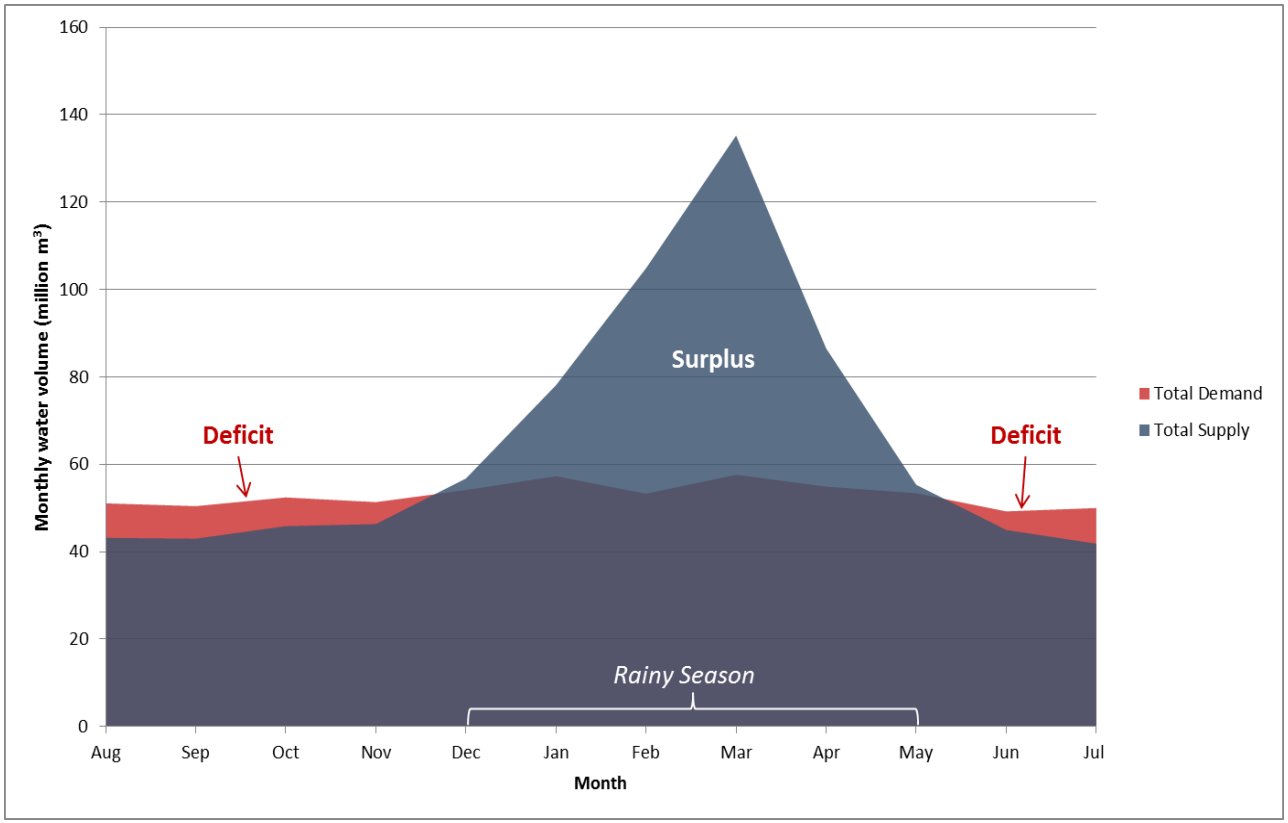
FOREST TRENDS

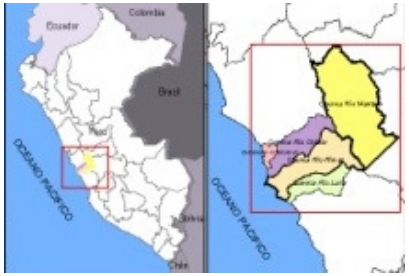
The Value of Green Infrastructure for Lima's Water Supply

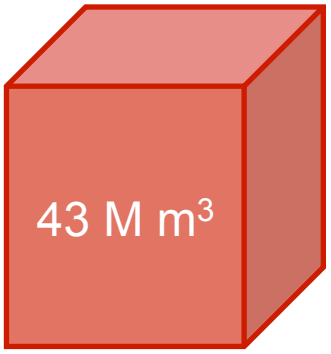
Gena Gammie, Forest Trends

CONTEXT

Lima, the second-largest desert city in the world, experiences a dry season deficit of over 40 million cubic meters of water each year.







