

Psychological minefields on sustainability road: it's people, not knowledge that matters

Campos de minas psicológicos en el camino hacia la sostenibilidad: lo que importa son las personas, no el conocimiento.

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ABSTRACT

Much of the knowledge about economic and environmental sustainability (EES) is couched in scientific and technical language and represented in complex diagrams of the knowledge flows in the process. The area is also a highly contested space. In addition, the role of individuals in decision-making about EES is downplayed with government overtures about sustainability directed to the corporate world. However, of the 23.1m SMEs in Europe, 21.6m employed fewer than nine people and their value-added part of the European economy was about €3.9 trillion. The 197m households in the EU had an average of 2.2 members. Individuals matter in decision-making about EES. While the UN's Sustainable Development Goals are laudable, major obstacles in their implementation rest with the behaviour of individuals, e.g., the propensity of people to say one thing and do another and fail to put policy into practice. In this context, the article discusses Kurt Lewin's "field theory" and reviews how cognitive dissonance and neuroscientific factors affect human behavior. The Circular Economy model of production and consumption illustrates how facilitating and inhibiting factors influence the implementation of its principles and practices. A review of the approaches and organizing principles used by one Higher Education Institution in delivering a subject underpinned with EES principles, demonstrates how obstacles on the road to sustainability can be overcome.

Keywords. Climate change, economic sustainability, social sustainability, environmental sustainability, Sustainable Development Goals, circular economy, cognitive dissonance, field theory, human behavior, cognitive neuroscience, higher education institutions, T&L, curriculum, UN, UNEP

RESUMEN

Gran parte del conocimiento sobre la sostenibilidad económica y ambiental (EES) se expresa en un lenguaje científico y técnico y se representa en diagramas complejos de los flujos de conocimiento en el proceso. Además, este ámbito es un espacio altamente disputado. Además, se minimiza el papel de los individuos en la toma de decisiones sobre la EES, ya que los esfuerzos gubernamentales hacia la sostenibilidad están dirigidos al mundo corporativo. Sin embargo, de los 23.1 millones de pequeñas y medianas empresas en Europa, 21.6 millones empleaban a menos de nueve personas y su contribución al valor agregado de la economía europea era de aproximadamente 3.9 billones de euros. Los 197 millones de hogares en la Unión Europea tenían un promedio de 2.2 miembros. Los individuos son importantes en la toma de decisiones sobre la EES. Aunque los Objetivos de Desarrollo Sostenible de la ONU son loables, los principales obstáculos en su implementación radican en el comportamiento de las personas, como la propensión de la gente a decir una cosa y hacer otra, y no poner en práctica las políticas. En este contexto, el artículo analiza la "teoría de campo" de Kurt Lewin y examina cómo la disonancia cognitiva y los factores neurocientíficos afectan el comportamiento humano. El modelo de Economía Circular de producción y consumo ilustra cómo los factores facilitadores e inhibitorios influyen en la implementación de sus principios y prácticas. Una revisión de los enfoques y principios organizativos utilizados por una Institución de Educación Superior en la impartición de una asignatura fundamentada en los principios de SEA demuestra cómo se pueden superar los obstáculos en el camino hacia la sostenibilidad.

Palabras clave. Cambio climático, sostenibilidad económica, sostenibilidad social, sostenibilidad ambiental, Objetivos de Desarrollo Sostenible, economía circular, disonancia cognitiva, teoría de campo, comportamiento humano, neurociencia cognitiva, instituciones de educación superior, enseñanza y aprendizaje (T&L), currículo, Naciones Unidas (ONU), Programa de las Naciones Unidas para el Medio Ambiente (PNUMA).

INTRODUCTION

The role of Higher Education Institutions [HEIs] is accentuated when a conjunction of social, political, economic, and/or technological factors create a tipping point, seen as significant enough to cause irreversible changes to the social fabric of society. Climate change is an example of a tipping point but diverse points of view about climate change create obstacles on the road. Nevertheless, in turbulent times, HEIs have the capabilities to calm the waters by transmitting evidence-based knowledge about the factors creating the tipping point. The remit of HEIs includes coordinating the teaching and learning [T&L] strategies and curriculum necessary to embed knowledge about the earth's changing environment into academic disciplines and by implication, in learning spaces beyond academe.

Finding solutions to redress problems created by global warming the the continued consumption of non-renewable resources is widely viewed as the "defining challenge of our generation" (BCG, 2023; KPMG, 2023). A variety of international organizations and individuals hold similar views (Christ & Burritt, 2019; Diep, et al., 2020; Hardwick-Franco, 2018; Mazza, 2021). Yet, the potential for HEIs to deliver knowledge relevant to meet the challenge is reduced when obstacles on the road threaten to derail this promise. A current example of a large multilateral project seeking to

overcome the many obstacles on sustainability road is the UN's *2030 Agenda for Sustainable Development* [hereafter Agenda 2030],

Background to Agenda 2030

The main deliverables of Agenda 2030 are driven by 17 interdependent Sustainable Development Goals [SDGs] as a “universal call to action” to eliminate problems caused of poverty and environmental degradation as ways to achieve global peace and universal prosperity by 2030. HEIs have a significant role to play in this regard.

Building on the work of the UN's Brundtland Commission (1987), Agenda 2030 continues the goal of striking a balance between a society's consumption of natural resources and the management of its ecosystems for human advancement and well-being, while simultaneously ensuring these resources and systems are preserved for future use. This balancing act received significant exposure in the global news media (Hase et al., 2021). Centre stage debates canvassed ideas about the nature of climate change, biodiversity, pollution, material waste, CO₂ emissions, and the dangers of continually consuming non-renewable resources.

