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JMGS defines global sustainability as the broad set of interconnected issues that include, but are not limited to, the achievement of environmental preservation, social entrepreneurship, poverty eradication, social justice, desirable production and consumption patterns, species preservation, and spiritually rich lives at this time in our species' history on this planet. It seeks to publish articles on how productive enterprises contribute toward realizing and achieving global sustainability so as to create socially just and spiritually whole ways for all species to go on thriving indefinitely.

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TABLE OF CONTENTS

VOLUME 9, ISSUE 1 (2021)

EDITORIAL

- 1 JAMES A. F. STONER
The Blessed Unrest in Business Education

ARTICLES

- 15 ROBERT SROUFE, STUART L. HART, & HUNTER LOVINS
Transforming Business Education:
21st Century Sustainable MBA Programs
- 43 ISABEL RIMANOCZY & BEATE KLINGENBERG
The Sustainability Mindset Indicator: A Personal Development Tool
- 81 NANA OWUSU-ANSAH
Identifying the Dominant Ecological Worldviews of
Community Leaders and the Influences These Have in
Managing Conservation Areas in Ghana
- 107 PHILIP ARNOLD P. TUAÑO, RAMON CLARETE, MARJORIE MUYRONG, &
CZAR JOSEPH CASTILLO
Assessment of TRAIN's Coal and Petroleum Excise Taxes:
Environmental Benefits and Impacts on Sectoral Employment and
Household Welfare

- 145 JOMEL J. REYES & ANNA A. MENDIOLA
Addressing Sustainability in Fashion Through Goal Frames and the
Theory of Planned Behavior Perspectives

SPANISH TRANSLATIONS

- 175 JAMES A. F. STONER
La perturbación bendita en la educación empresarial
- 189 RESÚMENES

THE BLESSED UNREST IN BUSINESS EDUCATION

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In his 2007 book *Blessed Unrest: How the Largest Movement in the World Came into Being, and Why No One Saw It Coming*, environmental scholar, activist, and leader Paul Hawken describes the worldwide movement of millions of individuals and groups working to create a better world.

Early in the first chapter, he reports seeing

compelling coherent, organic, self-organized congregations involving tens of millions of people dedicated to change. When asked at colleges if I am pessimistic or optimistic about the future, my answer is always the same: If you look at the science that describes what is happening on earth today and aren't pessimistic, you don't have the correct data. If you meet the people in this unnamed movement and aren't optimistic, you haven't got a heart. (4)

Since 2007, the reasons for both pessimism and for optimism have grown.

The planet's ecosystem has continued to be assaulted and to deteriorate. The latest 10-year window of opportunity to take the necessary actions for preventing a global ecological catastrophe has passed, as have all the other 10-year opportunities for critically important actions. Those windows keep passing without inspiring the level of worldwide commitment and actions needed to avoid that catastrophe, and each decade the magnitude and cost of the needed actions grow. Although many countries have made some significant strides in dealing with the existential challenges posed by climate change and global unsustainability, those efforts are far from adequate (Wallace-Wells, 2020).

In many respects, the most troubling event in this post-2007 period is the continuing opposition to positive actions by some political and some business interests in the United States—blocking, to a large extent, the national and

international initiatives led earlier by the Clinton administration and later by the Obama administration. This ideological and greed-driven set of destructive actions culminated in the abandonment of any efforts by the United States to provide leadership for a sustainable world from 2016 to 2020. In that period, the American national government actively fought against the kinds of measures needed, both domestically and internationally, not just for national prosperity and well-being but also very likely for the survival of ourselves and our species. Alas, there is plenty of reason for pessimism worldwide.

Compared to the reasons for being pessimistic, the reasons for being optimistic seem modest but they do exist. Attempts to establish multilateral agreements for environmental healing continue to be sought and to move forward, albeit modestly and haltingly. Hard technologies for creating clean energy have progressed rapidly with dramatic reductions in costs and increases in deployment. Awareness that we have the capacity and resources to eliminate global poverty at an almost trivial global economic cost is growing. The catalogue of feasible and powerful initiatives that deal with the multiple aspects of global unsustainability continues to grow and inspire positive actions. And in the United States, a new national administration is seeking to regain a positive role for America in dealing with climate change—one of the two great existential challenges of our lifetimes. And, by the way, we have continued to avoid, barely and mostly by pure blind luck and good fortune, the second greatest existential threat to the existence of our own and other species: nuclear Armageddon (Sherwin, 2020).

This journal has a history of being optimistic about the opportunities business schools have for contributing to meeting the challenges of global unsustainability, and post-2007 events have contributed to that optimism. In this editorial, we will frame the very basic case for that optimism about the role business schools can play and now appear increasingly likely to play. Then, we will list two broad domains in which this optimism lives. Finally, we will invite you to read the excellent articles in this issue of the Journal.

THE CASE FOR OPTIMISM ABOUT THE ROLE BUSINESS SCHOOLS CAN PLAY

If we are to find a way to live on this planet without destroying it, we need to do at least three things. They occur at the individual, organizational, and global levels:

1. become the kinds of people who can live on this planet without destroying it;
2. produce, distribute, and consume the goods and services we need in ways the planet can support; and
3. create global economic and political systems that enable all of the world's peoples to flourish.

Each of these three tasks has a discovery part and an action part. Discovery: "What needs to be done – what does it look like"? – Action: "Making it happen."

Both of those tasks – discovery and action – are what any educational endeavor should be about, especially the educational endeavor of business education.

It is true that business schools as a group have long been remiss in seeing and acting on such a vision for their role. Many of them have been content to accept a comfortable accommodation with the neoliberal, maximizing-shareholder-wealth framing of the purpose of the business enterprise and of all economic activity: "The purpose of business is to make money – period."

However, a much-needed blessed unrest has been growing rapidly in and around business education (Laszlo, Sroufe, & Waddock, 2017) and in the world community. It is increasingly clear that business practice aligned with the dominant neoliberal paradigm is a failure: it is destroying the planet, it is leaving a third of the world's peoples in dire poverty; it has increased income and wealth inequality to levels that are so great that one's mind cannot fully grasp both the extent and the implications of that inequality, and its advocates watch—or perhaps even celebrate—the flaunting of a 500 million dollar yacht by one of the greatest beneficiaries of that set of practices, as he leads a company, some of whose full-time employees seem to need government-provided food stamps to feed their families.

These systemic failures and the ugliness of the related excesses have become undeniable and are encouraging searches for a more valuable, creative, and exciting

adventure for business education. One of the possibly many approaches for seizing the opportunities open to business education is to embed material on sustainability, social justice, and poverty alleviation throughout the business curriculum. Another approach is to base the entire curriculum on the commitment to sustainability, social justice, and poverty alleviation from the very beginning—to start with the premise that the purpose of business education and business enterprise is to create a sustainable/flourishing/regenerating world.

As both of these approaches are gaining acceptance they are inspiring discovery and research activities of literally tens of thousands of faculty members, student, and student teams – many focused on the 17 United Nations Sustainable Development Goals. As this editorial was being drafted, the Fowler Center for Business as an Agent of World Benefit announced this year's Flourish Prizes. The prizes acknowledge for-profit companies for their contributions toward achieving the SDGs, as described in student Aim2Flourish research projects—17 companies, 17 SDGs, and 17 research projects (Aim2Flourish, 2021). Similar initiatives are occurring around the world.

EMBEDDING AND TRANSFORMING: TWO BROAD DOMAINS FOR BUSINESS SCHOOL CONTRIBUTION

As the unrest in business education has grown, the means to translate unrest into positive action have also grown. Perhaps the most frequently taken approach to increasing business education's contribution to a better world involves embedding projects and content into existing core and upper level business courses, such as the projects that earned the seventeen 2021 "Flourish Prizes." A second approach involves "going down to bare metal" and transforming the entire business education curriculum from the very first course to the very last. Both approaches are important and desirable, and each approach contributes ideas and content to the other.

