Development of Feasible Indicators for Restoration of Watershed Services

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Traditional Approaches to Watershed Management and Implementation

- Opportunity-based implementation
- Lack of defined goals/objectives/end points
- Selecting projects based on cost with little or no regard to outcomes
- Current status/conditions not defined
- Inadequate tracking/monitoring system
- **Inadequate Indicators for Assessing Watershed Opportunities**

Systematic Approach to Better Watershed Management

Critical Elements:

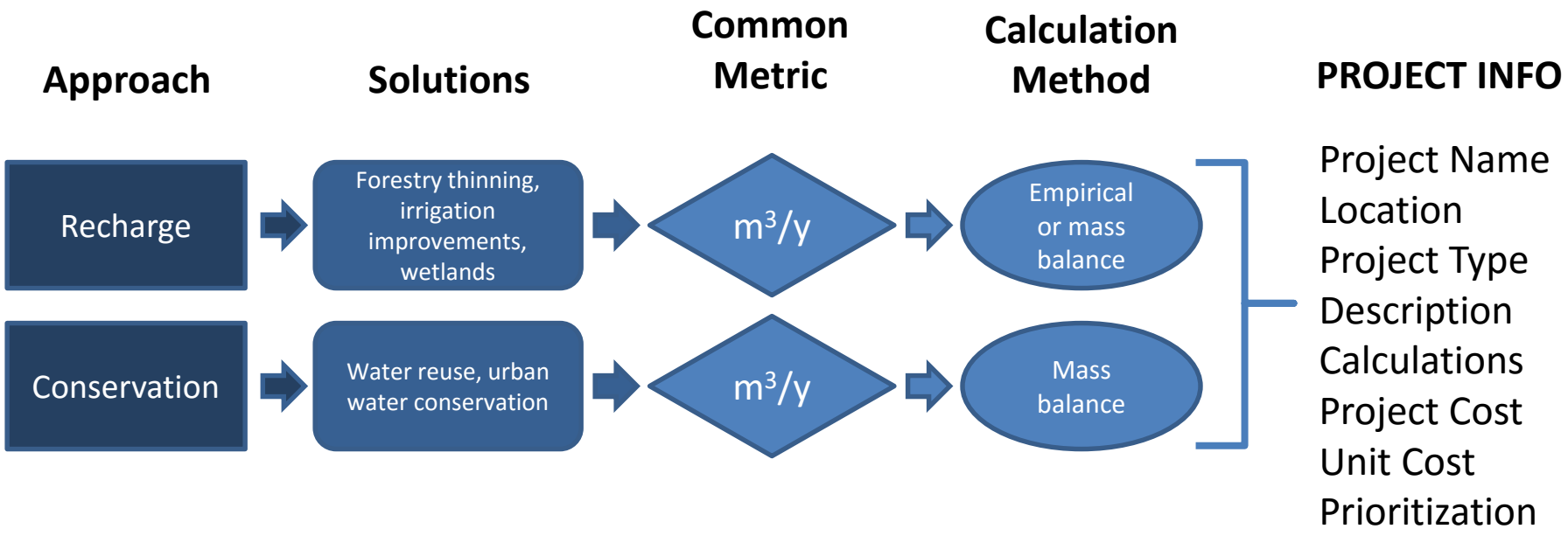
- Define the Setting & Needs
- Assess and Prioritize Options
- Strategic Implementation

All of these efforts can be based on appropriate Watershed Indicators (or "metrics")

Metric = "a standard for measuring or evaluating"

