Visions of a Circular Future: What Type of Circular Economy Is Developing in South Australia?

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Abstract

Circular economy is an influential concept with increasing policy adoption. However, a diversity of narratives within the field obfuscates what policymakers mean when using this term. This research maps four circular future scenarios via a Narrative Policy Framework, as a method for investigating the type of circular economy envisioned within a policy. The policy document used to test this method is the South Australia Waste Strategy 2020-2025, in which South Australia is positioned as a global leader in circular economy transition. The data analysis found a bias towards centralised and techno-optimistic policy narratives where government and waste management industry characters are portrayed as "heroes", with uninformed individuals cast as potential "villains". Policymakers are recommended to draw from circular future narratives that empower more stakeholders and promote resilience through decentralised circular economy strategies. Research opportunities include cross-case comparisons, automated coding, and codebook expansion, to include inanimate characters such as enabling socio-technologies.

1. INTRODUCTION

In times of crisis, leaders often evoke a future vision to persuade followers into accepting their proposal and supporting change (Creed et al., 2021). Narratives have been recognised as playing an important role in forming new visions for the transition to a sustainable future (Chabay, 2015). "Our Common Future" was an influential report from the World Commission on Environment and Development, organised by the United Nations (UN) as a call to action for "a new era of economic growth, one that must be based on policies that sustain and expand the environmental resource base" (WCED, 1987, p11). Otherwise known as the Brundtland report, it provided an often referred to concept of sustainable development and framed mainstream governmental narratives around this topic (WCED, 1987, p16). "Our Common Future" described a global agenda for change in response to increasing awareness about negative human impacts on the planet (Langhelle, 1999). Population growth, poverty, mass extinctions, climate change, resource and energy issues, and rapid urbanisation were highlighted as key issues. The problem facing humanity was portrayed as interlocking existential crises that can only be addressed with unprecedented international cooperation and a radical transformation of society.

Despite widespread acknowledgement of these problems, in the political discourse and wider collective consciousness, there are still alarming signals about the scale and consequences of our economic activities (Spash, 2021). Since 2020, multiple convergent crises including the Covid-19 pandemic, conflicts in Ukraine and the Middle East, and ongoing financial, cultural, and environmental anxieties have placed the established world order under stress (Hartley et al., 2024). Millions of people have recently experienced supply chain disturbances and rising costs of living (Allam et al., 2022). Influential thinktanks such as the World Economic Forum (WEF) have been quick to present a narrative that depicts these disruptions as a rare opportunity to reshape society with the transition to a circular economy (WEF, 2020).

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With more crises anticipated, the UN has championed a global cooperative effort with its far-reaching Agenda 2030 (United Nations, 2015). Agenda 2030, which has the ambitious target of eradicating poverty and hunger, is a direct descendent of the Brundtland report and part of a long running series of global policy declarations, goals, and deadlines culminating in the Sustainable Development Goals (SDGs) (United Nations, 2015). Over the last decade, in response to the longstanding controversies and frustration surrounding sustainable development, the circular economy concept has emerged as a cornerstone of realising the UN's vision for Agenda 2030 and thereby fulfilling the promise of "Our Common Future" (Murray et al., 2017; Schröder et al., 2019). By signing up to meet the SDGs, member states have now embedded circular economy inspired concepts into their policies (Jouni Korhonen et al., 2018).

The popularity of circularity in today's policy discourse partially stems from the broad range of projects that fall under its umbrella (Homrich et al., 2018). Almost all aspects of modern lifestyles from energy, transport, clothing, food, water, and housing could seemingly be improved by increasing the circularity of these products and services. For the business partners of influential advocates at the Ellen MacArthur Foundation (EMF) the circular economy is an opportunity to "close the loops" of transnational linear material flows and somehow decouple economic growth from resource depletion, waste generation, and subsequent pollution (Geissdoerfer et al., 2017) and open new opportunities in the global competition for profits and resources.

Despite enthusiasm behind circular economy ideas, there is growing academic concern about how the concept is being applied in policy and practice, especially in the context of chronic problems with the current economic system (Corvellec et al., 2022). Scholars warn the emphasis on decoupling fails to address important issues such as consumerism, crippling debt, and social inequality, and therefore misses an opportunity to make meaningful progress towards prosperity (Hobson & Lynch, 2016). It has been speculated that circular business models such as product-as-a-service and other "sharing economy" projects could inadvertently scaffold opportunities for a parasitic "rentier economy" (Webster, 2021). A circular future of platform monopoly, where (circular) supply chains are controlled by small numbers of people in governments and large corporate institutions, is likely detrimental to the majority (Martin, 2016; Murillo et al., 2017).

With the adoption of circular economy inspired policy in states and organisations around the world it appears the future is set to become more circular. However, an apparent lack of conceptual clarity suggests that not all policymakers are aligned on how to optimally design regulations and policy packages (Fitch-Roy et al., 2021). As such, there is a strong impetus for academic enquiry into the topic of circular economy policymaking. Foundational work into circular futures has begun, with major theoretical contributions including Calisto Friant et al. (2020) and Bauwens et al. (2020). However, analytic tools and case studies that build understanding about how particular types of circular future are being narrated or envisioned by advocates and proponents in the policy sphere are lacking. In particular, there is a call for research into how circular futures are playing out in specific geographic regions (Bauwens et al., 2020). This study seeks to build on these research opportunities.