Dry season deficit

Average Water Supply and Demand, Rimac River Basin.
Source: Peru Ministry of Agriculture (2010)

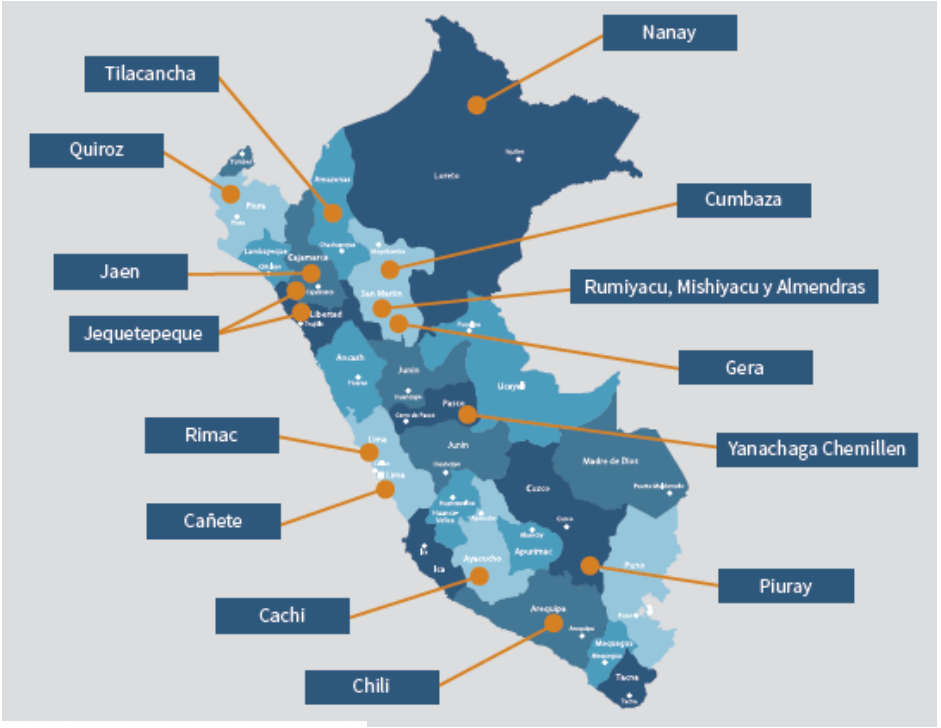
Green infrastructure can work like a sponge, turning excess water in the wet season into crucial dry season flows.

Photo credit: Gena Gammie

DECISION-MAKING CONTEXT

A new water sector reform in Peru requires all water utilities to invest in watersheds.

- SUNASS, Peru's water regulator, is working with each water utility to consider watershed investment in their new 5-year plans and budgets
- The Peru Ecosystem Services Project Incubator, a partnership of MINAM and Forest Trends, with key regional partners EcoDecision and CONDESAN, has supported this process
- The 2015-2020 budget for Lima's water utility, SEDAPAL, was under review in 2014, for approval in 2015



PERÚ Ministerio del Ambiente

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Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

CONDESAN
Consorcio para el Desarrollo Sostenible de la Ecorregión Andina

EcoDecisión
inversión en la naturaleza

APPROACH

The valuation assessment aimed to support this decision, estimating the value of green infrastructure for Lima's water supply amidst uncertainty.

