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Rational climate mitigation goals

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HIGHLIGHTS

- Effective mitigation targets should ideally satisfy a set of rationality criteria.
- The criteria are satisfied to various degrees for different types of targets.
- This points at a need for different types of targets in mitigation policy.

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ABSTRACT

The overall goal of the UNFCCC is to prevent dangerous anthropogenic interference with the climate system. In policy practice, this goal is mainly operationalized through three types of mitigation targets: emission, atmospheric concentration and temperature targets. The typical function of climate mitigation goals is to regulate action towards goal achievement. This is done in several ways. Mitigation goals help the structuring of the greenhouse gas (GHG) abatement action, over time and between agents; they constitute a standard against which GHG abatement can be assessed and evaluated; they motivate climate conscious behavior; and discourage defection from cooperative abatement regimes. Although the three targets clearly relate to one another, there could be differences in how well they fulfill these functions. In this article, the effectiveness of emission, concentration and temperature targets in guiding and motivating action towards the UNFCCC's overall aim is analyzed using a framework for rational goal evaluation developed by Edvardsson and Hansson (2005) as an analytical tool. It is argued that to regulate action effectively, mitigation goals should ideally satisfy four criteria: precision, evaluability, attainability and motivity. Only then can the target fulfill its typical function, i.e., to guide and motivate action in a way that facilitates goal achievement.

1. Introduction

The overall goal of the United Nations Framework Convention on Climate Change (UNFCCC) is to prevent dangerous anthropogenic interference with the climate system (Article 2). In policy practice, this goal is mainly operationalized through three types of mitigation goals: emission targets, atmospheric concentration targets and temperature targets. Up to now, the UNFCCC's goal has most frequently been operationalized through emission targets, the most well-known international agreement being the Kyoto Protocol. However, concentration targets and temperature targets are used as well. In 1996, the European Union adopted a target of keeping global average temperature increase below 2 °C compared to pre-industrial levels (EC Council, 1996), and a reference to the target has been inserted into the Copenhagen Accord. Some European governments make explicit reference to the 2 °C target in their national climate policies, among them the Dutch and German governments (Tol, 2007).

As with goals in general, the typical function of mitigation goals is to regulate action towards goal achievement. This is done in several ways. Mitigation goals help the structuring of the greenhouse gas (GHG) abatement action, over time and between agents; they provide a standard against which abatement efforts can be assessed and evaluated; they motivate climate conscious behavior and help to mobilize society towards a low-carbon economy; they drive technological development; and discourage defection from cooperative abatement regimes (Pershing and Tudela, 2003; Gupta et al., 2007). Although emissions, concentration and temperature targets clearly relate to one another, there could be differences in how well the targets manage to fulfill these functions. Therefore, policy makers need to consider carefully how to operationalize their climate policies.

Relatively little has been written on the rationality (functionality) of mitigation goals. Although mitigation policies have

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attracted notable attention from the viewpoint of effectiveness, efficiency, equity and legitimacy, much less research has been done on the goal-setting process or the prerequisites for effective goal evaluation. This is unfortunate, since insufficiently operational mitigation goals can be an important source of inefficiency in actual policy practice. In this article, the effectiveness of emission, concentration and temperature targets in guiding and motivating action towards the overall goal of avoiding dangerous climate change is assessed using a framework for rational goal evaluation developed by Edvardsson and Hansson (2005) as an analytical tool. It will be argued that to regulate action towards achieving the overall aim of the UNFCCC, mitigation goals should ideally satisfy four rationality criteria: precision, evaluability, attainability and motivity. Only when a mitigation goal satisfies one or several of these criteria can it direct and coordinate action in a way that facilitates goal achievement. The analysis shows that there could be differences in how well the three targets satisfy the criteria. Since goal achievement presupposes both action-guiding and motivating goals, it might therefore be concluded that there are good reasons to use a mix of targets in climate mitigation policy.

The article does not analyze specific target levels (e.g. emission levels) in order to assess whether they are adequate in preventing dangerous climate change. This is partly a scientific question that lies outside the scope of this article. Instead, the discussion will be kept at a conceptual level: What are the relative merits and disadvantages of the three types of mitigation goals in guiding and motivating abatement action? This question can only be answered by first looking into what (mitigation) goals are typically used for. This is done in Section 2. The article then outlines the three mitigation goals to be analyzed: emission targets (Section 3.1), concentration targets (Section 3.2) and temperature targets (Section 3.3). In Sections 4–7, the relative merits and disadvantages of the three targets are analyzed using the criteria of precision (Section 4), evaluability (Section 5), attainability (Section 6) and motivity (Section 7). Section 8 contains a discussion and some concluding remarks. In the following sections, the terms "goals" and "targets" will be used interchangeably.

