

Review

Is all inequality reduction equal? Understanding motivations and mechanisms for socio-economic inequality reduction in economic narratives of climate change mitigation

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ABSTRACT

In descriptions of a just transition to a sustainable future, ensuring a decent quality of life whilst remaining within planetary boundaries are often dual central aims. However, at present no country is moving in the right direction at the necessary speed to achieve this. In response, the need to reduce socio-economic inequality is increasingly highlighted in climate mitigation proposals, spanning a broad range of economic narratives of climate change mitigation, including Green Growth, Green New Deal, Post-Growth and Degrowth proposals. Despite broad support within sustainability transition literature for inequality reduction, the relationship between inequality and planetary boundaries is complex and understudied, particularly with regards to the climate impact economic inequality reduction may have in these divergent economic policy narratives. Through a structured integrative review of the academic literature that discusses inequality reduction alongside these narratives, this paper unpicks the motivations for and mechanisms through which socio-economic inequality reduction may be achieved. Whilst the narratives share the goal of achieving inequality reduction, the purposes for, mechanisms through which inequality reduction is to be achieved, and conviction through which inequality reduction is pursued is often distinct. It is argued that these differences may result in divergent climate impacts of ensuring decent living standards under each economic future. Despite this potential, none of the narratives offer investigation to these impacts, indicating the need for further empirical investigation of this important tension in climate change mitigation research.

1. Introduction

At present, there are no countries providing high levels of social performance whilst remaining within planetary boundaries [1,2]. At a global level, six of the nine identified biophysical planetary boundaries have already been exceeded [3]. With respect to the climate change boundary that this analysis focusses on, temperature targets of 1.5 °C and 2 °C will be surpassed without urgent and deep reductions in greenhouse gas (GHG) emissions, triggering earth system impacts that will pose significant hazards to human societies and natural systems [4]. Given this, anthropogenic GHG emissions must be rapidly reduced to limit future warming and achieve a sustainable future. As energy-related CO₂ emissions make up around 79 % of global GHG emissions [4], the focus of this review is therefore on energy and associated CO₂ emissions.

However, ensuring a decent quality of life for all is also an essential aim for socially and ecologically sustainable futures. Measuring the

ability of a society to provide this decent life has been a subject of study, with Fanning et al. [2] utilising two measures of life satisfaction, and nine 'need satisfiers' ('nutrition, sanitation, income poverty, access to energy, education, social support, democratic quality, equality and employment') necessary to achieve a good life. Meeting these need satisfiers requires access to essential energy services irrespective of income [5,6]. However, the global wealthiest 10 % presently currently consume the equivalent energy of that of the bottom 80 %, and are contributing between 36 and 48 % of GHG emissions [7,8]. Thus, without changes to wealthy groups' consumption, increasing access to energy services to those who need them, *ceteris paribus*, would require unprecedented levels of improvement in carbon intensity to ensure that GHG emissions did not grow rapidly [9].

Given (i) the rate at which planetary boundaries that are being transgressed [2]; (ii) the close coupling of income levels, energy use and GHG footprints [7,10]; and (iii) the high levels of income, consumption

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and energy inequality both within and between nations [7,11]; reducing inequality is frequently argued to be fundamental to decent living standards in sustainable futures [12–15]. In this context, the dual crises of mitigating climate change and reducing economic inequalities are increasingly discussed in parallel; as documented in the IPCC's AR6 [16], the UN's SDGs (Goal 10 & Goal 13) [17], and the demands of social movements such as Fridays for Future or Occupy Wall Street [18,19]. Beyond this, inequality reduction and climate mitigation are included across the spectrum of socio-ecological narratives of climate change mitigation and sustainable futures; from hegemonic pro-growth narratives of Green Growth [20], proposals for a Green New Deal [21], and in post-growth [22] and degrowth proposals [23]. As such, climate mitigation and a redistribution of income are often presented as aligned, even within paradigms that are often recognised as in opposition [24].

Despite the assumption that economic redistribution and climate mitigation are compatible, evidence examining the statistical relationship between levels of income inequality and greenhouse gas emissions leads to mixed conclusions [25]. Beyond assessments of the historical statistical relationship, others have indicated that not all inequality reduction is equal in terms of its ecological impact, or is contingent on other factors. Vogel et al. [14] describe reduced inequality as a 'social provisioning factor' to enable human need satisfaction at low energy use, particularly when combined with high standards of public service provision. Through an analysis of scenarios consistent with 1.5 °C of temperature rise, Jaccard et al. [26] define an inequality corridor for environmental footprints that facilitate necessary consumption whilst remaining consistent with 1.5 °C. They find that in order to have a 'realistically' high minimum level of final energy use for decent living standards, a drastic reduction in inequality would be necessary [26]. Others indicate this beneficial ecological impact of inequality reduction is contingent on this redistribution supporting a re-composition of consumption away from luxury consumer goods, and towards a more ecologically efficient utilisation of necessary services that do more to ensure minimally acceptable standards of wellbeing for all [27,28]. Finally, some studies indicate the relationship is contingent on other factors, such as the national socio-economic context, democratic quality, extent of economic development, or whether redistribution is occurring within or between nations [12,13,29–32]. In this paper, economic inequality reduction and redistribution are used interchangeably to describe a future distribution of economic resource, be that wealth, income or expenditure, with less inequality. That being a scenario where access to resources is more evenly distributed across society than at present.

Given the complex and indecisive evidence regarding the potential relationship between inequality reduction and ecological impact in sustainable futures; investigating how these two aims are presented within economic narratives of the climate transition is an important step in evaluating whether these policy narratives are able to coherently explain how these stated eco-social sustainability goals can be achieved simultaneously. Recent studies have begun to develop typologies for eco-social policy instruments [33,34], however there is little comparison of the role of inequality across these discourses. As such, through a structured integrative literature review, this paper begins to draw out varying conceptualisations and proposals for inequality reduction in a climate mitigation transition, across different policy perspectives. In doing so, it addresses three questions aimed at unpicking how inequality reduction features in contrasting economic narratives of climate change mitigation.

RQ1: How is economic inequality reduction considered alongside climate change mitigation as a dual goal within economic narratives of the transition?

RQ2: What motivates the inclusion of economic inequality reduction in economic narratives of climate change mitigation?

RQ3: What policy mechanisms are suggested to achieve economic inequality reduction in economic narratives of climate change mitigation?

First, this paper outlines the defining characteristics of the economic narratives of climate mitigation covered in this paper (section 2), and the methods used to collect the sample of papers and conduct the thematic analysis (section 3). Section 4 then presents the results stemming from the thematic analysis, highlighting instances where inequality reduction is presented alongside climate mitigation in the narratives (section 4.1), as well as discussing the purpose that inequality reduction serves in each narrative (section 4.2) and the policy mechanisms suggested to achieve inequality reduction (section 4.3).

2. Economic narratives of climate change mitigation

This section briefly characterises the economic narratives assessed in this article; Green Growth, the Green New Deal, and Post-Growth and Degrowth discourses, giving a high-level understanding of the distinguishing ideas of each narrative, and how they aim to reconcile social wellbeing with the need to reduce the ecological impact of social provisioning. These narratives represent key divides within the sustainability transition literature and a broad range of ideological thought in the climate transition debate [35–37]. As detailed further in section 3, these three narratives were established through an initial review of economic narratives that contain the dual goals of inequality reduction and climate change mitigation.