GOAL

Order-of-magnitude estimates of cost-effectiveness and potential impact

CHALLENGE

Significant data gaps; basically no historical flow monitoring

Analysis Team

KIESER & ASSOCIATES
ENVIRONMENTAL SCIENCE & ENGINEERING

CONDESAN
Consorcio para el Desarrollo Sostenible de la Ecorregión Andina

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aquafondo

Schweizerische Eidgenossenschaft
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Swiss Agency for Development and Cooperation SDC

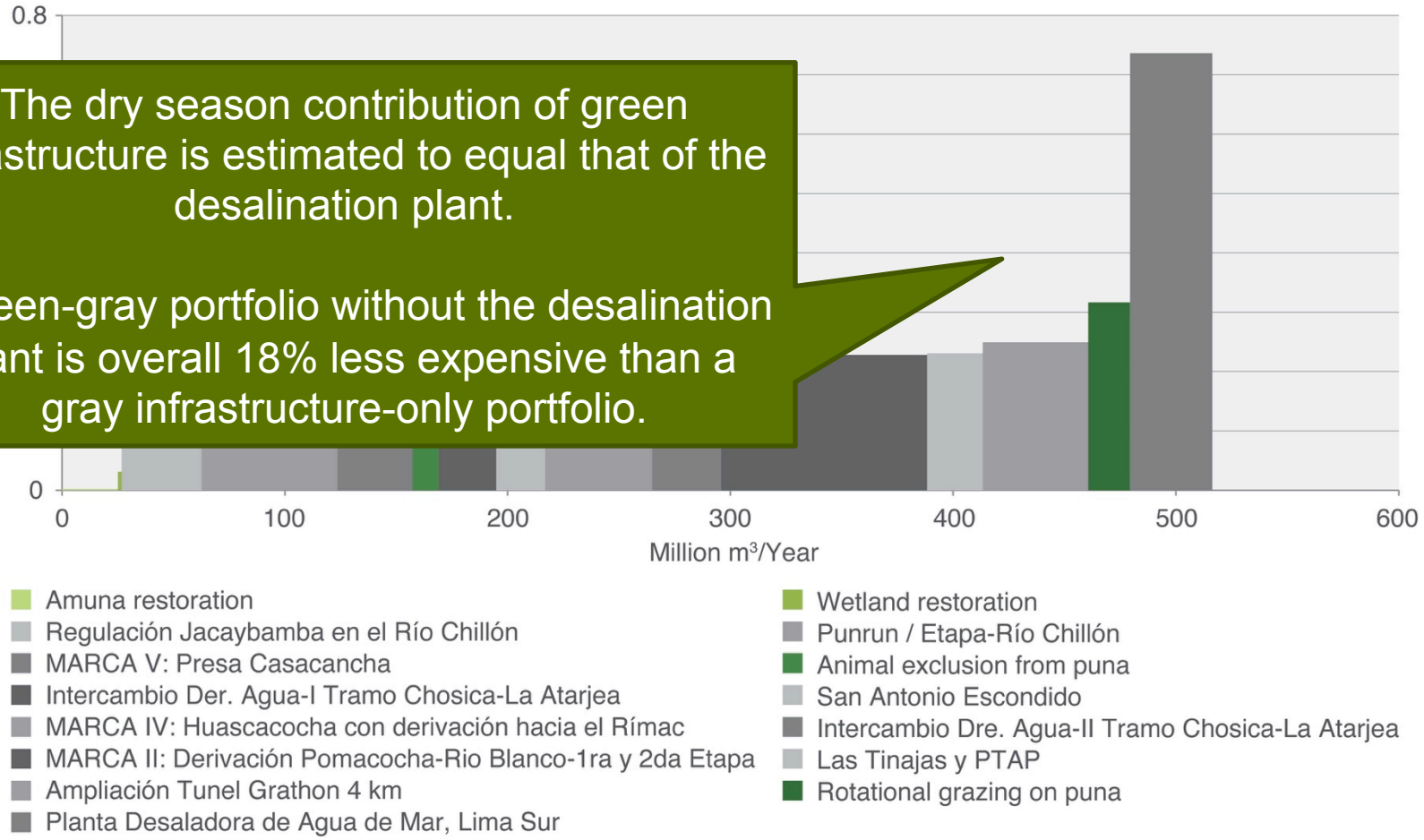
Photo credit: Aquafondo

RESULTS

We found that green infrastructure can contribute significantly and cost-effectively to an integrated portfolio of water management strategies.