The goals of Agenda 2030 brace the activities and publications of international forums like Europe's *Climate Change Adaptation Conference* (ECCA, 2023), the Ellen MacArthur Foundation, and numerous UN Climate Change Conferences. For example, concerns of ECCA-23 included finding solutions to slow the rate of global warming, strategies for acclimatizing to sea level rise, developing nature-based solutions to climate change, adapting to more frequent and severe climate extremes, reframing societal transformation, and making future energy infrastructure and systems change proof. And despite the heightened awareness of sustainability issues globally, discourses in the field still hold much contested information.

For the sake of brevity, five of the Agenda's 17 goals are collapsed under the umbrella category of achieving “Economic and Environmental Sustainability” [EES] (nos. 5, 9, 13, 14, 15). This acronym is used throughout as a surrogate for the issues and debates pertaining to achieving economic and environment sustainability. Goal 17 is concerned with developing effective implementation strategies. Moreover, in environments where the battle of ideas play out, HEIs emerge as key players capable of promoting a balanced view and broadcasting evidence-based knowledge concerning EES.

LITERATURE

A significant amount of substantive peer-reviewed scientific literature on issues pertaining to EES (e.g., climate change) is available via the repositories of leading international journals like *Nature* and *Science*. However, the contributions of other disciplines relevant to EES is often overlooked. The sections below examine these areas of knowledge that also shape our attitudes and behaviors toward projects like Agenda 2030.

Social psychology and cognitive neuroscience

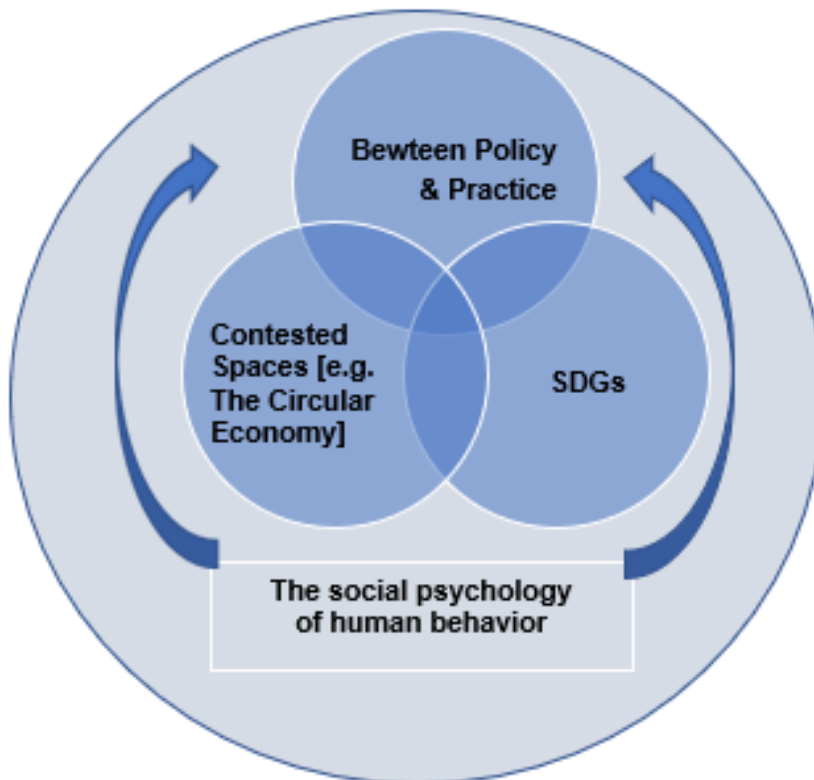
Kurt Lewin (1943, 1951) posits that our responses to EES occurs within a “field”, a social space circumscribed by the social psychology of human behavior. This field includes individuals as agents of change and the agencies of socialisation like HEIs. Political, economic, technological, scientific, and social policies as well as institutional and organizational processes that impact individual behavior are all part of the EES field. A field contains both explicit and implicit knowledge.

For Lewin, the totality of a field's tangible and intangible systems and structures sways human behavior at discrete moments in time. Thus, human behavior changes as the field changes (e.g., new scientific research linking CO₂ emissions to global warming). In any field, Berger and Luckmann (1967) suggested people would react differently to similar bits and pieces of knowledge because psychological processes filtered that information—these filtering mechanisms guaranteed

that knowledge about EES, internalized by the individual, was socially constructed. Figure 1 shows one EES field where the intersection of contested knowledge, the SDGs, and the gap between policy and practice is depicted.

Players in a field must continually engage with a matrix of diverse, dependent, interdependent, and sometimes contradictory elements embedded in communications, social exchanges, and decision-making processes. The social psychology of human behavior is an influential element in the field, turning psychological mechanisms into potential minefields on the EES road.

Figure 1. Example of a decision field of economic and environmental sustainability



The social psychology literature suggests that when contested ideas proliferate in a field like EES, two obstacles antithetical to sense-making cloud our thinking. First, people are unfortunately prone to say one thing but do another, even in the face of the significant risks associated with climate change and the conspicuous consumption of non-renewable resources (Beattie & McGuire, 2016). Second, moving from theory to practice, policy to practice, or thought to action are not straightforward journeys, even in the face of evidence about proven or even tentative solutions to a problem at hand.

The concept of “bounded rationality” (Simon, 1955) sheds light on how attitudes and behaviors form and develop to inhibit change behaviors from taking hold. At any one time, an individual is surrounded by highly complex ideas and in a contested space, no person can ever gain full knowledge about all the elements in the field and act on them with any measure of certainty despite the wealth of knowledge available to them. To bring a semblance of order to this situation, human biology plays its part. Evolutionary processes embedded shortcuts in our cognitive structure to streamline reasoning with incomplete knowledge. Rules-of thumb keep us on track and supply rational responses to the circumstances at hand, however complex the problems in a field might be.

