

# Integrative Conservation Planning in the multi-ethnic South-Caucasus



Dr. Jan Barkmann Dr Johana Schott

Talin Kalatas

Dr. Stefan Schwarze

Grigol Abramia

Dr. Vakhtang Shelia

Dr. Maia Gelashvili

Dr. Gizo Gogichaishvili

Dr. Nikoloz Mikava

Davit Shelia

Dr. Susanna Hakobyan

Dr. Vardan Urutyan

Zaruhi Babayanjan

Dr. Emilia Nercissians

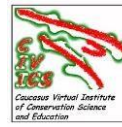
Dr. Bernd Gehlken

Dr. Vugar Babayev

## Quantitative Study

- random clustered sample (N= 3\*100)
- household and land use survey
- choice Experiment
  - pilot study: 3x30 interviews
  - main study : 3 x100 interviews
- Georgian, Armenian, Armenian-German scientist (M.S., PhD) interviewers

# CE Sample

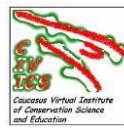


	<b>Study Villages (total)</b>	<b>Female respondents</b>	<b>Male respondents</b>
<b>Lake Arpi/AR (N=100)</b>	9 (18)	50	50
<b>Samtskhe-Javakheti/GE (N=100)</b>	6 (11)	11	89
<b>Lagodekhi/GE (N=99)</b>	6 (12)	7	93



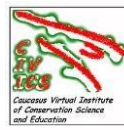
Armenia – Lake Arpi





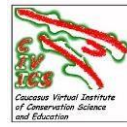
## Household Data – Lake Arpi

- 4,8 people (1 child)
- HH 11,8 years of education
- Very poor infrastructure (markets 47 km; veterinary 17 km; police, bank and clinic 11 km)
- 9,2 ha (3 plots, 7 ha used)
  - 83% grassland (hay making), 6% potatoes, 3% wheat, 2% barley, 5% other
- communal pasture land
  
- Income: 3840 EUR/yr
  - 1940 subsistence farming income
  - 1900 cash income
    - 72% from employment work; 4% from farm, 20% state payments, 4% remittances (?)



## Household Data – Lake Arpi

- animals
  - 10 cows (min:0; max:35) – 1,5 heads sold in 2012
  - < 1 pig
  - 9 sheep (min:0; max:70)
  - 16 chicken
  - 2,5 calfs (min:0; max:20)
- 16,000 L milk a year
  - 4000 L milk sold in 2012
  - 600 kg dairy products (barter)
- 100 kg meat autoconsumption in 2012

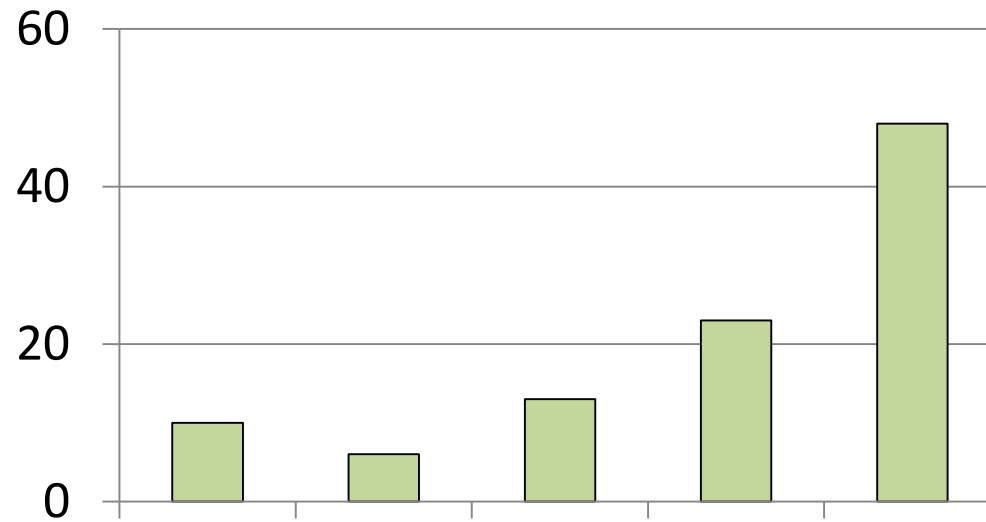


## Household Data – Lake Arpi

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- utility grid improvement in demand
  - natural gas (89%) and water (62%)
  - electricity (1%)
- WTP for improvement → 10,000 AMD (min:0, max: 80,000 AMD)
  
- Enlargement of herd desired → lack of money

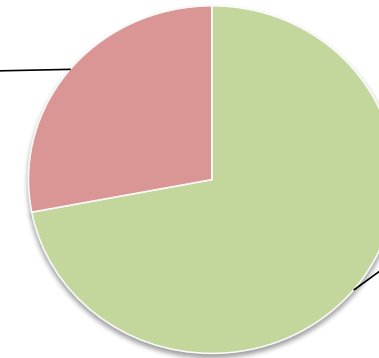
# Attitude towards NP – Lake Arpi



very negative attitude...  
negative attitude...  
neutral attitude...  
positive attitude  
very positive attitude...