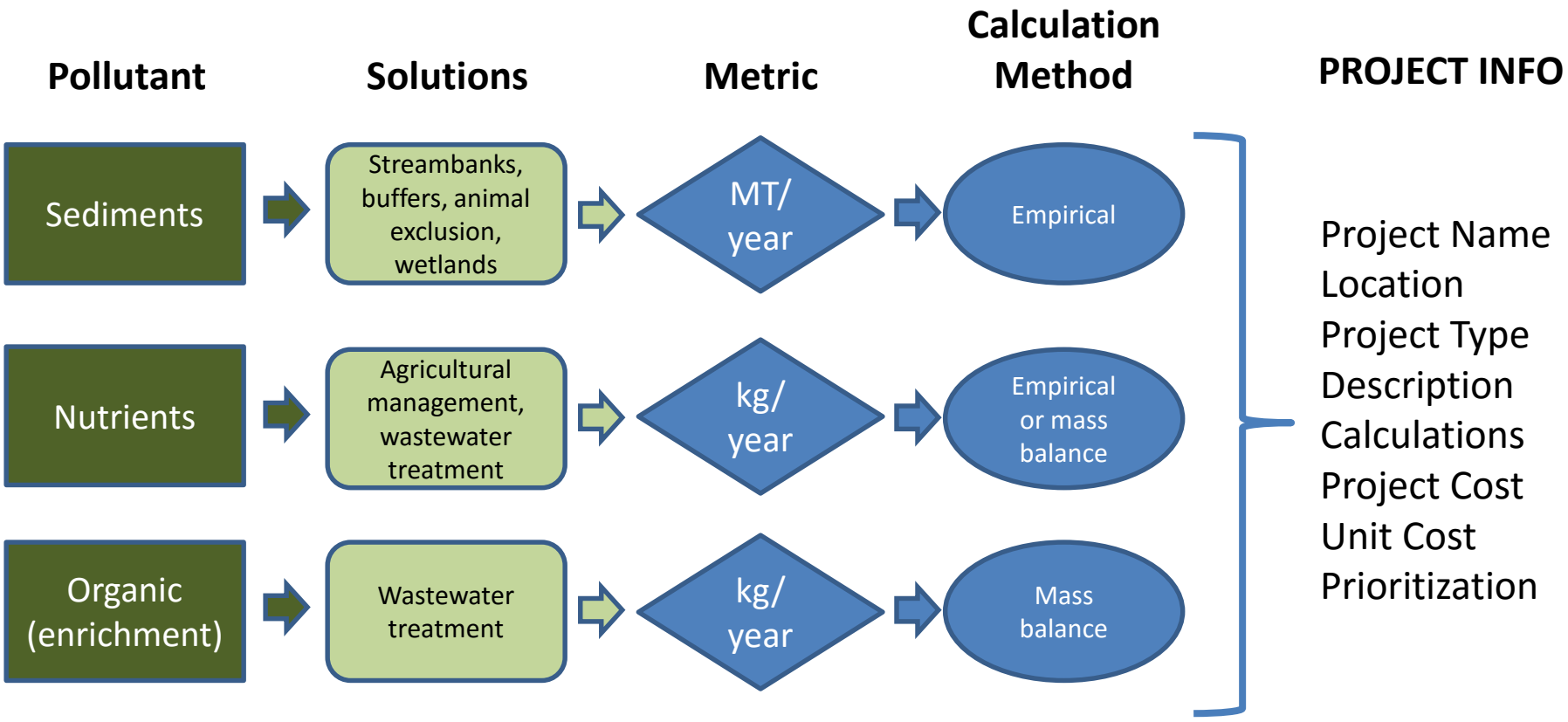
Quantifying Watershed Services

Water Quantity Projects