Embedding sustainability into the existing business-as-usual curriculum

Embedding sustainability content into courses in existing business-as-usual curricula allows good things to be done right now, begins shaping the mindsets and building the skills for more fundamental change, and increases the desires for more fundamental change in what business education is for and what it accomplishes.

Efforts to embed sustainability/flourishing/regenerating content into any course are supported by a rich literature and set of ideas for the UN Sustainable Development Goals (e.g., United Nations, n.d.), the Aim2Flourish program (e.g., Aim2Flourish, 2021), the materials and conferences for the UN Principles for Responsible Management Education (e.g., UNPRME, 2021), the programs of the Responsible Research in Business and Management (e.g., RRBm, 2021), and many other contributions such as the course materials developed and provided by Jeffrey Sachs and the SDG Academy (<https://sdgacademy.org/>) and those of the LEAP group (<https://isabelrimanoczy.net/leap/>) that plays an important role in changing course content, through its work on the Sustainability Mindset—described earlier by Isabel Rimanoczy in this journal (Rimanoczy, 2014) and in a second article, with Beate Klingenberg, in this issue.

Of course, as valuable as “doing sustainability” within the existing dominant business-as-usual paradigm might be, it is hard to imagine that even greatly growing numbers of business activities that involve making more money by doing less harm will get us where we need to go. The “business case for sustainability” within the existing neoliberal paradigm will not create a sustainable world.

“Going down to bare metal”—truly transforming business curricula and research

Very shortly after the publication of this issue of the *Journal of Management for Global Sustainability*, the *Journal of Jesuit Business Education* will publish a special issue devoted to the initiative described by Michael Garanzini a year ago in this journal (Garanzini, 2020). In a virtual meeting on July 15 and 16, 2020, eleven teams from Jesuit business schools began work on developing a set of core courses that move away from the neoliberal business-as-usual grounded programs that are taught throughout most of the world of business education. Accepting the structure of the traditional business curriculum as their starting point, these new business function courses, and the new textbooks they are intended to develop, will be aligned with a new purpose for business enterprise and a new paradigm for business education (Garanzini & Santos, n.d.).

The new courses these eleven teams are developing will very likely have many similarities to the courses in the sustainability MBAs offered by a few Universities.

These new courses, the new paradigm on which they are based, and increasing appreciation of the sustainability MBAs like the ones described by Sroufe, Hart, and Lovins in this issue are also likely to increase the desire in many universities and in their business schools to move away from the failed neoliberal paradigm and toward curricula aligned with the need for a sustainable/flourishing/regenerating world. These new courses, curricula, and sustainability-focused research will also reduce the perceived cost, difficulty, and risk of moving away from curricula grounded in that obsolete paradigm. The ground is shifting from under traditional purpose-of-the-business-firm-is-to-maximize-shareholder-wealth curricula. Those curricula no longer provide the safe harbor they used to offer. They are becoming the unsafe place to be.

Now what's next?

Three years ago this journal reported a 2016 initiative led by the International Association of Jesuit Business Schools and the Colleagues in Jesuit Business Education to inspire the transformation of business education along the lines of what we can now see starting to happen in increasing numbers of business schools (Stoner, 2018). That initiative took the form of an application to the MacArthur Foundation in its 100&Change 100-million-dollar competition. The 100&Change competition called for projects that would make real progress in solving a major societal problem. In that 2016 application, 40 business schools would receive \$2.4 million dollars each to transform their curricula and some of their research to be fully aligned with the need for a sustainable world, and to do so in *only* three years. In 2016 there was much doubt that such a herculean task could be accomplished in just three years ... if ever.

When the application was submitted, it was recognized that the chance of winning the competition was essentially zero—there turned out to be 1,904 applications submitted. However, the real purpose of the application was not to win the 100 million dollars but to inspire the MacArthur Foundation to make a global statement that climate change and global unsustainability are truly a threat to the existence of our species and that we all need to take bold action immediately. One of the hopes was that the MacArthur Foundation would inspire other foundations to take equally bold actions to deal with climate change and global unsustainability.... And perhaps even inspire climate change deniers in government and business to start rethinking their positions and actions.

A similar application was submitted in 2019 by another group and a third will be submitted in 2022 if the competition is repeated (globalmovement.net). This application seeks the same goal—to encourage and support the world’s entire business school community to focus many of their very large intellectual resources on discovering how we can thrive on this planet forever and to provide leadership in taking the actions to make it so. The process of transforming the business curriculum was and is seen as generating many exciting and valuable research possibilities as faculty and students ask new questions and seek new answers as they keep modifying each course in each business discipline. The real value of the curriculum transformations was and is seen as the immediate discoveries and actions for change that the curricula changes will bring about. The contributions graduates of the new programs will make in 5, or 10, or 20 years when they reach customary positions of organizational influence were recognized as important and desirable, but the real payoff would be in creating change immediately through business school leadership.

The 2022 application has one major difference from the first two. Between 2016 and 2021 it has become clear that it does not require bold, risky, and herculean-type efforts to transform business education and three years is not an impossibly short period of time to do so. And large investments to bring about the changes are also not needed. What is needed is recognition of the need for deep commitments to rapid change and actions based on those commitments.

Since the MacArthur Foundation is “offering” that 100 million dollars, the 2022 application is being designed to invest the bulk of the 100 million in 400 \$240,000 grants to business schools around the world to report their progress in making those curricular and research transformations as they engage in the journey. The application assumes, and experience is showing, those transformations do not take the 2.4 million dollars that seemed like perhaps not enough in 2016 – that they can be accomplished “for practically nothing.” The grants to the 400 schools will be for sharing their progress, successes, and bumps in the road in making their transformations. The application will also seek to include 40 business schools that have already made that transformation or are well along the way of doing so within that three-year target for transformative change.

The articles in this issue of the Journal

In the lead article for this issue, “Transforming Business Education: 21st Century Sustainable MBA Programs,” Robert Sroufe, Stuart L. Hart, and Hunter Lovins pose big questions for readers of JMGS. Are traditionally delivered business school programs doing more harm than good for this planet and its occupants? Are business schools preparing their students to be ready for complex global challenges? As we claw our way out of a pandemic and our thinking turns to creating a more sustainable future, what kind of business school curricula are required for a future that integrates global sustainability into business leader’s thinking? To help answer these questions the authors highlight the changing landscape of business schools, call for change from stakeholders, and describe how their programs became early movers in developing and delivering innovative MBA Sustainability pedagogy. The discussion of these three programs walks readers through case studies in change management, design, experiential learning, and action as they describe their attempts to change the fundamental DNA of business school curricula for the 21st century.

Given the existential challenges facing humanity, business schools will have to do more than create saddle bag courses to hang off a traditional business curriculum as some schools have done so they can check off a box for including ethics or sustainability within a program. Wrapped in the story-telling about each case study is the pushback of a paradigm shift underway in business school pedagogy, i.e., to continue the entrenched traditional neoliberal content, or to ground the curriculum in the social and environmental content relevant to a new generation of students and the complex challenges of this dynamic century. These authors and this article challenge others to develop a curriculum that makes sustainability the core of their programs, research, and mission. Sroufe, Hart, and Lovins contend that faculty and business school leadership should move beyond a shareholder primacy-driven core to a curriculum grounded in the realities of the 21st Century.

The three programs the authors describe are, of course, important for the committed and trained sustainability champions they have and will continue to produce. However, in the context of the growing blessed unrest in business education they have far more important roles to play. These programs are doing at the specialized MBA level exactly what needs to be done in all of business education around the world at all levels, aligning the curriculum and some—to much—of the school’s research fully with the need for a sustainable/flourishing/regenerating

world. Each has shown that it is possible to create such a curriculum and to survive and thrive with it in a relatively unfriendly environment. Unfriendly in the sense that the business education environment was composed of business schools, faculty, students, employing companies, and even foundations, wedded to the business-as-usual ways that are so very different from what their new programs are all about. And so different from what the world needs.

