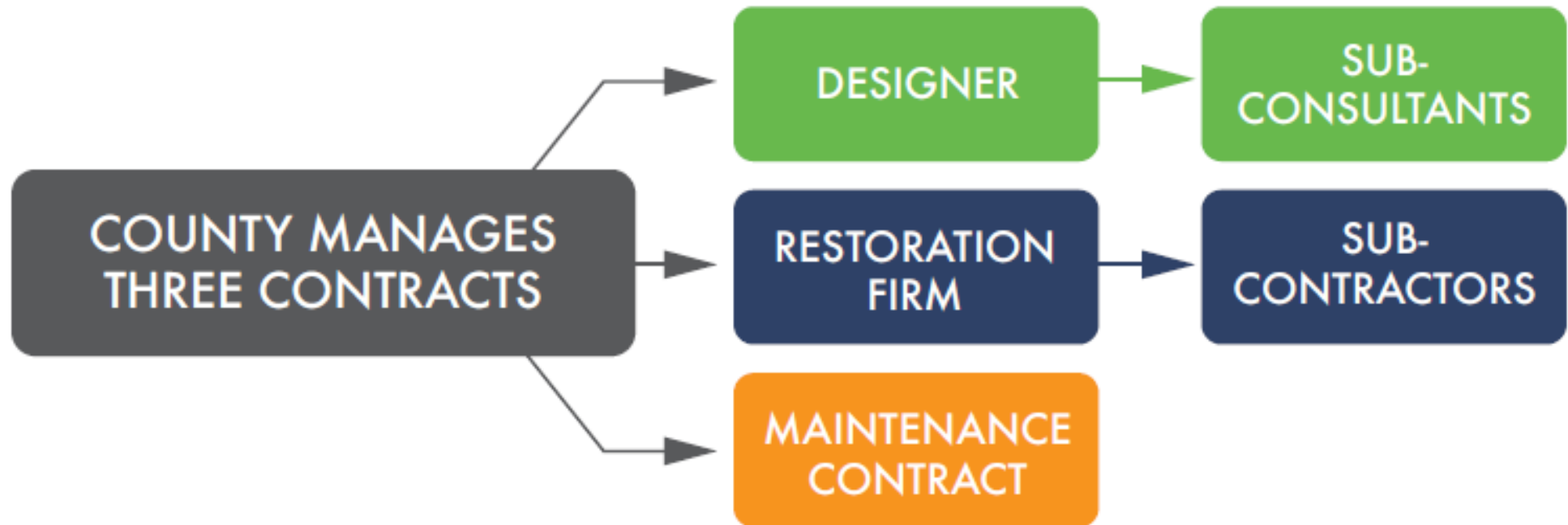
Figure 6. Installations facing current and future vulnerabilities to climate change.<sup>22</sup>

# Define Environmental Outcomes as Commodities

- “Environmental outcome” could mean any of the following quantitative outcomes that can be directly measured or modelled :
  - Nitrogen load reduction; Phosphorus load reduction; Climate resiliency; Carbon sequestration; or Algal bloom reduction. (Add others?)
- Defining these as a commodity would pave the way for easier public and private transactions to buy them.
  - MDOT currently using this approach with stormwater projects.
- Would open opportunities and streamline invoicing and IDIQ (indefinite delivery, indefinite quantity) contracts.



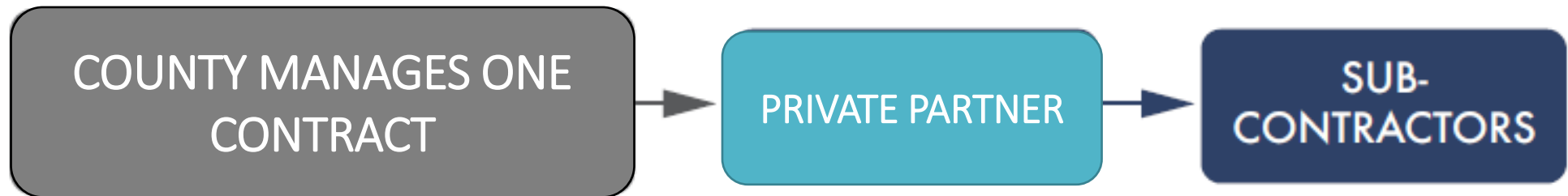
## MONTGOMERY'S TRADITIONAL APPROACH TO STORMWATER CONTRACTING



County issues and manages three contracts; is stuck in the middle when there are disputes between designers and restoration firms. It's difficult to know full costs until late in the process.