Green Growth and the Green New Deal are broadly pro-economic growth but are distinguished by their differing emphasis on the role of private and public actors as drivers of the climate transition. Given this, the Green New Deal emphasises a broader range of satisfiers of social wellbeing, such as the extent of public service provision, distinguishing it somewhat from green growth in Fig. 1. Post-growth and Degrowth discourses, seek to move further beyond economic growth as a central goal of modern societies, highlighting its ecological and social unsustainability. Post-growth here is used as an umbrella term to encompass several economic narratives such as doughnut economics and steady state economics, which share the goal of moving beyond economic growth as an indicator of social progress and goal for modern economies. Given its prevalence in the Post-growth literature set analysed here, degrowth is defined separately to post-growth in the forthcoming review, however, they are aggregated as one 'Post-growth and Degrowth' narrative in this analysis, as for the purposes of assessing their discussions of inequality and climate mitigation, their similarities significantly outweigh their minor differences [22]. Fig. 1 captures the relationship of each narrative to two statements about economic growth; a) that economic growth can be sufficiently decoupled from ecological impact to meet necessary climate targets and b) economic growth is essential to improving social wellbeing. This illustration implies some diversity in perspectives on these questions within each narrative and overlaps between narratives.

2.1. 'Pro-growth' narratives of climate change mitigation

2.1.1. Green Growth

Due to the close coupling of economic growth and growth in energy use and greenhouse gas emissions, growth in global economic activity has been identified as a major driver of climate breakdown [39–41]. At a basic level, Green Growth (referred to interchangeably in the literature as the 'Green Economy') argues that further economic growth can be made compatible with climate change mitigation targets. Green Growth proponents argue that growing markets and the correction of market failures can deliver innovative technologies to significantly reduce the energy and material intensity of economic activity, as well as internalise the 'social costs' of externalities to reduce harmful practices through price mechanisms, supporting the decoupling economic growth from ecological degradation [20,42,43]. Green Growth perspectives see

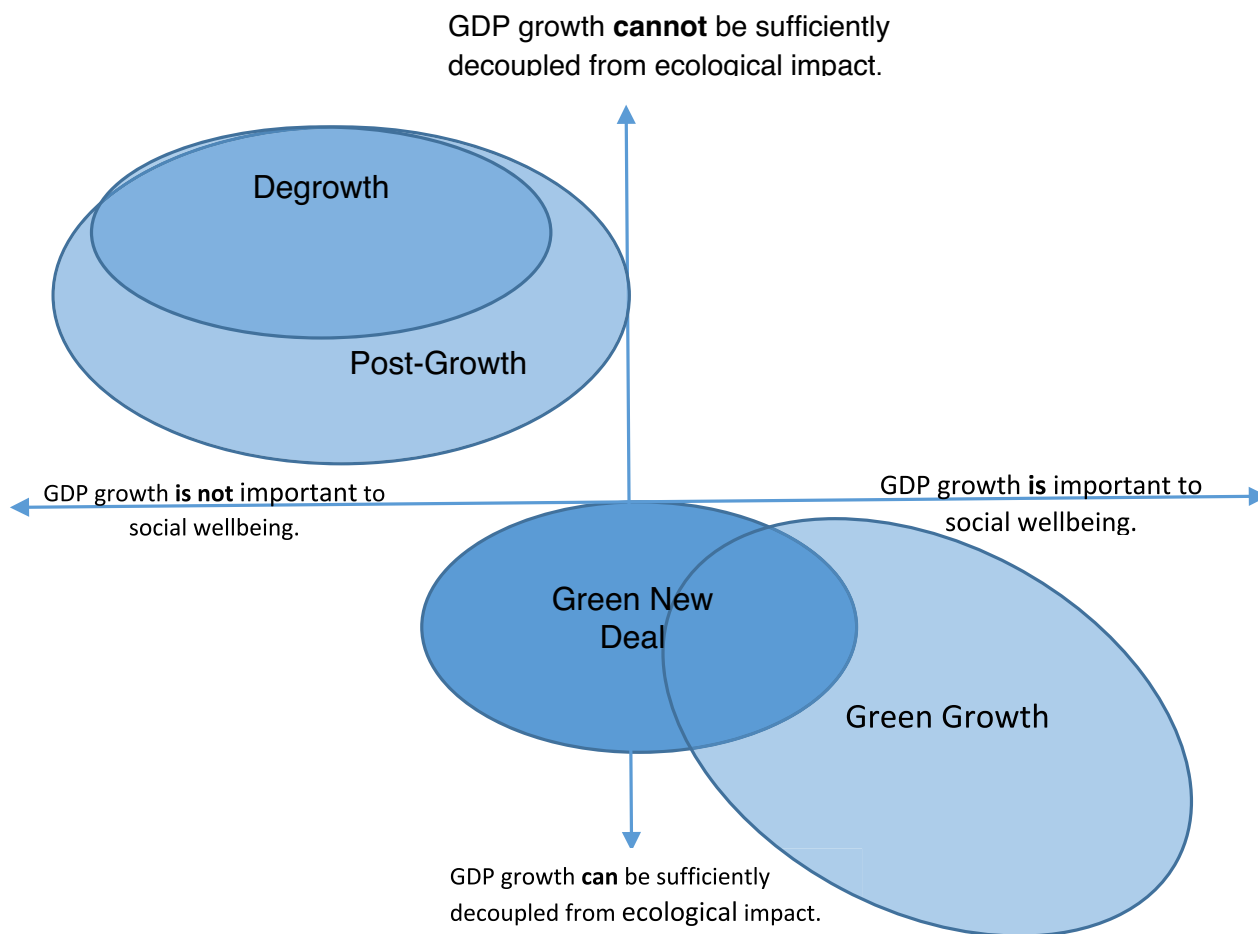


Fig. 1. Illustrative mapping of climate change mitigation narratives. Adapted from Petschow et al [38].

expansions in economic activity as crucial to maintaining or increasing social wellbeing through employment, wage growth and tax revenues to maintain traditional welfare states [20,44]. These two positions place Green Growth in the bottom right quadrant of Fig. 1.

The intellectual roots of Green Growth policy agendas borrow from mainstream environmental economic thinking, as well as incorporating dominant traditions in environmental political economy. Jacobs [44] and Bowen & Fankhauser [45] highlight the breadth of past economic theory built into Green Growth narratives, such as Keynesian fiscal policy, a Pigouvian focus on internalising market failures by monetarily valuing ‘natural capital’, and a Schumpeterian view that entrepreneurial competition leads to significant technological development [42,45]. From a political economy perspective, Fiorino [20] roots Green Growth thought within ‘ecological modernisation’, a school of neoliberal political economy that suggests capitalistic economic systems, economic growth and environmental protection are reconcilable through modest reforms to the central institutions of capitalist societies [46,47]. Ecological modernisation champions the role of markets combined with public policy stemming from a decentralised and flexible state [48]. This conviction in markets distinguishes Green Growth from the more heavily Keynesian narratives associated with the Green New Deal, envisioning a much stronger role for the state. The breadth of intellectual roots underpinning Green Growth has led some to argue it is an analytically rich narrative that strategically foregrounds the ‘attractive opportunities’ of climate mitigation, rather than framing mitigation in negative terms [45].