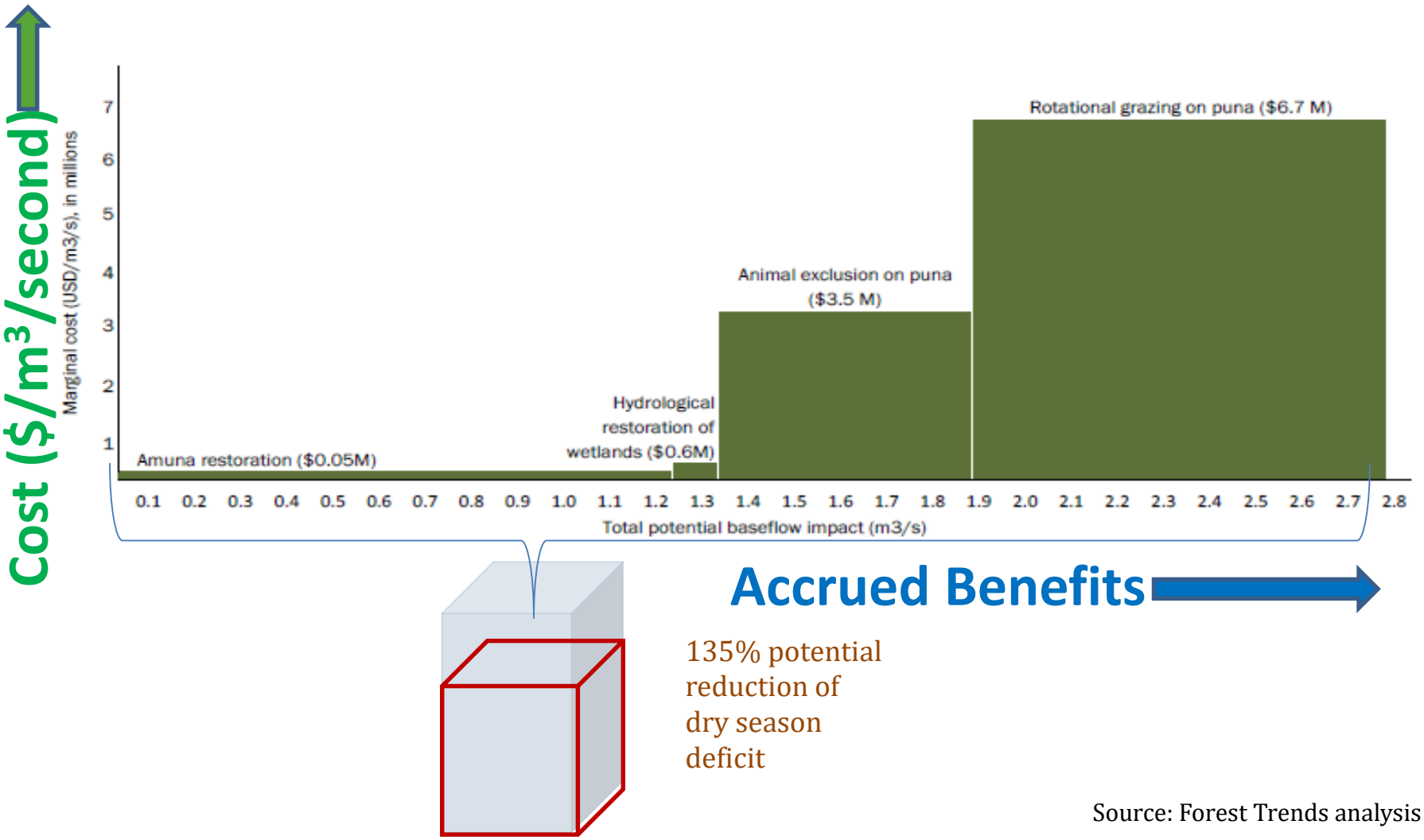
Quantifying Watershed Services

Water Quality Projects



Application of Metrics

