



valuing  
nature

# **Agriculture Water Valuation in Santa Cruz, Bolivia**

## ***to trigger Investment in Watershed Services***

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# The project



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Agency for Development  
and Cooperation SDC



**F O R E S T  
T R E N D S**



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**Quantis**  
Sustainability counts



## Context



- Bottom up approach (started in 2003)
- 30 municipal governments involved
- 85'000 downstream users compensating 4'000 upstream families
- 170'000 ha of forest protected

## The Question

How do we scale up Investment in Watershed Services in Santa Cruz, Bolivia?

## Long term objective...

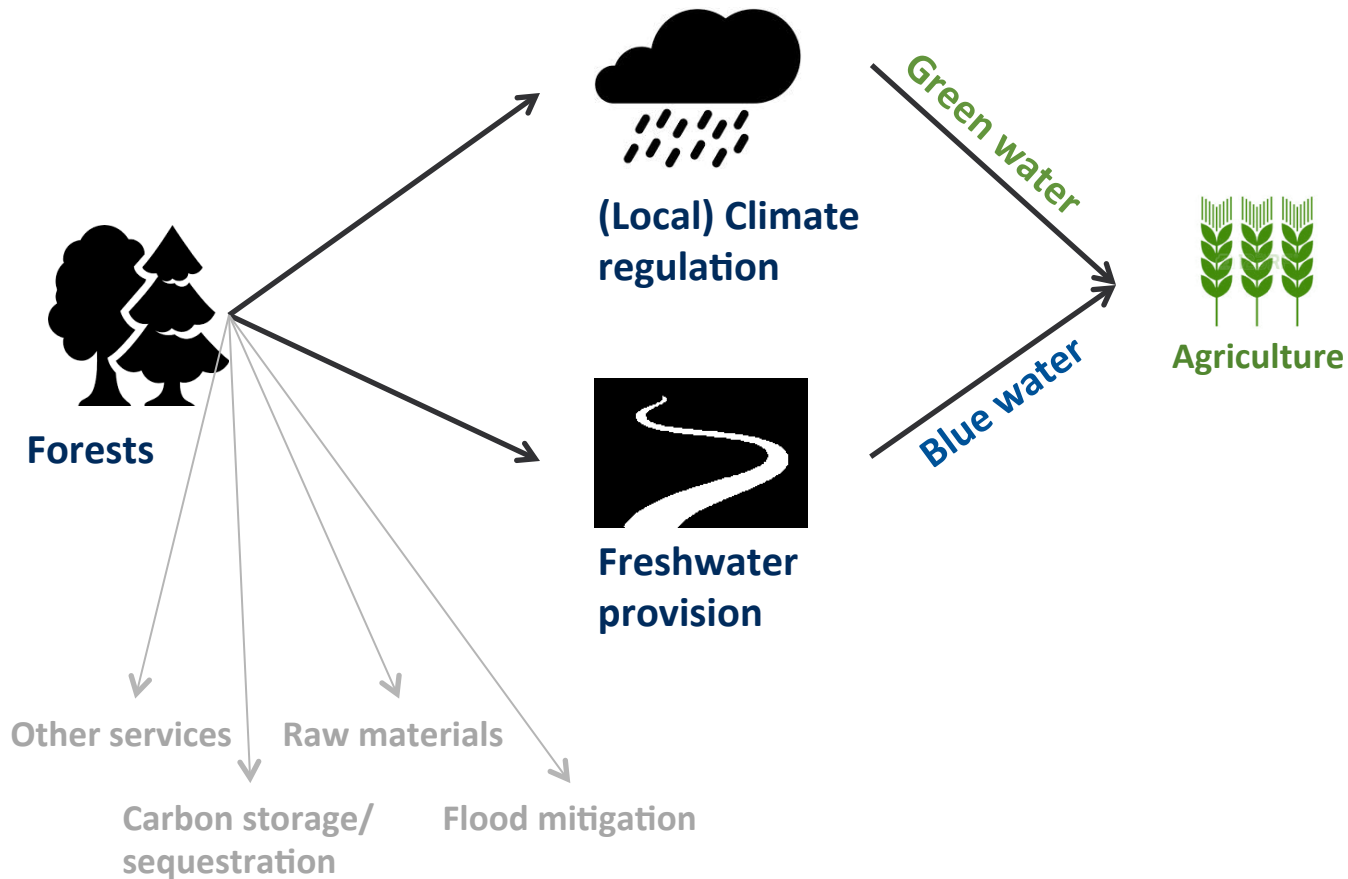
...Protect the local forests by engaging with the agricultural sector to build new Investment in Watershed Services projects.