McDonald (2010) suggested new research in cognitive neuroscience shows the “magnitude of the challenges” facing agents charged with implementing a change agenda like EES. Reflexive and preconscious neural processes, “hardwired via synaptic connections” are “potentially antagonistic to enhanced sustainability management”. In addition, research also suggests our understanding of a multifaceted phenomenon like EES is derived from cognitive structures that bridge between “emotion and reason”, “action and perception”, and “representations of other people and ourselves” (Adolphs, 2003). His research suggests certain brain functions are ignited by “biological motion stimuli” within an array of structures functioning to moderate thinking and behaviour based on the “motivational properties of stimuli”.

In this process, reasoning, and the self-regulation of social behavior tap into parts of the brain that “represent emotional response and actions, and that integrate goals with behavior”. In this setting, emotions govern thinking. This is important because a person’s predispositions about climate change, for example, are manifested from sentiments, beliefs, and opinions.

The concept of cognitive dissonance (Festinger & Carlsmith, 1959), which hinders translating thought into action, also casts its influence on how people behave. The American Psychological Association describes it as an “unpleasant psychological state” caused by “inconsistency between two or more elements in a cognitive system”, sometimes expressed as a mental discomfort resulting from a person simultaneously holding two conflicting beliefs, values, or attitudes. In the contested space of EES, cognitive dissonance certainly casts a significant influence.

Individual stakeholders often perform dual economic functions, being simultaneously the consumers and producers of non-renewable resources. This dilemma is a source of cognitive dissonance, which comes to the fore in the resolution of contradictions of this type (Cohen, et al., 2007). When problem solvers are the ones who created and continue to create the very problems they strive to remedy, cognitive dissonance can cause serious mental health issues.

Sources of knowledge about EES

Knowledge about EES abounds. The literature on earth’s changing climate as a harbinger of disaster contains almost 3.3k books (including e-books) published in the last 12 months. All had *Climate Change* in their titles. In addition, 35.5k publications in the last ten years carried the same title while 250k articles appeared on the topic. Between 2014 and 2023, 10k books displayed *Economic Sustainability* in their titles while *Sustainable Development Goals* appeared in the titles of 3.5k books and 11k articles (WorldCat.org). And this vast store of knowledge mostly arrived anywhere and anytime on the click of a mouse. Finding knowledge is no obstacle on the EES road. Distinguishing the utility of this knowledge for EES is another matter entirely.

Documents and reports published by regional and international agencies like the European Commission (2023) and the Organization for Economic Cooperation and Development (OECD, 2021a; 2023) in addition to country-specific literature adds to this continually expanding knowledge store. Concerning Agenda 2030 specifically, Arora (2018) describes the project as ‘critical for sustainable human development’.

Much of the literature supports the widely held view about the cumulative effects of human activity on the planet, significant enough now to cause irreversible environmental damage without immediate actions to reverse this situation. In turn, this urgency plays out in political, economic, and social life. Nevertheless, other literature challenges the legitimacy of these claims (Ipsos, 2023; Lomborg, 2023) although one would predict the potential for climate change to harm human well-being is an extremely strong motivating factor for change.

The consequences of unchecked climate change include growing numbers of climate refugees (McAllister, 2023) and people displaced by natural disasters (UNHCR, 2023). Other literature maintains that the links between climate change and increased political instability “are indisputable”, pointing to a troubled world ahead (HART, 2023). The literature suggests “continued economic growth” and “environmental sustainability” are incompatible ideas (Fritz & Koch, 2014).

Various discourses responding to *The Limits to Growth* published in 1972 still play out today in contested Marxist and capitalist philosophies about sustainable social, political, and economic systems.

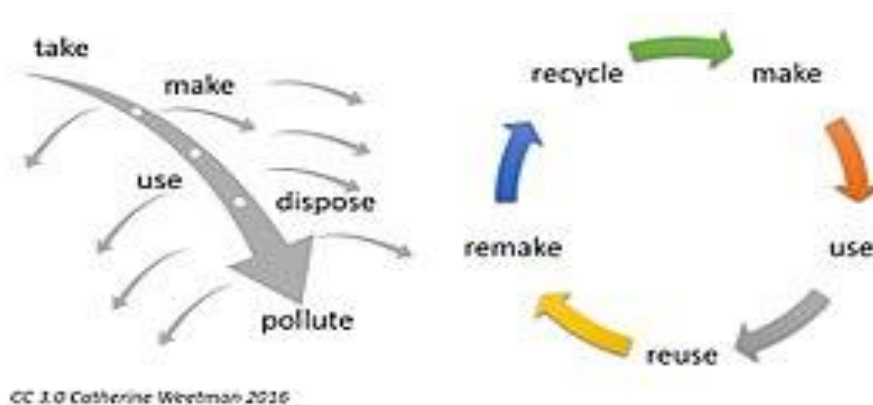
Framing communications about EES

Following Barbra Minto's (2009) advice about ordering information for maximum effect, framing discussions about EES requires the logical placement of salient ideas and/or concepts into similar group, either ordered "deductively, chronologically, structurally, or comparatively" (Kruger, et al., 2021). This alignment allows ideas to flow down the pyramid of ideas. However, many debates about EES contain unordered ideas and mis-matched concepts, which affect how people receive and internalise this information in the current change setting. The logical flow within Minto's "pyramid principle" suggests solutions to problems created by climate change, for example, should flow downward to the level of the individual; that is, from the amorphous macro concept of climate change to the micro concrete experiences and activities of individuals in their workplaces and social networks.

People accept or reject different types of sustainability depending on how these are framed (Kruger, et al., 2021). The capacity for individuals to make the connections between different ideas at various levels is a determining factor in the judgements they make. For example, describing EES using highly complex scientific and technical language impedes implementing micro-level strategies in realms where individuals dominate decision-making. In addition, an overt focus on political, economic, technological, and/or social imperatives and/or solutions causes them to compete with one another for dominance.