But that environment is slowly changing in favor of those three programs and all other business schools committed to creating a sustainable world. Faculty, potential and current students, and even many alumni and employing organizations are coming to realize business education must be changed if we are to get to where we want to go.

Beyond the contributions their graduates will make and are making a second major contribution of those three sustainable MBA programs, and others like them, is the fact that they could climb the “Mount Sustainability Curriculum”—to modify and to steal playfully a phrase from the wonderful and widely-loved sustainability champion Ray Anderson of the sustainability-committed company Interface. The third major contribution is their curricula. Those schools provide course designs and program ideas from which other schools on the same journey can learn and upon which they can build. They have shown the way—providing not a “cookie-cutter solution” to global unsustainability but valuable examples that other schools can use to create innovative approaches to their unique situations and unique opportunities ... just as the courses the eleven teams in the New Paradigm for Business Education initiative are doing.

This article is a call to action: The author’s stories of disruption give evidence of success and hope for the coming transformation of business education and of capitalism itself. The lessons learned and insights in this article provide guidance for business school leaders aspiring to redefine management for global sustainability and business programs. The authors assert that we are in the middle of a struggle for the soul of business schools and, now is the time for change. It is an open invitation for others to collaborate, disrupt, rethink, and to integrate business education before it is too late.

In this issue’s second article, “The Sustainability Mindset Indicator: A Personal Development Tool,” Isabel Rimanoczy and Beate Klingenberg report continuing

progress on developing ways to create the mindset changes required to help us, as a species, find ways to become the kinds of people who can live on this planet without destroying it. Continuing their work on the sustainability mindset concept, Rimanoczy and Klingenberg offer a brief overview of the origins of this construct and introduce the exploratory research that seeks to determine if a mindset for sustainability can be intentionally developed. From the early research 12 sustainability mindset principles were developed. Current work focuses on developing a new measuring instrument: the Sustainability Mindset Indicator (SMI). The instrument will assess the impact of initiatives focusing on a mindset shift. As such, the SMI represents the possibility of a new and innovative tool that supports the much-needed mindset change toward sustainability.

The complexity of the mindset is carefully laid out in this paper, allowing readers to expand their understanding of the components at play, and their linkages to a broad spectrum of scholarly frameworks. A comparison to other measurement frameworks available in the extant literature shows what additional features and opportunities the SMI offers. This work seeks to lay down the foundation of a new assessment tool that will serve both as a personal development instrument and as guide for educators and coaches.

In the third article, “Identifying the Dominant Ecological Worldviews of Community Leaders and the Influences These Have in Managing Conservation Areas in Ghana,” Nana Owusu-Ansah explores the ecological worldviews of top management executives in Ghanaian conservation-supporting organizations called CREMAs. The Wildlife Division of the Forestry Commission of Ghana is pursuing a community collaborative natural resources management strategy to promote biodiversity sustainability in communal and family lands. To do so the Division is facilitating the establishment of Community Resource Management Areas (CREMAs). The CREMA constitutions and bylaws that establish such areas emphasize fair representation of leaders from participating communities and not just individuals with sustainability inclinations. His paper examines how ecological worldviews of CREMA leaders could be used to gauge their sustainability considerations in managing the CREMAs.

The article explores how the leaders’ subscription to anthropocentric or eco-centric ecological worldviews might impact their management prescriptions. Five ecological worldview domains were used to assess the leaders’ ecological worldviews:

human dominance over nature, human exemptionalism, balance of nature, risk of eco-crisis, and limit to growth. It was assumed in the article that leaders with strong anthropocentric worldviews would endorse unsustainable harvesting of biodiversity resources whereas leaders with strong eco-centric worldviews would promote a prohibitive stance that might stifle the utilization of the resources and thereby might inhibit socio-economic development in their communities.

In bringing into focus the interface between the paradigms of nature conservation and socio-economic development, the article explores how the leaders' ecological worldviews influenced the socio-economic development activities allowed to be carried out in designated ecological hot spots in the CREMAs. The conclusion is that the leaders employed eco-centric ecological worldviews to maintain proper functioning of ecological processes whereas ambivalent ecological worldviews were used to promote socio-economic activities deemed to be less harmful in ecologically sensitive zones.

In "Assessment of TRAIN's Coal and Petroleum Excise Taxes: Environmental Benefits and Impacts on Sectoral Employment and Household Welfare," Philip Arnold P. Tuaño, Ramon Clarete, Marjorie Muyrong, and Czar Joseph Castillo highlight the policy trade-offs of increasing energy taxes in the Philippines. The increase in coal and petroleum excise taxes, under the Philippine government's first phase of current programs for tax reforms, is shown to have a slight adverse output effect for most industries, a decline in employment, and an increase in poverty incidence because the excise taxes have an adverse effect of higher commodities prices paid by the poor. On the other hand, carbon emissions are estimated to be lower.

The authors conclude that in undertaking reforms that would improve the environment, complementary measures are necessary to ensure that marginalized groups are not affected negatively by the tax reforms even in the short-term. At the same time, governmental policies to raise revenue should also consider how such policies might lead to improving the design of alternative energy policies. This paper highlights the fact that any economic policy re-design should take into account the effects on economic welfare and resource sustainability.

In this issue's final article, "Addressing Sustainability in Fashion Through Goal Frames and the Theory of Planned Behavior Perspectives," Jomel J. Reyes and Anna A. Mendiola address the problem of fast fashion, which is unsustainable primarily

because it generates more waste and contributes to depletion of natural resources. They note that interest in fast fashion has risen exponentially in the past few years, primarily because it provides fashionable clothes that are relatively affordable and convenient to buy. A look at a typical millennial or Gen Z closet would easily confirm this rise in fast fashion's popularity. The authors note that it would be safe to say that most people have many more clothes than what they really need. One simple solution to the fast fashion problem would be to reduce the frequency of buying clothes and to buy fewer clothes each time. This course of action is quite consistent with the growing trend toward minimalism, an enlightened simplicity as exemplified by what Marie Kondo preaches. Their study shows how communication can help people realize the positive environmental aspects of buying fewer clothes. It shows that one's attitudes and subjective norms can be significantly influenced when exposed to messages that frame one's goals alongside an environmental concern. Since these message frames take into consideration a person's goals, they are an effective way to encourage a change in perception toward favorable pro-environmental behavior.

The authors suggest that one of the many realizations this pandemic has engendered is a simple one: we do not really need all the clothes that we have in our closets and a less complicated life in some domains may be a more satisfying one. They note that, perhaps, this time may be quite an opportune one to link this practical realization with the awareness that buying fewer clothes could actually be a way to help the environment, and ourselves as well.

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TRANSFORMING BUSINESS EDUCATION 21st Century Sustainable MBA Programs

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ABSTRACT

Business education should give students the skills to solve complex global challenges. It should align management practices with goals for a sustainable future. Sadly, few management schools even discuss the real issues business leaders face today. This article challenges others to develop a curriculum that embeds sustainability in the core of their programs. The authors argue that faculty and business school leadership should move beyond “saddlebag” initiatives that bolt sustainability onto the traditional, shareholder primacy-driven core. This article profiles three programs as case studies transforming business education to prepare leaders to achieve a more sustainable world. Business schools are torn between competing paradigms. Given the existential challenges facing humanity, business schools will have to change or simply lose relevancy. Our stories of disruption give evidence of success and hope for the coming transformation of business education and of capitalism itself. The lessons learned and insights in this article provide guidance for business school leaders aspiring to redefine management for global sustainability and business school programs. It is an open invitation for others to disrupt and rethink business education before it is too late.

