Public Policy Question 1

How Much Is the Value of the Future?

Introduction

The problem of climate change is one for which standard cost-benefit analysis is insufficient. Certain problems can be fixed, replaced, or otherwise compensated for; others cannot. A road that gets washed away can be repaved. If a crop fails, it can be replenished through other means, such as importing food. However, the extinction of a species, the depletion of an aquifer, or coastal erosion due to rising sea levels may not be easily reversible. This difference is crucial because discounting future damage into its present equivalent is only one way discounting shapes government policy on what is worth postponing.

The long-term plan for environmental policy calls for a Ramsey discount rate that is initially around 2 percent and decreases as the level of uncertainty increases. It is also important that it applies only to damage that can still be repaired, priced, and adjusted for. When it comes to environmental damage that is irreversible, government policies should be based on something other than discounting.

John Locke's idea that government holds a trust is useful here. Since the next generation cannot vote, bargain, or give consent to environmental dangers, this generation's government cannot treat nature as its private possession. This government can preserve life, liberty, and property, but it cannot appropriate the entire world as the inheritance of future citizens. In other words, when it comes to irreversible damage, the government should choose a safe minimum standard, meaning that damage must be prevented unless it involves truly unreasonable costs.

Why Discounting Matters

When a period is long, even minor changes in rates may make huge differences. For $100 billion of environmental damage, its present value will be lower than $1 billion at 5 percent, approximately $14 billion at 2 percent, and approximately $37 billion at 1 percent. Either way, the future environmental damage will be the same; however, discounting will determine how it is considered now.

If the rate is above 2 percent, climate change problems can actually look small in financial calculations and large in life. They will move backward to their present value, and postponement starts becoming more reasonable compared to preparation. In January 2025, the Eaton and Palisades fires that broke out in Southern California resulted in over 37,000 acres of land burning, killing over 28 people, destroying or damaging almost 16,000 buildings, and displacing thousands of homes. Displacements, insurance losses, school disruption, and neighborhood destruction are harder to measure.

Environmental long-term planning is not flexible enough because environmental damage is public, often irreversible, and, most of all, costly. The developers were sure that the underground water supply would remain constant and built streets, mortgages, pipelines, school systems, and lawns based on this idea (Gober et al., 2011, pp. 285-300). No matter how appealing postponement looks when considering a high rate, depleted groundwater cannot simply be replenished later.

Why Ramsey Gives the Baseline

A discount rate used in public policy should rest on clear assumptions. The Ramsey model gives that starting point:

$$r = \rho + \eta g$$

(Ramsey, 1928). In this equation, r is the social discount rate, ρ is the pure rate of time preference, η is the elasticity of marginal utility of consumption, and g is the growth rate of per-capita consumption.

The model separates two questions that are often mixed together. One question is whether future people should count for less because they live later. The other is whether future people may be wealthier, making an additional dollar less valuable to them than it is to people today. That distinction matters because environmental policy involves both moral judgment and economic forecasting.

For long-term environmental policy, this paper uses the following numbers as a starting point:

$$\boldsymbol{\rho = 0.1\%,\ \eta = 1.5,\ g = 1.3\%}$$

which implies:

$$\mathbf{r = 0.1\% + 1.5(1.3\%) = 2.05\%}$$

This calculation is not meant to produce a perfect number. Its value is that each part of the rate is visible and open to debate. If someone wants a higher or lower rate, they must explain which

assumption they are changing: the moral weight of future people, the expected growth of consumption, or the diminishing value of additional income.

First of all, the low value of $\rho = 0.1$ percent should be considered very low. There is hardly any ethical argument for saying that future generations are worth less because they are born after us. Assigning a low value to ρ implies that time itself has almost no ethical value in the calculation.

Secondly, $\eta = 1.5$ refers to the diminishing marginal utility. Future generations may have more resources than present-day people, which would mean that one extra dollar means less to them compared to people today. We cannot know how wealthy future generations will be, and climate change may leave many people poorer while the aggregate income may increase.

Thirdly, $g = 1.3$ percent stands for the per capita growth in consumption. For environmental policy, a more conservative approach should be applied because climate change may reduce productivity, make insurance and adaptation measures expensive, and inflict damages not accounted for by GDP.

An approximately 2 percent rate is used in practice by governments. According to the latest version of Circular A-4, the social rate of time preference for the United States amounts to 2.0 percent per year. This allows us to ensure that our value corresponds to the present-day practice in public administration (Office of Management and Budget, 2023).

Ramsey theory helps establish the correct baseline, but it fails to solve the key issue in the context of losses that remain permanent. While it helps to assess the temporal comparability

of monetary losses, it fails to answer the question of whether monetizing some losses is inappropriate. Governments should deal with the management of common goods, but they do not own the future. Their power diminishes when their decisions tie the hands of future generations.

Why the Rate Should Decline

An estimated 2 percent discount rate serves as a reasonable starting point but should not remain static forever. Growth could come more slowly than planned. There could be worse effects on the environment than we can predict. Preservation costs, cooling expenses, restoration, insurance rates, and other daily costs of life could be much greater in the future.

A static rate implies a high level of certainty about future cost projections. For example, the UK Treasury Green Book adopts a declining social time preference rate: 3.5 percent for the first 30 years, 3 percent for years 31-75, and 2.5 percent after 75 years into the future. This is because it recognizes the government's capacity to price the near term better than the future (HM Treasury, 2026).