**Water valuation** was used to:

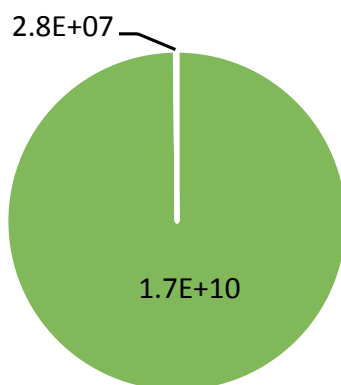
- Identify the key stakeholders
- Measure the benefits provided by key ecosystems (e.g. forests)
- Engage with stakeholders
- Better understand the local context

# Forest's ecosystem services assessed



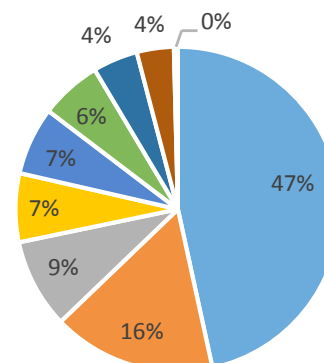
# What is the water footprint of Santa Cruz's agriculture?

Water footprint of crop cultivation in Santa Cruz 2012 (in m<sup>3</sup>)



■ WF green ■ WF blue

Green Footprint share per crop in in Santa Cruz 2012



■ Soy ■ Maize ■ Sunflower ■ Sugarcane ■ Rice  
 ■ Sorghum ■ Wheat ■ Cotton ■ Sesame

## Main conclusions:

- The region relies mostly on natural rainfall (99.5%). Irrigation is not significantly developed yet.
- Soybean is the biggest consumer of green water (47%)

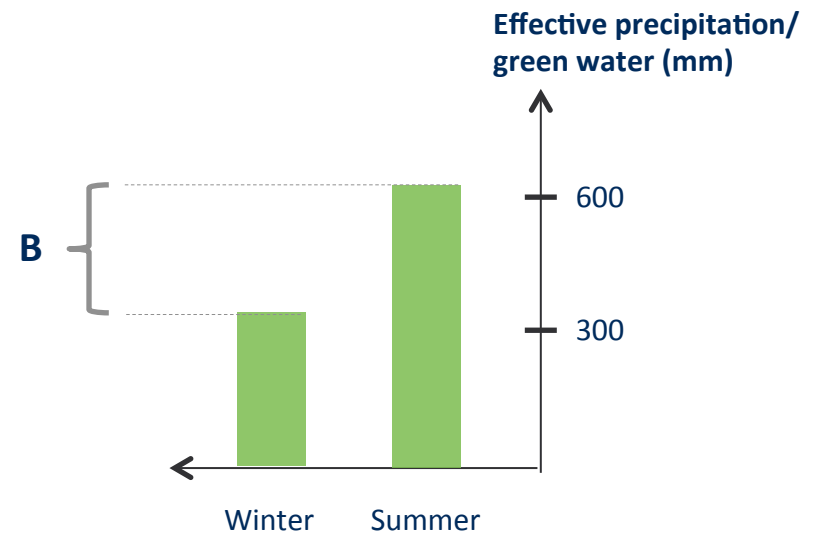
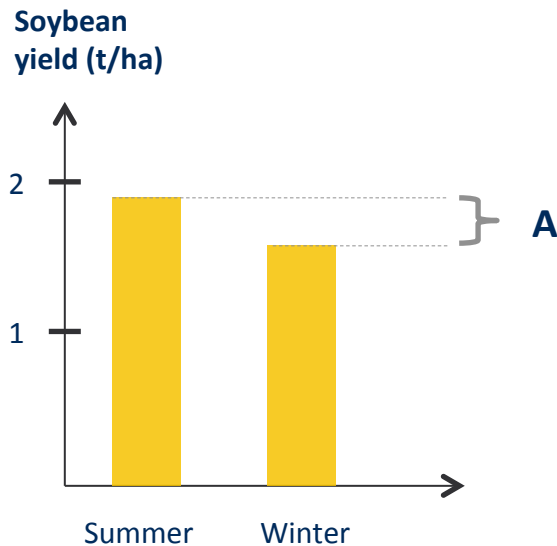