Over the last three decades South Australia has built a reputation for best practice in waste management and resource recovery (Crocker et al., 2021). In 2004, the South Australian government established Zero Waste SA (ZWSA) to oversee waste management in the state. South Australia has received acclaim for a nation-leading Container Deposit Scheme and forward-thinking bans on single-use plastics. In 2016, the ZWSA division of the South Australian government rebranded as Green Industries SA (GISA). This coincided with a move away from zero waste to explicitly embrace the circular economy for their latest five-year plan, titled "Supporting the Circular Economy – South Australia's Waste Strategy 2020-2025" (GISA, 2020). GISA pitches itself as a leader in the transition to a circular economy and has connections and influence in waste management and resource recovery education and technology throughout the Asia-Pacific region (Devlin et al., 2023).

Like many other places, South Australia appears to hold simultaneous objectives of transitioning to a circular economy whilst chasing opportunities for economic growth based on resource extraction and global trade. South Australia has aligned itself with the UN's SDGs, including in the GISA strategic plan 2021-2025 (GISA, 2021). As such, the South Australian Waste Strategy 2020-2025 policy document plays an important role in presenting the government's vision for a circular future and how it intends to implement the transition.

This paper presents a novel method to interrogate policy narratives found in a circular economy policy document, South Australia's Waste Strategy 2020-2025, to ascertain the type of circular future being envisioned by the policymakers. The method combines the circular futures matrix with the established conceptual approach of the

Narrative Policy Framework (NPF) to articulate the diversity of circular economy visions through a storytelling lens. The addition of narrative elements to the circular futures matrix provides a potentially more robust approach to coding data and understanding roles, goals, and dangers of competing circular economy visions.

By studying this key policy document through the lens of NPF we aim to develop a method that allows researchers and policymakers to identify and interpret policy narratives in the circular economy discourse. This will help both the policymaker leaders and potential followers understand the implications of the visions of a circular future being presented by governmental and industry institutions.

The purpose of the paper is not to produce a definitive replicable outcome in terms of identifying the specific type of circular future that is developing in South Australia, but rather find/create patterns using narratives as a lens and explore the method. Similarly, this paper demonstrates the method by analysing a single policy document, noting that comparative studies would also be possible.

2. THEORETICAL FRAMING

"Visions set the agenda for both thought and action."

(Sowell, 2002, p7)

2.1 Visions, Narratives, and Policymaking

Policy change is an important topic for scholars, and a variety of theoretical and methodological tools have been developed to understand these processes (Capano, 2009). A popular theme across a range of disciplines is the influence of narrative in policymaking (Blum & Kuhlmann, 2019). Narratives help humans formulate, understand, and communicate their views of the world (Bruner, 1991). Stories and symbols have been used by all cultures to pass on important information, especially about cataclysmic events and existential crises, to members of the current group and future generations (Peratt, 2003). For example, great myths and legends are narrative vehicles to contain vital lessons about origins, identity, philosophies, ideologies, and survival (Vitaliano, 2007). Each society has narratives about what is important, what is good and bad, and ultimately these form a vision of how to lead a good life (Grassie, 2008). Yet, there is also a potential for conflicting narratives, making it difficult to find consensus on how to proceed when groups of people within the same society are pulling in different directions.

As institutional ideology evolves, new sets of policymakers share a vision of the future in policy documents, and this is portrayed by a narrative. Presentation of the vision can reveal intentions about the expected roles of stakeholders and assumptions about societal values and goals. Mechling (1991, p43) suggests narratives are "emergent, contingent, public, and contested; that they reflect interests (such as class, gender, race, age) and, therefore, that they are ideological and political, even when they seem not to be". A successful policy narrative must persuade the reader of the policy solution's merits and justifications, and thereby encourage consent from the necessary stakeholders.

Policy documents help perpetuate or innovate institutional ideologies and create conditions for transition by framing the policy problems, impetus for reform, and preferred socio-technical solutions that make up the economic infrastructure. Documents are never neutral and can reveal or conceal issues, relationships, and assumptions considered by the policy makers (Asdal & Reinertsen, 2021).

2.2 Circular Economy Discourse, Imaginaries, and Visions of a Circular Future

Circular economy discourses have been described as sociotechnical imaginaries (Hermann et al., 2022). Sociotechnical imaginaries are a crucial constitutive element in social and political life, even having power to influence the direction of research and development (Jasanoff & Kim, 2009). Imaginaries operate "in the understudied regions between imagination and action, between discourse and decision, and between inchoate public opinion and instrumental state policy" (Jasanoff & Kim, 2009). Alvarado et al. (2022) highlights the influential role of underlying political goals in propagating specific visions of a circular economy, most often associated with continuing ideologies such as economic growth. Giampietro & Funtowicz (2020, p64) argue the circular economy as formulated by advocates of economic growth is "an example of socially constructed ignorance". They suggest

optimism for the circular economy has become a sort of policy legend that allows the establishment to ignore uncomfortable truths that would destabilise ideological frameworks, existing institutions, and power relations.

