

Climate Change & Payments for Ecosystem Services

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Intro

- A threat to one is an opportunity for another
 - When you are better, smarter (basic biology)
 - = Organised

Two topics

- Effect on climate change on crop suitability
 - Referring to study done recently by
 - p.laderach@cgiar.org
- Opportunities through PES
 - Referring to PES in cocoa agroforestry by
 - b.vanelzakker@louisbolk.org



Climate change

- Research done using different climate change models, WorldClim, SRES-A2, using 19 bioclimatic variables
- For Ivory Coast and Ghana
- Continuing with existing levels of emissions (business as usual)

Climate change from 2010 to 2050

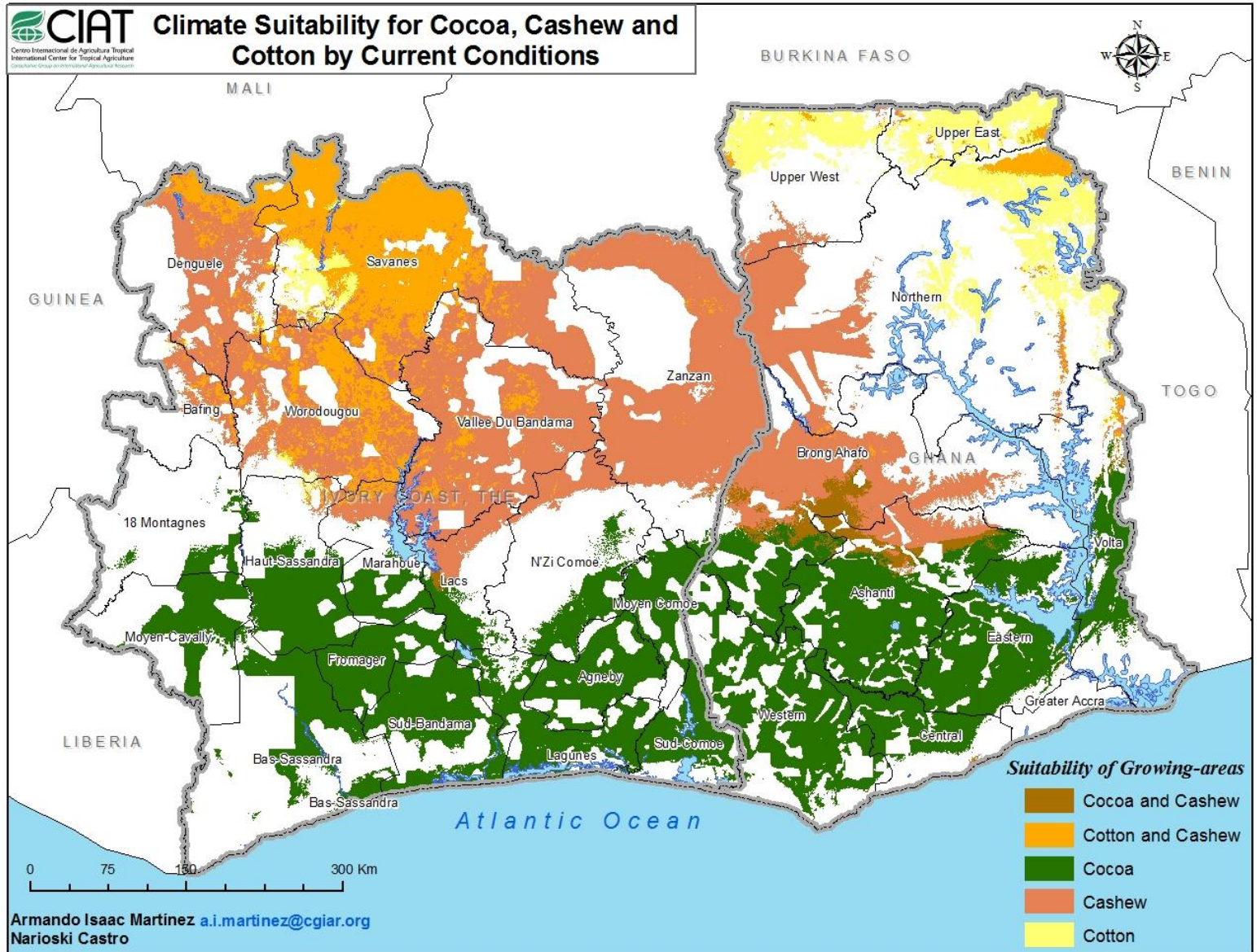
- 2 to 3 degrees Celsius warmer throughout the year
- More irregular rainfall, different per month
- Erratic, heavier rainfall and stronger droughts