The dry season contribution of green infrastructure is estimated to equal that of the desalination plant.

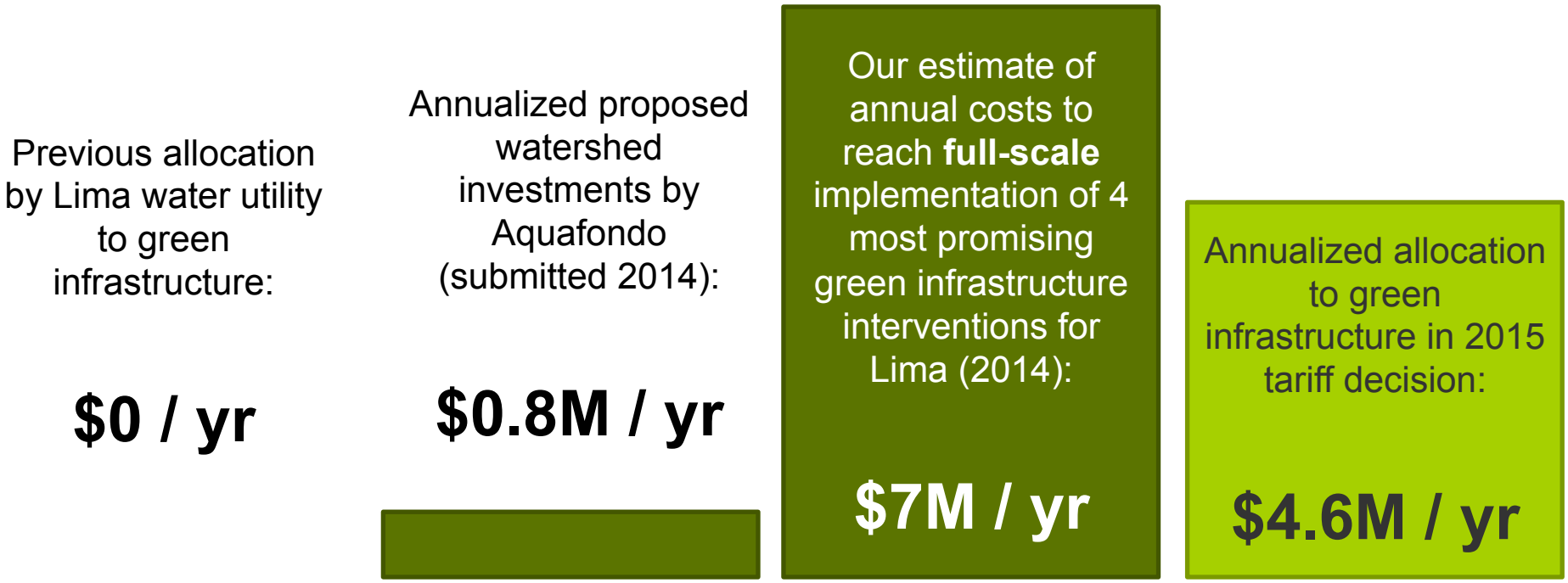
A green-gray portfolio without the desalination plant is overall 18% less expensive than a gray infrastructure-only portfolio.