## wish to be involved in NP planning - Lake Arpi

"I wouldn't like to be actively involved in..."  
28%



"I would like to be actively involved in..."  
72%



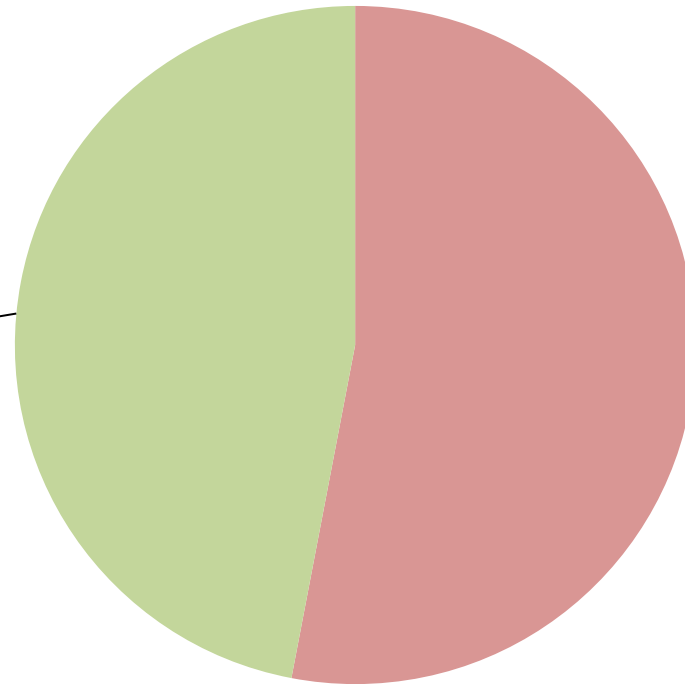
# Attitude towards NP – Lake Arpi

## Use restrictions - Lake Arpi

"I think there  
wont be any  
further use  
restrictions....

"

47%



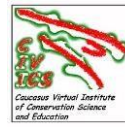
"I think there  
will be  
further use  
restrictions...

"

53%

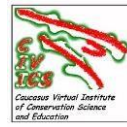
# Georgia – Samtskhe Javakheti





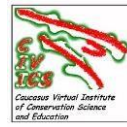
## Household Data – Samtskhe - Javakheti

- 5,4 people (1 child)
- HH 10,7 years of education
- poor infrastructure (markets and vet. 24 km; police, bank and clinic 7-14 km)
- 1,5 ha ( 2 plots)
  - 43% potatoes, 27% barley, 18% grassland, 10% wheat, 3% vegetables, 1% other)
- communal pasture land
  
- Income: 4900 EUR/yr
  - 3400 cash income
  - 1500 subsistence
- Cash income: 59% from employment work; 10% from farm, 19% state payments, 12% remittances



## Household Data – Samtskhe - Javakheti

- animals
  - 4,5 cows (min:0; max:16) – <1 heads in total sold in 2012
  - 1 pig
  - 12 sheep (min:0; max:180) – 1,4 sold in 2012
  - 17 chicken
  - 2 calfs
  - 2 lambs
- 5220 L milk a year
  - 1430 L milk sold in 2012
  - 170 kg cheese (barter)