Conclusion:

- Impact is significant
- Crops may move to other parts of the globe

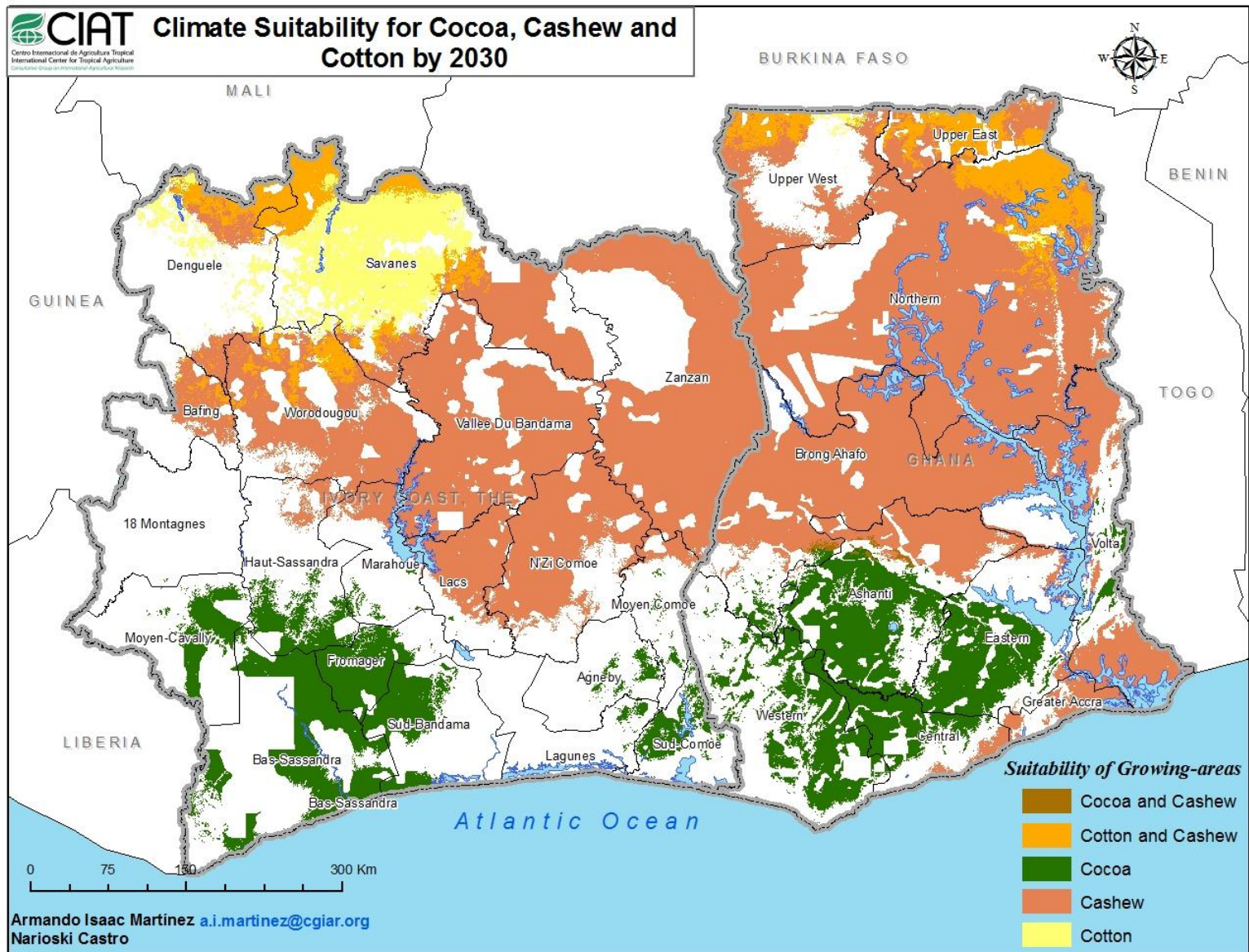
Climate change impact on three major cash crops in Ghana and Côte d'Ivoire.