The circular economy is frequently evoked by its proponents as a symbol for a desired future. De Angelis & Ianulardo (2020) find some visions of a circular economy function as a fictional expectation to counteract modern society's economic and cultural addictions. However, a critical shortcoming found in the circular economy literature is a lack of theoretical and strategic understanding about how to manifest a sustainable future and explore alternative pathways (Rodríguez et al., 2020). Specifically, circular economy has been found to be poorly defined (Kirchherr et al., 2017), and as such, this creates space for multiple visions with competing or contradictory projects to exist within a circular future vision, further confusing economic participants and potentially blocking meaningful engagement with their own personal footprint and supply chain interactions (Ho et al., 2022).

2.3 Bauwens et al. (2020) – Circular Futures Matrix

The diversity of circular visions is captured by Bauwens et al. (2020) with the circular futures matrix. Based upon a literature review and focus group of experts, they described four circular future scenarios to occupy a 2x2 matrix – these are planned circularity (centralised and low tech), circular modernism (centralised and high tech), bottom-up sufficiency (decentralised and low tech), and peer to peer circularity (decentralised and high tech). The four scenarios from Bauwens et al. (2020) are described in more detail in the following paragraphs.

Planned circularity is a transition to the circular economy centrally guided by the government via "strong coercive measures" (Bauwens et al., 2020, p6). Problem wastes are avoided or reduced by controlling behaviours through bans, regulations, and legislation to influence the material entering the economy and subsequent waste streams. This occurs within the national or state level. An example of this is China's top-down approach enshrined as a national goal (Cheng, 2018).

Circular modernism relies on a combination of technological innovation and profit-driven marketing by large businesses to outcompete "linear" business models and product lifecycles, a process facilitated by governments establishing favourable policies and procurement strategies. This scenario aims at the recycle and recover levels of the hierarchy.

Peer to peer circularity is a decentralised transition that combines technological and socio-economic innovation to disrupt present patterns of production and consumption. Entrepreneurs and consumers interact directly to obtain bespoke products or cooperate in sharing platforms, thereby reducing the wastage of mass production.

Bottom-up sufficiency is an economic transition operating at the local level with small scale, organic, human-centred production taking care of individual and community needs. This is associated with the degrowth movement and requires active participants interacting through cooperatives, farmers markets and social enterprises, whilst using alternative systems of exchange. Simple living and local production avoid and reduce waste through minimising resource footprint of supply chains and removal of problem materials from the waste management system.

Bauwens et al. (2020) note that some scenarios are more likely to develop than others and will vary across locations. In part this is due to pre-existing path dependencies in infrastructure and institutes, and cultural heritage, climate, and lifestyles. For instance, circular modernism has significant financial backing and requires the least consumer behaviour change. Planned circularity is more acceptable in countries that already have strong top-down control in other areas of governance. Bottom-up sufficiency projects have emerged in Southern Europe where austerity policies from 2008 have been severe. Peer-to-peer scenarios may find some projects or models more readily adoptable than others depending on how satisfactory existing services are. Hybridised scenarios can also be envisaged as the circular transition matures.

The circular futures matrix has been utilised previously to analyse a broad series of European Union (EU) policy documents over five inductively produced categories (Alberich et al., 2023). These researchers discerned a hybridised combination of circular futures in the EU with a dominance of circular modernism, which they suggest may lead to a weakened version of a circular economy.

The method presented in the following section builds on Alberich et al.'s (2023) use of the circular futures matrix by developing a more explicit process to identify policy narratives containing narrative elements, such as plots and

characters, associated with the four distinct circular future scenarios. This additional step could provide a more replicable, systematic approach to coding, potentially creating a foundation for automated coding of large samples.

3. METHODS

3.1 Narrative Policy Framework

The Narrative Policy Framework (NPF) is a theory centrally concerned with the role of narratives in the policy process. NPF was defined in 2010 (Jones & McBeth, 2010) emerging from an attempt to reconcile positivist-oriented and post-positivist-oriented theories in policy process research. NPF was conceived as a link between divergent policy process approaches by recognising that narratives socially construct reality and can also be empirically measured. After more than a decade of studies expanding, testing, and applying NPF in a variety of contexts the theory has become established as a valid way to conduct research (Brewer, 2021). Whilst comparative quantitative studies have been most popular within the NPF community, some research has demonstrated that qualitative methods are also applicable (Gray & Jones, 2016). Qualitative NPF research is more suitable for policy areas where sample sizes maybe too small for statistical approaches.

Generalizable narrative structural elements are the building block of the NPF study. The basic components of a narrative – characters, plots, a setting, and a moral of the story – are taken from Stone (2012). A NPF study must, by definition, identify policy narratives. A policy narrative may contain some or all of the narrative components, but it must at least have one character and also refer to the public policy of interest (Shanahan, Jones, & McBeth, 2018). This "policy referent" (Shanahan, Jones, McBeth, et al., 2018) could be a fully developed policy solution or some reference to "a policy-related behaviour, potential consequence, or references to contested science in the policy setting" (Shanahan, Jones, & McBeth, 2018, p336).