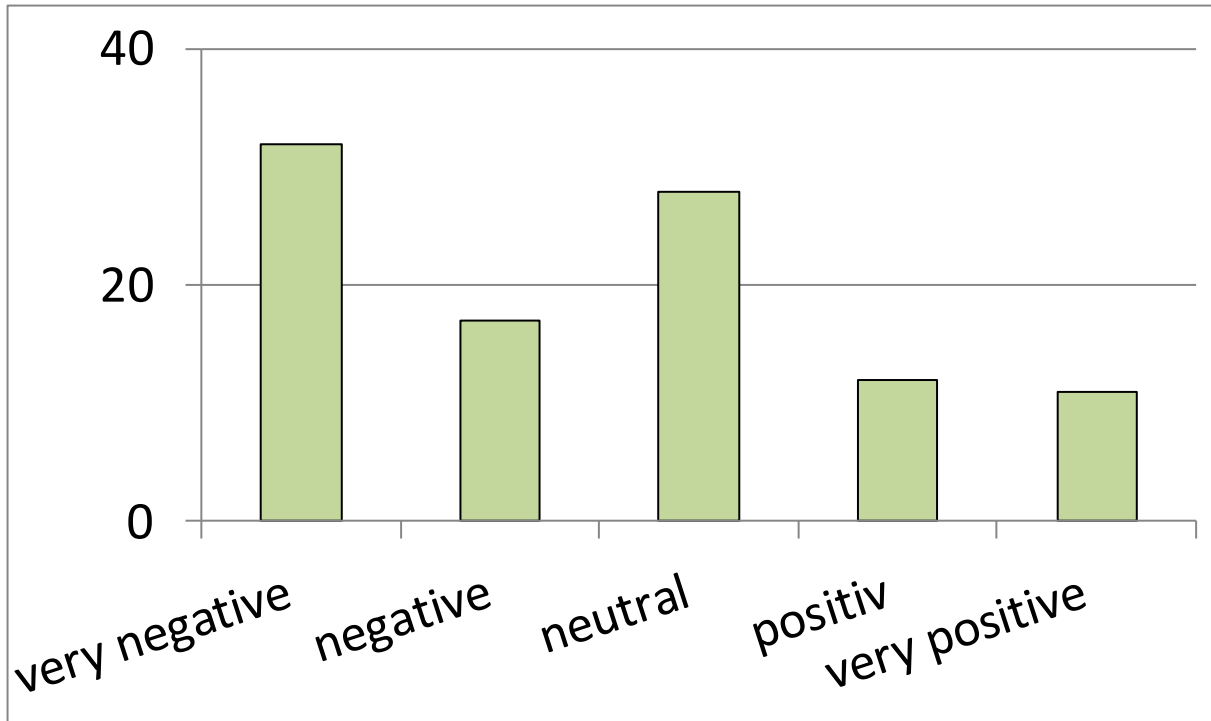


## Household Data – Samtskhe - Javakheti

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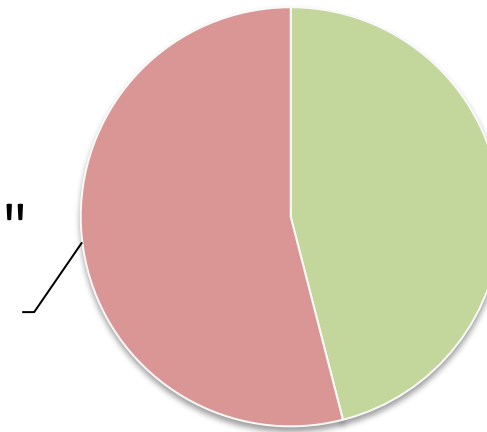
- utility grid improvement in demand
  - natural gas (88%) and water (89%)
  - electricity (1%)
- WTP for improvement → 30 GEL (min:0, max:120 GEL)
  
- Enlargement of herd desired → lack of money

# Attitude towards NP – Samtskhe - Javakheti



## wish to be involved in NP planning - Samtskhe - Javakheti

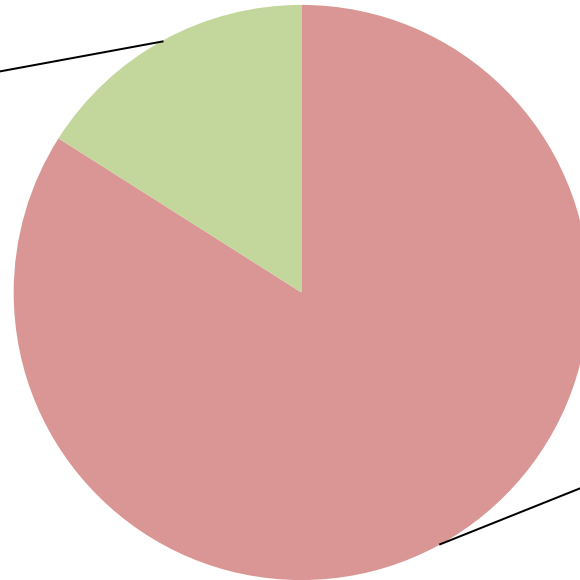
"I wouldn't like to be actively involved in..."  
54%



"I would like to be actively involved in..."  
46%

## Use restrictions - Samtskhe - Javakheti

"I think there  
wont be any  
further use  
restrictions...."  
16%

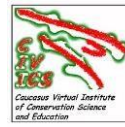


"I think there  
will be further  
use  
restrictions..."  
84%

# Georgia – Lagodekhi

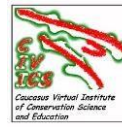






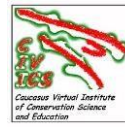
## Household Data - Lagodekhi

- 4,5 people (0,5 child)
- HH 10,6 years of education
- acceptable infrastructure (markets, vet., police, bank and clinic 7-8 km)
- 1,2 ha ( 2 plots)
  - 74% corn, 15% grassland, 3% wheat, 2% vegetables, 1% barley, 5% other
- communal pasture land
  
- Income: 1020 EUR/yr
  - 810 cash income (?)
  - 210 subsistence
- Cash income: 39% from employment work; 33% from farm, 14% state payments, 14% own business



## Household Data - Lagodekhi

- animals
  - 2,8 cows (min:0; max:60) – <<1 heads in total sold in 2012
  - 1 pig
  - 0,3 sheep (min:0; max:30)
  - 16 chicken
  - 0,27 calfs
- 1170 L milk a year
  - 1030 L milk sold in 2012
  - 30 kg cheese (10% barter)