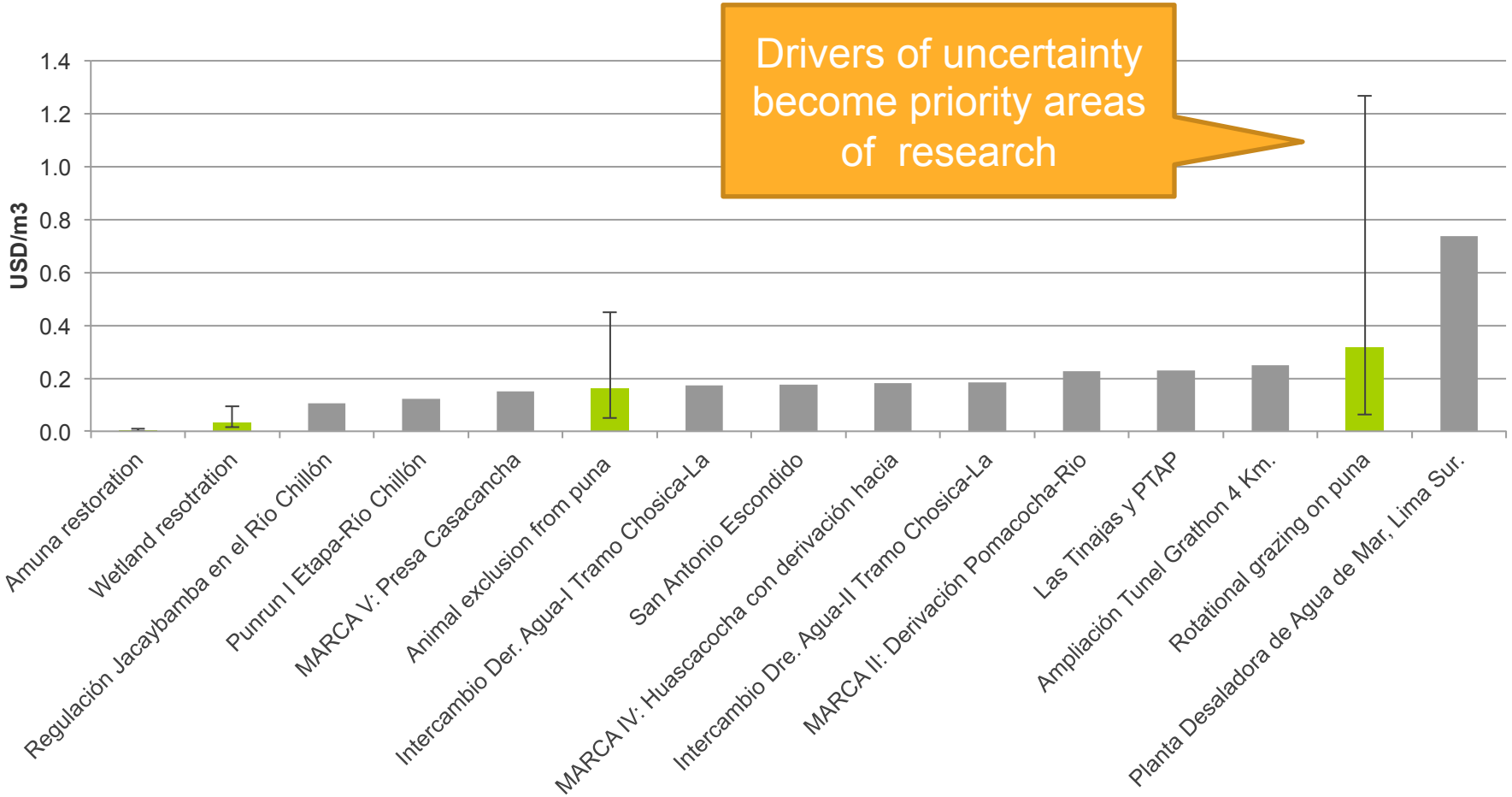
Source: Gammie and De Bievre (2014).

IMPACT

In June 2015, the 2015-2020 budget for Lima's water utility was approved, with a new fund for watershed investments, worth 1% of the utility's total budget.



Green infrastructure can be cost-competitive with gray infrastructure, even when we account for uncertainties.