NPF studies have two types of policy narrative components, taken from a distinction common to literary studies: narrative form and narrative content. These are consistent across NPF studies, critical to a scientific approach to build knowledge about the role of narratives. However, defining the narrative components of a policy narrative is essential in guiding the research as some studies adapt these basic foundations to suit specific needs or contexts.

Characters are an important narrative component to move the plot forward. There are three main characters that tend to be identified in NPF studies:
- Heroes – the agent of alleviation, the character who can solve the problem and bring relief to the victims.
- Villains – the actor responsible for harming the victim or standing against the hero's action to address the problem. This can be assigned through the character being perceived to lack something – knowledge, or motivation etc.
- Victims – the person, people, or value that is being (or will be) harmed.

Other characters have been explored by NPF studies including beneficiaries, supporters/allies, opponents, and "shadow characters" (Vogeler et al., 2021; Jones et al., 2022)

In NPF the character does not have to be a human. For example, a policy narrative can portray the victim or hero as something natural like an animal, plant, or ecosystem, or it can be something that isn't alive like a technology or even a perception such as freedom. However, without differentiating between animate and inanimate objects the definition between hero and solution becomes blurred, and there can be confusion about who is acting on what (Weible et al., 2016). Weible et al. (2016, p422) defines animate objects as "individuals and various forms of collectives (e.g., groups, organisations, countries) that have the ability to take deliberate action or receive action". Animate objects "have the capacity to play a role of a character in a policy narrative." (Weible et al., 2016, p422). Whilst policymakers can make use of inanimate objects as characters in policy narratives, these constructs do not actually have humanlike needs, threats, and agendas.

Plots position the characters and their actions to settings in time and space (Shanahan, Jones, McBeth, et al., 2018). A plot is usually an arc of action that has a beginning, middle, and end. Plots can show how blame is assigned to the villain, what the hero is required to do or is suggesting, and what the moral of the story is (Gray & Jones, 2016). NPF studies have tended to reference Deborah Stone's (2012) universal story lines, such as story of decline and story of stymied progress, or other plotlines induced from data or conceptual frames.

Even though plots are central to narrative they have received less research attention compared to other narrative components (Kuhlmann & Blum, 2021). In response, Kuhlmann and Blum (2021) have developed a more nuanced

formulation of plot types that they suggest link specific types of policy (Lowi, 1972) to the universal themes of Stone (2012), shown in Table 1.

Table 1. Policy Types and NPF Plots Based on Kuhlmann and Blum (2021)

POLICY TYPE	Regulatory policies		Distributive policies	
DIRECTION	*Restrictive*	*Lenient*	*Expansionary*	*Reductive*
Policy theme **PLOT (link)** Universal theme	Restricting to control	Liberating to promote	Providing to promote	Withdrawing to/out of control/ helplessness

Settings situate policy narratives in specific policy contexts and problems (Jones et al., 2023). For example, this can include references to time and space such as targets and deadlines, duration of policy, borders of places and environments, and other policies inside or outside of a jurisdiction. Other settings include pressing issues at the time that requires a policy response or make an existing policy inappropriate. The use of reports or statistics as evidence can also form an important aspect of the policy narrative.

The moral of the story gives the characters purpose for their actions and motives; it can also be a call to action (Shanahan, Jones, & McBeth, 2018, p336). In NPF, the moral of the story is often the equivalent to the policy solution – for example, banning certain products or actions.

3.2 Mapping Bauwens Matrix onto NPF Table

In the current study, mapping the circular future scenarios onto a NPF table of narrative elements was achieved by reading the Bauwens et al. (2020) circular futures study, Section 4, to highlight sentences that alluded to policy problem framing, characters, plots, settings, and moral of the story (policy solutions) for each of the circular futures scenarios. These findings were then used as a basis to produce a narrative for each of the circular futures scenarios in the matrix, as summarised in Table 2.

Table 2. Circular Future Scenarios (Bauwens et al., 2020) Mapped onto NPF Narrative Elements

	Planned Circularity	Peer to Peer	Circular Modernism	Bottom-up Sufficiency
Problem Framing	Crises requiring control	Freedom to prosper	Growth is good	Personal responsibility and restraint
Policy beliefs	Authoritarian environmental-ism	Access over ownership	Techno-optimism	Human scale Natural patterns
Characters (hero)	Government; Elite experts	Individuals; Innovators	Large businesses; Brands	Self-sufficient communities; Individuals as active citizens
Characters (villains)	Non-compliers; Polluters	Central authorities	Regulators; Environmentalists	Corporations; Government