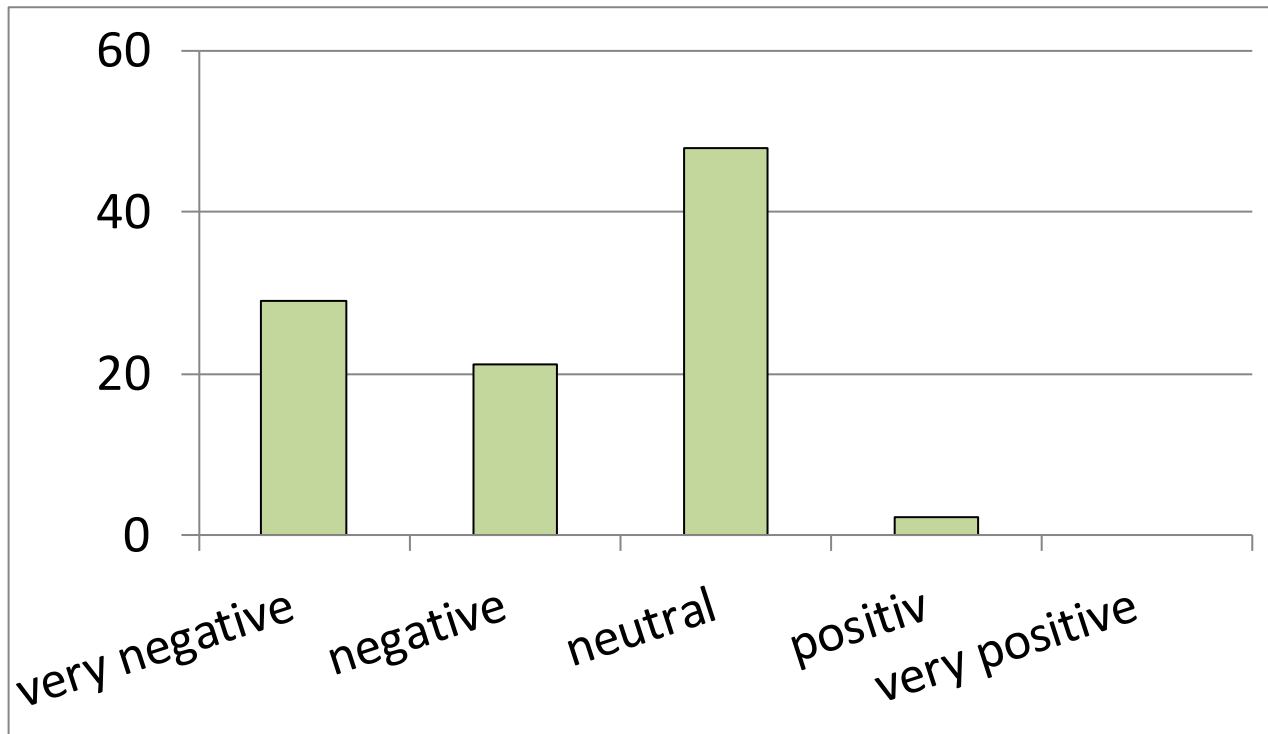


## Household Data - Lagodekhi

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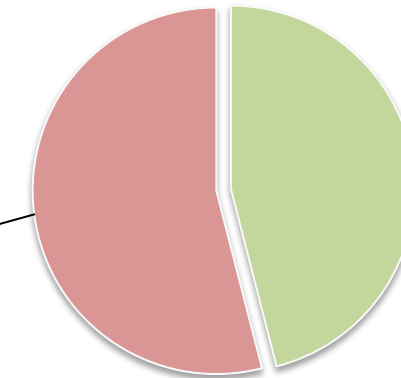
- utility grid improvement in demand
  - natural gas (63%) and water (41%)
  - Electricity (2%)
- WTP for improvement → 30 GEL (min:0, max:300 GEL)
  
- Enlargement of herd desired → lack of money, lack of land due to NP

# Attitude towards NP - Lagodekhi



## wish to be involved in NP planning - Lagodekhi

"I wouldn't like to be actively involved in..."  
54%

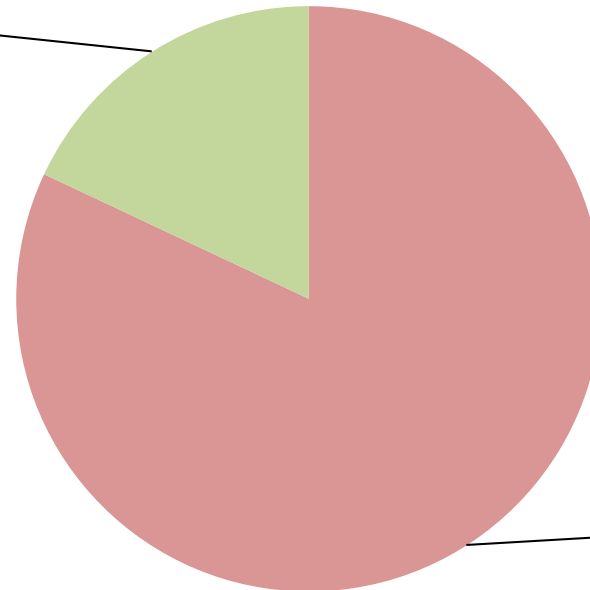


"I would like to be actively involved in ..."  
46%

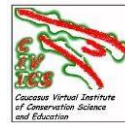
# Attitude towards NP - Lagodekhi

## Use restrictions - Lagodekhi

"I think there  
wont be any  
further use  
restrictions...."  
18%



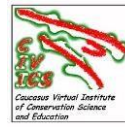
"I think there  
will be  
further use  
restrictions..."  
82%