KEYWORDS

business education; sustainable MBA; “saddlebag” initiatives; transformational experience;
integrated management; disruptive; innovation; paradigm shift

INTRODUCTION

In the wake of the 2008 financial collapse, an article in *Harvard Business Review* asked, “Are Business Schools to Blame?” It argued that “the traditional MBA curriculum has divided the challenges of management and leadership in a dysfunctional way.” Business school marketing that trumpets its graduates’ anticipated salaries and ignores the harm its graduates do is one symptom of an underlying problem. The article concluded that “business schools must demonstrate a greater affinity with society’s interests” (Podolny, 2009). Too many business school programs still focus on a “profits-first” mentality in their curricula (Ghoshal, 2005; Giacalone & Thompson, 2006; Slater & Dixon-Fowler, 2010). This myopic focus on “shareholder primacy” is responsible for the unethical and unsustainable behavior that still pervades business (Henle, 2006).

A recent scientific report warned against “Underestimating the Challenges of Avoiding a Ghastly Future” (Bradshaw et al., 2021). Given current economic conditions, environmental degradation, and social unrest, business schools should backcast (the opposite of forecast) from this uncertain future back to where we are now to design and develop the MBAs and skills necessary for solving the global issues and enabling a more sustainable society.

What would such an MBA program look like, and what kind of curriculum will enable students, decision-makers, and businesses to succeed in the future? The co-authors have created three different answers to this question. All, however, are profoundly different from the offerings of business-as-usual schools. The programs described below equip graduating managers with the skills to create shared prosperity on a healthy planet.

Educators are aware that if they wish to be more effective and relevant in the 21st century, they need to integrate new forms of pedagogy and content. An integrated approach can provide opportunities for showing how best practices in sustainability can be part of every business management course (Sroufe, 2018). The three authors have reimagined the MBA by developing programs that deliver the cutting edge of business practice as they prepare students for the challenges that face the world in 2021—climate change, ecosystem degradation, toxic inequality, and systemic racism.

Navarro (2008), in a *BusinessWeek* article entitled “Business Schools: A Study in Failure,” states: “As the first and most important element, the ideal curriculum

should focus on multidisciplinary and integrative problem solving rather than [on] the isolated delivery of individual ‘functional silo’ disciplines.” Happily, “more sustainable business practices” are gaining the attention of business school leadership, faculty, employers, and students.

The insights provided in this paper show that the full integration of sustainability into the business curriculum can be done and that more business schools need to act. Business programs of the past have yet to catch up with today’s employers and students’ needs. The authors provide insiders’ perspectives on disruptive programs as case studies and show how these programs and prior curriculum efforts have integrated sustainability into core courses. They outline the trends leading up to the programs’ launch, lack of differentiation in the academic industry, students’ and employers’ needs, and the need to bootstrap new initiatives without financial resources.

MOVING BEYOND SADDLEBAGS

Business as usual is at risk. Business schools that do not innovate over time will become stranded assets—a piece of pedagogical equipment (a campus and its buildings) or a resource (faculty, knowledge, and skill development) that once had value or produced income but no longer does. Assets can become stranded by external change, including changes in technology, markets, and societal habits. The less nimble programs that have already closed their doors are an early warning sign to other schools. What if the error at the heart of corporate decision making—focusing only on profits (Bower & Paine, 2017)—is also the error at the heart of business school pedagogy? Focusing only on profit maximization has, for too long, kept many schools from innovating to the point that they no longer meet the needs of a changing society.

Paradoxically, while the business school curriculum asks future leaders, i.e., students, to learn about leadership and management from multiple functional perspectives, business school programs themselves are not integrated across functions. Add to this lack of cross-functional perspective the belief that leaders should not value social and environmental systems in decision-making and the stage has been set for business-as-usual.

For a new paradigm to emerge and be a meaningful part of the curriculum, business schools must redesign course content. This redesign needs to be done while finding new ways to connect commerce to global goals for sustainable development (i.e., the UN Sustainable Development Goals or SDGs). Business school programs, administrators, and faculty can rethink content, delivery, and experiential elements rather than continue with traditionally siloed core courses punctuated by a few saddlebag electives of nontraditional courses (Sharma & Hart, 2014). Integrated programs of the future will be those that align with the needs of a sustainable society. Innovative curriculum and research agendas that engage with and value messy and complex real-world problems *can* produce business leaders who understand their global responsibilities in finding solutions to these problems while generating sustainable value for society and businesses.

When we unpack Sharma and Hart's (2014) article on "Beyond Saddlebag Sustainability," we see that incremental change has been the watchword in the business education field for too long. Over the past 30 years, major business schools have added some initiative, center, or institute focused on sustainability, corporate citizenship, or social entrepreneurship. Evolving societal demands have forced business schools to consider business ethics, corporate social responsibility, and sustainability in their programs' curricula.

The problem is that virtually all of these initiatives, centers, or institutes continue to hang off the side of the existing business school edifice. Like the proverbial "saddlebag" on a horse, the issues are contained within separate compartments that are readily visible from the outside but have little impact on the business program's behavior on the inside. Sustainability has joined other business school "saddlebag" issues such as ethics, entrepreneurship, and emerging economies as a way to recognize such but stop short of fully integrating them into the core DNA of the institutions (Sharma & Hart, 2014).

The MBA curriculum at top-tier business schools remains startlingly unchanged from what it was when one of the co-authors (Hart) started MBA teaching 35 years ago: functional core courses in finance, accounting, marketing, operations, organizational behavior, and strategy still rule, with the "saddlebag" issues addressed through elective courses after students have completed the "real" content. Tenured faculty are typically researchers focused on the established functions and disciplines,

not on the challenges contained in the saddlebags. Why? Because these saddlebag topics are complex and challenging to study. Faculty focused on the saddlebags, therefore, are typically untenured adjuncts, lecturers, or clinical professors with little say in the research agenda and governance of the schools. As a result, institutional inertia business-as-usual reigns.

It is time to move beyond saddlebag sustainability in business education. Now is the time for pioneers, independent players, niche programs, and a burgeoning field of programs that have been waiting on the sidelines to get in the game and to flourish. Doing so will enable the kind of institutional legitimacy and reputation to have the “tip of the spear programs” that gain momentum and scale on a path toward a serious challenge to the status quo. Only recently have a few business schools boldly overcome organizational inertia to develop curricula that lead practice by embedding sustainability into the core, thereby allowing them to educate managers who can rise to the demands of the global sustainability challenges facing the world in the 21st century.

The authors also reflect on and draw from Laszlo, Waddock, and Sroufe’s (2017) “Torn Between Two Paradigms: A Struggle for the Soul of Business Schools.” They recognize that business schools today are torn between two paradigms: the dominant neoliberal paradigm of free markets, profit maximization, free trade, endless growth, and laissez-faire government and an emergent paradigm of an economy in service to the environment, ecosystem services, and a life that supports wellbeing and dignity for all (see the website of the Humanistic Management Network at <http://humanisticmanagement.network>). The local and global crises posed by climate change and growing social inequality pose significant threats to the existing system, i.e., economic systems and business education systems, yet policymakers, university administrators, and those in the seats of decision-makers overseeing promotion and tenure, research strategies, and curriculum development have been too slow to act.

We need a 21st century, fully integrated business school curriculum and research agenda (see Figure 1). We also know what the emergent paradigm looks like, and the authors argue for a pivot in business schools toward this new paradigm. Universities and business schools need to step up their game while envisioning what “traditional” academic disciplines are needed for this century. What topics and skills are needed in a post-pandemic socio-eco-economic system as schools and faculty are tasked

with broadening the perspective of future leaders and managers to enable them to incorporate the significant threats and opportunities facing businesses and society?