# The value of rainwater and freshwater – Example of valuation

## Rainwater valuation:

$$\frac{A}{B} \cdot C$$

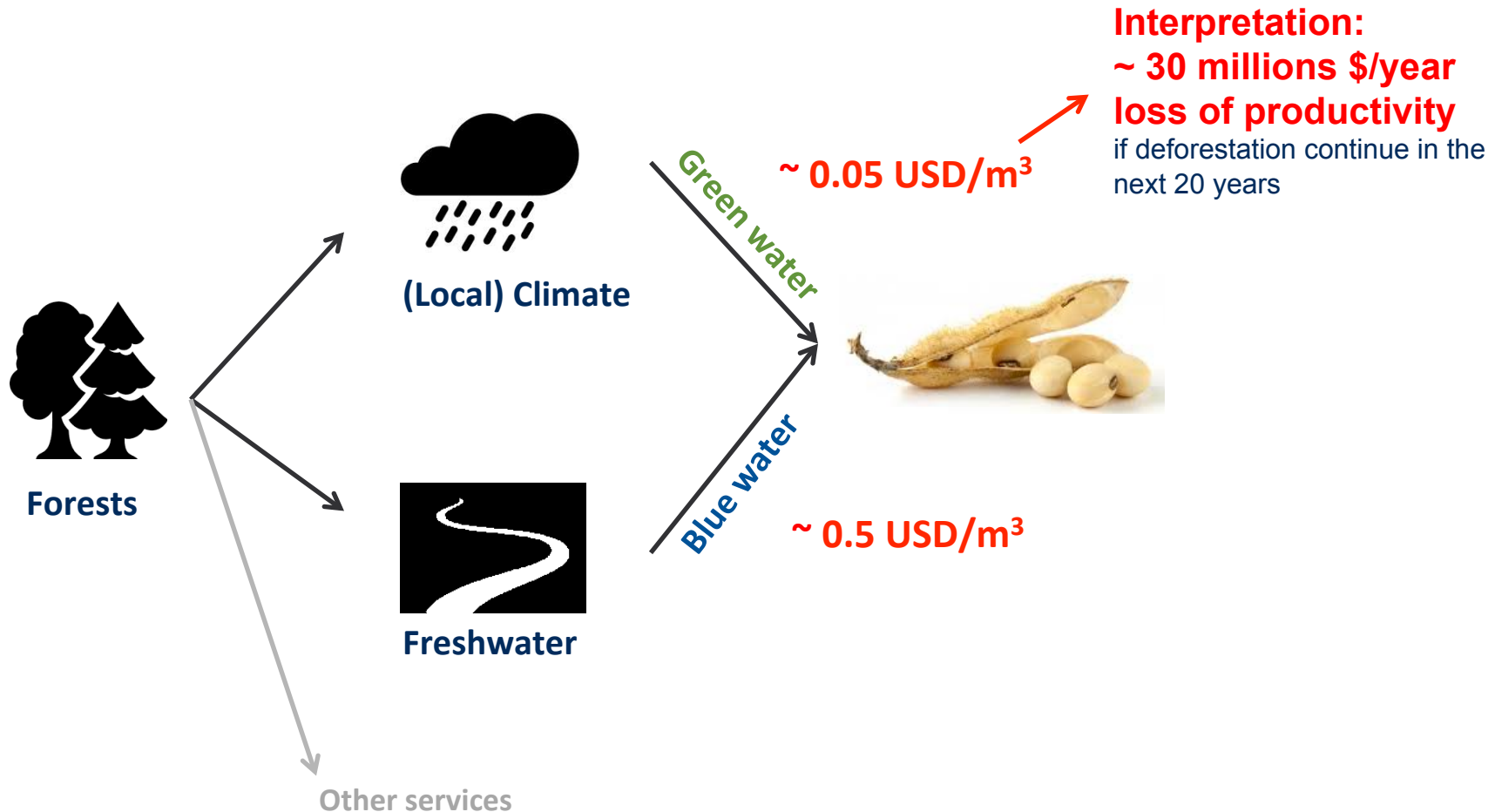
Correction Factor



$C_{\text{correction factor}}$  is accounting for the fact that part of the yield difference comes from other factors as well