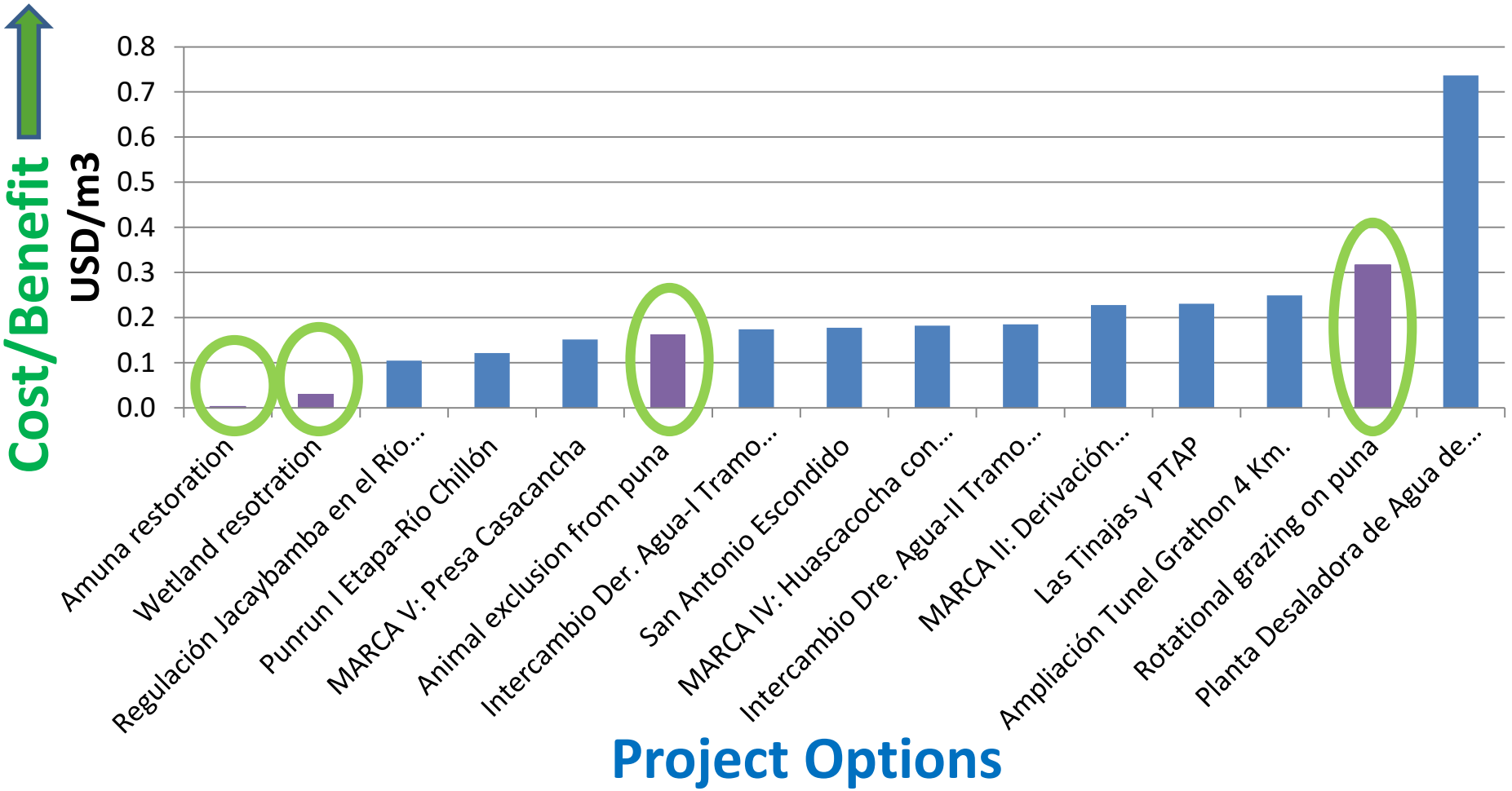
Green Infrastructure in Lima, Peru (*Aquafondo* Water Fund)