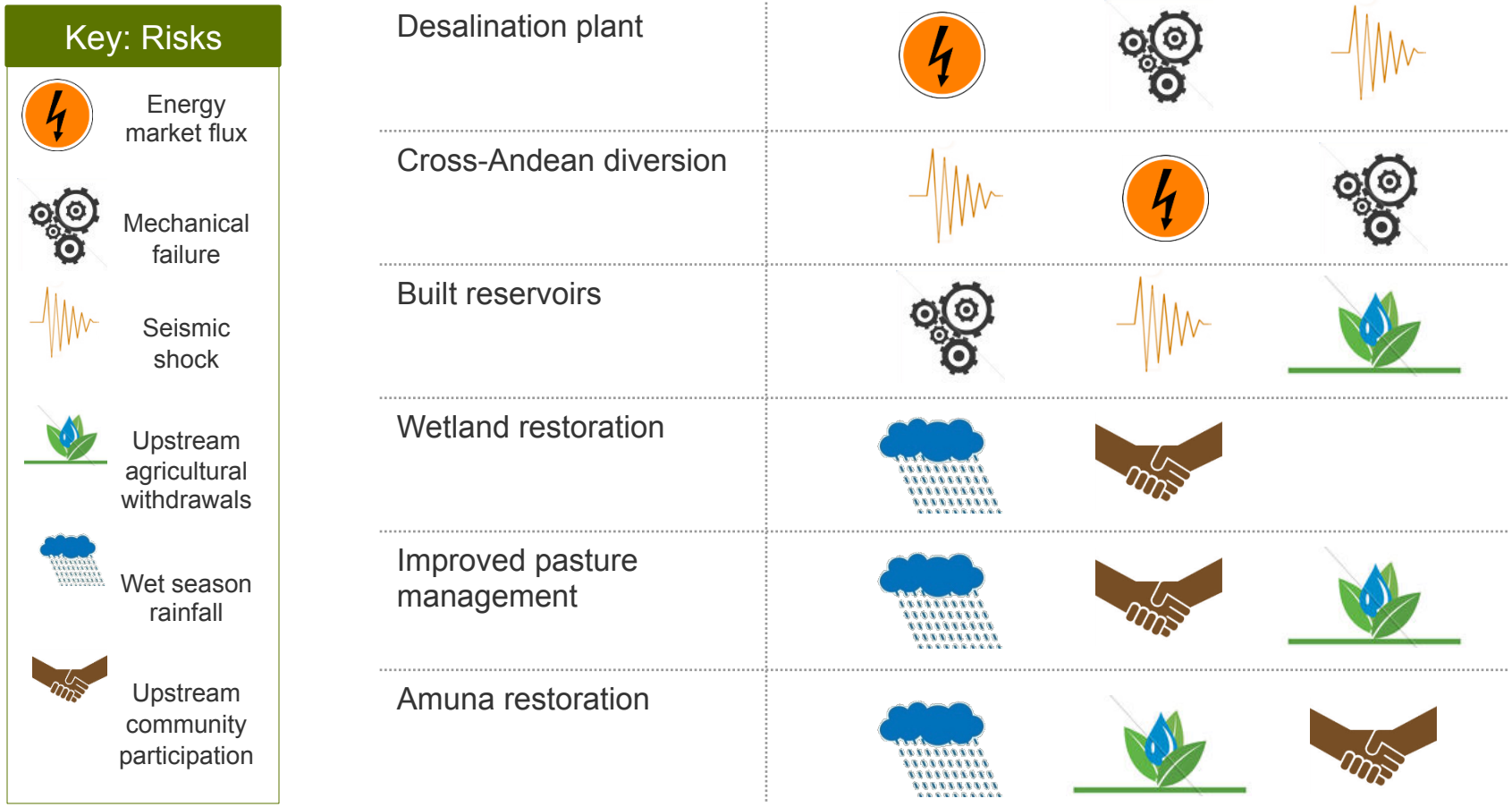
Source: Gammie and De Bievre (2014).

IMPROVING THE ANALYSIS

Beyond substitution and cost-effectiveness, toward resilience:

Water resource management portfolios that combine green and gray infrastructure hedge against different risks.

Risk exposure of green and gray interventions



Source: Forest Trends analysis

IMPROVING THE ANALYSIS

Refining our understanding of “who benefits” – and implications for policy design and prioritization of projects

Thank you

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WatershedConnect.org