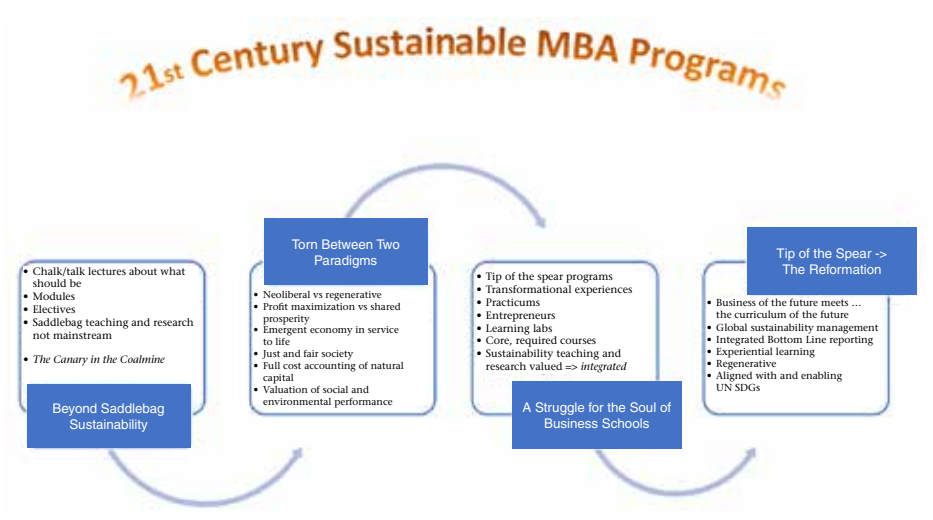


Figure 1: Foundations of Disruptive Change and Transformational Education

Existing management education is terrific at educating analysts and functional specialists who increase efficiency and preserve the status quo. It was a good place to start, but it is a tragic place to stop. These educational systems are not so good at preparing students to transform business by valuing social and environmental performance. More needs to be done to enable leadership roles ready for the complexities of the world they will face in a post-pandemic world craving a more resilient future. We have the tools and knowledge to make a new paradigm take hold in business education as part of new 21st century business programs.

Evolutionary “better practices” can move us toward more integrated learning, embracing project-based action learning and community engagement. These new pedagogical practices, along with reflective learning, will allow students to think about what they have learned, why it is important, and consider impacts on the world. The authors can also envision department walls coming down: co-instructed courses, environmental science, planetary boundaries and UN SDGs within the curriculum, faculty and students together finding solutions to large, complex global problems as part of integrated management collaboratories. These ideas only scratch the surface of integration shifts that bring about a more systemic

perspective in management education while grounding it in notions of sustainability, wellbeing, dignity for all, and ethical considerations at the core of a 21st century full of complex challenges.

Only recently have a few business schools overcome organizational inertia to embed sustainability into the core curriculum. When it comes to creating new MBA programs, the case study examples provided here are the tip of the spear. They now educate managers who can rise to the demands of the world's global sustainability challenges in the 21st century. The following examples tell the origin stories of how three award-winning and innovative programs came about. They set forth the design elements and catalysts along with what makes each innovative and disruptive. These programs and their designers wanted to go beyond a saddlebag approach to curriculum and bridged two paradigms while creating change. They continuously struggled for the business schools' soul in their ongoing work. Our thinking in sharing these stories is much like that of the Baldrige Prize winners of the past quality revolution: the winners report on what they are doing to learn from and adopt new practices. The authors hope that these learnings will help others in their quest to transform business education. They next present the three programs in order of when these were launched.

DUQUESNE: DESIGNING THE 21ST CENTURY MBA FOR TRANSFORMATIONAL EXPERIENCES

In early 2006, a small task force of faculty accepted the new business school dean's challenge at a private, Catholic university founded by the Spiritans in Pittsburgh, Pennsylvania, to design a "blue sky" MBA program for the 21st century. At this time, the dean watched declining numbers of part-time graduate students and wanted to differentiate the school's curriculum from other MBA programs in the region. After benchmarking MBA programs and conducting independent primary research with prospective students and prominent regional employers of MBA graduates, a team of faculty assessed competing business paradigms and took the risk of recommending an innovative 12-month curriculum that would prepare next-generation leaders to

ethically manage triple bottom line forms of capital—social, environmental, and financial.

This triple-bottom-line (TBL) call to action would evolve and be the catalyst for Integrated Bottom Line (IBL) performance. This phrase was coined by Theo Ferguson, with further work from Walter Link and Hunter Lovins (Lovins, 2016), and used to enable organizational change (Sroufe, 2017). The IBL became an embedded element within a textbook developed for business management courses. The book has a purposeful approach to action learning, questioning a reader's integrated enterprise (IntEnt), a play on words for why and how sustainability can be integrated into every business function. The design and development of the MBA Sustainability program was a catalyst for the development of an award-winning book now used in almost two dozen countries—*Integrated Management: How Sustainability Creates Value for Any Business* (Sroufe, 2018).

Building on the university's Catholic reputation for ethics and its faculty expertise, the task force defined key program features for a three-semester, accelerated MBA program designed for a transformational educational experience. Themed semesters helped to anchor learning with auditing and benchmarking in the first semester, process improvement in the subsequent, and change management in the final semester. A majority vote moved the program forward, but there was opposition from some faculty. At the same time, an endowed chair in finance was converted into a chaired position in sustainability to help launch, further design, and develop the program. This new program was launched in the Fall semester of 2007, with transformational experiences (live projects and two study abroad trips in one year) now vying for the soul of a business school. The timing of the launch meant that students graduated at the end of July. Over the years since its inception, the start and graduation of cohorts have changed to May. The May graduation helped align with market hiring practices, and the program designers have scaled back to having one study abroad trip.

At about the same time as the program's launch, the United Nation's Global Compact (UNGC) announced the Principles for Responsible Management Education (PRME). Duquesne was among the first group of signatories. The new curriculum, focused on integrating sustainability, had already incorporated the principles outlined in the UNGC, so alignment with the PRME initiative was a natural fit. Core-required live project courses and an international study trip were embedded in the new program design to enable students to investigate global best practices and sustainability challenges firsthand while building a more sustainable mindset

for responsible leadership in an uncertain global economy. Since the program's inception, and at the time of the writing of this article, the program founders have designed and delivered more than 200 live consulting projects, with no two projects being the same, and 18 international study experiences. Given that the program has evolved, MBAs now mentor undergraduate student teams while building leadership skills. Signing the PRME affects both implementation and assessment, including what is taught (content), how it is taught (process), the environment in which it is taught (context), and how learning outcomes are measured (assurance of learning) (Waddock, Rasche, Werhane, & Unruh, 2010). These are critical issues as cyclical economic crises and public awareness of sustainability alter business schools' expectations for preparing globally minded leaders who can responsibly address today's problems and tomorrow's challenges.

The PRME offers a robust framework for developing and strengthening MBA curricula when student educational experiences are explicitly aligned to pedagogical strategy, content delivery, and performance assessment. These are not simply saddlebag efforts. The program's primary goal is to prepare graduates to lead organizations that value prosperity today without compromising tomorrow's resources. To meet this goal, the program designers first identified a set of program-level goals and curriculum design priorities that support experiential learning. To jumpstart the development of skills and understanding of business concepts, they required non-business students to complete online modules before starting the program. These modules helped get students up to speed on accounting, statistics, economics, and finance basics. The designers then juxtapose these fundamental building blocks of business management with contemporary and more sustainable business practices as a way of developing critical mindsets for responsible management in the 21st-century economy.

As early signatories of the PRME, the program's guidelines became an inspiration for faculty who serve as curriculum architects, course designers, project developers, and study trip leaders. The program founders use a mix of program and course-level approaches to assess how well they are achieving program and, ultimately, Association to Advance Collegiate Schools of Business (AACSB) goals, including 360-degree feedback from corporate partners, peer evaluations, reflective essays, and psychological measures using web-based instruments.