Characters (victims)	Society	Consumers	Entrepreneur	Climate refugees
Characters (supporters)	International NGOs	First-movers; Inventors	Government; Think tanks	Consumers (voluntary)
Characters (beneficiaries)	State	Retailers & clients	Corporates; Consumers	Low-income
Enabling socio-technologies	Strong coercive measures; Command and control regulations	Digital collaborative platforms; Blockchains; 3D printing; Open source	Market forces; Automation; Big data; High-tech recycling	Organic farming methods; Permaculture; Not-for-profit
Plots (Kuhlmann and Blum, (2021)	Regulatory Restricting; Restricting-to-control	Regulatory Lenient; Liberating-to-promote	Distributive Expansionary; Providing-to-promote	Distributive Reductive; Withdrawing-to-control
Plots (summarised by authors)	Less for more	More for more	More from less	Less is more
Settings	National Jurisdictions; Bureaucracy	Borderless; Online	Global scale	Local
Moral of the story (policy solutions)	Compliance; Taxes; Caps; Regulations; Bans; Fines; Surveillance	Laissez-faire; Crypto-currency; Bespoke production	Investment; Grants; Public sector procurement; Regulations; Advertising	Education; Engagement; Participation

3.3 Document Analysis of Policy Documents

This NPF data analysis was focused on the policy document "Supporting the Circular Economy: South Australia's Waste Strategy 2020-2025" produced by GISA (GISA, 2020). The document is 68 pages and was released in August 2020. It is the fifth and latest in a series of state-wide five-year plans released by ZWSA (and later GISA) since 2004.

Data collection commenced by carefully reading a printed copy of the document several times whilst making notes and highlights. The policy document was loaded into MAXQDA software for coding. Coding proceeded by reading each page and highlighting any sentence or paragraph that contained a policy narrative. A policy narrative could be reduced to a sentence level but for this study the policy narrative was taken to be at the paragraph level. The policy document contains statements of one or more sentences separated by line breaks, that we call a paragraph. A policy narrative can contain multiple characters, a plot, a setting, a problem framing, and a policy solution (moral of the story).

Coding narratives is labour and time intensive (Shanahan et al., 2013). As such, given the constraints of this research, we opted to concentrate on narrative elements (rather than narrative strategies or belief systems). Initially, all potential characters (animate and inanimate) were coded. However, following Weible et al. (2016) we then focused on the characterisation of human stakeholders in the circular economy, i.e., animate characters, as opposed to inanimate characters such as technologies, to identify the narratives related to the circular future scenarios.

All animate characters were identified and for each character a subsequent document word search was conducted to ensure all mentions of the character were recorded. These animate character-containing policy narratives were extracted from MAXQDA into a spreadsheet. This provided the data set for analysis.

4. RESULTS AND DISCUSSION

4.1 Policy Narratives

A total of 70 policy narratives containing animate characters were identified in the policy document. Each policy narrative was assigned to only one of the four circular future scenarios, although some coded sections arguably had elements of multiple scenarios. The decision of which circular future scenario to assign a policy narrative to was based primarily upon the animate character portrayal (identifying the hero, villain, victim etc.) with consideration also for the plot, setting, policy solution, or problem framing if those narrative elements were present in the policy narrative.

For an example of this decision-making process, a policy narrative found in the "Purpose" section, states "Green Industries SA is an enabler and driver of change, supporting the development of the circular economy through diverse collaborations which improve productivity, resilience, resource efficiency and the environment" (GISA, 2020, p7).

This policy narrative positions an animate character, Green Industries SA, as the "hero", with this government department portrayed as prime mover of the circular economy transition. The moral of the story, or policy solution, is "the development of the circular economy through diverse collaborations". The plot, enabling and driving change, sounds active and engaged, aligning with an Expansionary Distributive policy type that is a providing-to-promote plot we associate with circular modernism (see Tables 1 and 2). The beneficiaries of the change in this policy narrative are inanimate characters consisting of economic concepts and the environment. Therefore, whilst there is a circular modernism plot type because the government is the hero in this policy narrative it was assigned to planned circularity due to the primacy of animate character portrayal in our method.

The policy narratives were distributed as follows:

Table 3. Count of Circular Future Scenario Policy Narratives

Circular future scenario	Policy narrative count
Planned circularity	35
Circular modernism	29
Bottom-up sufficiency	4
Peer-to-peer	2

These results suggest that the policymakers of the South Australian Waste Strategy 2020-2025 narrate a circular economy vision that leans quite heavily towards the centralised scenarios of the circular futures matrix. A quite balanced mixture of policy narratives relating to planned circularity and circular modernism emerged from the document. Hints of bottom-up sufficiency and peer-to-peer circularity were detected but appeared far less influential in the overall policy narrative.

4.2 Characters

Animate (beings) and inanimate characters were identified and distinguished as per Weible et al. (2016). A total of 72 characters were identified in the policy document. Of these, there were 30 animate characters and 42 inanimate characters. Sometimes the same character was referred to slightly differently, such as "our State" or "The State" or "South Australia". For the purposes of this discussion, the animate characters are grouped together into stakeholder roles – government/institutes, individuals, groups, waste management industry, business, and NGOs.

The most prominent animate hero characters of the Waste Strategy are the government and waste management industry. The policy portrays the efforts and ambitions of both South Australian government institutes and waste management industry in a positive light. There are several references to the South Australian government's record of initiative in waste management and resource recovery. For instance, "Our state has rightly earned a reputation as a global leader in recycling and resource recovery and for building a resilient resource recovery sector" (GISA, 2020, p5). Other leadership qualities are displayed by the government as a provider of education to consumers, the giver of grants, and the influential controller of materials entering the market and waste streams. The government plans to use its power to guide market development, as shown by this "Supporting this Strategy's objectives in Sustainable Procurement, particularly with government, will be crucial, as will continued support to priority industries and sectors requiring business sustainability assistance" (GISA, 2020, p42).