135% potential reduction of dry season deficit

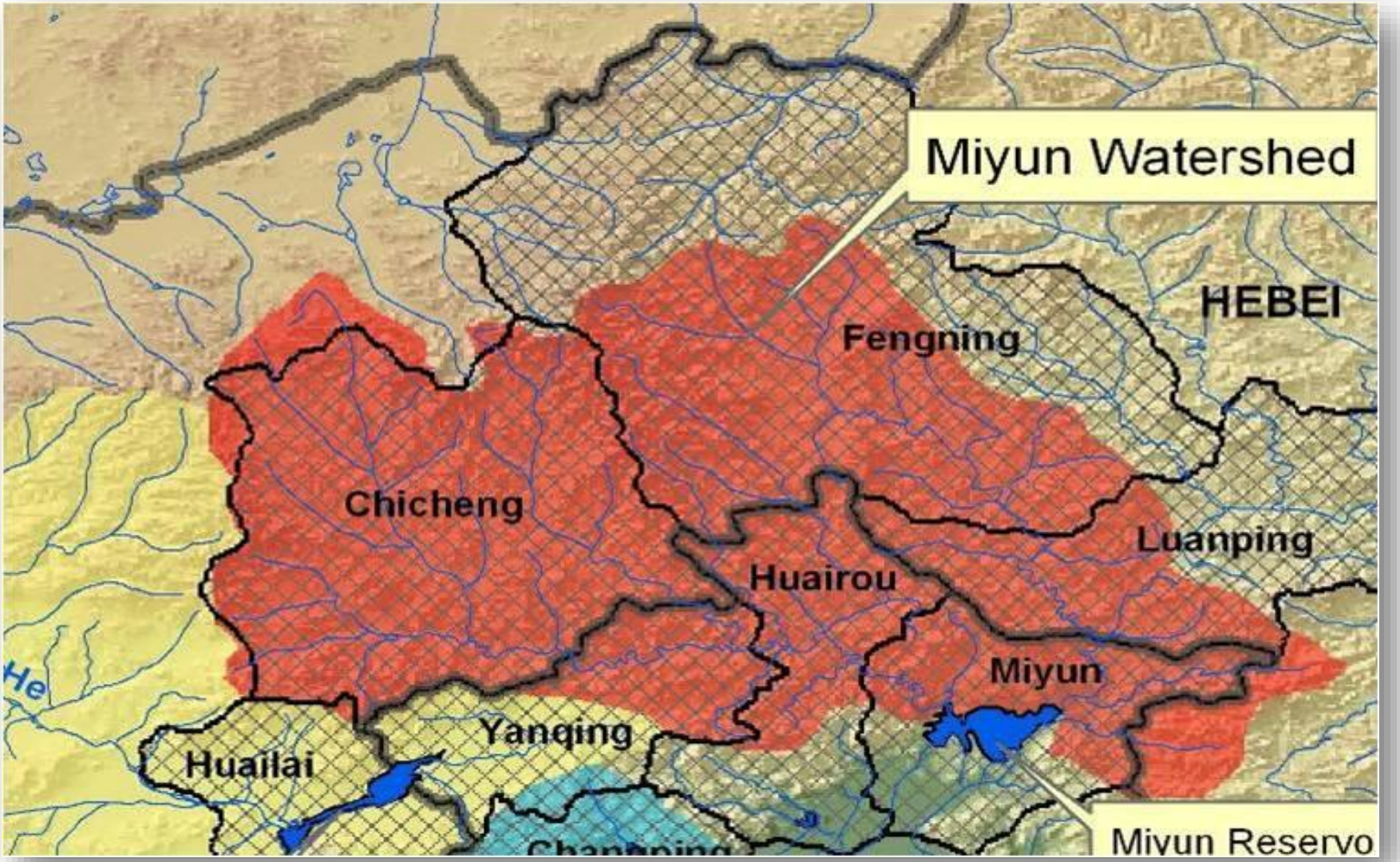
Source: Forest Trends analysis

Informed Watershed Investments in Peru Using Flow Metric (m^3/second)



Sources: Forest Trends analysis
Gray infrastructure costs: Nippon Koei (2011)

Quantity & Quality Benefits Projected to Miyun Watershed Scale



Potential Watershed-scale Benefits:

Forest Thinning *(volume: m^3/year)*

Total Area Potentially Managed: **4,650 - 8,850 km^2**
(Entire Miyun Watershed)

Total Potential Investment: **¥0.9 – 1.8B/year**
(Over 5-year period)

Potential Water Quantity Benefit: **62 – 119B m^3/year**
(recognizing 5-year benefit)

Could provide an additional 12-14% of the water provided to Beijing by Miyun Reservoir annually

Preliminary Watershed-scale Benefits:

Riparian Buffers *(quality = MT/year)*

Total Area Potentially Managed: **460 km^2**

Total Potential Investment: **¥15.6 million/year**

Potential Load Reduction Benefit: **86 MT Nitrogen/year**
11 MT Phosphorus/year

Could represent a load reduction of 3% and 44% of annual N and P loads to the reservoir, respectively

Importance of Watershed Indicators

- The correct indicators (metrics) match problems with relevant solutions
- The calculation of benefits using metrics…
  - Provides certainty for investments
  - Allows for prioritizing of projects
  - Identifies critical data gaps
  - Provides transparency and accountability
  - Provides opportunity to track progress
  - Allows for projection of benefits at scale

Thank you

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FOREST TRENDS

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