# PRINCE GEORGE'S COUNTY APPROACH TO STORMWATER CONTRACTING

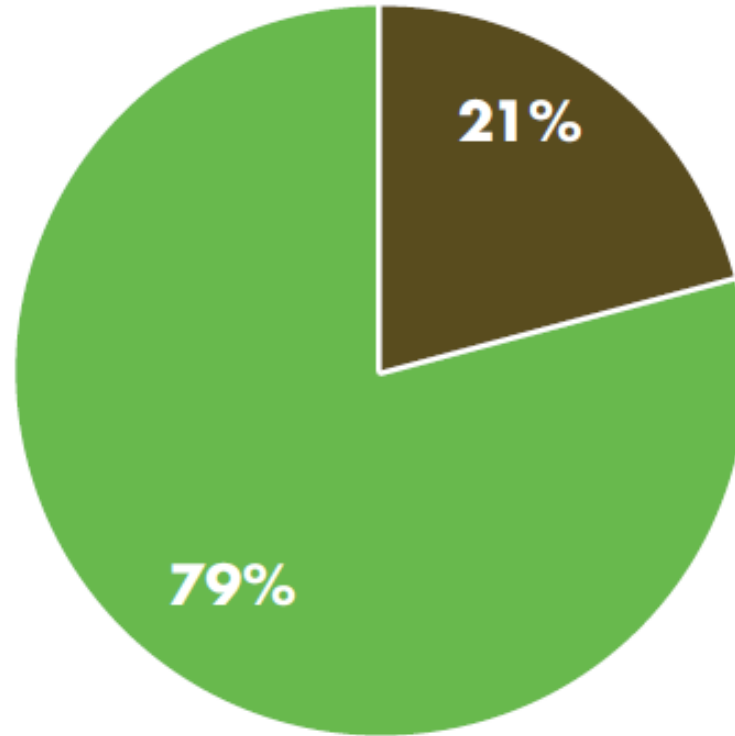




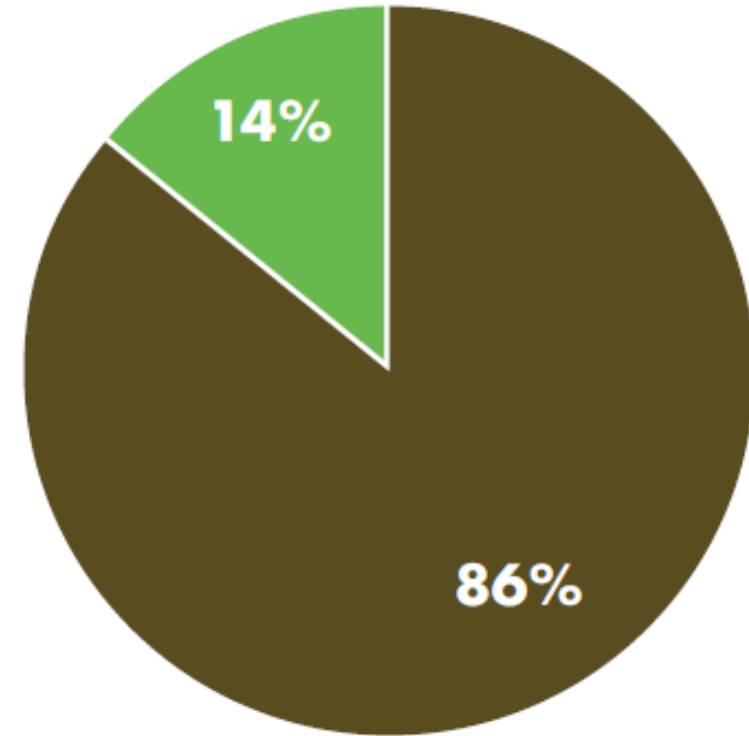


## JOBS

MONTGOMERY COUNTY



PRINCE GEORGES



- Minority, Female and Disabled-Owned Businesses

## By Project Category



**Agriculture**  
12.0 KtCO<sub>2</sub>e



**Chemical Processes/  
Industrial  
Manufacturing**  
620.9 KtCO<sub>2</sub>e



**Energy  
Efficiency/  
Fuel Switching**  
1,758.4 KtCO<sub>2</sub>e



**Forestry and  
Land Use**  
9,287.0 KtCO<sub>2</sub>e



**Household  
Devices**  
1,472.9 KtCO<sub>2</sub>e



**Renewable  
Energy**  
2,162.8 KtCO<sub>2</sub>e



**Transportation**  
8.9 KtCO<sub>2</sub>e



**Waste Disposal**  
444.4 KtCO<sub>2</sub>e

## By Standard

**Verified Carbon Standard**  
10.2 MtCO<sub>2</sub>e

**Gold Standard**  
3.3 MtCO<sub>2</sub>e

**Plan Vivo**  
1.2 MtCO<sub>2</sub>e

**Climate Action Reserve**  
1.0 MtCO<sub>2</sub>e

**American Carbon Registry**  
0.0 MtCO<sub>2</sub>e

A dark, moody landscape with a cloudy sky and a body of water reflecting the clouds.