People are characterised as either individuals, householders, consumers, or part of the community. The South Australian Waste Strategy 2020-2025 portrays individuals as potential unintentional villains or supporters of the policy through non-compliance. This is because in the role of consumers, and therefore waste creators, they are represented as currently having an information deficit that would stifle implementation of the policy solution. For example, the policy asserts the need for "ongoing and consistent state-wide messaging, to support householder education and behaviour change" (GISA, 2020, p37) and "coordinated and integrated householder recycling education campaigns and use innovative approaches to inform households and increase awareness of wasteful consumption, effective recycling and reducing contamination" (GISA, 2020, p41). If re-education was unsuccessful, this is probably where coercive planned circularity tactics of fines and surveillance would be implemented to counter the non-compliers. Individuals are not often portrayed as producers or builders in the vein of bottom-up sufficiency.

Inanimate characters found in the policy include abstract concepts such as the waste hierarchy and extended producer responsibility, technologies, pieces of policy and legislation, and constructs such as "our markets", "our infrastructure", and "our environment". Interestingly, inanimate characters also seemed to be the main victims and beneficiaries of the proposed policy. For example, a policy narrative found in the foreword section "A message from the Presiding Member" states "South Australia's Waste Strategy 2020-2025 is a major step in the transition to a circular economy and to achieving environmental gains while boosting the South Australian economy" (GISA, 2020, p6). This policy narrative does not contain any animate characters but does suggest that the policy beneficiaries are the environment and the economy.

The environment is conceptualised as something that needs protecting by the government from waste and pollution produced by consumer and industry behaviour. Rather than portraying the environment as something to be emulated, it is placed in a victim role. For example, "Our aim is to help South Australian businesses become more resource efficient, resilient and competitive, which will secure economic advantage while protecting the environment. This is particularly important as we support the State's recovery from the coronavirus pandemic and respond to global and domestic changes relating to the export of recyclables" (GISA, 2020, p6). The circular economy is rendered as a distinct entity that needs supporting by South Australians through the initiatives of the Waste Strategy. Another potential victim is South Australia's current leadership status that needs protecting by pushing through the reform initiatives proposed in the policy.

The policy document contains multiple assertions in the forewords that implantation of the Waste Strategy will provide a 'boost' to the economy. This could imply the perception that more waste is better, so long as the system can repurpose the waste material into a resource and thereby squeeze out value in the form of further monetary exchange. The purpose of the waste strategy is said to serve South Australia's priorities for economic growth, which may have been conflated by the policymakers with general priorities of South Australians. The unmentioned victims in this vision are the "householders" or "consumers" who are locked into a waste heavy variation of the (circular) economy.

4.3   Problem Framing, Settings, and Plots

There were 37 statements coded as problem framing statements.

The problem framing is biased towards policy narratives that either promote economic growth opportunities or attempt to mitigate threats from outside force, or both within the same statement. This would indicate a problem framing narrative that supports planned circularity and circular modernism scenarios.

Crises were the most frequent type of problem framing found in the policy document with 21 references to threats of various kinds ranging from greenhouse gases to a loss of reputation. The temporal setting for the overall policy solution, Supporting the Circular Economy, is presented in several places as a necessary response to a variety of ongoing challenging events or looming crises such as Covid-19, climate change, population growth, and natural disasters. Demographic issues such as "By 2050, world population will have reached 9.7 billion people" (GISA, 2020, p15), and "70% increase in food demands by 2050" (GISA, 2020, p15) are given as context for the policy solutions offered.

The narrative of needing to build resilience is repeated several times during the foreword of the policy document and echoes familiar refrains from the World Economic Forum and United Nations' Agenda 2030 Sustainable Development Goals literature (Arora & Mishra, 2019; WEF, 2020). This sense of urgency is reinforced by highlighting connections to policy obligations set by other State and National policies for sustainable development including Australia's National Strategy for Ecologically Sustainable Development and South Australia's Environment Protection Act 1993 (GISA, 2020, p14). These commitments are offered as legitimisation for the priorities set by the waste strategy. For example, "Progressing priority actions within this Strategy will support a transition to a more circular economy while implementing the State Government's Directions for a Climate Smart South Australia" (GISA, 2020, p14).

Ambitious emissions targets are also implicated in the vision for a circular future, including a "South Australian Government target to reduce emissions by more than 50 per cent from 2005 levels by 2030 and for net zero emissions by 2050" (GISA, 2020, p14). A reference is made to a United Nations Climate Change suggestion that "the world can maximise its chances of avoiding climate change by moving to a circular economy" (GISA, 2020, p14).

The plot references to demographic challenges, reductive targets, and bans of certain products suggest a tendency towards Restrictive Regulatory policy types that are restrictive-to-control (Kuhlmann and Blum, 2021), or "less for more", from the planned circularity scenario.