2010



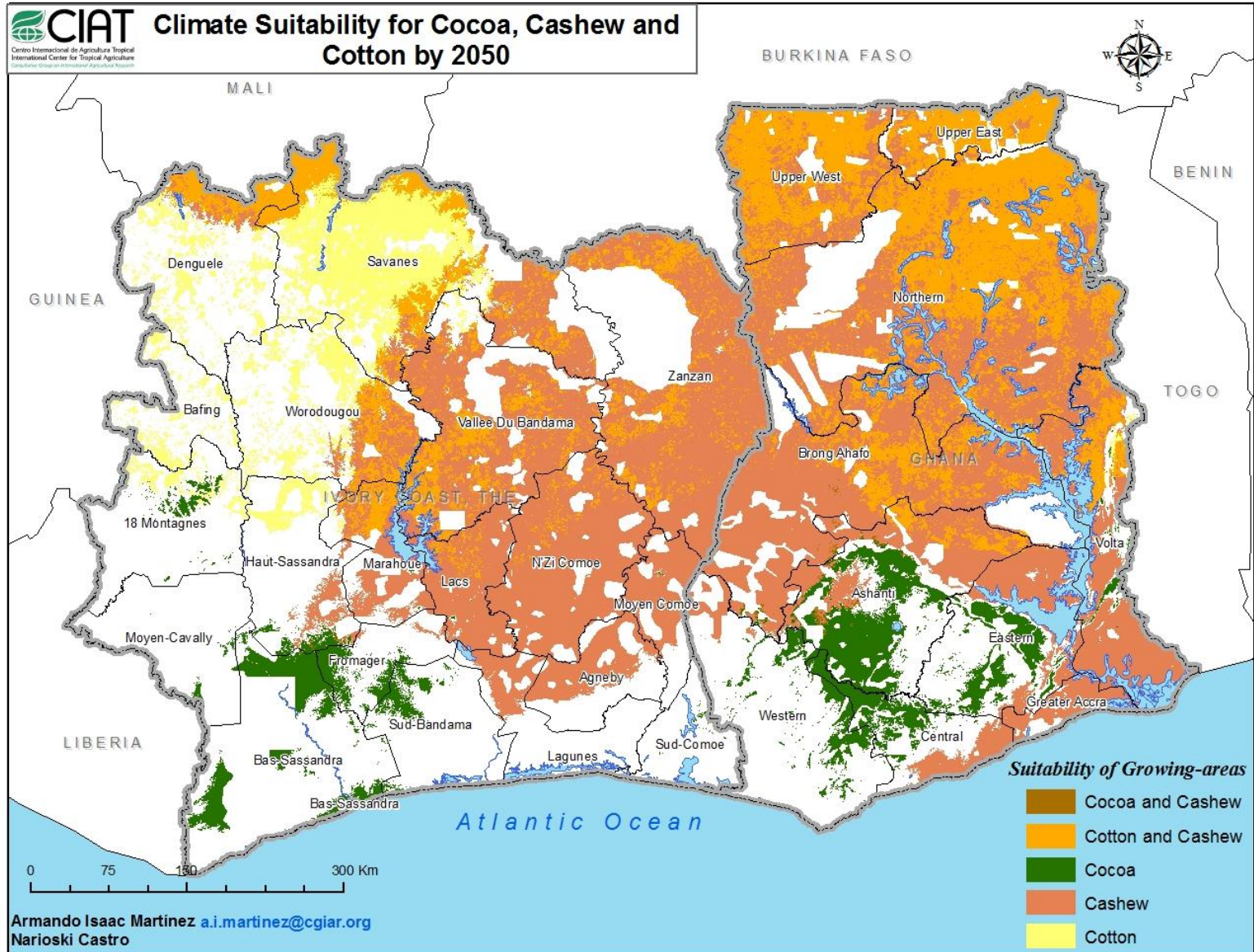
Climate suitability by 2030 for cocoa, cashew and cotton in Ghana and Côte d'Ivoire.

2030



Climate suitability by 2050 for cocoa, cashew and cotton in Ghana and Côte d'Ivoire.

