

## Intertemporal Individual Preferences for Climate Change Intergenerational Investments - Estimating the Social Discount Rate for Poland

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**Abstract :** Climate change mitigation investment activities are inevitably extended in time extremely. The project cycle does not last for decades - sometimes it stretches out for hundreds of years and the project outcomes impact several generations. The longevity of those activities raises multiple problems in the appraisal procedure. One of the pivotal issues is the choice of the discount rate, which affect tremendously the net present value criterion. The paper aims at estimating the value of social discount rate for intergenerational investment projects in Poland based on individual intertemporal preferences. The analysis is based on questionnaire surveying Polish citizens and designed as contingent valuation method. The analysis aimed at answering two questions: 1) whether the value of the individual discount rate decline with increased time of delay, and 2) whether the value of the individual discount rate changes with increased spatial distance toward the gainers of the project. The valuation questions were designed to identify respondent's indifference point between lives saved today and in the future due to hypothetical project mitigating climate changes. Several project effects' delays (of 10, 30, 90 and 150 years) were used to test the decline in value with time. The variability in regard to distance was tested by asking respondents to estimate their indifference point separately for gainers in Poland and in Latvia. The results show that as the time delay increases, the average discount rate value decreases from 15,32% for 10-year delay to 2,75% for 150-year delay. Similar values were estimated for Latvian beneficiaries. There should be also noticed that the average volatility measured by standard deviation also decreased with time delay. However, the results did not show any statistically significant difference in discount rate values for Polish and Latvian gainers. The results showing the decline of the discount rate with time prove the possible economic efficiency of the intergenerational effect of climate change mitigation projects and may induce the assumption of the altruistic behavior of present generation toward future people. Furthermore, it can be backed up by the same discount rate level declared by Polish for distant in space Latvian gainers. The climate change activities usually need significant outlays and the payback period is extremely long. The more precise the variables in the appraisal are, the more trustworthy and rational the investment decision is. The discount rate estimations for Poland add to the vivid discussion concerning the issue of climate change and intergenerational justice.

**Keywords :** climate change, social discount rate, investment appraisal, intergenerational justice

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