The second most frequent problem framing topic was an association between the policy solution and the need to create opportunities for economic growth, which were seen 16 times. The purpose of the South Australian Waste Strategy 2020-2025 policy is clearly stated as meeting "South Australia's priorities for economic growth" (GISA, 2020, p7). This top-down objective is derived from longer-term strategic goals set by consecutive South Australian governments and more recent initiatives such as the "SA: Growth State – Building a stronger future" policy released by the South Australian Premier's office around the time the waste strategy was being developed (Liberal South Australia, 2022). The publicly expensive challenge of waste management is paradoxically reimagined as a means to serve this high-level strategic goal. For example, this activity within the policy "promote innovation and business activity in the waste management, resource recovery and green industry sectors, recognising these areas present valuable opportunities to contribute to the state's economic growth" (GISA, 2020, p7) links the ongoing production of problem wastes with growth opportunities. This type of rhetoric is suggestive of the techno-optimism advocacy presented by the Ellen MacArthur Foundation, who are credited later in the policy document (GISA. 2020, p62).

The references to growth, productivity, and innovation in the waste sector suggest a plot that is aligned with Kuhlmann and Blum's (2021) Expansive Distributive policy that is providing-to-promote, or "more from less" (from Table 2), associated with the circular modernism scenario.

Lenient Regulatory policy, liberating-to-promote, and plots narrating peer-to-peer innovations in the production or supply side of the waste management challenge, aimed at the avoid and reduce levels of the waste hierarchy, are less visible. There were 3 problem framing statements linked to material inefficiencies, but these were targeting end-of-life products. An example of this is when describing the circular economy, "It (circular economy) refers to the better use of materials within the economy and involves more remanufacturing, repair and reprocessing than the linear 'make, use, dispose' mode of traditional economies" (GISA, 2020, p22). It is worth noting that product

design was mentioned several times in the policy, but as these statements did not fit the policy narrative requirement, they were not captured for coding as a problem statement.

Only one policy narrative, "The Waste Strategy reflects the need to conserve resources and reduce pollution and carbon emissions whilst reducing poverty and maintain human wellbeing within a supportive environment" (GISA, 2020, p15), was coded to align with Kuhlmann and Blum's (2021) Distributive Reductive policy type, withdrawing-to-control, that promoted a bottom-up sufficiency vision of restraint, or "less is more" ethos.

5. RECOMMENDATIONS

5.1 For Policymakers

Given the crises that are acknowledged as providing the impetus for the policy change, the overwhelming dominance of economic growth as a plot raises questions about the proposed transition to a circular economy. Whilst the South Australian Waste Strategy 2020-2025 seeks to decouple economic growth from material wastes it has not gone so far as to imagine decoupling prosperity from economic growth which is likely to emerge from a broader macro change of ideological culture (Buch-Hansen, 2018).

A waste strategy optimised to create economic growth could conflict with circular economy ideas from the decentralised scenarios, which tend towards either degrowth or growth agnosticism. The policymakers of the South Australian Waste Strategy 2020-2025 could possibly find themselves in a bind. Economic growth is a high-level strategic aim for the South Australian government. However, the two ambitions of the state government – increasing both growth and circularity simultaneously – could potentially establish a contradiction.

Whilst it could be tempting to view Bauwens et al. (2020) circular future scenarios as oppositional, this need not be the case if the growth prerogative is dropped. Each circular future has its own risks and benefits, and suitable conditions for its application. Specifically for the South Australian context, the large distances between relatively small population centres lends itself in principle to circular economy tactics and strategies from the decentralised scenarios. Policymakers could benefit from including ideas from each of the circular future scenarios to motivate change in a wide range of stakeholders, to ensure that circular economy disruption benefits are distributed throughout society (Kirchherr et al., 2022). This would also help strengthen South Australia's leadership in the circular economy transition by widening its experience in a variety of scenarios relevant to the Asia-Pacific region.

The South Australian Waste Strategy 2020-2025 mentions the nationwide disruption to waste management logistics that were caused by changes of policy in other countries, such as China's National Sword policy. This external force has been identified elsewhere as a motivator for institutional actors across the country to rethink how recovered materials are processed (Levitzke, 2020). A potentially bigger vulnerability to South Australians that is not highlighted lies in the reliance on imported goods. The need to export recovered waste material could indicate that many goods consumed in the South Australian market originate from out of state. Promoting alternative narratives that render local circular producers as heroes could help support a decentralised circular future that would likely increase resilience of both the waste systems and the supply of food, housing, and other essential goods and services. Perhaps the next iteration of the South Australian Waste Strategy would be strengthened by focusing more on the productive side of the circular economy.

The circular futures matrix (Bauwens et al., 2020) combined with NPF analysis is a useful tool for policymakers to think about the variety of stories being portrayed in the circular economy space. By working with the diversity of circular futures, policy makers have a wider range of strategies to draw upon to achieve their policy goals. Not all problems can be solved with more growth and not all circular economy strategies need to operate in the formal sector (Lane & Gumley, 2018). Economic growth indicators are just one possible measure of a peaceful and prosperous society; it could be more beneficial to optimise the system for other outcomes, such as reducing the cost of living, creating jobs, or providing better services to the community (McCartney et al., 2023).

