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The Climate Change dilemma: Can unpredictability save us?

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The climate change is an example of the biggest social dilemma in the human history. Climate change mitigation can be successful only if the whole world will undertake an internationally coordinated collective action. Evolutionary games provide a suitable theoretical framework for studying the challenges of climate change, and we will build on this fact in the present paper to study the evolution of cooperation and discuss its implications for offsetting the temptations to pollute. It has become clear that tackling the climate change will be costly, and accordingly, the temptations to pollute will always be present. Costs to reduce emissions of greenhouse gases can be easily calculated for each individual, but benefits of the successful reduction will be distributed among all the “players”, independently from their actual contributions to sustainable

development. Evolutionary games have recently been employed successfully to tackle the looming climate change problem. Build on this fact, we study the evolution of cooperation and discuss its implications for offsetting the temptations to pollute. It has namely become very painfully clear that tackling the climate change will be definitely costly, and accordingly, the temptations to pollute will be always be present. Can the element of unpredictability increase the probability of adopting the cleaner strategies? We apply the spatial prisoner's dilemma game where the cooperative behaviour is challenged by defection that promises individuals a higher fitness and is thus more likely to predominate. Results show contrast to the real data and indicators of climate change.

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