A Focus on Experiential Learning

Collaborative, cross-disciplinary learning ties theory to practice when conducted in real-world settings. To facilitate such learning, faculty developed and continuously improved a cross-discipline pedagogy that features regular project updates to faculty teaching in the MBA program. The program designers baked into this process cross-discipline faculty evaluation of student performance before deliverables are presented to external clients. Faculty from all disciplines are also encouraged to mentor student teams. The formal, 360-degree evaluation process collects ratings from course instructors, other business school faculty, student peers, and corporate clients. It uses instruments that explicitly ask about the extent to which students appropriately applied tools and concepts from specific courses in core business disciplines. In a given semester, the program has up to seven live projects running simultaneously.

Core-required courses for three live consulting experiences anchor semesters within this 12-month MBA curriculum. The experiential learning courses that integrate live consulting are designed to provide tangible opportunities for MBA students to apply concepts from each semester’s core business courses. They become purposeful integration opportunities for faculty to use the projects within courses and assignments and serve as live case studies each semester.

Orientation
Summer Semester
ACCT-715 Accounting for Decision Makers STAT-710 Applied Statistics MGMT-716 Business Ethics and Global Responsibility MGMT-712 Sustainable Business Practices Project I GRBU-713 Systems Thinking and Managerial Decision Tools GRBU-731 Professional Development Practicum
Semester Break
Fall Semester
MGMT-724 Strategic Sustainability and Models ECON-720 Managerial Economics FINC-721 Financial Management MGMT-722 Sustainable Business Practices Project II ISYS-725 Managing Information SCMG-727 Supply Chain/Operations Management MGMT-723 Managing People for Sustained Competitive Advantage GRBU-731 Professional Development Practicum

Semester Break
Spring Semester
MKTG-730 Marketing Management MGMT-736 Strategic Innovation Management MGMT-737 Leading Change in Sustainable Enterprises GRBU-731 Professional Development Practicum — <i>Taught over 3 semesters; final grade in Spring</i> MGMT-732 Sustainable Business Practices Project III MGMT-738 Global Business—Study Trip

Table 1: Duquesne University—Course Sequence for Students

The first semester and field project focus on understanding auditing and benchmarking best practices in sustainable business measurement, management, and reporting. Student teams analyze an actual issue for a large corporate client by researching and benchmarking best practices from multiple perspectives, analyzing a range of alternatives, and proposing solutions that apply broad-based learning. All teams involved in the first and subsequent engagements have multiple opportunities for reflection, reanalysis, and the resolution of competing outcomes before providing written and oral deliverables to clients. Complementing core courses in the second semester of the program, the second project course emphasizes process improvement and project management. It offers teams more autonomy to conduct collaborative deliberations in the classroom and the field. The third and final project engagement includes options to put students on-site with their clients to address strategic change opportunities.

The intersections of experiential learning-based projects and deep learning come from student ownership of the learning process. They leverage a “double-loop learning” feedback cycle (Argyris, 1997) through 360-degree evaluations and regular coaching from course instructors and faculty mentors. Students complete three different projects in different teams and with different clients. They gain first-hand experience with several industries, different operations, a range of sustainability challenges, and client management styles. It is essential to recognize that faculty who serve as team mentors, instructors who play a coaching role, and clients who collaborate with students to frame and solve problems also benefit from action learning (Raelin, 2007). The outcomes assessment process aligns with AACSB expectations and includes longitudinal analysis of multiyear evaluation data from clients, faculty (who teach in all disciplines), course instructors, and peers.

Analysis of multiyear and multisource assessment information from each engagement drives continuous improvement in curriculum design, pedagogy, and client selection. These student engagements create internal value for program administrators, opportunities for faculty research, and measurable value for external clients. Based on demonstrated contributions to learning and retention as measured by soliciting information from exit interviews and the consulting experiences' value for career placement, the projects quickly became cornerstone experiences within the program.

Evidence of Success

In the first year of this program, Duquesne was ranked among the top schools in the Aspen Institute's new *Beyond Grey Pinstripes* rankings and has consistently been ranked among the top schools in multiple rankings. The MBA program is currently the No. 1 ranked program in the United States and ranked No. 4 globally by the Corporate Knights. Program courses and instructors have received University teaching awards, University assurance of learning awards, and been touted as exemplary by the AACSB review teams auditing the program. The curriculum's validity came early on with a Page Award for the best environmental curriculum in the United States from the University of South Carolina. More recently, the program's success has inspired some faculty across schools on campus to work together in developing and proposing an undergraduate major in sustainability, and sustainability is also included in the University's part-time MBA curriculum. Accolades for instructors include innovative teaching awards for courses from the Decision Sciences Institute, the Aspen Institute's Ideas Worth Teaching awards, and an innovative teaching award from the Production and Operations Management Society.

BARD: "HERE TO LEAD THE CHANGE"

It was 2009. Eban Goodstein looked at Hunter as they sipped Jack Daniels in a faux barbeque restaurant in Copenhagen and spoke what filled both their minds: "It's going to fail, isn't it?" December snow sifted down outside as delegates from the United Nations' climate summit trudged grimly by. The summit had been billed as the last chance for a "top-down" binding agreement on global warming pollution. Along with Eban's wife, Chungin, they had left the venue early in search of the closest thing they could find to comfort food. Rarely a wise choice when traveling, but the Jack tasted good.

“Yes, it is,” Hunter agreed. “But even if we’d won here, we’d still have to figure out how to cut emissions 80% in 30 years. We’re just going to have to work that much harder. So, how’s your new Bard Center for Environmental Studies going?”

“We really need your ideas—natural capitalism (Hawken, Lovins, & Lovins, 2013), reinvented capitalism—to become business as usual,” he mused.

Business has to figure out how to keep the lights on, set food on the table, get health care for everyone, in ways that radically cut pollution. We have to find ways to profit as we treat workers, suppliers and communities with justice and respect. I’m thinking of creating a joint degree for my policy students with a business school.

Chungin had been telling him to start his own sustainable business school, like the one Gifford and Libba Pinchot had founded outside of Seattle. But, until that moment in Copenhagen, it had seemed like an impossible lift.

“Let’s start one together,” Hunter grinned. She had done that, seven years before, in California, though it was fast going off the rails as its traditional board wanted to retreat to conventional accreditation. She knew it was possible, with a better partner, to do it right. And so was born the Bard MBA in Sustainability.

Now a decade old, the program was just named the number one green MBA by the Princeton Review of educational institutions for 2021. Bard also made the top ten list of best MBAs for non-profits alongside the programs at Vermont, Harvard, Stanford, Columbia, and Berkeley.

The mission of the Bard MBA in Sustainability is to

transform business towards a focus on equity, social justice, and environmental sustainability.

Every course—from operations to finance, strategy to leadership—teaches students to build for-profit and non-profit organizations that are in business to solve the critical challenges facing humanity. All entering students take Hunter’s Principles of Sustainable Management (PoSuM—named for Pogo, Walt Kelly’s little cartoon critter who said: “We have met the enemy and he is us” and “We are confronted by insurmountable opportunities”). Students learn the essential ecological literacy and social literacy that all business leaders should have. They learn the business case for sustainability. This differs from the triple-bottom-line concept which, while

appealing, is not a business reality. They called their approach “Integrated Bottom Line” business (Lovins, Wallis, Wijkman, & Fullerton, 2018). If the students are shown that behaving more responsibly toward people and planet enhances every aspect of shareholder value, it becomes core to the business—baked in, not bolted on. This approach is not a cost center but essential to regenerative value creation in a company.

Students learn how to do carbon accounting as well as traditional balance sheets. They understand the difference between the Global Accounting Reporting Initiative, the Sustainability Accounting Standards Board, and the International Integrated Accounting Committee Reporting Council. They know what the United Nations’ Sustainable Development Goals are and why they matter. They know how to use tools from scenario planning in Tableau. They know how to implement anti-racist practices in organizations. Just as importantly, they learn who they are as business leaders, working in pods in Leadership and Personal Development to clarify their values as they engage in the hard conversations.

