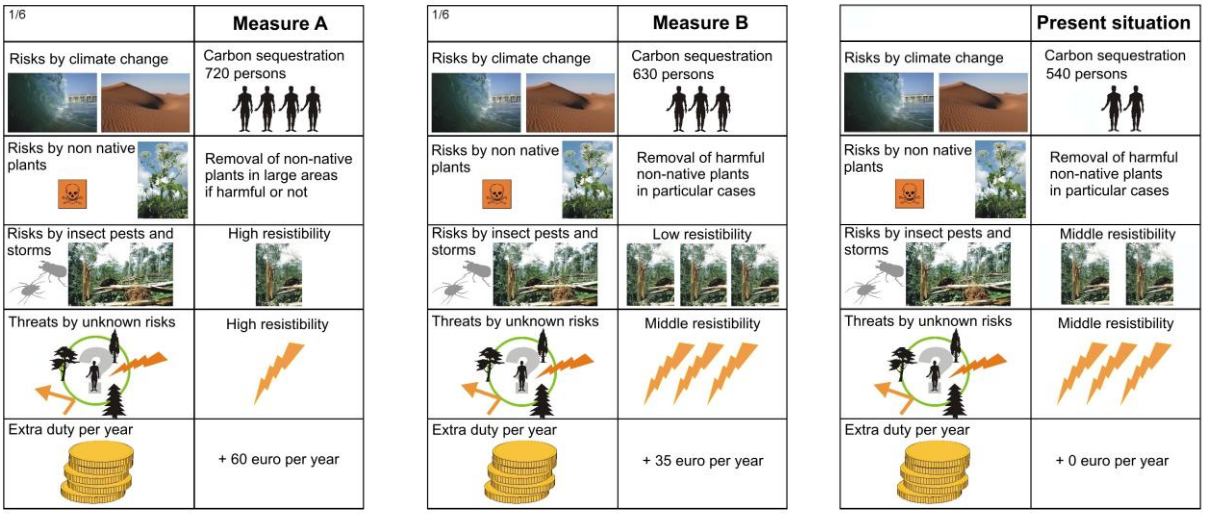
Appendix B: Details of scenario benefit calculations



☐ I would chose Measure A
☐ I would chose Measure B
☐ I would chose “the present situation” (no change)

Figure B1. Example of a choice set presented to respondents (translated from the German original version).

Econometric analysis

We assume an additive utility function linear in parameters with respect to the attribute levels. The utility function can be separated into an *observable* component V_{in} and *unobservable* (error) component ε_{in}:

$$U_{in} = V_{in} + \varepsilon_{in} \qquad (1)$$

where U_{in} is the total utility of alternative *i* for individual *n*. The probability that individual *n* will choose option *i* over option *j* within the complete choice set C is given by:

$$Pr_{in} = Pr\,(V_{in} + \varepsilon_{in} > V_{jn} + \varepsilon_{jn}\text{, all } j \in C) \qquad (2)$$

If a deterministic utility component V_1 is hypothesized to be a linear function of attribute Z_1 itself, plus an interaction term of the attribute Z_1 with an individually varying socio-demographic variable *A*, V_1 can be expressed as

$$V_1\,(Z_1, A) = c_A * Z_1 * A + c_1 * Z_1 \qquad (3)$$

with c_A: utility coefficient of the interaction term. In the econometrically estimated utility models, a positive sign of the coefficients *c* indicate a positive influence of the respective term on choices, and thus on utility. To reduce collinearity between the interaction term and the non-interacted attribute term, the socio-demographic variable *A* can be standardized before multiplied with Z_1. The vector of utility coefficients is usually estimated with maximum likelihood estimation techniques. Usually the estimated choice models include an alternative specific constant (ASC) that picks up systematic difference in choice patterns between the three choice cards. The ASC was coded ‘zero’ for cards A and B, and ‘1’ for the Status Quo option (*Status Quo*-ASC).

Preliminary analyses unveiled a risk of violation of the independence from irrelevant alternatives (IIA) assumption necessary for the application of the (simple) Conditional Logit model. Thus, Nested Logit models (NL) were used that partially relax the IIA assumption (Train 1998, Hensher et al. 2005:518). Suitable NL model structures were identified, and the corresponding models estimated with NLOGIT 3.0. The inclusive value was set to 1.0 for the degenerated branch, and the model initiated with starting values obtained from a non-nested NL model (Hensher et al. 2005:530). All scale parameters were normalized at the lowest level (RU1).