BAOQUALITY
PROJECT

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A Discrete Choice Experiment to Measure the Malawian Potential Market for Baobab Fruit Shell Briquettes: Evidence from Consumer Preferences in Mzuzu City

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1. Introduction
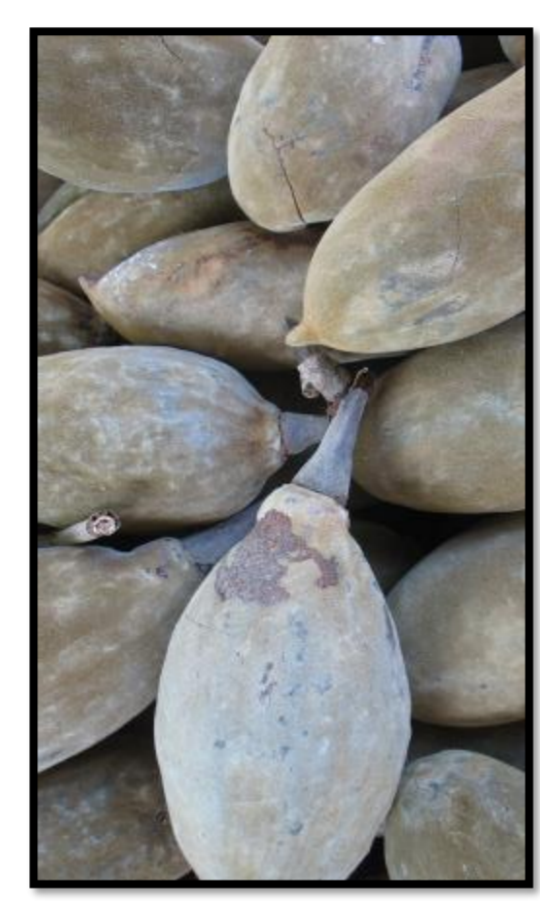

Source: www.baofood.de

Presentation of the topic

- Fuelwood and charcoal are mainly used to meet energy demand needs
- Malawi:
  - one of the poorest countries in the world
  - relatively high population growth
  - depends on biomass from forest by more than 97 per cent[2345]

- Trend amplifies:[467]

Environmental issues → Social insecurity

- loss in biodiversity
- deforestation
- soil erosion

- unreliable energy supply
- less meal preparation
- inappropriate nutrition[467]

Source: www.baoquality-project.de
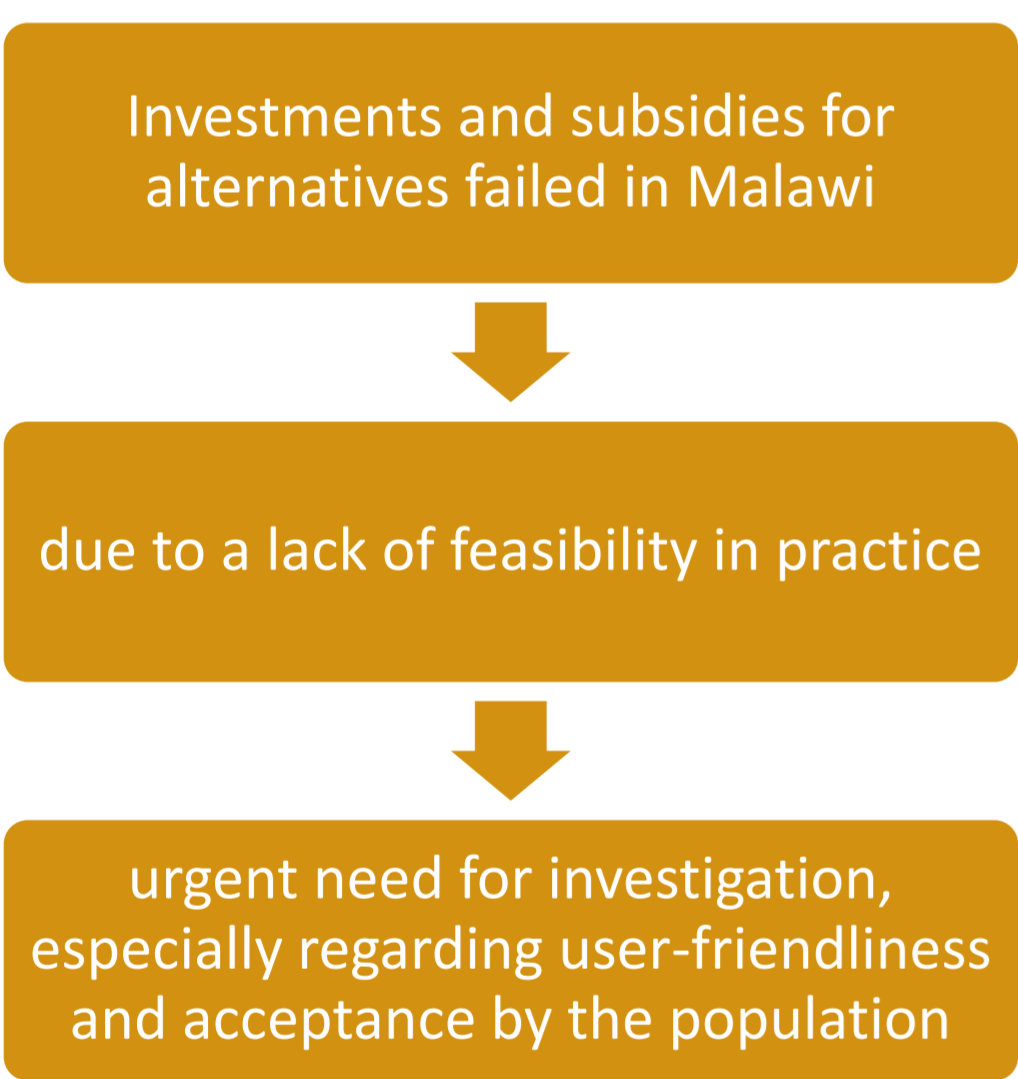
- **Solution**: Fruit peels of the baobab tree (Adansonia digitata L.)
  → great potential as a suitable raw material to produce briquettes
  → cheap, easily accessible and available in surplus