Making connection between knowledge at different levels in the hierarchy of ideas related to the Circular Economy [CE] model or an amorphous concept like climate change is difficult. Communicating ideas about CE often lean toward employing intricate models to represent its basic ideas. Figure 2 below succinctly captures a non-technical and readily understood representation of the CE model.

Figure 2. The essence of the CE model



Source: Weetman (first edition, 2016); images via Google

When academics or policy makers get hold of CE, the depictions of the circular flows take on a spaghetti-like appearance as in Rabobank's *The Potential of the Circular Economy* (2015) or Italy's *Towards a Model of Circular Economy for Italy* (2017). This approach might suit governments and corporations but what the "average person" makes of these spaghetti-like representations of CE is anyone's guess.

The way information about CE is communicated influences how people internalize the information. For example, convincing people now that a mere "2-degree rise in global temperature" sometime in the future will cause a catastrophe is no easy task—people tend to take such messages based on some unknown future without believing in the proposition (Silberg, 2016). Nordhaus and Shellenberger (2009) warned against using apocalyptic language to describe the effects of global warning. This language risks "losing the public on climate change". Making the links between current knowledge and future events is fraught with danger because we are oriented to the present, not the future. With this mindset, climate change becomes a low priority given the complexities of everyday life.

During a recent spate of horrendous natural disasters (floods and fires) in Europe and Australia, social and political awareness about the detrimental effects of climate change on society gained prominence. But this awareness waned as the events either moved into history or were overtaken "amid shocks from other social issues" like COVID-19 (McDermott, 2022). Thinking about one's life in 2050 is also a leap too far for many people although on the upside, "episodic future thinking" is a cognitive process that allows a person to project their "self" into a future scenario to comprehend what that envisioned environment shaped by climate change might hold for them and humankind (Atance & O'Neill, 2001). On the downside, while about half of us forward plan when "taking decisions in a dynamic risky context", the other half don't (Hey & Knoll, 2007). Convincing people of a future vision, however well-articulated, is a monumental challenge given the powerful influence of the present on how people behave.

Two studies in the literature of projects framed with a single focus demonstrates the influence of the present and recent history on how people think and behave. In Russia, Suopajärvi, et al. (2016) observed social sustainability deteriorate because economic development focused on economic issues, left the "social side of the (sustainability) equation" in limbo. Downplaying the mining sector created "fear" and "anxiety" among regional residents who until recently depended mostly on mining for "employment opportunities, prosperity, and better service-structure". A reduced mining sector disrupted the community. In a similar setting, Scricciu and Stringer (2008) highlighted tensions between economic and environmental sustainability in communities in the former Soviet Union and its satellites. As reforms based on competitive market philosophies and economic liberalization policies stalled, new problems emerged including the mammoth costs of transition and the shelving of environmental concerns.

Explicitly connecting the dots in documents and strategies to achieve EES is crucial, especially those framed holistically. For example, promulgating EES strategies underpinned with economic terms like growth, progress, competitiveness, return on investment, profit, or market driven fit a particular line of thinking about economic progress. However, alternative definitions of growth and progress that align with the goals of Agenda 2030 are now required (cf. EEA, 2023a).

Making connections between knowledge and its applications involve a person's ability to think critically about EES, especially about how to bridge the gap between policy and practice. At one level, the EU's commitment to Agenda 2030 is explicit. At another level, implementation strategies are failing, which indicate the connections between some levels of the ESS pyramid of knowledge are stressed. This view about is reflected in the following facts:

- The EU's carbon footprint is 2.4 times higher than the global level and its water, land, and materials use is also higher
- Disposable household income in the EU is rising
- Poverty and inequality indicators in the EU is also rising
- The EU is highly dependent on imported fossil
- The EU's source of raw materials for renewable technologies is fragile

While many approaches, solutions, and services available to achieve EES are summarized on BCG's Home Page on *Climate Change and Sustainability* (e.g., "Energy Transition" and "Nature Based Solutions"), the section below focuses on CE as one vehicle for achieving the goals of Agenda 2030. The CE model is critically discussed below in the light of the facilitating and inhibiting factors that shape a person's attitude toward EES.

THE FUNDAMENTALS OF A CIRCULAR ECONOMY

Although the production and consumption components of CE trace back to antiquity (Charlton, 2020), the development of 'property rights, scientific rationalism, capital markets, and revolutionary communication and transportation technologies' in the West coincided in the 1820s to lay the foundation for the "birth of plenty" (Bernstein, 2004). This was a turning point in how society thought about the economic processes of production and consumption.

Prior to that time, global per capita GDP had increased only marginally since the advent of the Common Era (Maddison, 2001). In a few decades following the 1820s, per capita GDP increased exponentially. Consequently, household incomes and household discretionary spending on goods and services also increased substantially. In a rapidly expanding society with a consumer mentality (cf. Veblen, 1957), individuals disposed of goods and consumed services with little negative consequences. In earlier times, many goods were recycled out of economic necessity. By the 1920s, consumerism was the driving force in Western economies.

The birth of plenty also laid the foundations for critical thinking about the ecological implications of industrialization, as is the case today. By the 1850s, Karl Marx was already searching for practical solutions to the ecological problems of his day brought on and intensified by industrialization and the consumption of non-renewable resources, which included the problems of soil erosion, toxic waste, water pollution, and deforestation (Parsons, 1977). Today, CE is widely publicized as a solution to these old problems.