2.1.2. Green New Deal

Whilst in Green Growth, the state's role is limited to introducing

policies to correct market failures or encourage private investment in green technology; in the Green New Deal, the state plays a far more hands-on role, representing an alternative growth model to Green Growth. In Green New Deal proposals, the state unites short-term fiscal goals to stabilize macroeconomic fluctuations with long-term sustainability through significant public investment in low carbon technologies [37,49]. As such, the state ‘creates’, ‘shapes’ and ‘steers’ markets towards rapid expansions in renewable energy, energy efficiency savings and energy service infrastructures required in future sustainable societies [21,50]. This is often achieved through investments in public goods and services, increased regulatory measures, public procurement and a renewed focus on fiscal policy leavers [51]. However, this intervention is still intended to achieve growth, redirecting economic flows and capital towards ‘green’ sectors that have lower ecological stress and that support the reduction of energy and emissions intensities of historically damaging industries [49]. Thus, the Green New Deal agrees with the statement that GDP growth can be sufficiently decoupled from economic impact, as indicated by Fig. 1.

The Green New Deal also pursues important socio-economic benefits, such as full employment, well-paid green jobs, increased tax revenues and poverty reduction through conventional welfare states, much of which are predicated on maintaining a growing economy. Having said this, there is more recognition within Green New Deal proposals that growth alone is unable to ensure increases in social wellbeing, with more attention paid to minimising resource consumption in social provisioning, and measures societal wellbeing using indicators beyond economic growth, such as reduced inequality, improved public health and a focus on addressing legacies of intersectional oppression [21,52]. As captured elsewhere in the literature [36,37], these positions entail

that the Green New Deal has some significant overlaps with the Post-Growth and Degrowth narratives and sits between the two social statements made in Fig. 1.

2.2. 'Post-Growth' and Degrowth narratives of climate change mitigation

Both post-growth and pro-growth narratives diagnose past global economic growth as a central driver of total energy demand and GHG emissions. However, unlike pro-growth perspectives, Post-growth and Degrowth perspectives suggest that economic growth cannot be decoupled from energy use and GHG emissions to the extent or pace necessary to achieve internationally agreed climate targets [53]. As a result, economies must move beyond the pursuit of exponential economic growth to prioritise the reduction of the harmful ecological impacts of economic activity, and evaluate wider measures of societal wellbeing or prosperity, particularly in high energy consuming nations [54]. Thus, instead of attempting to decouple GDP growth from energy use and emissions, Post-growth and Degrowth pathways seek to decouple the throughput of the economy, such as energy or material use, from improvements in the welfare of societies [55]. Post-growth is an umbrella term comprising a wide range of proposals including but not limited to the steady-state economy, doughnut economics, wellbeing economics or degrowth. Whilst differences exist, these proposals are united by the need to move beyond the economic prioritisation of growth for socio-ecological reasons.

Given the prominence of Degrowth in the post-growth literature set analysed in this study, as well as the broader eco-social discourse, it is worth describing more concretely, given it is a broad perspective in its own right. Degrowth's aims stretch beyond the socio-ecological boundaries of most transformation narratives, often highlighting the need for larger commons, smaller markets, integration of democratic structures in workplaces, greater gender equity, a strengthening of communities, human-nature relations, and increased income equality through redistribution [38,56,57].

With regards to climate mitigation, Degrowth has two fundamental critiques; a) exponential growth in economic activity and associated resource and energy consumption is incompatible with staying within planetary boundaries [53], and b) continued economic growth is socially undesirable, given a detrimental relationship between economic growth and need satisfaction above a moderate level of affluence [14,55]. This places degrowth (and post-growth) in the top left quadrant of Fig. 1. In response, degrowth scholars propose 'an equitable downscaling of production and consumption that increases human wellbeing and enhances ecological conditions' [58]. It's often emphasised that degrowth is not directly aiming to reduce GDP, which is a recession or depression [55]. Similarly, degrowth does not necessarily describe a contraction in the amount of human activity going on. Instead, it aims to reduce the throughput of energy, materials and resources through an economy that may in turn lead to a reduction of GDP, but managed in a way that it improves social wellbeing [23]. This is because it is the scale of this throughput that is ecologically significant, rather than the size of GDP. It does so through growth in non-market-based collective service provision, increases in common property, increases in shared resource use, and economic redistribution that reduces the reliance on growth to support society [38].

Degrowth and post-growth proposes similar critiques of pro-growth economic narratives and describe similar ideas of what just sustainable societies will look like; however, the conviction held in the need to downscale production and consumption systems in order to bring societies back within the ecologically safe boundaries of the biosphere is a core distinguishing feature within the degrowth literature compared with other Post-growth narratives. However, given these similarities in the critique of more hegemonic pro-growth descriptions in the transition, and their shared focus on a much broader range of both ecological and social indicators of socio-economic progress, including economic inequality, allows them to be considered as one narrative for the

purposes of this analysis.

3. Methods

3.1. Research design

To evaluate the role that economic inequality reduction plays in these narratives of climate change mitigation, a structured 'integrative' [59] literature review was undertaken. The aim of this review is to unpick the existence of motivations for and mechanisms through which socio-economic inequality reduction is to be achieved alongside climate change mitigation in these narratives. Given this, the structured integrative review approach employed here, allows for the critical analysis of themes within sets of literature to uncover shared or conflicting ideas [60]; rather than collating empirical results from primary research on a topic, as usually achieved through a full systematic descriptive literature review. Garvey et al. [61] identify three reasons for why a structured integrative review may be the most appropriate approach, including a) the exploratory nature of the review b) the interdisciplinary nature of the review and the literature it covers, and c) the diversity of methods used in the literature, making a meta-analysis less meaningful. First, whilst these economic narratives are well established, the literature analysing the goal of inequality reduction within them is limited, with no examples of cross comparison evident in the literature. Secondly, these narratives are characterised as economic transitions, however their reach includes to macro and microeconomics, development studies, sociology, ecology, energy, geography and political economy, as reflected by the variation in study topics in the literature assessed. Finally, the literature reviewed involved significant breadth in methods.

Given this is not a full systematic review, the importance of rigor and replicability has been considered throughout the research design, utilising practical guides and standards for doing so, such as those developed by Sovacool et al. [62]. As done by Garvey et al. [61], this review brings together the qualitative critical analysis facilitated by an integrative review with important methodological structure of a fully systematic review to help ensure academic rigor and replicability as described in the rest of this section. Section 3.2 describes the systematic search of the academic literature using pre-defined criteria derived from the research questions and provides an explicit criterion for excluding or including studies. Section 3.3 outlines the thematic coding strategy and process of analysis used in the study. Section 3.4 indicates some limitations to the study.

3.2. Academic literature search

The literature search was conducted using search strings developed from the key research questions guiding this study, alongside seven economic narratives, all of which were identified from an initial rudimentary search of the literature. In the process of eliminating articles (see Fig. 2) these seven narratives were reduced to five, as steady state economics and doughnut economics failed to yield any results after exclusion. In the analysis phase, these five were further condensed into three final narratives, given the conceptual similarities between the green economy and green growth, as well as post-growth and degrowth as indicated in section 2, as well as similarities in how inequality reduction was discussed in these literature sets. These search strings are displayed in Table 1 and were applied to the Web of Science and Scopus databases.