Relevance of this work

Investments and subsidies for alternatives failed in Malawi
↓
due to a lack of feasibility in practice
↓
urgent need for investigation, especially regarding user-friendliness and acceptance by the population
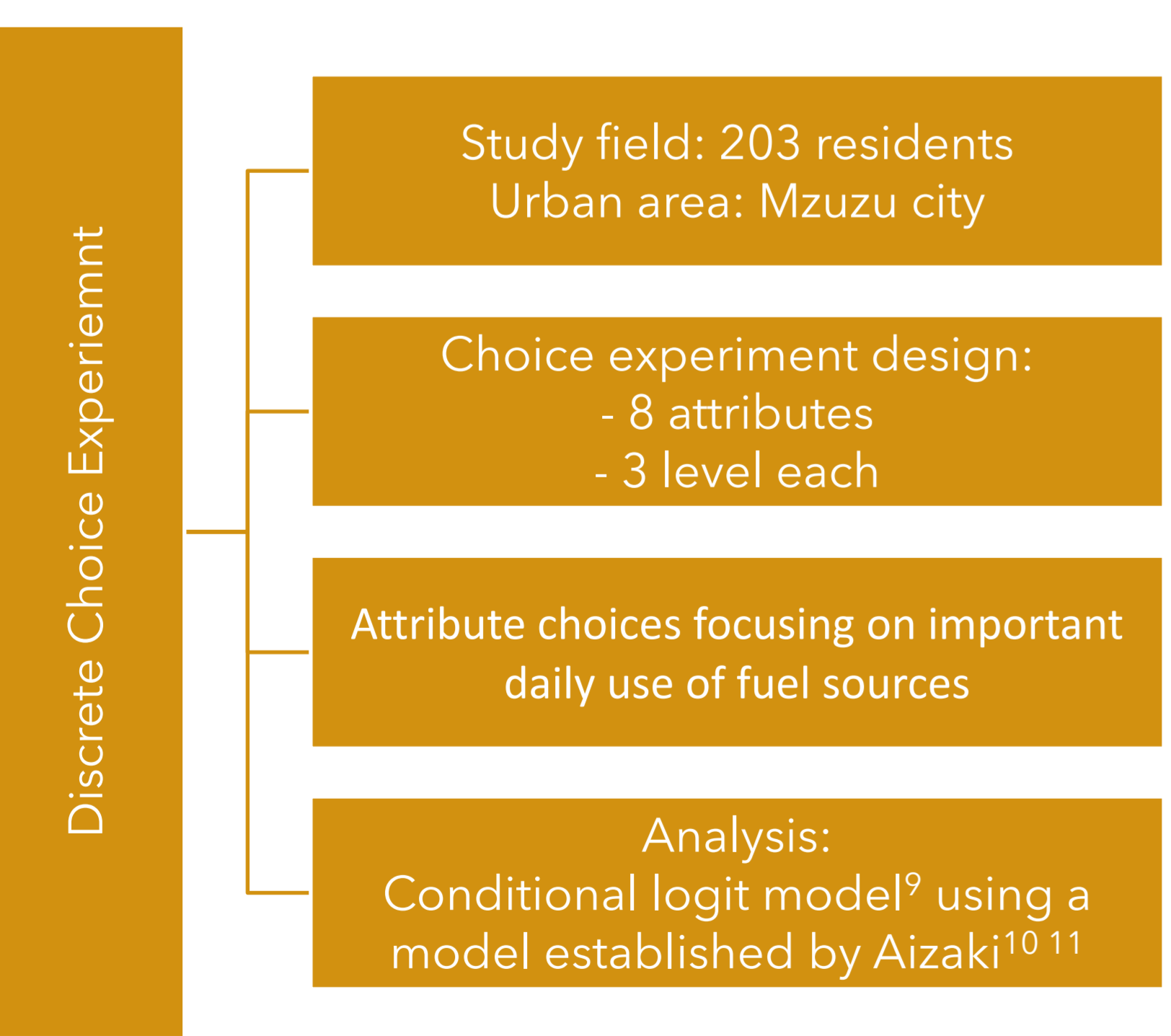
Objectives

