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Defining Just Transition

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Climate change has sparked a vivid discussion on its socio-economic risks, capturing the attention of academic circles and policymakers. While it is widely argued that a low-carbon transition should be socially just, the precise criteria that policies must adhere to, in order to be universally accepted as 'just', remain insufficiently defined. We draw on relevant theories of distributive justice to provide a formal definition of a just transition. According to our definition, just transition policies should minimise costs for the most vulnerable groups and also take into account the uneven responsibility for causing damages.

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JEL codes: O13; Q52; Q54, Q58

1 Introduction

Moving to a low-carbon economy is a costly process, which requires a variety of policies on local, national, regional and global levels (Foxon, 2011; Green and Gambhir, 2020; Dechezleprêtre et al., 2022; Semieniuk et al., 2023; Weitzel et al., 2023). The costs of each proposed policy can be unequally distributed across sectors of an economy, with non-green sectors having to pay higher costs (Balta-Ozkan et al., 2015; Diffenbaugh and Burke, 2019; Vona, 2023). Since the late 1980's labour unions have asked for the protection of employees in these sectors, arguing in international meetings that a low-carbon transition should also be socially just. This type of approach regarding a *just transition*, highlighting aspects of justice that should be taken into account in green transition policies, has been getting increasing traction over the last 30 years.

The concept of a just transition first appeared in a Conference of the Parties (COP) in Cancun in 2010: '[...] a just transition of the workforce that creates decent work and quality jobs' (UNFCCC, 2010). Aiming to provide a more concrete description of what this concept means, the International Labor Office of the UN, put forward a 'just transition framework' (ILO, 2015) acknowledging the issue of transition-related inequalities and proposing ways to deal with these. The 2015 Paris Agreement (COP21) identifies the 'just transition of the workforce and the creation of decent work and quality jobs' (UNFCCC, 2015) as an essential goal, while similar comments have been made in other COPs.¹ Moreover, the European Green Deal features a Just Transition Mechanism, and the European Commission has proposed the creation of a Climate Social Fund; systemic equality and a just transition were among the arguments for a Green New Deal in the US as well (see Boyle et al., 2021; McCauley et al., 2023).

Parallel to the policy-making arena, the issue of a just transition has been a topic of interest within different academic literatures across social sciences and humanities often linked to issues

¹For example see 'Solidarity and Just Transition' document in COP24 and the 'Just transition declaration' of COP26.

related to sustainability.² with various works discussing what the general characteristics of justice should be (for example see [Newell and Mulvaney, 2013](#); [McCauley and Heffron, 2018](#); [Fanghella et al., 2023](#), among others). However, an explicit definition of a just transition does not exist ([Vollebergh, 2023](#)). Hence it is impossible to concretely judge which environmental policies related to a low-carbon transition should be considered as just. This commentary aims to fill this gap by formally defining which green policies should be labelled as just. In this way, our paper provides a criterion that can be used both in relevant research and in analysing policies.

Our definition draws on theories of distributive justice in the Rawlsian tradition ([Rawls, 1971](#)) and uses key intuitions of [Roemer \(1998\)](#)'s formulation of Equality of Opportunity (EOP). We incorporate key aspects of justice which have been argued to be desirable components of a just transition framework ([McCauley and Heffron, 2018](#)). In order to be able to capture issues related to the unequal effects of policies and unequal responsibility of agents, we have to go beyond existing works even if we keep some insights such as relating justice to the policy which makes the worst-off group as well off as possible as in the EOP framework. However, our approach has two key differences which make it different to EOP: First, while according to EOP, the population is divided into groups (types) ex-ante based on characteristics for which people should not be held responsible, in our definition, types are defined based on the relative costs of policies. Second, in order to take into account the issue of possible differential responsibility across types, we apply to the relative costs of each type a weight that is inverse to the type's relative responsibility for environmental degradation.

The next section provides an overview of the relevant theories of distributive justice upon which our approach is based. Section 3 presents our just transition framework and the last section provides a concluding discussion and directions for future research on the topic.

²Through the issue of sustainability it is possible to also draw links with the de-growth literature (see [Muraca, 2012](#); [Cosme et al., 2017](#); [Hickel et al., 2022, 2018](#), among others).

2 Distributive justice foundations

Our starting point is the distributive justice literature, rooted in the influential work of John Rawls (Rawls, 1971). Rawls puts forward two principles that define Justice. According to the first principle (the 'liberty principle'), a just society should first provide all its members with a maximum level of basic civil liberties. The second principle of Justice (the 'equality principle') is divided into two further principles: The fair Equality of Opportunity Principle, according to which all members of the society should have effectively the same opportunities for different positions and the Difference Principle, which argues that the institutions should act such that the worst of individuals' index of primary goods are maximised.