As captured in Table 1 the economic narrative search was limited to the titles of articles, ensuring a focus on or account of a narrative within the article. A broader search of the title, abstract and keywords of articles was used for the inequality/redistribution dimension, given there is a very limited number of papers directly studying the role of economic redistribution within economic narratives of climate change mitigation, and that often redistribution is discussed implicitly within narratives. Broadening the search constraints helped to capture a wider range of

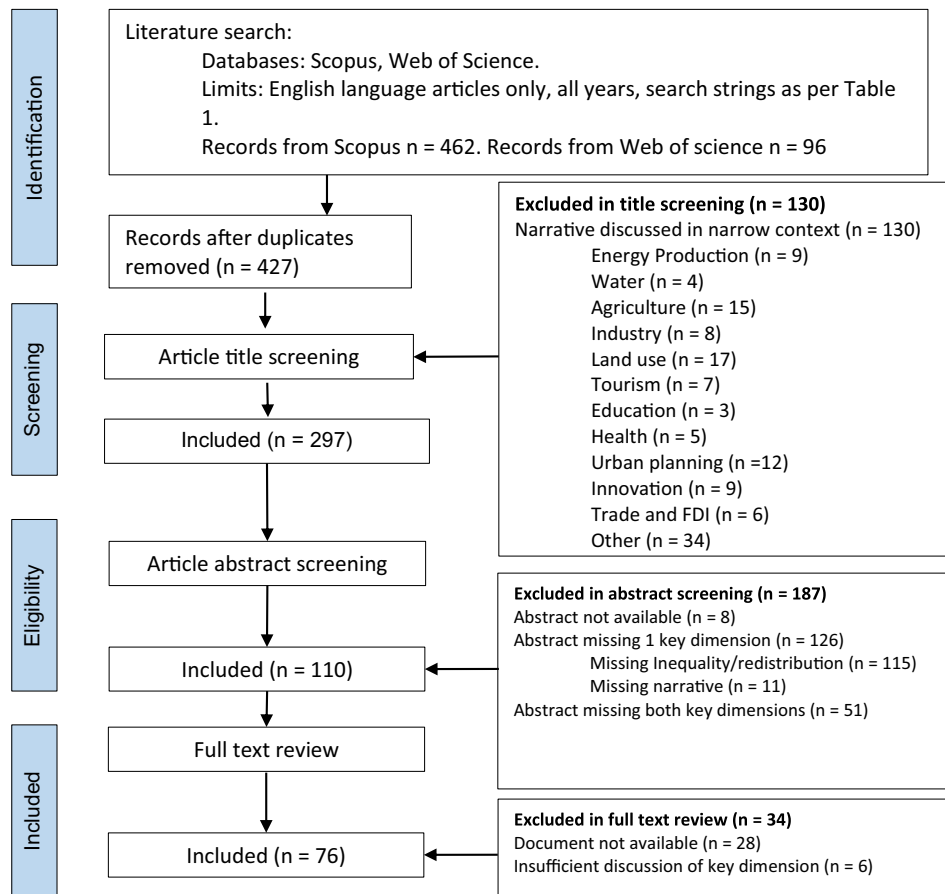


Fig. 2. Flow chart of the article selection process.

Table 1
Search strings used to collect literature for review.

Economic Narrative	TITLE: "Green growth" or "Green Econom*" or "post-growth" or "post growth" or "doughnut economics" or "degrowth" or "steady state economics" or "Green New Deal".
Inequality Reduction	AND: ALL FIELDS: "Inequal*" or "Equal*" or "redistribute*" AND: ALL FIELDS: "Economic" or "Income" or "wealth" or "consum*".

articles that may not be wholly focused on redistribution, but that included some discussion of its importance to the narrative(s) each article discussed. Further an economic dimension was added to the inequality/redistribution search string, in order to focus more closely on economic inequality, and exclude articles focussing on other axes of inequality, that whilst important, were outside of the scope of our research questions.

This initial search of the literature yielded 427 articles, after removing articles duplicated across databases. This sample size was reduced to 76 articles, through an inclusion criterion that included the accessibility of the resource, it being in English, and that on review the abstract and full article included both a focus on at least one economic narrative and some discussion of how inequality features in said narrative. Fig. 2 displays this process, using the PRISMA flowchart [63]. This sample captured articles from across the three narratives covered in this paper as displayed in Table 1, Green Growth (n = 26), the Green New Deal (n = 11), Post-growth and Degrowth (n = 34). A small number of papers provide accounts of more than one economic narrative, as indicated in Table 2, including articles that compare Green Growth and Post-growth perspectives (n = 4), and 1 that compares all three

narratives. Including these articles, the spread of broadly 'pro-growth' accounts (Green Growth and Green New Deal) (n = 44) and growth-sceptic perspectives (Post-growth and Degrowth) (n = 39) was also well balanced.

Given the search strings in Table 1 were used to identify economic narratives in paper titles, the articles often provided a direct self-categorisation as sitting within a particular narrative. To ensure consistency with the narratives, they were cross referenced against the core definitions of each narrative as outlined in section 2. Additionally, it was not always the case that the authors of each paper were proponents of the narrative they were discussing. In these cases, care was taken to ensure the analysis captured the narrative they were discussing, rather than the views or perspectives of the author. Where more than one narrative was covered in an article, the second narrative was often explicitly referred to in the article, which was again cross referenced to the defining narrative characteristics in section 2 and analysed in the same way.

Table 2 presents the articles in the sample along with the narrative which they discuss and the reference number within this articles reference list. This number is used to denote its inclusion in a theme in Table 3 capturing the motivations for inequality reduction (section 4.2) and Table 4 capturing the mechanisms and policies intended to achieve inequality reduction (section 4.3).

3.3. Thematic analysis

The thematic analysis of the literature set was undertaken in order to compare the role of economic redistribution in each narrative, utilising a process set out by Clarke and Braun [134]. Thematic analysis is the process of systematically producing codes within the data, which are

Table 2

Literature sample and their respective economic narrative. GG = Green Growth, GND = Green New Deal, PG = Postgrowth and Degrowth. Reference number refers to use in [Tables 3 and 4](#).

Author (Date)	Economic Narrative	Reference number
Adeleke and Josue (2019)	GG	[64]
Akbulut, (2019)	PG	[65]
Alexander (2011)	PG	[66]
Asara et al. (2015)	PG	[67]
Asongu and Odhiambo (2020)	GG	[68]
Barbier (2016)	GG	[69]
Bowen and Hepburn (2015)	GG	[70]
Buch-Hansen (2018)	PG	[71]
Buch-Hansen and Koch (2019)	PG	[72]
Büchs and Koch (2019)	PG	[73]
Cato (2012)	GG	[74]
Chiengkul (2018)	PG	[75]
Cook and Smith (2012)	GG	[76]
Cosme et al. (2017)	PG	[57]
de Schutter et al. (2020)	GG	[77]
Decker (2020)	GND	[78]
Diesendorf, (2013)	GG	[79]
Dinda (2014)	GG	[80]
Domazet and Ancić (2016)	PG	[81]
Dukelow and Murphy (2022)	PG	[82]
Endriana et al. (2016)	GG	[83]
Fesenfeld (2021)	GND	[84]
Fioramonti et al. (2022)	PG	[85]
Fiorino (2018)	GG	[20]
Fitzpatrick et al. (2022)	PG	[86]
Fyock (2022)	PG	[87]
Gabriel and Bond (2019)	PG	[88]
Gainza and Lobach (2021)	GG	[89]
Galvin and Healy, (2020)	GND	[90]
Ge et al. (2018)	GG	[91]
Georgeson et al. (2017)	GG	[92]
Gerber and Raina (2018)	PG	[93]
Green and Healy (2022)	GND	[21]
Ha and Byrne (2019)	GG	[94]
Hanaček et al. (2020)	PG	[95]
Hickel and Hallegatte (2022)	GG & PG	[9]
Hickel (2020)	PG	[23]
Hickel et al. (2021)	PG	[96]
Hickel (2019)	PG	[97]
Jackson (2019)	PG	[98]
Jakob and Edenhofer (2014)	GG & PG	[99]
Juan (2020)	GG	[100]
Kallis (2011)	PG	[101]
Kennet and Heinemann (2006)	GG	[102]
Khoshnava et al. (2019)	GG	[103]
Lee et al. (2021)	GND	[104]
Lenaerts et al. (2022)	GG	[105]
Littig (2017)	GG	[106]
Mair et al., (2020)	PG	[107]
Mathur (2019)	GND	[108]
Muraca (2012)	GG & PG	[109]
Murphy (2013)	PG	[110]
O'Neill (2020)	GG, GND & PG	[36]
Perkins (2019)	PG	[111]
Prieto and Domínguez-Serrano (2017)	PG	[112]
Ramcilovic-Suominen (2022)	PG	[113]
Rammelt and Gupta (2021)	PG	[114]
Read (2015)	GG & PG	[115]
Ruggiero (2021)	PG	[116]
Savin et al. (2021)	GG	[117]
Schroeder (2021)	GND	[118]
Selwyn (2021)	GND	[119]
Sica (2019)	GND	[120]
Spangenberg (2017)	PG	[121]
Stevis and Felli (2015)	GG	[122]
Stilwell (2021)	GND	[123]
Strunz and Schindler, 2018)	PG	[124]
Sturman and Heenan (2021)	GND	[125]
Teelucksingh (2018)	GG	[126]
van Vuuren et al. (2017)	GG	[127]
Wahlund and Hansen (2022)	PG	[128]
Weiss and Cattaneo (2017)	PG	[129]