2050



Payment for Ecosystem Services

in cocoa agroforestry

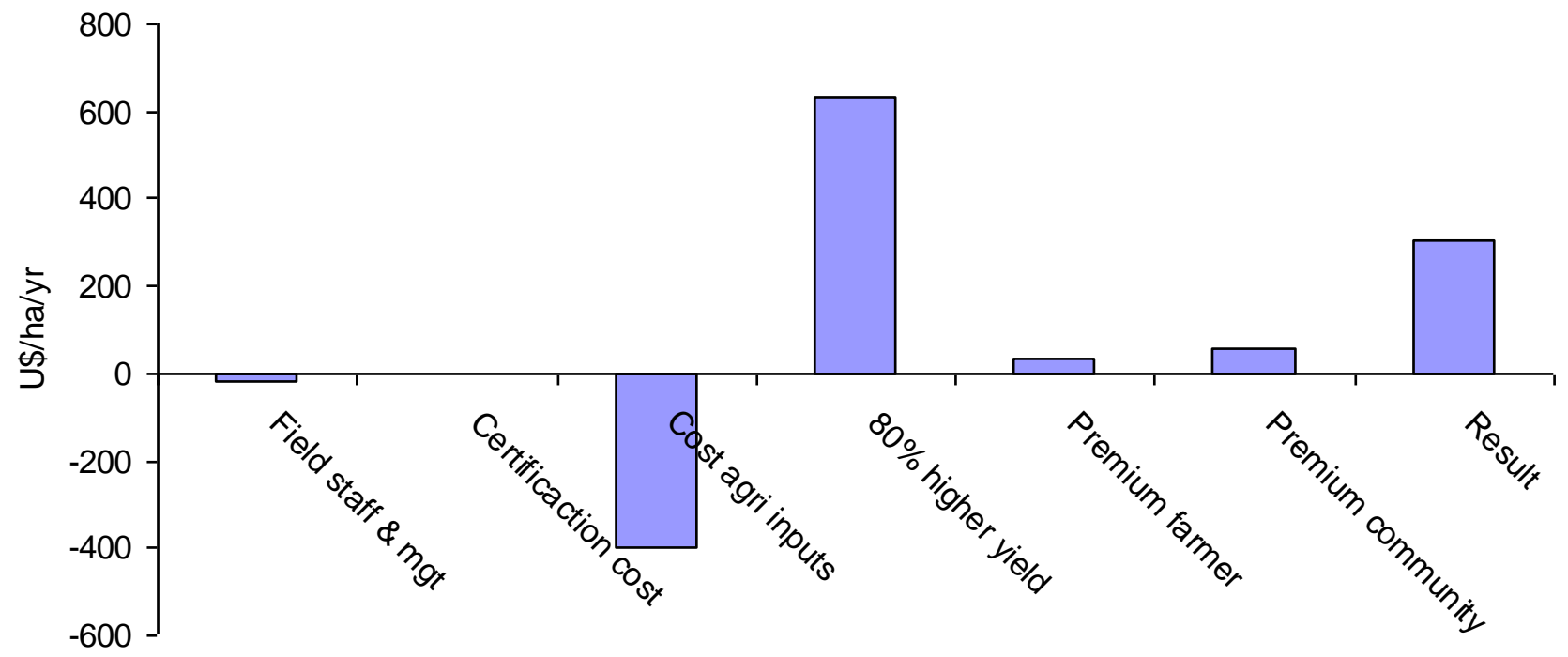
What are the ecosystem services:

- No deforestation (primary & secondary forest)
 - Sustainable farming systems, no soil degradation; permanent agric
 - Important as deforestation contributes up to 20% to CC
 - Eligible for REDD+ ?
- Provision of drinking water
 - Rainfall attraction, water retention, release throughout the year
- Lower emissions through GAP (no or limited N fertiliser)
 - NO_x is significant contributor to CC (up to 60% of agric)
- (Agro) biodiversity, food security
- Carbon sequestration
 - In soil and trees
 - Carbon credits

In cocoa

- On top of certification (org, FT, RA, Utz)
- Certification 'already' takes care of:
 - Training in GAP
 - Correct use of correct inputs, (provision of inputs)
 - Better practices
 - 80% higher yield
 - There is a farmer organisation, driver for change
 - Premium for farmer and community
- Next slide gives cost & benefit
 - 2000 farmers, 150 kg/acre, 30% side selling
 - Fertiliser not subsidised (on the longer term)
 - GAP and inputs result in 80% increase of yield
 - Extra income is approx US\$ 300/ha/yr
 - Is that worth the significant extra labour input?