- Analyze consumer preferences for properties of baobab fruit shell briquettes
- Determine the parameters for a successful implementation of an alternative energy source for firewood and charcoal in urban areas

Hypothesis

The more useful features the alternative product has, the higher the acceptance among users and the more the Willingness to pay (WTP) increases.
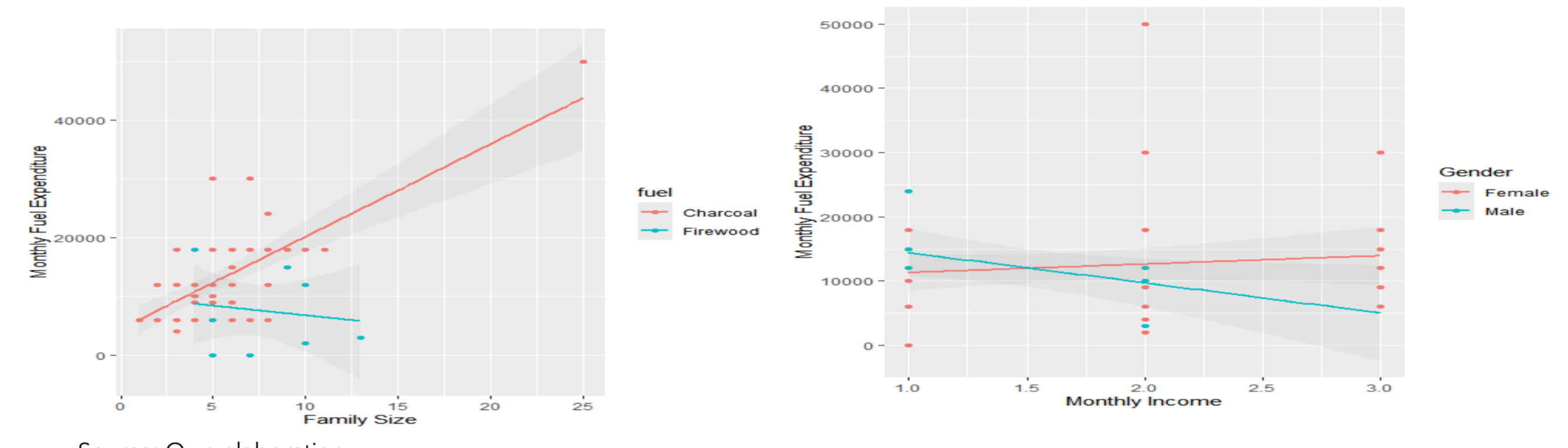
2. Methodology

Discrete Choice Experiment

Study field: 203 residents
Urban area: Mzuzu city

Choice experiment design:
- 8 attributes
- 3 level each

Attribute choices focusing on important daily use of fuel sources

Analysis:
Conditional logit model[9] using a model established by Aizaki[10 11]

Source: http://www.transafrika.org/pages/laenderinfo-afrika/malawi/geographie.php