The knowledge base on CE

For HEIs teaching about CE, knowledge abounds. In 2023, about 2.2k books and 24k articles had *Circular Economy* in their titles (WorldCat.org; cf. Maksymiv, et al., 2021). The generic principles of CE—originally cast as Reduce, Reuse, and Recycle—recently expanded as Rethink, Refuse, Reduce, Reuse, Recycle, and Repair [the 6Rs] (Wrathall & Steriopoulos, 2021). In contrast to the independent 'take, make, use, and discard' cycles in production and consumption in a linear industrialized economy, interdependent elements in the CE model make more sense because the production/consumption loop becomes a self-renewing cycle (Bigwood, 2020; Weetman, 2016).

Authorities in the EES field (EPA, 2023; European Commission, 2020a, 2020b; McKinsey Sustainability, 2017; OECD, 2019; Rizos, et al., 2017; Worrall, et al., 2022) are in concert with the following views about CE:

- Innovative design technologies applied to the production and consumption of goods and services (including redesigning traditional business models) will reduce waste
- Implementing CE requires initiative-taking agents
- The linear economy is unsustainable in the immediate term
- Using renewable resources creates environmental capital, which fosters the regeneration of natural systems in sustainable ways
- The 6Rs (or equivalent strategies) are the key to CE, although weak links in the chain dramatically reduce CE's efficacy

While most people agree on the basic principles of CE, complexities and uncertainties about the approach remain to create a highly contested space (Corvellec, Böhm, et al., 2020; Corvellec,

Stowell, et al., 2022). Note, the social psychology driving ideas like “make”, “reuse”, and/or “dispose” are absent from the CE schema.

CE as a contested model

HEIs are important agents in disseminating unbiased knowledge about CE although this role is problematic because many of CE’s underlying foundations are contested. For example, Velenturf and Purnell (2021) suggest CE is neither a “magical fix for our environmental woes” or a set of ideas easily transferable to the current economics of production and consumption (cf. Narberhaus & von Mitschke-Collande, 2014; Meidl, 2021). To confound the situation, concerning definitions of CE, Kirchherr, et al. (2017) found 117 of them.

The “complete circularity of materials” in any economy calls into question the proposition that current industrial processes can be rejiggered to produce material flows that are “consistent with natural cycles”, according to de Man and Friege (2016). They highlighted the vast amounts of energy and time needed just to create these flows in addition to the risk potential of unforeseen hazards associated with “unexpected waste flows” and the scale problems that come with the cycle of natural materials. More recently, Lehmann, et al. (2023) began the task of “separating aspirations from reality” in CE projects. A more pointed criticism of CE: “circularity dreams” ignored physical realities (de Man, 2023).

In the 2010s, European policymakers pursued a single strategy solution based on the assumption that CE equals “zero waste” [ZW] (de Man & Friege, 2016), a concept with its own unique problems and challenges highlighted in studies on waste management and its technologies (Bogusz, et al., 2021; Pietzsch, et al., 2017). The utopian underpinnings driving ZW was queried along with the hazy delineation of its boundaries. In a similar fashion, studies highlighted conflicting ideas about how to convert CE theory into practice (Corvellec, Stowell, et al., 2022; Quicker, et al., 2020).

The politicization of CE was also of concern. This process created a space that allowed ideological discourses to surreptitiously sneak in and capture CE thinking. In addition, the overdetermined roles of technology and economics in assessing the efficacy of the CE model overshadowed the equally important goal of achieving social sustainability. Sparse mandatory legislation about implementing CE solutions worried governments, corporations, and institutions alike (Arruda, et al., 2021).

While proponents of the CE model believe it will “cut greenhouse gas emissions” (Ellen Macarthur Foundation, 2023), some scientific studies opposed the view that CO₂ emissions are the main source of global warming (Easterbrook, 2016). Such opposing views make both CE and global warming contested spaces; yet Völker, et al. (2020) showed how CE thinking quickly penetrated the political, economic, social, and education policies of the European Commission.

The current iteration of CE

Environmental issues loom large in CE today, illustrated in the view that ‘restorative and regenerative economic systems’ enhance the ‘self-renewal capacity of natural systems’, which is a catalyst for ‘reactivating ecological processes damaged or over-exploited by human action’ (Morseletto, 2020). These views gained significant traction in developing solutions to climate change and environmental damage, which shaped economic policy making (Abad-Segura, et al., 2021; Velenturf & Purnell, 2021).

Not all CE models produce significant outcomes. As an early adopter of CE, China recently situated “circularity” as the cornerstone of its “green production strategy” (Kuo & Chang, 2021); despite that initiative, a sizable gap still exists between the promise and the reality of CE. For example, despite officially adopting CE as a way forward, China remains at the top of most raw pollution tables (CO₂ emissions, for example) although it is trending downward in tables based on a per capita basis.

Current iterations of CE are normally driven by top-down policies developed by governments department or organizations. The EU's *Circular Economy Action Plan* is one such example of this approach (EU, 2020a). However, the approach risks not connecting with the general population.

While CE jells with policy makers and academics, the concept needs to make sense to individuals because decision-making about CE resides mostly with individuals. In this context, consider the 2023 European data below:

- Among the 23.1m SMEs in Europe, 21.6m employed fewer than nine people in 2022 (*Statista*, 2023)
- The value-added of SMEs to the European economy was about €3.9 trillion in 2022; of this amount, micro-sized SMEs accounted for about €1.38 trillion (*Statista*, 2023)
- The 197m households in the EU had an average of 2.2 members in 2021 (*Eurostat*, 2023)
- As percent of GDP in 2021, European household consumption was an average of 54.09 percent over 41 countries (*The Global Economy*, 2023)

Individual decision makers in SMEs and households do not function according to predictions arising from scientific discourses, highly technical explanations, or economic modelling (although at the macro-level, negative sanctions can be significant motivators in large-scale industrial sectors like petroleum and gas because governments can set targets and impose fines for transgressions). Rather, they function according to their current store of knowledge and depth of experience at any given moment. And current CE models, couched mostly in business, scientific, technological, and/or economic language downplay the influence of social psychology on human behavior to being an almost negligible factor.