Based in New York City, the Bard MBA offers a hybrid, low-residency structure. Classes meet in person one extended weekend each month and then online twice each week in the evenings. This allows students to work while in the full- or part-time programs. It also makes it possible to attend from anywhere in the United States. Students fly in once a month from Los Angeles, Houston, Denver, and Orlando, with carbon emissions offset by a carbon fee.

As Eban puts it, “Our New York City location has enabled us to assemble a world-class faculty [made up of] cutting-edge sustainable business practitioners. They are all implementing sustainable businesses in their day jobs, then bringing that insight into the classroom.” Many of the professors are academicians with coveted “terminal degrees,” but that is not why Bard hired them. They are practitioners first and good teachers second—PhDs first, then JDs and MBAs.

Term 1	Term 2
Principles of Sustainable Management	Data and Decisions
NYCLab I	NYCLab II
Personal Leadership Development	Strategy for Sustainability
Economics for Decision-Making	Operations and Supply Chains
Accounting and the Integrated Bottom Line	Finance for Sustainability

Term 3	Term 4
Leading Change in Organizations	Sustaining a Mission-Driven Organization
Entrepreneurship	Globalization and Emerging Markets
Stakeholders and Marketing	Employees and Organizations
Capstone	Capstone
Elective*	

Table 2: BARD MBA—Course Sequence for Full-Time Students
*Business and Sustainable Development, Impact Finance, Circular Value Chain Management

Sustainability Vision	Leadership	Business Foundations
Principles of Sustainable Management	Personal Leadership Development	Accounting and the Integrated Bottom Line
NYCLab I & II	Leading Change in Organizations	Finance for Sustainability
Sustaining a Mission-Driven Organization	Employees and Organizations	Economics for Decision-Making
Capstone	Entrepreneurship	Globalization and Emerging Markets
	Strategy for Sustainability	Operations and Supply Chains
		Data and Decisions
		Stakeholders and Marketing
		Elective*

Table 3: BARD MBA—Courses by Primary Curricular Vertical
*Options in Spring 2018: Business Pragmatics, Business and Sustainable Development, and Impact Finance

All students take the core courses (see Tables 2 and 3). As part of an emphasis on experiential education, all Bard students take a unique, year-long course in Sustainability Consulting called NYC Lab. Mentored by Laura Gitman, Managing Director at BSR, the course has students choose from applications submitted by major companies, government agencies, and NGOs who are seeking help meeting their sustainability challenges. They then diverge into concentrations, including Circular Value Chain Management and Impact Finance. In the final year, students complete an individually mentored capstone, working one-on-one with a faculty member to develop a leadership career trajectory. Bard also offers certificates in Sustainable

Management for those who took an MBA at a school that has not yet realized the sustainability imperative.

Bard MBA alums now work as entrepreneurs, sustainability consultants, and sustainability professionals within companies, and most commonly bring a mission focus to conventional business positions. The Bard MBA was created to drive the revolution in business, and its graduates are getting it done. At the end of the day, if the students are not working, changing the world at scale, and in a hurry, Bard would have failed in its mission. A 2020 survey of graduates found that 88% were working in jobs where their mission alignment was Great or Good.

Every December, Bard student teams face off against teams from Bangladesh, Palestine, Kazakhstan, Spain, and elsewhere to compete for entrepreneurship prizes in Disrupt to Sustain. Students use RebelBase, a tool that guides new entrepreneurs to create viable businesses that embed sustainability and disruption into everything they do. Built by Bard entrepreneurship professor Alejandro Crawford, it embeds the approaches used in teaching the competing classes (PoSuM, Accounting, Entrepreneurship, and Marketing). This allows teams from around the world to learn how to entrepreneur and launch the sorts of businesses that will bring greater equity and environmental justice to all peoples. Bard student teams have also won pitch competitions on transforming energy systems at Columbia and were even invited to Patagonia's headquarters in Ventura to present their winning entries in that company's competition.

In the spirit in which the Bard MBA was created, they're still figuring this out as they go. This year, the winners of Disrupt to Sustain will be featured in a "shark tank" for sustainability reality TV series launching in 2021. The program has always highlighted the social as well as the environmental side of sustainability, embedding anti-racist leadership skills training across the curriculum. The Bard MBA also integrates the principles of Regenerative Capitalism into courses.

The COVID-19 pandemic hit many academic programs hard. The Bard MBA was able to pivot rapidly to virtual classrooms given that it was already a hybrid program. Even in lockdown, applications increased. That said, Bard sure is looking forward to returning to its classrooms in New York City and even more to its twice-annual weekends at the beautiful Bard campus up the Hudson River, where they gather at a campfire at Chungin and Eban's house overlooking the Catskill Mountains. As the

students toast S'mores, Eban and Hunter retire to the shadows to sip whisky and remember that snowy night in Denmark when it seemed impossible to change the world. And they committed to doing it anyway.

VERMONT: GOING ALL IN— THE SUSTAINABLE INNOVATION MBA PROGRAM

When Sanjay Sharma joined the University of Vermont (UVM) as the dean of the business school in 2011, he had reinvention on his mind. The business school had a traditional MBA program, developed in the 1970s, which focused on mid-level managers at area companies and UVM employees looking to “get their ticket punched.” But by 2011, enrollment in the MBA program had declined significantly as the largest company in Burlington—IBM—had cut their headcount by more than half in the previous decade.

Facing declining enrollments and revenues, Sharma convened an ad hoc faculty committee to analyze the situation and explore options for the program. Ultimately, Sharma and the faculty committee decided that the best option was to shut the existing program down and develop a new and specialized MBA program focused on addressing the world's sustainability challenges—environment, climate change, poverty, and inequality. Such a program had the benefit of being distinctive and entirely consistent with the culture and ethics of the university and the State of Vermont. And while Sharma had to deal with some pushback at the university board level, he was ultimately successful in getting the green light to proceed. The faculty unanimously approved this recommendation in 2012, and the planning for the new program, which was initially named the Sustainable Entrepreneurship MBA (SEMBA), began.

Starting with a Clean Sheet

It was at this point that the dean first invited Stuart to get involved, and he leaped at the opportunity—he had been working for the past 20-plus years to bring environmental and sustainability concerns into MBA programs—at Michigan, University of North Carolina, and Cornell—but had succeeded only in developing centers, elective course sequences, and dual-degree programs without ever fundamentally changing the core DNA of the MBA programs themselves. The SEMBA

offered the chance for the first time to go beyond saddlebags and fundamentally alter the horse itself!

It was the opportunity he had been waiting for—the chance to start with a clean sheet of paper with the aim of creating a model for the purpose-driven MBA program of the 21st century, focused entirely on the knowledge, skills, and capabilities needed to harness the power of business for a sustainable world. Appointed as a part-time “adjunct” faculty member by the dean in 2013, Stuart started making regular visits to UVM to work with the faculty on this new enterprise.

Since the idea was to create a 1-year (12-month) program rather than the typical 2-year-with-summer internship MBA, they knew that the design of the curriculum would have to depart significantly from the norm. In fact, all the coursework would need to be completed in just *nine months* since the program was designed with an experiential learning project—the 8-credit Practicum Project—as its capstone experience in the final three months. And to break the mold even further given the constraints of the graduate school, the program needed to start in August and be finished one year later, in August. This meant that the MBA program would miss the usual MBA recruitment cycle that followed the conventional academic year calendar.

The 2013–2014 “design year” turned out to be an exercise in “building the bridge as you walked on it” since the existing business school faculty lacked the full spectrum of knowledge and experience needed to deliver on the vision for the program. Sharma, Stuart, and faculty took an inventory of current course offerings and titles, both within the business school and across the university, as a way to identify prospective faculty and courses. Ultimately, this included faculty from the Rubenstein School for the Environment, Community Development, and Applied Economics, the Engineering College, the Gund Institute for the Environment, and Vermont Law School.