2. When is a mitigation goal rational?

Policy makers, i.e., in the case of climate mitigation primarily negotiators in multilateral talks, typically set goals because they want to achieve the states described by the goals and believe that by setting goals they enhance the likelihood of goal achievement.[1] Hence, the characteristic function of policy goals is to regulate action in a way that furthers goal achievement.[2] For example, in the case of greenhouse gas emissions abatement, the function is to regulate action in a way that avoids dangerous anthropogenic interference with the climate system. In what follows, the term "achievement-inducing" will be used to denote a goal that performs its function, i.e., has the capacity to regulate action towards goal achievement.[3]

Goals in general (including mitigation goals) have the capacity to regulate action when they satisfy a set of rationality, or functionality, criteria. In public policy contexts, these criteria are often captured by the acronym SMART, which requires that goals be *s*pecific, *m*easurable, *a*ccepted, *r*ealistic and *t*ime-bound (see, e.g., Rubin, 2002; Latham, 2003; Lee, 2010). In this article, a set of goal criteria developed by Edvardsson and Hansson (2005), which builds on the SMART criteria but includes a criterion referring to the emotive function of goals, is used as an evaluative framework: precision, evaluability, attainability and motivity. Precision means that the goal is formulated in clear and unambiguous terms. Evaluability means that that it is possible to measure degrees of goal achievement and to assess whether or not our actions bring us closer to the goal. Attainability means there are actions that can be performed in order to achieve or come reasonably close to achieving the goal. Motivity means that the goal has the capacity to motivate action that furthers goal achievement.

Not each and every criterion has to be satisfied in order for a goal to be achievement-inducing. In some cases, a goal's action-guiding properties will determine the extent to which the goal has the capacity to regulate action; in others it is the goal's action-motivating force that will do the job (Edvardsson and Hansson, 2005). For example, where there is general knowledge of what to do in order to reach a specific emission target, it is perhaps more fruitful to focus on the target's action-motivating properties; if such knowledge is lacking the action-guiding function of the goal should perhaps be given priority to. Since goals are used by agents in specific contexts, factors external to the goals will determine the extent to which the rationality criteria have to be met in order to further goal achievement: Who are the key actors involved? Who is responsible for setting the goal and who is going to implement the goal? What background knowledge do key actors in the goal-setting process have? What is the specific context in which the goal is supposed to operate?

When a mitigation goal is rational in the sense described above it has the capacity to regulate action, over time and between agents, in a way that is conducive to goal achievement. For example, having adopted an emission target makes it easier for a government or firm to plan its activities over time in a way that facilitates goal achievement. The target will function as a normative standard for a variety of decisions, perhaps most importantly for the generation, evaluation and prioritization of abatement actions, plans and strategies, but also for investment decisions and managerial decisions, such as how to allocate resources between different individuals, departments or functions. Once the target has been adopted a government or firm will, under idealized circumstances, act to achieve the target; actions that inflict damage on achievement of the target will typically be discarded, and measures that are believed to further the target will be selected instead (McCann, 1991).

Equally important, mitigation goals regulate action towards goal achievement in social contexts. For example, on the basis of a politically agreed stabilization target, groups of individuals or organizations can plan and coordinate their actions in ways that facilitate goal achievement. This interpersonal coordination can be formal, as when a government allocates different abatement

[1] However, it is important to remember that policy goals could be set for other reasons than to further goal achievement: to impress on other political players, to give an image of a "rational" or politically legitimate organization, because the organization has been instructed from "above" (e.g. EU level) to do so, or simply because goal-setting is fashionable. I am indebted to a reviewer, who pointed this out to me.

[2] It should be noted that other action-regulating instruments exist in climate mitigation. Technological standards, i.e., legally binding requirements that mandate the installation of certain pollution abatement technologies, are increasingly used in international climate agreements. Technological standards also regulate action and, thus, share some essential features with the climate mitigation goals analyzed in this article. However, they will not be dealt with here. For an illuminating discussion of the action-regulating force of technological standards, see Urpelainen (2010).

[3] As pointed out by Edvardsson and Hansson (2005), the word "goal" can be used to denote either (a) the objective to achieve a specific state or (b) the state itself. In this article, the word "rational goal" is used to denote a goal that is auto-instrumental, i.e., a goal in sense (a) that is instrumental to a goal in sense (b). Hence, the article is based on an instrumental, or means-ends, notion of rationality.