The dominant economic model depicting the flows of goods and services, even in a traditional society, directly shape a society's preferred political, economic, technology, and social structures. Nonetheless, CE's potential to break traditional ligatures binding a linear economy for the better remains uncertain. CE remains a contested space and change agents still face any obstacles on the road.

PSYCHOLOGICAL MINEFIELDS ON THE ROAD

While most scientists accept earth's climate is changing in way detrimental to society, the causes of this change and the solutions proposed to reduce the rate of global warming are still contested. Bjørn Lomborg (2023, 2020, 2001) for one suggests environmental issues are overstated, harmful to developing countries, and costing us trillions of dollars pursuing dubious fixes.

As a Wicked Problems that "cannot be definitively described" (Rittel & Webber, 1973), climate change as a significant component of EES does not fit with our underlying psychology or institutional approaches to decision-making (Hersher, 2023, quoting Leiserowitz). It is an "abstract statistical phenomenon" occurring over time, making it hard to detect based on personal experience alone (Weber, 2016). Our emotional and cognitive processes make it difficult to imagine our future lives under climate change that includes the possibility of unpredictable events. However, people work in a world of direct communication, taking account of "short-term outcomes, immediate, and linear effects" (Pahl, et al., 2014; cf. Linden, 2014).

While debates about EES contain risk scenarios, the subjective experience of time at any given moment in a field ("time perception") determines a person's response to various risks. A mismatch between human cognition, social dynamics, and the causal factors of climate change exasperates the risk.

Research using four dimensions of psychological distance (temporal, social, place, and uncertainty) suggests a person's response to risk scenarios involving climate change is "both

psychologically distant and proximal in relation to these different dimensions” (Spence, et al., 2011). The closer a person is to the core of climate change, the more immediate the response is. The lesson for HE programs: the effects of climate change need to be experienced directly or realistically simulated to engender meaningful responses in students.

Cognitive dissonance is a dangerous mine on the road

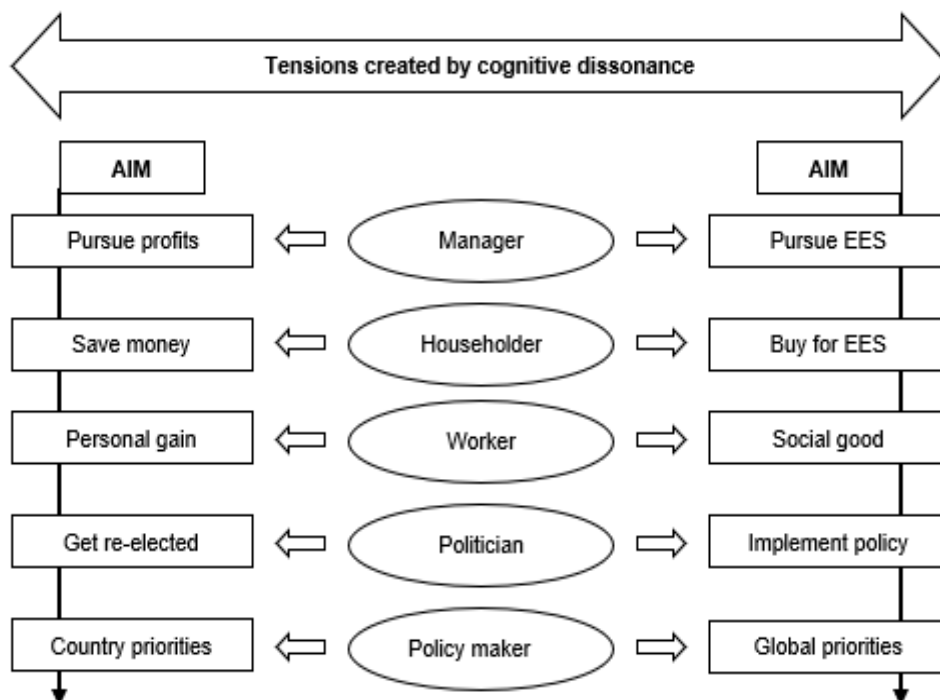
Change agents have contradictory aims, expectations, desires, responsibilities, needs, rationales, and/or duties associated with their regular roles in business and/or society. For example, managers of a company consuming non-renewable resources might also be active members of a conservation society. Householders who recycle plastic containers are also the ones who brought these goods into the home. The politicians who champion EES programs in the EU (for example, in Germany, France, and the UK) govern over the three largest consumers of oil and gas products (Statista, 2023). Such tensions are the root cause of cognitive dissonance.

Johnson and Levin (2009) cut to the core about the dilemmas contributing to cognitive dissonance. They discuss “the tragedy of cognition” and “psychological biases and environmental inaction”, suggesting that human brain functions are neither entirely “accurate” nor “impartial”. Their summation is worth internalizing if KPMG’s prediction that both climate change and the sustainability agenda are at their tipping points. They concluded:

Beyond the exploding ecological and socio-economic research on climate change and how to deal with the ‘tragedy of the commons’, it is a better understanding of human psychology – ‘the tragedy of cognition’ – that may ultimately tip the balance against the seeds of our own destruction.

If climate change causes the degradation of planet earth, human cognition might be the main culprit in its demise.

Figure 3. Cognitive dissonance and tensions in the EES field



HIGHER EDUCATION AND AGENDA 2030

In Europe during the 2010s, HEIs began to introduce the concept of CE into their curriculum. Nevertheless, a detailed assessment of this process in Italy suggested that although knowledge about sustainable development expanded during that time, studies about how HEIs disseminated this knowledge was lacking (Giannoccaro, et al., 2021). On the upside, knowledge about CE increased as academic disciplines integrated its principles into T&L and the curriculum. On the downside, what enterprises needed to implement a CE transition “from the demand point of view” was lacking. In a sense, this later finding reflected a gap between theory and practice. These gaps can be plugged by identifying success factors in projects geared to EES.