## Overview

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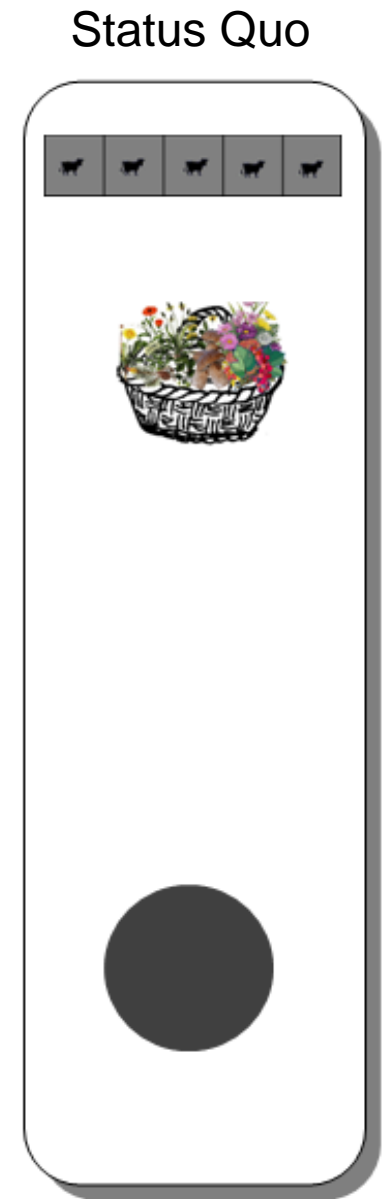
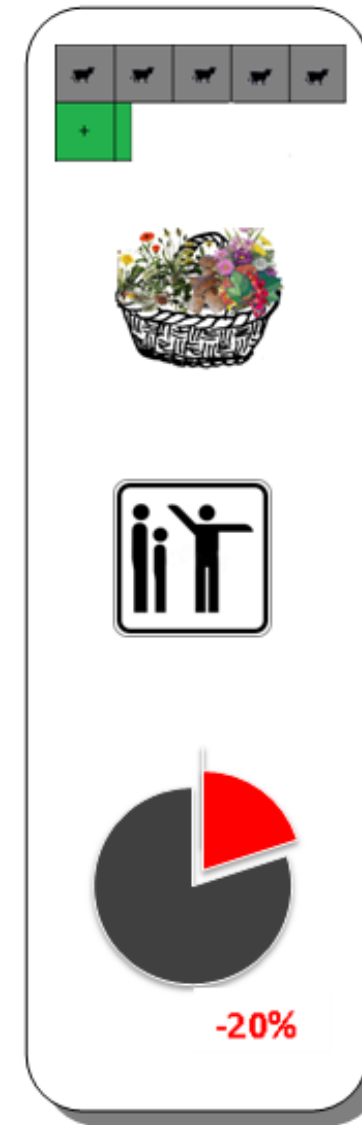
- High level of education
- 2 – 3 generation Households
- Samtskhe-Javakheti and Lake Arpi: possibilities to get income from farming
- Lagodekhi: land as limiting factor (income, animals)
- Communal Summer Pastures important for farm income
  - Lake Arpi, Samtskhe-Javakheti – lack of investment chances
  - Lagodekhi – lack of land
- Attitude towards NP differ widely



# Hypotheses

- Summer pastures have high economic value for dairy/meat production
  - dairy/meat income roughly proportional to access to summer pastures
  - Samtskhe-Javakheti; Lagodekhi: fear of further restrictions
  - Lagodekhi: low access to summer pastures; very low income
- Bottom-up, participatory NP planning → positive attitudes

- Change in access to summer pastures (%)
- Access to plants and fuel wood
  - no, household, commercial
- Training for income alternatives
  - bees, cheese, tour guiding
- Change in monthly income