3. Results

Fig. 1. Relation fuel expenditure, family size, and monthly income in Malawi

Source: Own elaboration

Tab. 1. Coefficients and marginal willingness to pay for each attribute of the DCE

	coefficient	MWTP
Children help sometimes	0.2629**	60.39795
Children help never	0.4720**	108.45138
Energy mostly available	-0.0002	-0.05498
Energy always available	-0.2589*	-59.49075
Some smoke	0.3012**	69.20576
No smoke	0.8888**	204.20730
Medium improvement of nature	0.0194	4.46578
High improvement of nature	-0.195*	-44.84653
Fuel collection times	0.2184**	50.19052
Burning time	0.1377**	31.64270
Preparation time	0.0043	0.99984
Price	-0.0043**	-

Likelihood ratio test= 1256, number of events= 1827
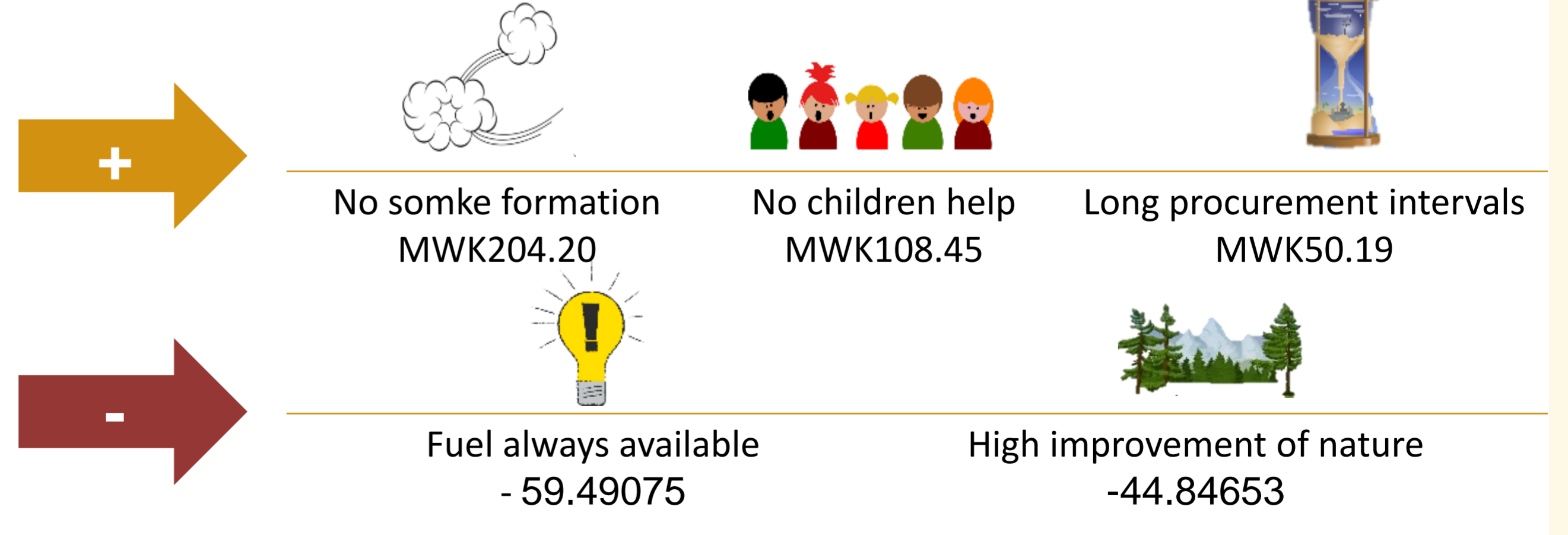** Significant at 1%
*Significant at 5%
Source: own elaboration

4. Interpretation and final considerations

Key findings

- Consumer highly appreciate a product which excludes children help
- Consumers accept when a product is not always available
- No smoke formation is highly preferred over some smoke formation and even more preferred over a lot smoke formation
- Consumers see low value in a product that contributes to an improvement in nature
- Consumers see a significant need for a product which is to be procured at great intervals
- The fuel alternative should provide relatively long burning times
- The price coefficient is slightly close to zero but negative, indicating that the proposed price is accepted by consumers but should not increase

Marginal willingness to pay

+ No smoke formation MWK204.20 | No children help MWK108.45 | Long procurement intervals MWK50.19

− Fuel always available - 59.49075 | High improvement of nature -44.84653

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