Rawls' theory emphasises that several characteristics of individuals are due to circumstances beyond their control. Hence inequalities related to these are not morally justifiable. This approach gave birth to a debate between philosophers such as Dworkin (1981a,b), Arneson (1989) and Cohen (1989), focused on where the line of responsibility should be drawn. Allocating this cut between responsibility and circumstance is crucial in order to be able to provide a definition of distributive justice. While the various approaches to EOp (e.g., Van de Gaer, 1993; Fleurbaey, 1995; Roemer, 1998) agree on the importance of distinguishing between circumstances beyond one's control (for example, date of birth or parental socioeconomic background) and effort which should be rewarded, there are disagreements regarding the extent to which circumstances influence preferences and effort. Following this distinction, individuals can be divided into types according to their circumstances. In particular, individuals will differ within each type with respect to the characteristics like effort for which they should be held responsible. In this way, inequalities across types are unjust, while inequalities within types can be justified.

According to Roemer (1998), policies aimed to achieve EOp should maximize the average person in the types with the worst of circumstances, while, for example, Van de Gaer (1993) proposes maximizing the average of the worst-off across types. These details regarding the

differences between the various models are important for normative economics. However, their discussion goes beyond the scope of this commentary (see [Roemer and Trannoy, 2016](#), for an overview and a more detailed discussion). In any case, both [Van de Gaer \(1993\)](#) and [Roemer \(1998\)](#) stress that EOp policies should aim to maximize different worst-off individuals and, in this way, ‘correct’ for unfair inequalities through slightly different ‘maximin’ procedures.

3 Definition of a just transition

Drawing on the maximin issue of fairness (which goes back to [Rawls \(1971\)](#)) and the division of the population in types, allows us to incorporate both distributional and procedural justice elements, which are considered necessary components of a just transition ([Newell and Mulvaney, 2013](#); [McCauley and Heffron, 2018](#)). However, due to two main issues related to the partition of the population in types and the influence of different levels of responsibility, it is not possible to apply an EOp criterion to identify which policies are just, and some reformulation is necessary. The first issue has to do with the fact that a low-carbon transition is a costly process, and each policy may lead to different allocations of costs within a population. Hence, in our context, it is more appropriate to define types not *ex-ante* based on circumstances as in the EOp approach, but according to differential costs, due to specific policies. *Ex-post*, this also implies that the specific division of a population in types may differ for each policy. Also, this highlights that a just transition characterisation should take into account all possible type divisions for the different policies.

Having a characterisation of types based on costs for each policy is not enough to make a choice regarding which of the policies should be considered as just. The reason for this is that thinking about costs is too general and does not allow rank types. Hence, we need to look not at costs in general but at some kind of relative costs which can provide a better basis for welfare comparisons. Then the just transition policy should be the one where the relative costs

of the type with the highest costs are the smallest when compared to the relative costs of the worst-off types in other policies.

In order to make this clearer, consider the following example: a government who is in favour of a just transition faces a choice between two possible feasible policies, A and B, each of which are able to reach a given environmental target. If policy A is adopted, the primary division of costs is between regions South (S) and North (N) and the costs in terms of loss of regional incomes are 10% and 5% respectively. If policy B is adopted then the division of costs occurs between high income (H) and low income (L) earners, with the relative costs being 3% for the former and 12% for the latter. In this setup, the just transition policy would be A, as the highest costs under A (10%) are lower than the highest costs under B (12%), irrespective of whether the loss of income concerns a region or an income group.

The second issue is related to how unequal responsibility of social groups, countries or regions should be taken into account in the definition of a just transition. Contrary to the standard EOp approach which distinguishes types on the basis of lack of responsibility for characteristics, in the context of a costly low-carbon transition, we should consider the relative responsibility regarding the contribution to environmental damages. If one type has considerably more responsibility related to climate damages, then should not this type also bear a higher level of costs? The answer to this question seems evident in cases where the type with the lowest contribution to damages also has the lowest relative costs under all feasible policies. In situations like this, applying the previous minimax formulation regarding relative costs is reasonable. However, this is not the case when the type with the highest responsibility is the one most negatively influenced by policies. Hence defining as just transition the choice of the policy highest relative costs are the lowest compared to all other policies is not convincing. In those situations, the previous criterion should be extended such that relative responsibility enters the just transition definition. We propose to do this by applying responsibility weights across types, where each weight is inversely related to relative responsibility. In the extreme

case where one type has all the responsibility then the responsibility weight for this type will be equal to zero. In this case, the minimax criterion should be applied to the new ‘weighted’ types.