Ամառային  
արձուակայր

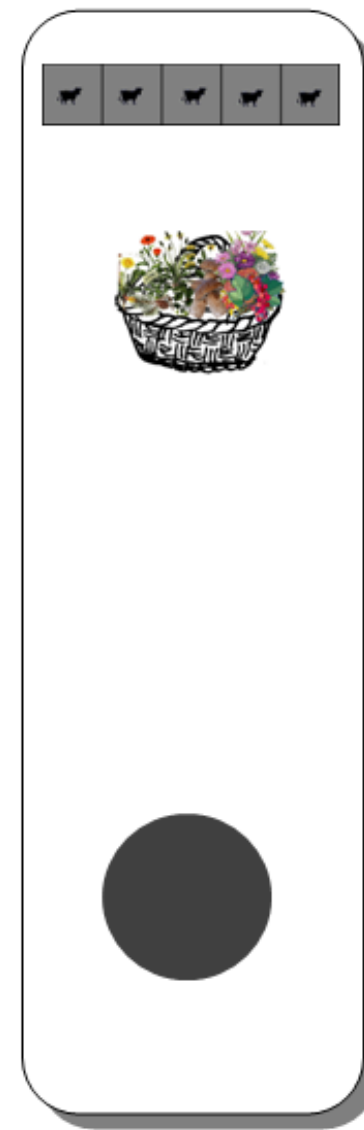
բույսերի  
օգտագործում

թրեյնինգ

ամսական եկամտի  
փոփոխություն

Ես ընտրում եմ

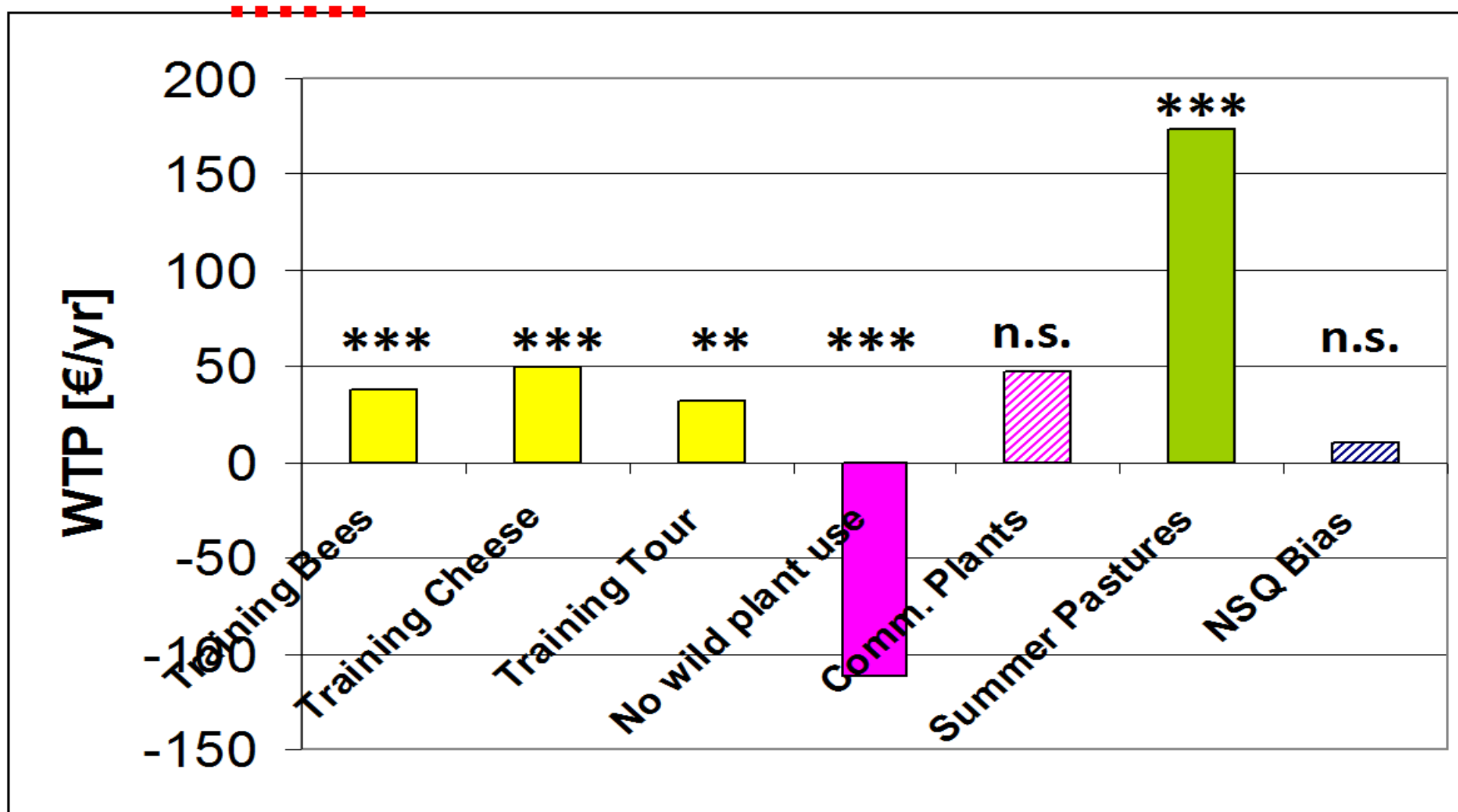
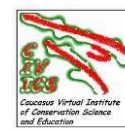
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Block 1, Set 1

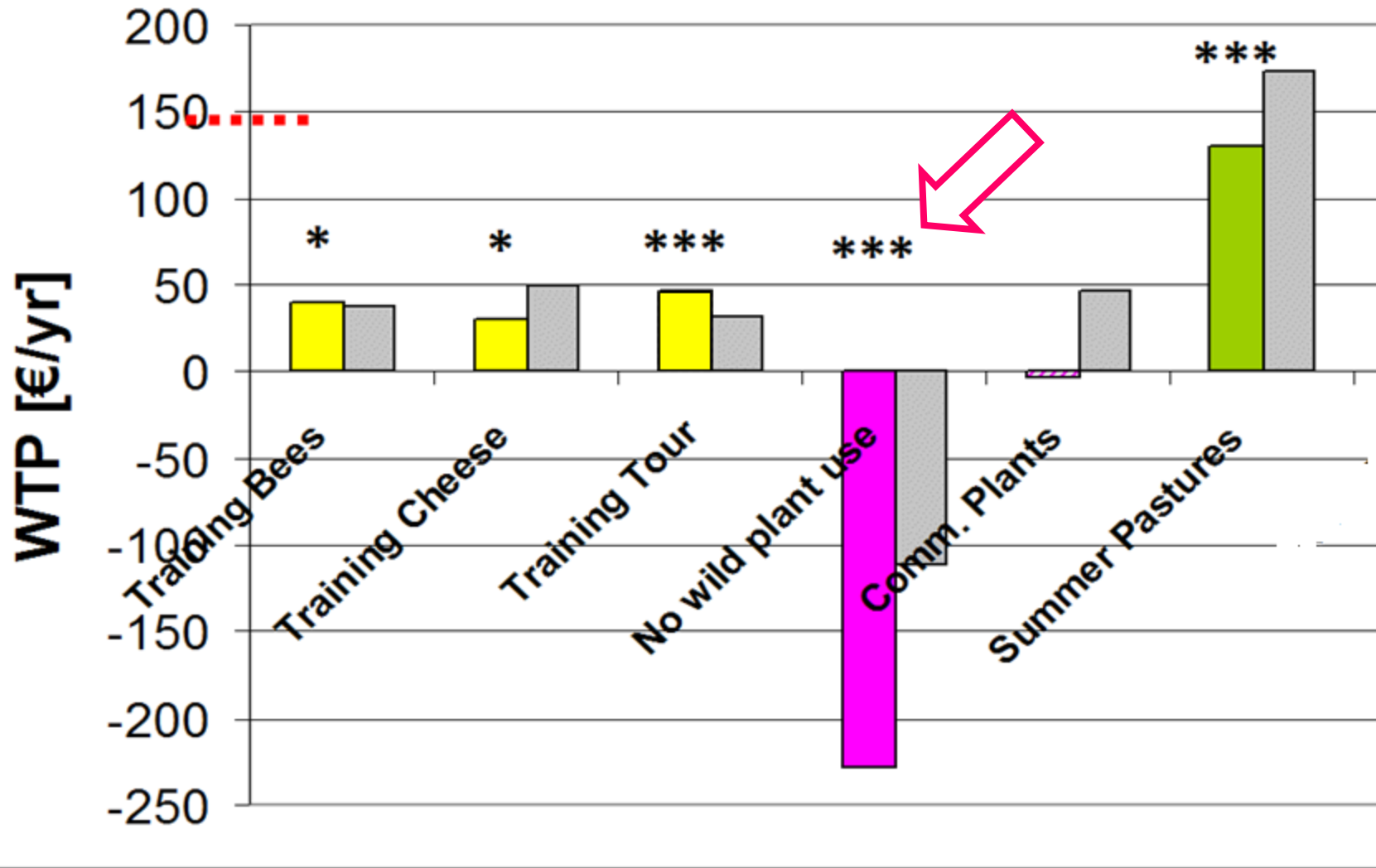
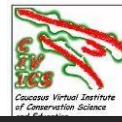
- **WTP** → maximum willingness to pay (amount of money) for a good or to avoid a bad
- **WTA** → minimum willingness to accept (amount of money) to abandon a good or accept a bad
- Szenario:
  - 2 month trainings of bee keepig/honey production; cheese production; tour guiding
  - general ban to use/collect wild plants and fuel wood
  - and/or general permission to use/collect wild plants and fuel wood commercial
  - 25% higher access to summer pasture