Table 2 (continued)

Author (Date)	Economic Narrative	Reference number
Xue et al. (2012)	PG	[130]
Zhao et al. (2019)	GG	[131]
Zhu and Ye (2018)	GG	[132]
Zoellick and Bisht (2018)	PG	[133]

subsequently analysed and grouped into themes [134]. Using NVivo software, each text was coded using a mixed approach of inductive and deductive coding to establish common themes within the narratives. A top-down deductive coding approach was undertaken first using the key parts of the research questions, drawing out codes in the literature that discussed motivations for and mechanisms to achieve inequality reduction. To extract further detail and support the grouping of codes into comparable themes, an organic inductive approach was used to begin grouping the aims or policies of redistribution within each narrative. This inductive coding was done until no further insights, themes or new codes were being identified in the literature.

3.4. Methodological limitations

As indicated by Sovacool et al. [62], one possible limitation of non-fully systematic literature reviews is that material could be missing from the review sample. As the previous sections detail, efforts were made to minimise this limitation, however, it is likely that literature containing discussions of how to fulfil the dual goals of reducing economic inequalities alongside climate change mitigation was excluded. This exclusion of material could be caused in several ways.

Firstly, the economic narratives search for included a range of recognisable narratives present in the literature, however some narratives that did not appear in the preliminary literature search may be excluded. Whilst this may limit some perspectives, the narratives selected comprise a wide range of views on the relationship between socio-economic issues and climate change mitigation, giving the review of narratives a reasonably broad scope.

Secondly, for practical reasons, the search for economic narratives was limited to the title of articles to guarantee a focus in the article on a particular economic narrative. This will have also limited the sample somewhat, given the large prevalence of these narratives in the academic literature. As such, this review is not fully systematic by design, but has incorporated principles of systematic reviews where possible as detailed in [section 3.2](#). Further, it is likely that there may be some discussion of inequality within particular narratives that was not captured in searchable fields in the Scopus and Web of Science database. This may have led to the exclusion of some literature that discusses inequality reduction with respect to an economic narrative. These limitations likely mean that some relevant articles were not reviewed, yet the sample size and distribution across the narratives reviewed is still able to produce coherent understandings of how inequality is viewed in each perspective. In addition, the inductive coding strategy was used until no more new insights were present in the literature, thus, it is argued that the paper sample reviewed is able to establish credible answers to the paper's research questions.

A third limitation in the sample is that the economic narratives assessed in this review exist beyond the peer-reviewed academic literature. Therefore, the non-inclusion of grey literature and, in particular, government or international institutions' policy documents where relevant, presents a gap in the analysis of how inequality reduction and climate mitigation are considered in these narratives outside of academia. Whilst not an insignificant omission, it was excluded to ensure the narratives were cross-comparable, given that some of the economic narratives were far more likely to appear in grey literature than others, given the greater dominance of growth-based agendas in policy circles.

Finally, it is important to mention that given the exploratory and not

fully systematic nature of this literature review, the review does not quantify the prevalence of discussions of inequality within the broader literature featuring each economic narrative. As described in Table 1, the search terms aim to pick out articles within these traditions that feature discussions of inequality reduction or redistribution. As a result, the aim of the review, rather than assess the importance of inequality to these narratives through sheer weight of inclusion as an important dual goal, is to assess this importance based on the strength of arguments for why it is discussed, as well as the policy mechanisms used to achieve inequality reduction. As shown in section 4, evaluating these arguments within the context of each narrative, illuminates differential levels of commitment to inequality reduction, issues with the internal coherence and evidence deficiencies in the narratives.

4. Analysis

4.1. RQ 1: How is economic inequality reduction considered alongside climate change mitigation as a dual goal within economic narratives of climate change mitigation?

Economic inequality reduction and the challenge of mitigating the climate crisis are frequently framed as dual goals within all three economic narratives in the literature sample. In the case of Green Growth, this result contrasts many characterisations of Green Growth elsewhere in the literature, that criticise the narrative for failing to pursue inequality reduction; both from Green Growth proponents [20], as well as those critiquing the narrative [35,36]. However, upon analysing this sample, the goal of inequality reduction is not completely absent from the narrative.

In the Green Growth sample, these dual goals are often expressed in the language of sustainable development, as one of the three dimensions of sustainable development, ‘namely the economic, social and environmental aspect’ [83,89,100,103,132]. In some cases, it is argued that the reduction of inequalities should be given equal weight to economic growth and ecological protection in green growth initiatives [89]. Also referring to sustainable development, others articulate the importance of inequality reduction to achieve social equity and poverty reduction in a sustainable transition [9,77]. This framing, of inequality reduction in Green Growth existing within the sustainable development paradigm also reflects much of the geographical scope of inequality reduction within the Green Growth sample, often applied to the catch-up development of the global south, and more rarely discussed as an important national policy agenda in wealthy nations. Finally, the importance of ‘finding important economy-ecology relationships’ is emphasised in Green Growth, as the best route to supporting low-income groups through economic growth and wealth creation, as well as reducing ecological harm [20,106]. The framing of these dual goals, as within the paradigm of sustainable development is not without criticism.

Fesenfeld [84] suggests that alongside a governmental responsibility to guide a climate transition, the dual “goal of simultaneously reducing both socioeconomic inequalities and greenhouse gas emissions” is a secondary “defining feature” of typical Green New Deal proposals. Reinforcing this, all 11 Green New Deal papers express these goals with similar conviction. Whilst in Green Growth, continued economic growth often featured as a central goal alongside inequality reduction and climate mitigation; in the Green New Deal, economic growth was rarely expressed as an outright goal alongside these. However, as is clear in the motivations and policy mechanisms aimed to reduce inequality, economic growth is a significant feature of a Green New Deal climate transition.