For environmental policies that consider the long-term future, a rate of 2 percent for the first 30 years, 1.5 percent from 31 to 75 years, and a lower 1 percent for the rest of the timeline should be applied. These rates represent specific policy decisions aimed at ensuring that damages done in the distant future are not ignored by today's policymaking process.

Where Discounting Stops

Discounting is relevant when there is room for repair. A washed-out road can be paved anew; a poor crop yield can be compensated with imported food products. Buildings can be

rebuilt, reinforced, or moved elsewhere. In all of those cases, money can address or reduce the loss caused by the damage.

However, some instances of environmental damage might have other characteristics. The aquifer that sits near the seacoast may not show signs of saltwater intrusion immediately. By the time a community realizes its aquifers are contaminated with saltwater, the practical course of action will have shifted to coping rather than preventing the damage.

According to the National Oceanic and Atmospheric Administration, the number of natural disasters in the USA reached 403 during the years between 1980 and 2024, each causing $1 billion worth of damage or more. NOAA also says that the average annual amount of disasters that caused the same damage grew from 9.0 to 23.0 between those periods. However, those figures clearly show that environmental damage is not just a distant possibility and cannot be put off to an uncertain date (NOAA National Centers for Environmental Information, 2025).

When the damage is irreversible, a discussion of discount rates becomes superfluous. The issue shifts to whether government has the right to allow that kind of loss. As argued by Locke in his Second Treatise, taking things from the common world was acceptable only "if there be enough, and as good left in common for others" (Roark, 2012). Thus, irreversible damage takes something from subsequent generations, leaving them with fewer resources and choices than the current generation had.

Before allowing any loss, government must establish precisely what will be lost, who will probably incur the cost of that loss, and why. That is the practical definition of safe minimum standards: nothing irreversible should happen except in exceptional cases where prevention costs

are truly unreasonable. This does not abolish cost-benefit analysis. It only limits its authority when the loss being priced would permanently reduce what future citizens inherit.

Objections

The primary justification for using a higher discount rate is the idea of opportunity cost. Money spent protecting the environment cannot be used for building homes, paying for medical care, educating, feeding the hungry, and helping poor families with rising fuel costs. A government that ignores those present needs also fails its duty to citizens. This criticism applies only to cases where an environmental problem can be fixed in the future. If a bridge can be rebuilt, crops restored, or a building retrofitted, the use of higher rates of return seems appropriate.

But this is precisely why there must be a distinction between damage that is easily reversible and irreparable. Opportunity cost is a strong argument against giving future generations a disproportionate advantage. It cannot serve as a justification for losses that future citizens will be unable to repair. Although a government will have a right to carry some repairable costs, it will never have the right to pass fewer natural resources and less habitable land to future generations because today's calculations show that it is relatively cheap.

There is another criticism of lower interest rates: future generations are going to be richer, thus their ability to cope with losses will increase. But the Ramsey model already takes into account the anticipated growth in per capita consumption levels.

Nevertheless, climate change means that even wealthy countries will have more problems. Although people will become richer, they will devote more money to insurance services, disasters, heat management, water purification, restoration, and migration. We cannot assume too much about how rich future citizens will be when we talk about losses that can be fixed.

We allow discounting of costs of repairable problems, and at the same time create boundaries for irreversible losses. This is necessary because victims of permanent losses cannot consent to them, negotiate about them, or remedy them.

Conclusion

A rate of 2 percent may be justified only if the future holds the potential to undo mistakes made today. It attaches value to the future but does not equate all harms in the future with harms in the present. The problem emerges once the approach is used for harms that cannot be undone. To discount means to assume that time, money, and wealth can somehow reduce the cost. Local governments already spend money on cooling centers, firefighting, flood management, emergency water supply, and rebuilding. Insurance companies avoid locations where risks are real.

Locke's theory provides the limit. Environmental harms that are irreversible violate it by constraining choices of people who are yet to come into existence. Once the harms are irreversible, the issue is no longer what the future is worth in today's dollars. Even if the present generation gains from its use, it cannot destroy the inheritance and declare itself victorious.

References

Gober, P., Wentz, E. A., Lant, T., Tschudi, M. K., & Kirkwood, C. W. (2011). WaterSim: A simulation model for urban water planning in Phoenix, Arizona, USA. *Environment and Planning B: Planning and Design, 38*(2), 197–215. https://doi.org/10.1068/b36075

HM Treasury. (2026). *The Green Book: Central government guidance on appraisal and evaluation*. GOV.UK. https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2026

NOAA National Centers for Environmental Information. (2025). *U.S. billion-dollar weather and climate disasters*. National Oceanic and Atmospheric Administration. https://www.ncei.noaa.gov/access/billions/

Office of Management and Budget. (2023). *Circular A-4: Regulatory analysis*. Executive Office of the President. https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/11/CircularA-4.pdf

Ramsey, F. P. (1928). A mathematical theory of saving. *The Economic Journal, 38*(152), 543–559. https://doi.org/10.2307/2224098

Roark, E. (2012). Applying Locke's proviso to unappropriated natural resources. *Political Studies, 60*(3), 687–702. https://doi.org/10.1111/j.1467-9248.2011.00935.x