5.2 For Researchers

NPF studies allow researchers to undertake a more systematic approach to explore policy narratives. This research was a first attempt to understand circular futures using a NPF approach. Future refinement of the codebook is recommended to include more specific inanimate technology "characters" to understand their roles within the context of specific "settings" and "plots" in each scenario; as such, subsequent studies about different topics relating

to circular economy transitions would uncover more nuance for the codebook. For example, if examining the topic of energy-from-waste, this term could apply to a spectrum of scenarios from decentralised and bottom-up (e.g. a home biogas system that powers a cooking stove) to centralised and top-down (e.g. an industrial mass incinerator of municipal solid waste to fuel a furnace). The appropriateness of such technologies relies on understanding the context into which they are placed.

The method described should be developed to allow multiple coders to analyse the data sources and reduce possible bias or oversights. Whilst it is possible, and maybe probable, that a similar outcome could be achieved by two different researchers, the subjective element of this type of method is unavoidable. There is potential to automate the coding process to speed up data generation and capture policy narrative sentiment over a wider range of data sources (Curry et al., 2024; Rasheed et al., 2024). Although, the quantitative emphasis of most NPF studies has a weakness that could mean fully automated coding provides misleading results. For example, some of the inanimate characters in this data set, particularly references to other policies, were mentioned just once or twice. However, frequency of appearance is not necessarily an indication of importance. "SA: Growth State" (Liberal South Australia, 2022), a wider economic strategic policy, is mentioned just once. Yet this is an influential policy document that partially dictates the purpose and rationale of the waste strategy and its objectives. It also indicates the political climate in which the policymakers were operating. Therefore, some contextual knowledge of the case study was required to ascertain this connection that an automated process might miss. This leads us to recommend that comparative studies would be strengthened by collaborations between researchers who possess knowledge of the policy climate in the case studies under investigation.

NPF was developed to allow for comparative policy analysis in a structured way. This study looked a single policy document to test the method and assess the vision of a circular future narrated in the South Australian Waste Strategy 2020-2025. The method presented could facilitate exploration of alternative narratives that cast different stakeholders into the roles of heroes, villains, and victims. It would also be productive to use the same method to compare policy narratives change over time within the same jurisdiction, or how policy is narrated in different places, or how the policy discourse in civil forums such as social media compares to the official narrative.

As this research was conducted with just one policy document it does not capture any counter narratives that might exist within South Australia, or even different departments of the South Australian government. It is important to note that this policy is just one "scene" in a wider narrative in South Australia's commitment to the SDGs (DTFSA, 2023). The method could be applied to other documents within this transition context, to determine whether policy narratives portray a different characterisation of the public and present other policy solutions and plots.

Policymakers are not free to deploy narratives as they wish, they are confined to a larger context. In this case, the Waste Strategy policymakers are likely motivated to create their policy narrative in line with the rest of the South Australian government's thinking and priorities, e.g. economic growth. Therefore, it would be useful to explore the linkages between macro, meso, and micro level narratives and behaviours. Researchers can play a role in bridging the gap between innovators, entrepreneurs, activists, and policymakers to help expand the circular economy playbook.

6. CONCLUSIONS

This paper presented a method for understanding circular economy futures developed from a combination of the Narrative Policy Framework (NPF) and the circular futures matrix by Bauwens et al. (2020). The method aims to use the coding of narrative elements in a data source to identify circular future scenarios.

South Australia's Waste Strategy 2020-2025 was analysed to demonstrate the method. The results found the policy narrative to be biased towards centralised visions of a circular future. The policy portrayed government and waste management industry as the hero characters, as aligned with the planned circularity and circular modernism scenarios. Householders, retailers, and manufacturers were signalled as in need of education and therefore potential villains if failing to comply with the strategy. The impact of this type of narrative, and the characterisation of policy followers in a villain role, might exclude important stakeholders from engaging in the circular economy transition as anything but passive consumers. Reliance on coercive control methods could dull enthusiasm to support the circular future.

Following the research findings, we recommend the leaders of the circular future draw upon alternative narratives from the decentralised scenarios that portrays individuals and community stakeholders as innovative heroes empowered to follow their own desired vision that is supported by a more circular economy. This would involve deploying lenient regulatory types of policy to produce a liberating-to-promote plot that supports the emergence of small-scale producers to meet local needs that build resilience into diversified systems of provision.

This study demonstrated successful application of the NPF method to a single policy document, applied via solo manual coding, using the circular futures matrix to locate the policy in the variety of circular economy visions. This approach has two potential limitations. Firstly, a policy is likely to contain important information, such as performance targets, that are not contained within a policy narrative and would therefore be absent from analysis. Secondly, the method currently places the policy narrative into one of four possible futures, whereas further research into circular futures may reveal more nuanced visions. Future research is recommended to explore similarities and differences in narratives between multiple coders, and across related policy documents. The mapping of the circular futures scenarios into the NPF framework could be further developed to create a fuller narrative for each or explore new/additional narratives for circular futures.

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AUTHOR CONTRIBUTIONS

John Devlin: Conceptualisation, methodology, data analysis, and writing
James Hopeward: Conceptualisation, review, and editing
Keri Hopeward: Conceptualisation, review, and editing
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DECLARATIONS

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