Like in Green New Deal narratives, economic redistribution between and within countries is a core goal of Post-growth and Degrowth proposals in the literature sample, alongside minimising human impacts on the environment and promoting a transition away from economic growth [57]. Cosme et al.'s [57] substantive review of the Degrowth literature highlights a focus on social equity, achieved through inequality reduction, as the most dominant theme in degrowth proposals

than environmental sustainability. Buch-Hansen and Koch [72] argue ecological collapse and extreme concentrations of wealth are dual threats to human civilization, undermining the ‘preconditions for human beings to thrive’. As such, Degrowth, a mainstay of Post-growth narratives, is often defined as a ‘planned reduction of energy and resource use designed to bring the economy back into balance with the living world in a way that reduces inequality and improves human well-being.’; concretely positioning inequality and climate mitigation as central goals of the narrative [23].

4.2. RQ 2: What motivates the inclusion of economic inequality reduction in narratives of climate change mitigation?

Inequality reduction is discussed as a societal goal within all three economic narratives in the academic literature set, but the reasons given for its importance in the transition differs between narratives. Table 3 lists the 13 key themes emerging from the inductive thematic analysis of the motivations for inequality reduction in literature, revealing the range of rationales. The most referenced of these are elaborated on here, including social benefits of inequality reduction encompassing poverty reduction and social justice codes (section 4.2.1), the climate benefits of inequality reduction (4.2.2), the pursuit of economic growth through inequality reduction (4.2.3), and potential for inequality reduction to improve the socio-ecological efficiency of resource distribution (4.2.4).

4.2.1. Social benefits of inequality reduction: Social equity and poverty reduction

Highlighting some similarities, all three narratives reference the social benefits of inequality reduction, describing aims to reduce or eliminate poverty and pursue a socially equitable climate transition. Appealing to fairness, equity and justice, all three narratives utilise these concepts in a similar way, indicating that inequality reduction within a climate transition is central to the creation of a just, sustainable society. However, although poverty reduction is present across paradigms, it is utilised differently. In Green Growth, reducing inequality is seen as an “obvious synergy between environmental protection and poverty reduction” and one that makes poverty eradication far easier to achieve [9]. However, beyond this social value in and of itself, poverty and inequality reduction are sometimes framed as an unexplored economic growth opportunity. By allowing low-income households to invest in education or the development of new skills to increase their labour productivity, as well as fostering political stability to support green investment, inequality reduction can bolster Green Growth [20], a view shared in some Green New Deal narratives [104].

In contrast, in Post-growth and Degrowth, inequality reduction is essential to poverty reduction without increasing aggregate material or energy throughput that would place greater strain on the earth's planetary boundaries [65,72,114]. This difference, between expanding total consumption through inequality reduction in pursuit of economic growth, and using redistribution to equitably redistribute consumption of materials, is likely to yield different climate impacts. This difference in core aims, between stimulating economic expansion and reducing material throughput, is a central tension between the motivation for and instrumentalisation of inequality reduction in pro- and post-growth policy narratives, even where other aims are similar.

4.2.2. Inequality reduction as supportive of climate mitigation

Another shared motivation is the argument made that inequality reduction can be supportive of climate change mitigation and wider ecological protection. Although most evident in Post-growth and Degrowth narratives, it is often included elsewhere. In Green and Healy's [21] arguments in support of a Green New Deal, they detail a number of mechanisms through which inequality contributes to climate change, some of which are echoed elsewhere in Green Growth and Post-growth proposals. Those referred to across all three narratives are, (i) the contribution of inequality to the unsustainability of present

Table 3

Key themes describing the purpose for advocating for inequality reduction in economic narratives of climate change mitigation in the academic literature. (See Table 2 for reference key). GG = Green Growth, GND = Green New Deal, PG = Post-growth and Degrowth.

Why is inequality reduction important in a climate mitigation transition?	Number of articles referencing each code				References		
	GG	GND	PG	Total	GG	GND	PG
To reduce poverty	12	2	13	27	64, 68, 69, 70, 77, 80, 20, 9, 100, 102, 103, 132	90, 21	65, 66, 72, 73, 75, 86, 93, 97, 111, 114, 121, 128, 130
To achieve social justice/fairness	9	3	15	27	74, 76, 77, 79, 83, 20, 92, 102, 132	90, 21, 120	65, 66, 71, 72, 57, 88, 9, 97, 110, 111, 113, 114, 121, 128, 130
To improve the socio-ecological efficiency of resource distribution/consumption	2	0	13	15	78, 20	–	66, 72, 75, 57, 88, 9, 97, 101, 114, 121, 124, 128, 130
To support environmental protection/climate mitigation	4	2	9	15	68, 20, 102, 109	21, 104	66, 67, 72, 57, 81, 85, 111, 114, 121
To increase social cohesion	3	1	4	8	20, 9, 109	21	66, 72, 85, 107
To generate employment	5	2	0	7	69, 77, 80, 91, 94	21, 104	–
To strengthen democracy	0	0	7	7	–	–	72, 101, 111, 114, 121, 129, 130
To generate economic growth	5	1	0	6	72, 20, 9, 109, 132	104	–
To end capitalism	0	1	4	5	–	120	71, 110, 111, 116
To gain political support for sustainable transition	0	3	2	5	–	90, 21, 120	111, 124
To reduce wealth inequality	0	0	3	3	–	–	115, 124, 128
To improve health outcomes	0	0	1	1	–	–	85
To increase the climate resilience of society	0	1	0	1	–	104	–
Totals	40	16	71				

consumption patterns, both with regards to overconsumption and the conspicuous consumption of goods linked to social status [20,21,72]; and (ii) the impact inequality has on social cohesion and the ability to act collectively [20,21,66,85,107]. More broadly, the links between inequality and political decision making consistent with climate mitigation are raised in the Green New Deal, Post-growth and Degrowth discourses. Green and Healy [21] indicate that present concentrations of wealth allow for productive investment to be controlled and organised in the interests of maximising shareholder profits, often against the common interests of supporting climate mitigation. Removing these myopic interests from investment decisions through a redistribution of wealth could thus support investment into climate transitions [21,111].

Whilst claims that inequality reduction is ‘broadly good for environmental protection’ [20] are made across all narratives studied, an empirical investigation of these statements within the context of each narrative is absent from all three literature sets. It is the case that these relationships have been studied elsewhere in the literature, with respect to how changes in inequality may impact carbon emissions [12,28] and on energy use [13]. However, as indicated previously, factors including the socio-economic context or policy design can influence the climate-related impacts of inequality reduction, causing an evidence gap relating to the compatibility of the dual goals in the three narratives. Given the differences between the intended impacts on aggregate consumption levels in the narratives, and thus the associated climate impacts, further investigation of these claims is necessary to assess the compatibility of both goals under each narrative's conditions.

4.2.3. Inequality reduction to pursue economic growth

One prominent difference is the pro-economic growth narratives of Green Growth and the Green New Deal utilise inequality reduction to stimulate growth, given evidence suggesting that a 1 % increase in the concentration of wealth in the top 20 % has historically led to a 0.08 % reduction in total GDP [20,135]. Others indicate that an increased focus on inequality reduction can help spur job creation in a spatially equitable way, helping to grow average incomes, distribute the benefits fairly and support green economic growth [91,94]. Finally, Fiorino [20] points towards the impact that inequality reduction can have on labour productivity, by facilitating increased skills acquisition and training, supporting increased opportunities for social mobility, and contributing positively to economic growth. This motivation for redistribution is seen as a supportive mechanism for greening economic growth in Green

Growth and the Green New Deal, to help supply green sectors with a skilled workforce necessary for the transition [77,104].