Success factors in EES initiatives

One influential study with implications for projects concerned with EES is P. Wesley Schultz’s (2011) review of the allied field of conservation biology. Successful projects tended to focus implicitly on micro-level social spaces, where individual decision-making holds sway. A “heavy emphasis on science” at the expense of “practice”—and much practice is shaped by social psychological factors—appeared to inhibit success.

Studies also revealed that gaps between “thought and action”. People were concerned about environmental issues, but little behavioral change occurred because of this belief. Knowledge alone cannot change behaviors towards EES (Leiserowitz, et al., 2005; McKenzie-Mohr, et al., 2012).

Confirmation and perceptual bias (leading to the ‘say one thing, do another’ syndrome) played a role in moving beliefs to behaviors. Schultz (2002) concluded that people believed their social milieu and the surrounding physical environment were separate spaces. Yet, people with a high level of “connectedness” to nature (e.g., taking part in a basic activity like bushwalking) displayed more positive attitudes to EES compared to those with a low connectedness. For the former, the natural environment is omnipresent—it is here and now.

The degree of a person’s connectedness to the natural environment involves the concept of cognitive plasticity; that is, the latent potential for a person to acquire cognitive skills that change their attitudes and behaviors gained under specific contextual conditions (Swim, et al., 2011). Behavioral plasticity refers to changes in a person’s behavior following exposure to targeted messages (e.g., Go Neutral, Energy Australia’s carbon offsetting program; cf. Dietz, et al., 2009). Schultz surmised that marketing ideas targeted at “high-impact behaviors that have high plasticity” are more likely to succeed. Other success factors included initiatives that connected people directly to their immediate natural environment and used motivational primers related to “self-interest, social responsibility, and self-transcendent values”, which placed individuals at the centre of change (Stern, 2002).

The table below highlights salient factors and activities likely to instil positive attitudes and values toward EES. In this regard, education programs for EES should populate the curriculum with interdisciplinary social and scientific knowledge (Nunes & Diaz, 2022) and frame the activities of individuals as the main proponents of change. However, HEIs face a significant challenge here; definitive knowledge about how people think remains tentative.

Table 1. Success factors and organizing principles*

Success factors*	
A	Connect individuals with others in their social relationship networks
B	Link an individual’s social identity with the positive attitudes and behaviors shown towards EES by members of their peer group
C	Acknowledge significant differences exist between an individual’s behavior in public (open) and private (closed) spaces

D	Focus on delivering a single message about a single event rather than multiple messages across diverse types of events
E	Communicate the positive behaviors of an individual's peer group at opportune times
F	A combination of positive and negative reinforcement can change attitudes and behavior
G	Norm-based interventions should use non-scientific and non-technical language
H	Melding ideas from cognitive neuroscience and the social sciences supplies insights about how an individual's internal emotive mental processes moderate their external physical behavior in ways the impact sustainability management
I	A coalition of natural and social scientists, and behavioral and social psychologists empowers a design team
J	Include information about agencies and associations dedicated to promoting the value of EES
K	Direct experience of issues affecting EES
L	Promote activities where people engage directly with the natural environment

* unordered; Sources: Glasman & Albarracin, 2006; Schultz, 2011, 2002; various articles in the *Annual Review of Psychology* from 2000 to the present

Despite the identification of success factors and activities, teaching about EES in elementary, secondary, and HEIs, the efficacy of this education is questioned because of the following reasons:

- Climate education across Europe is lacking (Erasmus+, 2022)
- Most teachers in the US don't teach about climate (Kamenetz, 2019)
- Significant gaps exist between the ambition to teach about aspects of EES and the reality of what teachers teach in their classrooms and lecture halls (Hindley, 2022)
- Confusion among teachers about climate change significantly reduces the potential of education as a change agent (Plutzer, McCaffrey, et al., 2016)
- Only half of the world's national curricula have a dedicated reference to "climate change" (UNESCO, 2023)

Another problem is keeping Agenda 2030 front of stage. As the health crisis of COVID-19 waned, countries dealt with "an education crisis" caused by student progression factors (Blaskó, et al., 2022), various output losses (Ari, et al., 2022), and significantly reduced budgets (*Australian Financial Review*, 2023). In this testing environment, the *Sustainable Development Goals Report* described the negative affects COVID-19 had on implementing the SDGs (DESA, 2021).

Teaching and learning for recovery and embedding the SDGs

By the mid-2010s, the rapidly expanding event management industry offered new employment opportunities for graduands in Europe, the US, Australia, and elsewhere (Buhalis, 2022). The pre-COVID-19 experience of delivering the undergraduate subject *Iconic Events* at William Angliss Institute [WAI] in Australia suggests ways to recover lost time now. One author had academic oversight of the subject, the other, academic oversight of the degree program.

The *Subject Guide* held specific learning outcomes [LOs], nominated content, T&L strategies, suggested learning spaces, and assessment items (both individual and group) as approved by the National Accrediting Agency. In delivering the subject, the coordinator strived to use renewable resources like e-textbooks and teaching materials where possible. A value-added activity for students during the semester included opportunities to directly experience an iconic event (e.g., the Australian F1, the Grand Final of the various football leagues, the Australian Tennis Open, and/or the Melbourne Cup).

While the *Subject Guide* laid out the accredited LOs, the incorporation of implicit learning strategies or "learning without being aware of what is being learned" (Baumard, 1999) added to the student experience. The power of implicit learning is acknowledged in a wide range of disciplines and contexts (Stadler & Frensch, 1998). Nonetheless, post experience reflective sessions were needed to assess the extent of this learning. In the first part of the semester, students were "primed"

indirectly with general knowledge concerning making, consuming, and disposing of plastic products, presented in a non-emotive and objective manner.