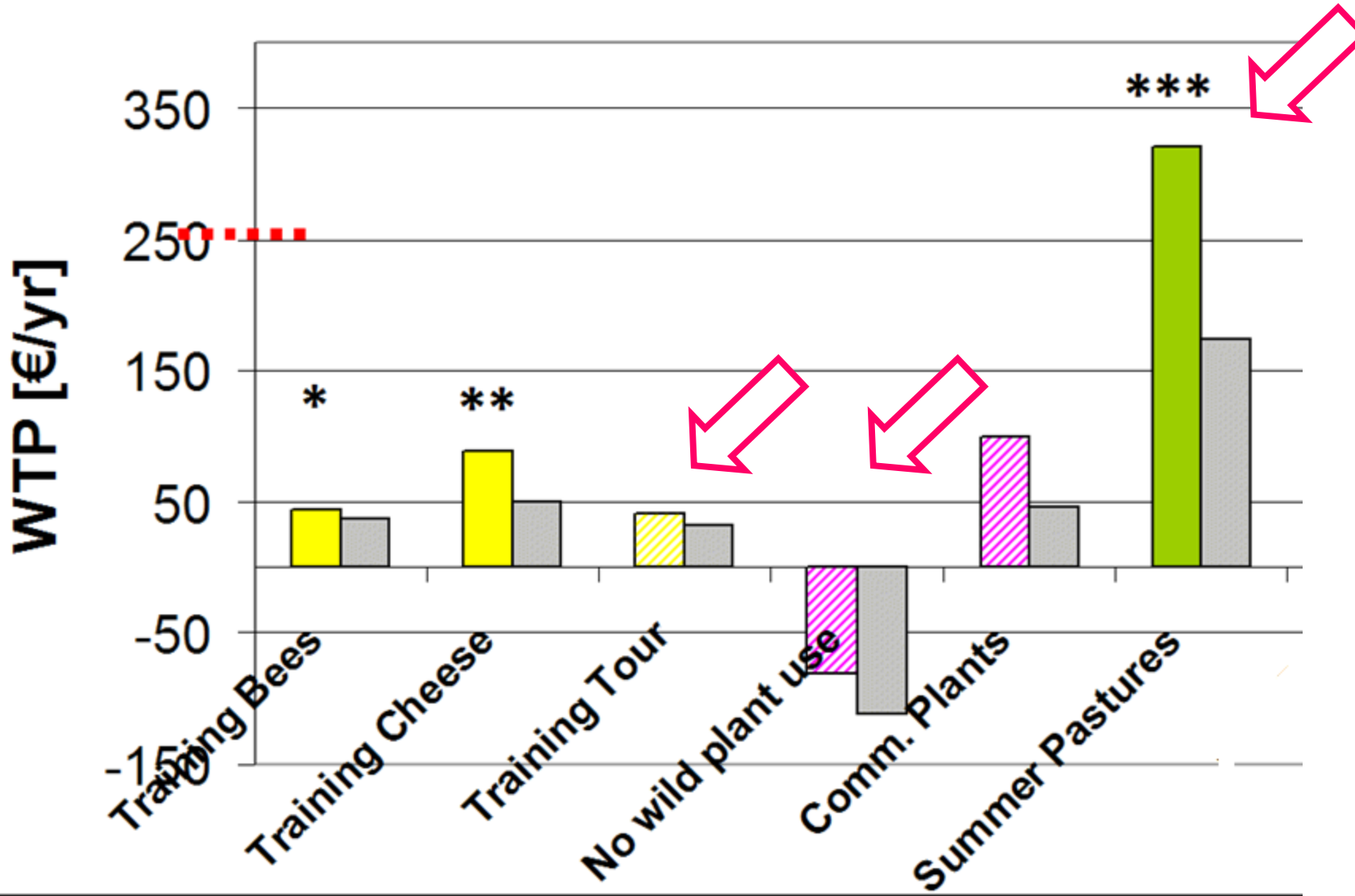
# CE Results - Total

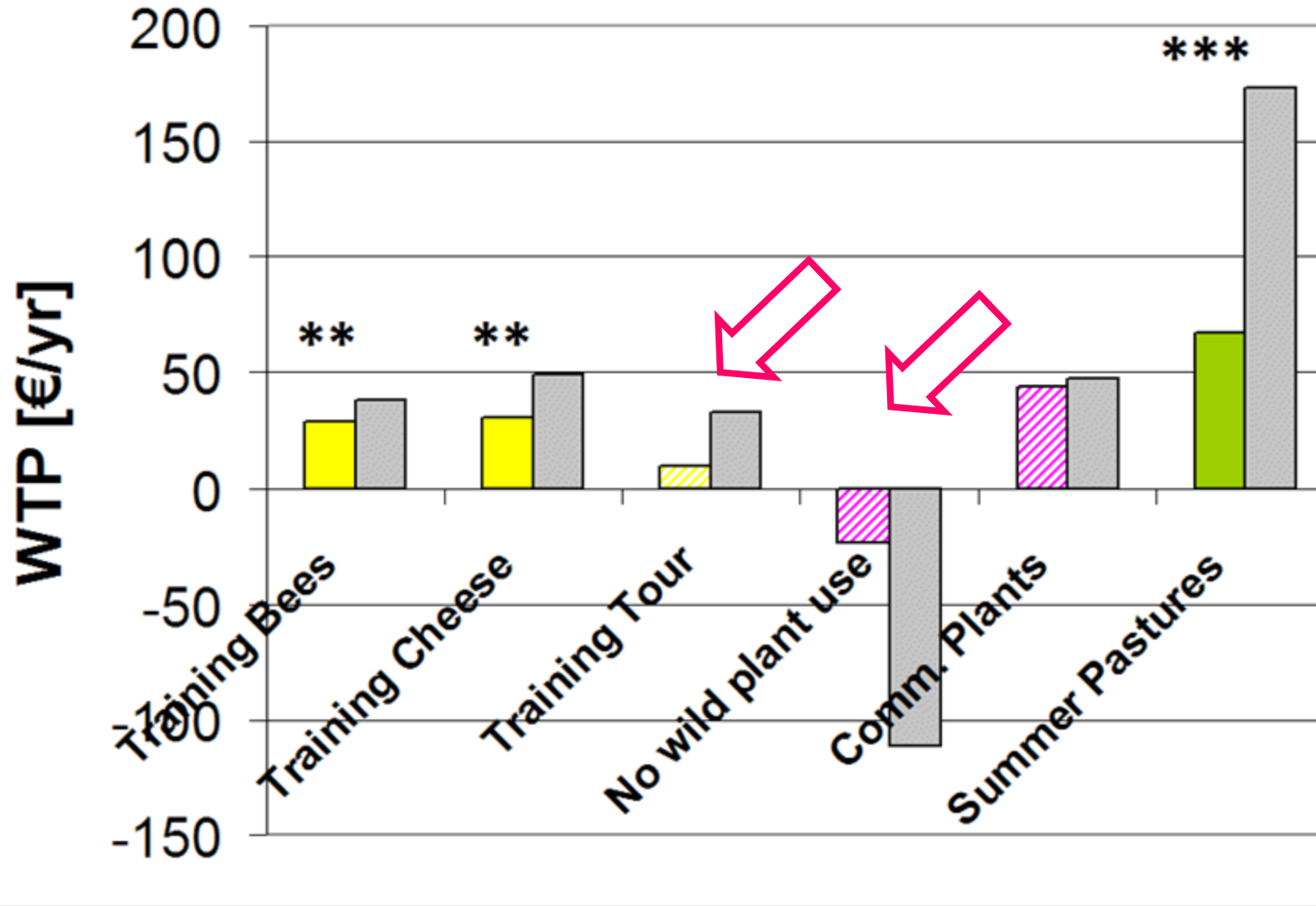


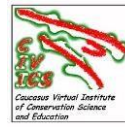
standard significance asterisks based on P value (Wald) of utility coefficients of environmental attributes; P(income change) << 0.001

# CE Results – Lake Arpi



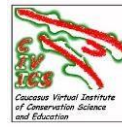






# Summary

- access to summer pastures has high economic value (WTP)
  - conversion to Euro/yr a bit simplistic
- ethnically charged tensions over access to summer pastures
  - documented
  - may be exacerbated by NP establishment/enlargement
- access to wild plants/fuel wood less important
  - exemption: very poor Lake Arpi
- trainings for income alternatives are economically appreciated
  - bees, cheese, guides
  - regional differences!
- results useful to inform NP (buffer zone) management



# Thank you!



- Total sample:
  - WTA not to use wild plants higher for females (-40 €/ -75 €)
  - WTP for summer pasture higher for females (90 €/119 €)
- Lake Arpi:
  - WTP for „guide training“ higher (29 €/ 73 €)
  - WTP for summer pasture higher for females (172 €/ 105€)
- Samtskhe – Javakheti:
  - WTA not to use wild plants for men higher (76 €/138 €)
  - WTP for summer pasture higher for females (86 €/117 €)
- Lagodekhi:
  - WTP summer pasture higher for females (66 €/ 78€)

- influencing interactions through age, education and positive attitude towards NP
- Lake Arpi:
  - positive attitude increases WTP for tourguiding about
  - each year more of education increases WTP for tourguiding about
- Samtskhe – Javakheti:
  - each year more of age increases WTP for beekeeping about
  - each year more of education increases WTP for beekeeping about
  - each year more of age decreases WTP for SuPa about
  - positive attitude increases WTP for not to use wild plants about
- Lagodekhi:
  - positive attitude increases WTP for cheese production training about and for tourguiding about
  - each year more of age increases WTP for tourguiding about