For inequality reduction in pro-growth narratives to both increase economic activity alongside playing a positive role in climate mitigation, its effect on the decoupling of growth from energy use and emissions must be greater than its overall positive effect on economic growth. As documented in section 4.2.2, some mechanisms stemming from inequality reduction that could aid the decoupling of energy and emissions from economic growth are presented. However, there is no evidence presented that these outweigh any increases in economic growth pursued through inequality reduction. Thus, in order to establish the plausibility of achieving inequality reduction and sufficient climate change mitigation under a pro-growth transition, further empirical investigation of these effects is needed to establish the extent that inequality reduction in pro-growth transition pathways is aiding climate mitigation, and the impact this may have on the decoupling rates necessary to achieve climate targets.

4.2.4. Inequality reduction to improve the socio-ecological efficiency of resource consumption

In Post-growth and Degrowth narratives, rather than the underlying motivation being to stimulate Green Growth, redistribution is pursued with the aim of improving resource distribution to ensure the maximum amount of wellbeing is extracted from each unit of resource use [57,66,72]. Above a level of consumption, the contribution of that resource to wellbeing is reduced. At present the inequality in consumption is leaving many unable to consume the resources necessary to achieve a good standard of living. Despite this aggregate consumption levels are causing the crossing of multiple planetary boundaries, meaning the consumption of resources is not ecologically efficient in achieving social wellbeing [121]. Therefore, resource use should be prioritised for necessary consumption, rather than luxury consumption [101]. As a result, redistribution is essential in Post-growth and Degrowth narratives to ensure social wellbeing in aggregate can be improved, whilst not increasing, or even reducing aggregate levels of resource use and material throughput. From these findings, all narratives argue for and describe the potential social benefits of inequality reduction, through poverty alleviation and social equity, and for some, through economic growth. However, only post-growth narratives thoroughly and consistently develop ecological arguments for the need for redistribution.

4.3. RQ 3: Policy mechanisms to achieve inequality reduction alongside climate change mitigation

Responding to these motivations for reducing inequality within economic narratives, a wide range of mechanisms, policies and interventions are identified across the range of literature studied to achieve inequality reduction. Table 4 groups these mechanisms and policies around core themes in the literature sets. These groups do not represent fully developed policy proposals, but rather indicate the kinds of measures described as critical to reduce inequality in the policy narratives assessed. This section elaborates on those policies that are most referenced in the literature set, including employment policies, training and education (section 4.3.1), progressive tax systems (4.3.2) and the role of welfare states and public services (4.3.3).

4.3.1. Employment, training and education policy for inequality reduction

Following the similarities in motivation, the narratives broadly agree on mechanisms related to employment, training and education having importance in ensuring inequality is reduced within a climate transition. Whilst present across all three narratives, the Green Growth literature relies more heavily on the role of education and training in the creation of green jobs and opportunities for social mobility in a future green economy [20,77,83,136]. Despite this, in Green Growth, beyond discussions of upskilling for low-carbon sectors, detail regarding what these jobs may be, how the jobs would be created, or how they may lead to reductions in inequality is absent. This lack of detail reflects a broader finding in the Green Growth literature, where indications of policies to achieve inequality reduction are scant in number and in detail. Given the increased economic output advanced by rapid expansions in low-carbon technologies, and relatively greater reliance on job creation in comparison to other narratives, Green Growth's failure to more concretely or empirically capture how these economic benefits are able to be distributed more evenly through this mechanism weakens the

narrative's claim to be able to achieve inequality reduction in a transition.

In contrast, the Green New Deal, Post-growth and Degrowth narratives focus more greatly on the role of the state as a provider of jobs to support the climate transition, often supportive of calls for a universal job guarantee [9,21,23,36,57,78,85,90,96,108,123]. These narratives share their view of the state as an employer of last resort, however their respective job guarantees are different. Post-growth and Degrowth narratives utilise shorter working weeks and job sharing (without financial loss for low incomes) to ensure a jobs guarantee avoids a significant expansion in economic activity [57,82]. In the wider literature discussing inequality and energy demand reduction, utilising shorter working weeks to facilitate a redistribution of working hours to those who experience working-time insecurity, is frequently discussed as a way in which structural inequalities in the labour market can be addressed, whilst reducing levels of energy demand [137,138]. In the Green New Deal, a jobs guarantee is funded expansionary investment in green sectors in service of reducing the emissions intensity of economic growth, through decarbonisation. These differences in jobs guarantee implementation are likely to impact rates of decarbonisation given their differential impacts on economic growth, in the absence of unprecedented levels of decoupling.

4.3.2. Progressive tax system

Utilising tax systems progressively is another area where some agreement is shared, highlighting the increased need to progressively fund public services and to help support economic redistribution. Similarly, with environmental taxes, all three narratives recognise the potentially regressive impact of taxes on high carbon goods or services, and propose measures such as tax breaks or money transfers to implement carbon taxes progressively [20,21,84,101,108,110]. Further, progressive taxation to support climate policy investment and resource redistribution through direct welfare payments and public service

Table 4

Key themes describing the mechanisms and policies to achieve inequality reduction in economic narratives of climate change mitigation in the academic literature. (See Table 2 for reference key). GG = Green Growth, GND = Green New Deal, PG = Post-growth and Degrowth.

How should inequality reduction be achieved in the context of the climate transition?	Number of articles				References		
	GG	GND	PG	Total	GG	GND	PG
Employment policies to create jobs, including workplace education, skills and training	11	9	13	32	69, 77, 80, 83, 20, 89, 100, 103, 106, 122, 125	78, 84, 90, 21, 104, 108, 36, 119, 123	57, 82, 85, 86, 9, 23, 96, 97, 101, 107, 110, 111, 112
Progressive taxation	5	7	19	31	77, 79, 20, 9, 100	78, 84, 90, 21, 108, 119, 120	65, 66, 67, 75, 57, 82, 85, 86, 9, 23, 97, 101, 110, 111, 113, 115, 116, 121, 128
Universal Basic Services/increased public service provision	3	4	11	18	69, 20, 100	90, 21, 104, 119	57, 82, 86, 9, 23, 96, 97, 101, 110, 121, 128
Wealth tax	0	2	15	17	–	118, 120	66, 67, 72, 75, 57, 86, 97, 110, 36, 111, 113, 116, 121, 128, 130
Universal Basic Income	2	2	12	16	74, 20	108, 123	65, 66, 73, 57, 82, 86, 9, 97, 101, 107, 121, 128
Maximum income cap	1	0	13	14	100	–	65, 66, 72, 73, 75, 57, 82, 86, 9, 96, 101, 116, 121
Increased welfare state transfers	3	4	6	13	77, 20, 100	84, 90, 21, 108	57, 82, 97, 110, 111, 128
Alternative currencies/non-monetary exchange	0	0	4	4	–	–	57, 101, 112, 113
Regional investment	1	0	2	3	69	–	111, 113
Democratic strengthening	0	0	3	3	–	–	111, 112, 121
Economic decentralisation	0	0	3	3	–	–	111, 112, 113
Stimulate economic growth to reduce inequality	3	0	0	3	80, 20, 109	–	–
Returning privatised resources to the public commons	0	0	3	3	–	–	87, 111, 128
Infrastructure investment	2	1	0	3	69, 100	104	–
Strengthening workplace democracy and/or workers collectives	0	1	1	2	–	119	57
Reducing inequality through climate mitigation policies	2	0	0	2	68, 77	–	–
Progressive compensation to avoid regressive impacts of climate policies	2	0	0	2	77, 105	–	–
Structural economic change towards green sectors	1	0	0	1	83	–	–
Total	36	30	105				

provisioning are discussed across all three narratives, albeit to varying extents as captured by Table 4.