Consider the previous example but with unequal responsibility between the types. More specifically assume that the relative responsibility between S and N is $1/3$ and for H and L is the same. Based on the above, these correspond to responsibility weights $3/4$ for S , $1/4$ for N , and $1/2$ for both L and H . This means that the weighted costs for S and N are 7.5% and 1.25% while for L and H , the weighted costs are 6% and 1.5% respectively. In this setup, the just transition policy would be B. We next turn to a general definition which captures our example’s insights.

In order to provide the characterisation of a just transition policy, we need to define types, costs, and responsibility weights and find the worst-off type for each policy. Consider the set of feasible policies $\Phi = \{p_1, p_2, \dots, p_K\}$, which can reach a given environmental target.

Types and costs

For each policy p_k , with $k = \{1, \dots, K\}$ define a set of types $I(p_k)$. Let $c^i(p_k)$ be the relative costs of type $i \in I(p_k)$ for a given policy p_k .

Responsibility weights

For each type $i \in I(p_k)$ compute the responsibility weight w^i , such that w^i is inversely related to type i ’s relative responsibility and with $\sum_{i=1}^{\mathcal{I}(p_k)} w^i = 1$, where $\mathcal{I}(p_k)$ indicates the cardinality of $I(p_k)$.

Max weighted costs

For each policy, p_k , find the maximum weighted cost $c^i(p_k)w^i$ for each of the types and call this m^{p_k} .

Definition

We define as the just transition policy, the policy p_k^* which corresponds to the minimum m^{pk} .

$$p_k^* = \inf_{p_k \in \Phi} m^{pk} \quad (1)$$

Linking this definition to our second example we have

- Policies: $\Phi = \{A, B\}$
- Types: $I(A) = \{N, S\}$ and $I(B) = \{L, H\}$
- Costs: $c^N(A) = 5\%$, $c^S(A) = 10\%$, $c^H(B) = 3\%$, $c^L(B) = 12\%$
- Responsibility weights: $w^N = 1/4$, $w^S = 3/4$, $w^H = 1/2$, $w^L = 1/2$
- Max weighted costs: $m^A = c^S(A)w^S = 7/5\%$ and $m^B = c^L(B)w^L = 6\%$
- Just transition policy: $\min\{m^A, m^B\}$, hence p_k^* : B

4 Discussion

A low-carbon transition is a costly process, with its costs being distributed unevenly across regions, countries and social groups. Over the last three decades, various scholars and policy-makers have argued that the transition should be socially just; however, without a concrete definition regarding the criteria that policies should satisfy to be considered as just. This open question has been the motivation for this commentary. Drawing on egalitarian theories of distributive justice and, more specifically, on the distinction of types and the maximin procedure of the Rawlsian/EOP traditions, we provide a formal definition regarding the conditions that should be satisfied for a low-carbon transition policy to be able to be considered just. Our approach has been to provide a general proposition that can be applied to a variety of setups in

both academic and policy analyses. By doing so, we have necessarily abstracted from a number of issues which can lead to further work in this field. We briefly discuss the ones which seem especially relevant for policy analysis.

According to the EOp framework, the distinction of types is a political issue (Roemer, 1998) that consists in deciding which characteristics should be understood as circumstances beyond one's control is at least to some extent a political question. Bringing this political dimension allows Roemer (1998) to provide a definition of EOp leaving aside discussions regarding which characteristics should be viewed as circumstances. Even if this political aspect appears to be not so relevant in our *ex-post* type characterisation based on costs, there is still 'political' space to extend the number of types by taking into account relevant characteristics which have an impact on how we calculate costs and hence define types. For example, should one focus on costs across occupations or also take gender into account? What about unequal costs within occupations? While we have abstracted of these types of questions such that our definition is as broad as possible, as these issues are important these define directions for further research.

There are another two political economy issues related to our approach from which we have also abstracted, but are very relevant especially with regards to the policy applications of our framework. These are related to both the targets and the set of policies into consideration. The targets differ across time and space; for example, the targets regarding the reduction of GHG emissions vary across countries, which in turn implies that the set of possible policies to achieve these targets will also differ. Also, targets depend on intergenerational ethical considerations which vary within the environmental economics literature. Including these considerations would require taking into account more types not only in the present but also further in the future.

Finally, although in our definition we consider the set of feasible policies, we recognise that this feasibility constraint is also to some extent politically defined and linked to other economic, ecological (for example related to sustainability) and/or financial targets. While we have chosen to abstract from these to make our definition as general and applicable as possible,

analysing how our just transition framework can change under different feasibility assumptions and targets, leads to another avenue of enquiry on the topic.

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