summary





Who pays back the investor



Government behavior (as regulator or buyer) needs to be predictable



Natural commodity has value to someone

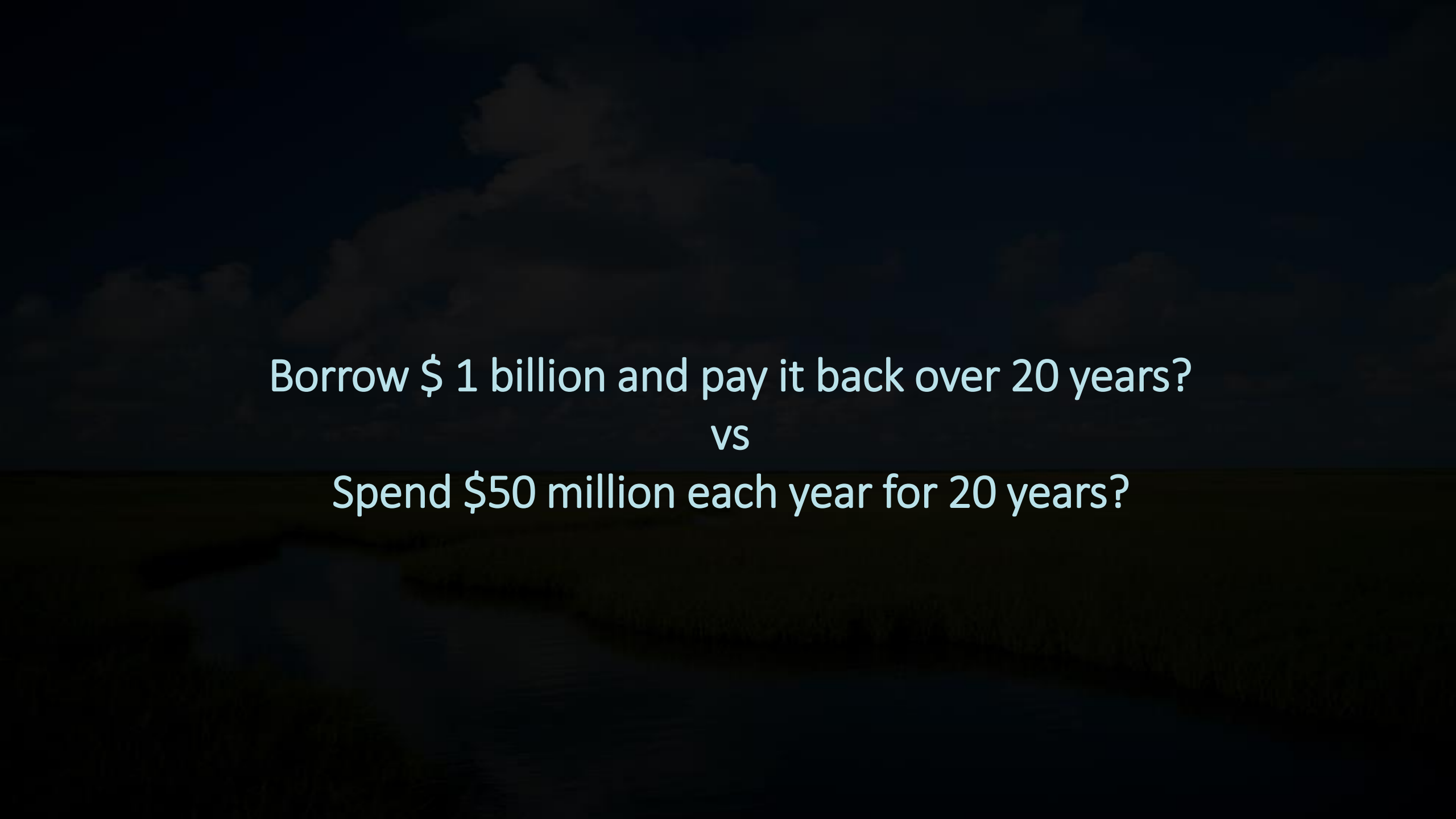


Currency requires less than 5-10% of investment to track



Don't be the expert





Borrow \$ 1 billion and pay it back over 20 years?

vs

Spend \$50 million each year for 20 years?