However, whilst all seek to expand the tax base, Degrowth proposals go further, advocating strongly for top rate taxes ‘in excess of 90%’ [121], with many advocating for 100 % tax rates above given levels, an effective income cap with the aim of eliminating overconsumption to within sustainable levels (see Table 4). Possibilities for where this salary cap should be placed is reviewed by Buch-Hansen & Koch [72] and is an important area for future degrowth research. His approach to seek to cap income and consumption at a level above which it is deemed ecologically unsustainable, significantly distinguishes post-growth approaches compared with the other pro-growth narratives. Beyond income and environmental taxes on consumption, Post-growth and Degrowth proposals also advocate for taxes on resource extraction/use in production processes [66,82,97,110], increased taxes on financial transaction and corporation taxes [82,110,129], and a wealth tax (see wealth tax in Table 4). A wealth tax is also proposed in some Green New Deal literature to help finance the increase in public spending on both the expansion of low carbon technologies and increased public service access often advocated for in Green New Deal proposals [118,120]. In contrast, in Green Growth, discussion is largely limited to advocating for environmental taxes, with some recognising the potentially regressive impacts of these and thus advocating for the integration of progressive conditions into their design [9,20,77,79]. However, the lack of attention given to expanding taxation on higher incomes, and high levels of wealth, poses questions over the extent that inequality reduction will occur under Green Growth. This poses further questions for the narrative, around ownership and access to low-carbon technologies for those in lower income groups, and the extent to which the economic benefits of these will be distributed more evenly.

4.3.3. Welfare states and public service provision

The importance of redistributing increased tax revenues in a manner that reduces inequality is another cross-narrative shared theme. All three discuss cash transfers through welfare payments and increased provisions of public services as important to reducing inequality. In the case of welfare payments, all narratives describe the importance of functioning social security systems, with some discussions of a universal basic income (UBI) being a useful tool to combat poverty in all narratives (see Table 4). A UBI is seen as redistributive, particularly when it is funded through progressive taxation.

With regards to public services, the extent of provision argued for is significantly different between the three narratives. In Green Growth, limited discussion is given the kinds of public service provision necessary to reduce inequalities, with discussions often limited to improvements to health, education, and low-carbon public transport provision [20,100,136]. Whilst important, public provision in these areas is well established in many contexts, therefore, Green Growth does not seek to significantly expand the breadth of key services beyond those that are often already publicly provided. Conversely, alongside advocating for improvements in these areas, the Green New Deal and Post-growth perspectives advocate for a much wider set of public goods and services spanning efficient and low-carbon housing, economic security, access to environmental services such as pollution free water and air, sustainably produced food, low carbon energy, many for free at the point of use (see Table 4). Given this much higher level of public service provision, some describe it as a Universal Basic Services approach [9,81,86], where consumption of basic goods underpinning wellbeing are de-commodified, with provision no longer dependent on private consumption and instead is ensured by the state. A UBS approach to basic provisioning could yield some climate benefits, through a greater efficiency of service provision or help coordinate more sustainable practices [139,140].

5. Conclusions

Through a structured integrative literature review of 76 academic articles across three economic narratives, this study has identified the existence of and analysed the motivations for and mechanism through which inequality reduction is pursued as an essential goal in Green Growth, the Green New Deal and Post-growth narratives. Two key conclusions arise from this study: i) that whilst similarities exist in the narratives' inclusion of inequality, there are significant differences present in the utilisation of inequality reduction within efforts to mitigate climate change ii) these differences may yield differential climate impacts in each proposed pathway, in some cases making the goal of climate mitigation potentially more difficult to achieve relative to other narratives. Given these contextual and policy differences between the narratives, that there is no conceptual or empirical investigation of how inequality reduction may impact levels of energy demand or GHG emissions particular to each narratives contexts, presents an evidence gap. This lack of evidence questions the internal coherence particularly of the pro-growth narratives, and the question of whether all mitigation narratives can achieve both climate and social goals simultaneously.

Addressing the first finding, whilst some cross-perspective motivations and policy mechanisms are common, the analysis indicates that policy proposals to achieve inequality reduction are far more developed in the Green New Deal, Post-growth and Degrowth academic literature. Further, there are significant differences in the purpose of inequality reduction in each future. Much of this difference can be explained by the distinct position each narrative takes on the importance or compatibility of economic growth for eco-social goals represented in Fig. 1. First, given the conviction within Green Growth that economic growth is essential to improvements in social wellbeing, discussions to reduce inequalities follow suit. Inequality reduction in Green Growth thus address themes that yield increases in economic growth such as increased employment levels, labour productivity increases through reskilling and education, as well as expansionary fiscal policy with regards to public service provision and social security. Secondly, in contrast, within Post-growth and Degrowth narratives, where continued growth is seen as ecologically and socially detrimental, redistribution in Green Growth aims to reduce the climate impact of societies alongside ensuring aggregate levels of wellbeing improve. All perspectives recognise the potential for redistribution to limit the unsustainable overconsumption of resources, however only Post-Growth develops proposals to directly address overconsumption through redistribution, employing maximum income caps, expanding the tax base to target unnecessary extraction and consumption of resources, and implementing wealth taxes. The Green New Deal sits between these two perspectives. In some respects, its continued pursuit of growth places it closely with the aims of Green Growth, with a strong focus on generating employment and economic growth, particularly in green sectors integral to the transition. However, when zooming in on policies to redistribute income and wealth, the Green New Deal contains significant similarities with Post-growth and Degrowth perspectives in the ambition and sometimes radicalism of mechanisms advocated for. Whilst in the Green New Deal more attention is given to goals or policies that would significantly reduce the consumption of the wealthy, they are limited in scope, such as through progressive income taxes, or not widely agreed upon (i.e., wealth taxes) across what is a fairly contested discourse [125].

For the second finding, given these different purposes of redistribution in these narratives, and the extent to which their policy proposals may have an impact on changing the patterns, nature or extent of consumption; inequality reduction within the three narratives is likely to yield significantly different impacts on climate mitigation. Empirically measuring the interaction between socio-economic policies to establish decent living standards for all and the ecological pressures they may cause under the conditions and policies of each transition, is an evidence gap across all three narratives. Despite this, and the mixed evidence

elsewhere in the literature on the relationship between emissions and income inequality [25], all three narratives are consistent in suggesting inequality reduction is supportive of a climate transition, with little empirical investigation as to the climate impacts of these proposals.

Given this, the claims to simultaneously reduce inequality within a climate mitigation transition require further scrutiny to assess their validity in each perspective, to establish the conditions under which these dual goals are best realised, and which policy narrative direction best fits these conditions. As a first step, this analysis has mapped out the core characteristics of the proposals, and highlighted where there may be some conceptual contradictions between these goals in the narratives. Whilst a handful of studies have investigated the impact of varying levels of inequality on carbon [12,28] and energy use [13], additional empirical analysis would be necessary to establish the climate impact of inequality reduction given the varying proposals within each economic narrative. Additional research to further integrate income or consumption differentials into energy-economy modelling, as begun by D'Alessandro et al. [35], to move beyond the use of average consumption levels in energy modelling would help produce the capacity to explore redistributive scenarios, and understandings of the implications for mitigation proposals on economic and energy inequalities. The benefit of deeper empirical investigation could thus help to further unpick the interrelationship between these two crucial societal aims in the pursuit of a safe and sustainable future for all.

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Data availability

Data will be made available on request.

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