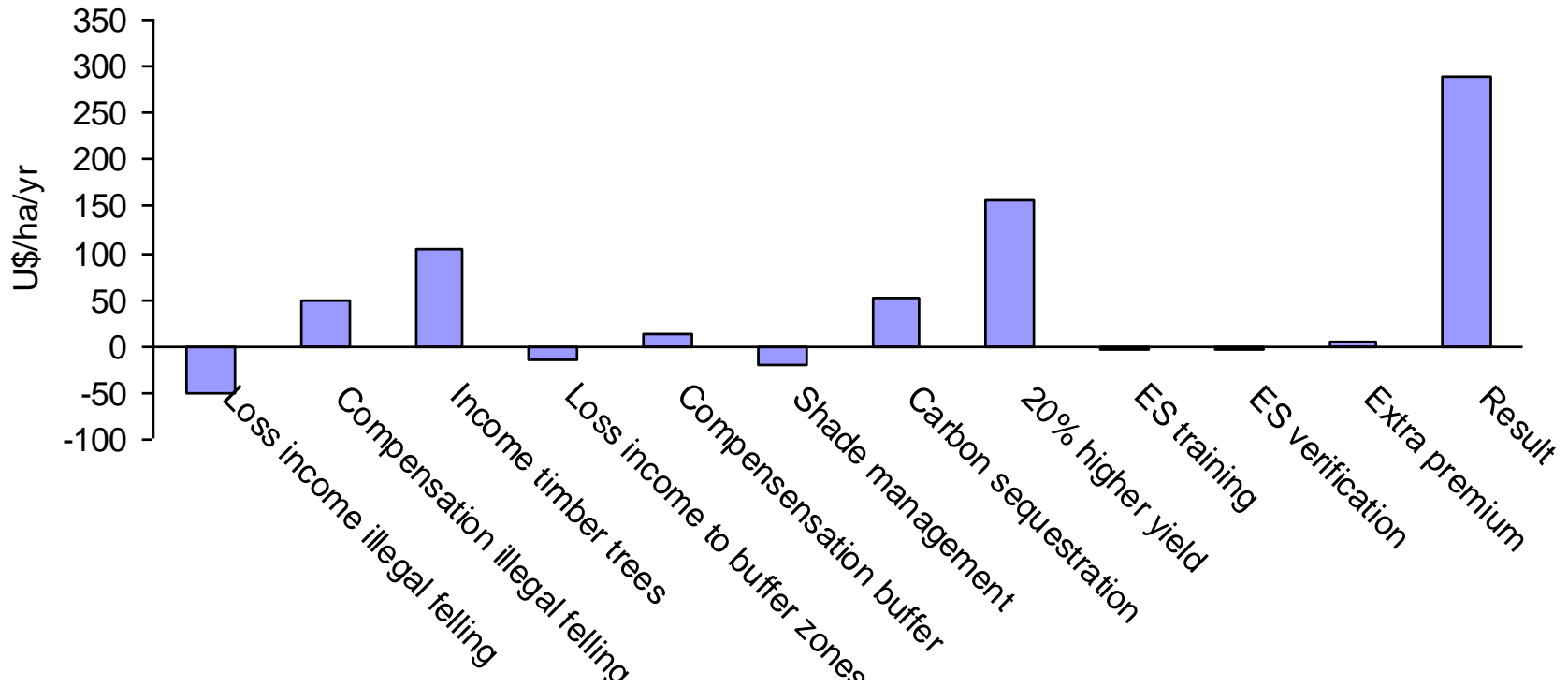
Benefit from certification, excl extra labour



In cocoa

- PES is about:
 - Illegal felling replaced by commercial timber
 - Farmer owned trees
 - Buffer zones along streams (compensated)
 - Shade management, 50% shade, > 50 trees/ha
 - 65 tons of CO₂/ha during 25 years @ U\$ 20/t
 - Leading to increasing yields & less dependency on inputs (expressed as increase in yield)
 - ES training, input = shade trees
 - ES verification added onto existing ICS
 - Extra farmer payment to offset opportunity cost
- Results in an extra approx. U\$ 300/ha/yr income
 - Is that worth the (very limited) extra labour input

Cost & Benefit PES (excl extra labour)



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the natural source of knowledge