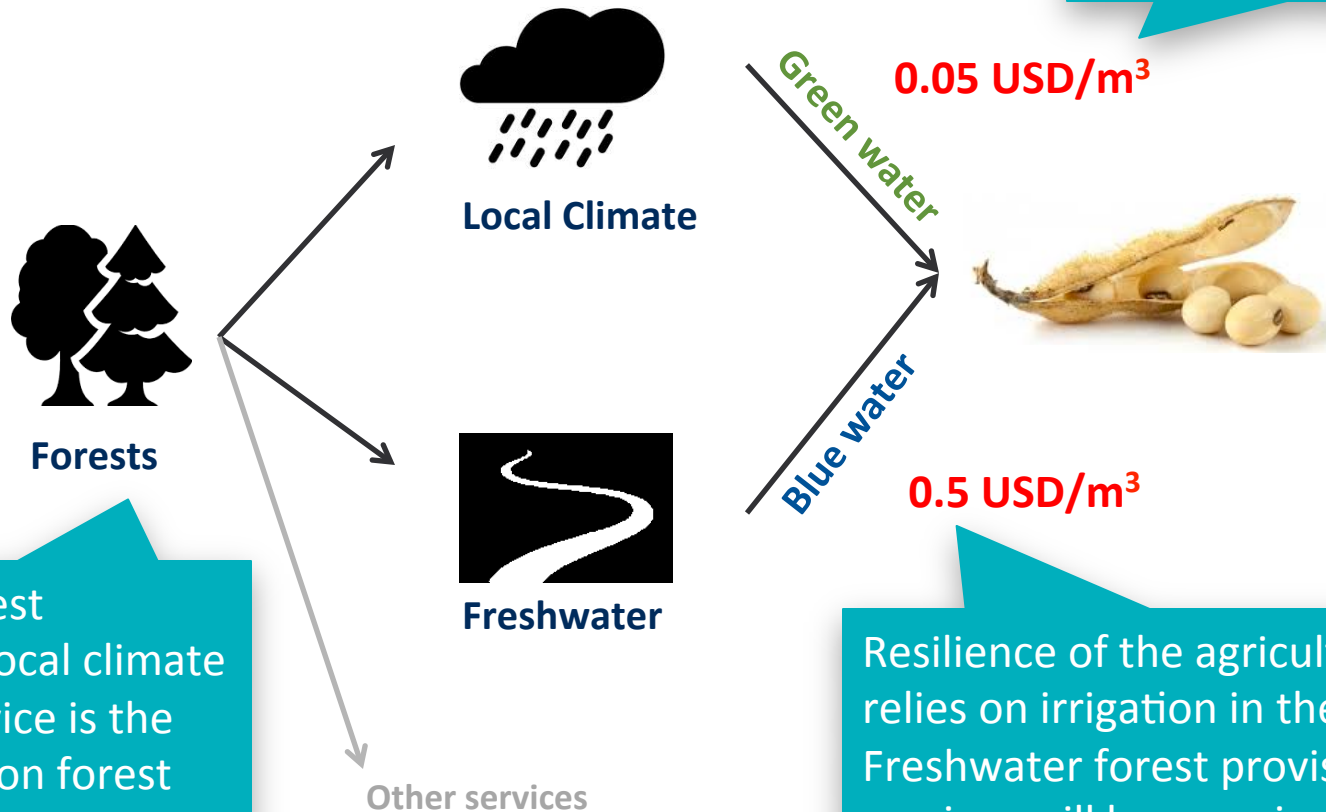


## Results – One possible interpretation



## Another interpretation

Seasonal variability is more important than marginal change due to climate change



Part of the forest providing the local climate regulation service is the Brazilian Amazon forest

Resilience of the agricultural sector relies on irrigation in the future. Freshwater forest provision services will become important.

# The link with forests



## Conclusion

- Valuing water, in the context of ecosystem services, helps identify the **business case** to protect the nature
- **Water footprint assessment** can support water valuation
- Water valuation quantitative assessment, despite their uncertainty, is seen as **important to support dialogue with stakeholders** and **trigger decision making**
- Valuing water **will not “save the world” alone**. It should be embedded in current and new projects, stakeholders engagement processes, communications, etc.

## Results over various sub-regions

		Green water value (marginal value)	Green water value (average value)	Blue water value (summer – marginal value)	Blue water value (winter – marginal value)
Sub-region name	Code	In USD/m <sup>3</sup>			
Pie de Monte – Centro Oeste	PM1	0.046	0.570	0.334	0.173
Region del Rio Pirai – Zona baja	PI2	0.067	0.225	2.410	0.485
Aluvial del Rio Parapeti	RP	0.054	0.599	0.235	0.157
Region sur de Santa Cruz – Suelos Arenosos	SC	0.067	0.260	0.641	0.283