Psychology suggested the “priming effect” would occur when students were exposed to certain ideas that unconsciously triggered connections between the phenomena viewed at the “iconic event” (e.g., food consumption) and “sustainability”, without being consciously aware of the connections being made (cf. Bargh, 2017). Just being there and experiencing the event dramatically increased the likelihood that both the explicit and implicit LOs would be integrated into a student’s worldview (Kolb & Kolb, 2017).

WAI was formally committed to EES and a range of UN-type initiatives. Taking account of the success factors and organizing principles identified in Table 1, the Subject Coordinator incorporated them into T&L and the curriculum. Adding implicit LOs to the accredited ones increased the chance that students would graduate with not only the knowledge but also the will to put policy into practice and thought into action.

The range of examples of things to do below are geared to the HE sector with policies and guidelines guiding their implementation (e.g., the ethical use of IT, underage issues, prohibited sites, plagiarism policies, use of gender-neutral language, and similar regulations). Subject Coordinators would normally use the in-house Learning Management System (e.g., Blackboard) to manage and oversee student communication.

Table 2. Examples of success factors, organizing principles, and T&L strategies

	Précised factors & principles*	Examples of things to do
A	Social relationship networks	<ul style="list-style-type: none"> ▪ Use the inhouse social media platform before the semester for communication to students enrolled in the subject ▪ Students share their current memberships of EES related associations with their peers ▪ Use external platforms like LinkedIn to set up an ‘iconic event’ community ▪ Ask students to monitor the extent and types of debates about EES on external social media platforms and the news media
B	Positive attitudes & behaviors of others	<ul style="list-style-type: none"> ▪ Feed the message/discussion board on the LMS with stories about individuals or groups that espouse EES principles and practices
C	Differences between public & private spaces	<ul style="list-style-type: none"> ▪ Students have opportunities to experience the range of contested knowledge about achieving EES (e.g., debates about the effect of CO₂ emissions on global warming) ▪ Offer example of how peer pressure shapes one’s attitudes to environmental issues ▪ Show examples of how people behave differently in public (tutorial group) and private (home) learning spaces and ask them to reflect on their own behavior in these settings
D	Deliver a single message in a single event	<ul style="list-style-type: none"> ▪ Use multiple case studies that highlight one aspect of EES ▪ Use a trigger to draw students’ attention to a single dimension of EES (e.g., waste, climate change, reuse of materials) before attending the event ▪ Closely examine one EES issue at one event
E	Communicate positive peer behaviors	<ul style="list-style-type: none"> ▪ Use the discussion board to allow individuals or groups to share ideas/observations of the event (e.g., food consumption and disposal of waste, use of renewable and non-renewable resources) ▪ Report initiatives by HE students pursuing the aims of Agenda 2030
F	Highlight positive & negative sanctions	<ul style="list-style-type: none"> ▪ Use message/discussion board to highlight positive and negative sanctions used by governments and companies to achieve the aims of Agenda 2030 ▪ Provide examples of companies with policies that promote EES ▪ Field trip to industrial sites where the effect of both types of sanctions are visible
G	Norm-based interventions using non-technical language	<ul style="list-style-type: none"> ▪ Supply examples of how to use non-technical language in describing highly technical or scientific concepts ▪ Ask students to rewrite technical documents using everyday non-technical language

H	Meld ideas from cognitive neuroscience & the social sciences	<ul style="list-style-type: none"> ▪ Teaching team participates in workshops about the influences of neuroscientific factors on human behavior ▪ Supply student a with case study that highlights these connections and ask them to reflect on how neuroscientific factors might influence their own attitudes to EES
I	Inputs from social scientists & behavioral psychologists	<ul style="list-style-type: none"> ▪ Use a cross-disciplinary design team to broaden knowledge included in the subject ▪ Introduce students to techniques in evidence-based decision making
J	Highlight work of agencies and associations	<ul style="list-style-type: none"> ▪ Initiate student membership of a national or international association relevant to EES (cost to institution) ▪ Arrange for students to receive Newsletters and similar communications from associations (e.g., UN, UNEP, EU, EEA) ▪ Ask students to take a critical perspective on how different groups pursue their EES agenda (e.g., social justice warriors, Green Peace) and their impact Agenda 2030
K	Direct experience (if not available, then simulate)	<ul style="list-style-type: none"> ▪ Take active part in any event with EES implications ▪ Simulate events with EES implications ▪ Role play on specific issues in contested spaces ▪ Visit 'clean' and 'dirty' industrial sites
L	Engage with natural environment	<ul style="list-style-type: none"> ▪ Arrange field trips to natural environment (e.g., hiking, sailing, visit a snowfield, beach party, walking tours) ▪ Outdoor excursions ▪ Talks by leaders in outdoor recreation industry

* unordered

CONCLUSION

The contested spaces of EES, the use of technical and scientific language in explanations about climate change, CE, ZW, the dangers posed by fossil fuels, and the denigration of flora and fauna hold a lot of information for the current crop of students to digest. These students, who are also the potential leaders of future governments, policy bodies, EES associations, and society, need to develop a platform for change today to become effective change agents tomorrow. In this scenario, students today also gain from knowledge about the influence of neuroscientific factors on their behavior and the behavior of others. Given various predictions about the effects of climate change and the sustainability agenda being at a tipping point, tomorrow's decision-makers are key to achieving EES.

If cognitive dissonance arms many mines on sustainability road, then people must think critically about EES to become the leading agents in the disarming process. The actions of people really matters on sustainability road. In this light, HEIs must provide an holistic and critical education for EES if today's students are to take up this important task tomorrow.

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CRedit AUTHOR STATEMENT

All authors have contributed equally to all parts of the work.