People from the world of practice who had a history and/or passion for working with students were identified. These individuals were engaged in workshops about the vision for the program, and the founders worked with them to explore how their current teaching might be adapted to the program’s needs. If the typical 3-credit-hour course structure was kept, then the faculty’s tendency would be simply to rename their existing courses without significantly altering the course design.

The traditional mold had to be broken by organizing the curriculum around a larger number of intensive 1- and 2-credit courses, which would require faculty to innovate their course designs and also allow for more diversity in content. Ultimately, the result was four half-semester modules of courses—two in the fall and two in the winter/spring—with the experiential learning-based practicum as the capstone experience during the summer.

The faculty also realized that the original name of the program—the Sustainable Entrepreneurship MBA—was limiting potential student interest. The next year, they changed the name to the Sustainable *Innovation* MBA (SI-MBA) to better recognize that the program was focused on not only start-ups and ventures but also purpose-driven business and corporate transformation. This wider program scope was captured by the tag line “Transforming Today’s Business, Creating Tomorrow’s Ventures.” The rather audacious mission of the new SI-MBA program was stated thus:

To reinvent business education, and develop and launch a new generation of leaders who will transform capitalism to solve the world’s most pressing sustainability challenges.

Since its launch in August 2014, the program has steadily grown, both in applications and enrollment. This in contrast to the trajectory of “conventional” MBA programs which, for nearly a decade, have been experiencing declining applications—even among the top 20 “incumbent” players such as Harvard, Stanford, Kellogg, MIT, Cornell, Tuck, Wharton, and Michigan. Several “second tier” MBA programs have even been forced to shut down due to declining enrollments. The increasing applications for SI-MBA can be interpreted to mean that this is the beginning of a wave that will sweep business education in the years to come—the creative destruction of the shareholder primacy-based MBA from the 1980s.

SI-MBA has also gained growing recognition—the program received the 2015 Page Prize for Sustainability Issues in Business Curricula and has been ranked the No. 1 Best Green MBA Program in the United States by The Princeton Review since 2018. Corporate Knights also ranked SI-MBA No. 1 in the United States and No. 4 globally in their Better World MBA Rankings for 2019. Professor Chuck Schnitzlein also led a team of SI-MBA students to victory in the inaugural Wharton School Total Impact Portfolio Competition (TIPC) in 2019. Prospective students who align with the program’s focus and values pay even more attention to these rankings and achievements than to the conventional MBA rankings by Fortune, Business Week,

and US News and World Report, which place primary emphasis on how much more money students make after graduating.

Doing More in Less Time

Traditional full-time MBA programs take *two* years to complete, with the first year dedicated largely to “core” courses and the second year dedicated to electives in an area of functional specialization. So how does the SI-MBA program, which received AACSB accreditation in 2015, deliver the obligatory core MBA content while also developing the 21st-century knowledge, skills, tools, and capabilities needed to achieve sustainable innovation?

Since the SI-MBA program was designed from a clean sheet, this allowed the faculty to select the most critical sets of core knowledge, skills, and capabilities that every MBA graduate must know while also infusing these with the perspective of sustainable innovation. All SI-MBA students are required to complete a suite of self-paced online tutorials before they start in-person classes in late August. This brings all incoming students up to speed on basic concepts in accounting, statistics, economics, and finance, regardless of their prior education or business experience. This type of basic material often occupies an inordinate amount of time in the first-year core curriculum of traditional MBA programs.

SI-MBA then takes a critical perspective with regard to the traditional tools and techniques of business—functionally oriented courses not only ensure competence but also examine the *toxic side effects* of applying traditional business tools such as industry analysis, competitive strategy, marketing strategy, supply chain optimization, discounted cash flow, internal rate of return, and financial reporting. What do the traditional tools miss? What are the blind spots? What unintended negative consequences result from their uncritical application?

Next, the SI-MBA curriculum adds courses focused on the emerging knowledge, skills, and capabilities that will be crucial for creating the sustainable and inclusive businesses of tomorrow. These include content that would typically not be found in traditional MBA programs—World Challenges, the Sustainable Development Goals, Planetary Boundaries, Climate Change, Natural Capital, Circular Economy, Poverty and Inequality—as well as “next practice” tools and capabilities like materiality assessment, life cycle design, systems thinking, biomimicry, impact investing,

base-of-the-pyramid business models, deep dialogue, appreciative inquiry, and co-creation skills.

What makes SI-MBA truly bold is the integration of sustainability and innovation content throughout the entire program and not just in a few elective courses. In other words, sustainable innovation is core to *every* course taught in the program—and every course taught in the program is “core.” Indeed, there are *no* electives in SI-MBA. Students experience the entire curriculum—24 courses across four modules—together as a cohort, building strong bonds and gaining deep experience in teamwork and leadership in the process (Table 4). Courses are supplemented by “Toolkit Workshops” which provide intensive training in emerging tools and methods, along with visits by “Innovators in Residence”—practitioners who can speak to the challenges as well as opportunities of pursuing a career focused on purpose and sustainable innovation.

Because the SI-MBA was designed from scratch, the program was not beholden to any non-essential legacy content. Starting with a “clean sheet” enabled the faculty to include only that material and content that was relevant to the mission of transformational innovation. The SI-MBA design process was like zero-based budgeting—faculty had to justify why a particular course or topic should continue to exist rather than simply rubber-stamping the continuation of the status quo. This “all in” redesign approach enabled the program designers to *remove* the non-essential legacy content of a bygone business era to make room for the next-generation content that would be critical to a sustainable and inclusive future.

Fall Semester	Winter Semester
<div>Module 1</div> <ul style="list-style-type: none">• Business Strategy for a Sustainable World• Finance for Innovators I• Sustainable Brand Management• Teamwork for Sustained Innovation• Business Economics• Cost Models for the Transformational Enterprise	<div>Module 3</div> <ul style="list-style-type: none">• Sustainable Operations and Green Supply Chains• Data Analysis for Sustainable Business• Crafting the Entrepreneurial Business Model• Financing a Sustainable Venture• Driving Sustainable Change I• Sustainability Toolkit I

Fall Semester	Winter Semester
<div>Module 2</div> <ul style="list-style-type: none">• From CSR to Creating Shared Value• Business Sustainability and Public Policy• Marketing Decision Making Under Uncertainty• Leading Sustainable Innovation• Finance for Innovators II	<div>Module 4</div> <ul style="list-style-type: none">• Driving Sustainable Change II• Driving Innovation from the Base of the Pyramid• Innovation Strategy: From Idea to Market• Accounting for a Sustainable Enterprise• Systems Tools for Sustainability• Law as a Framework for Entrepreneurial Business• Sustainability Toolkit II
	Practicum Project

Table 4: University of Vermont—Course Sequence for Students

Over the past seven years, the Grossman School of Business has been fundamentally transformed. SI-MBA has helped attract several new faculty members—in all functional areas—with a personal interest and passion for environmental sustainability and social inclusion. There is now a critical mass of faculty with a common focus on reinventing business, allowing this perspective to spread and gradually transform even the undergraduate business program in the school. Sustainable innovation has now been literally baked into the culture of the Grossman School of Business.

LOOKING AHEAD

It is high time that we moved beyond saddlebag sustainability in business education. Given its centrality to our current predicament, business education represents a high-leverage opportunity if we are to transform capitalism and the management of global sustainability in the years ahead. We desperately need new models of business education appropriate to the challenges we face in the 21st century, which include toxic inequality, structural racism, ecosystem degradation, and a looming climate crisis. We need transformative change and revolutionary new business models, not just adjustments around the edges. We need a focus once

again on business for the greater good and the nurturing of business as a true calling and profession, and we need to emphasize the skills required to imagine, co-create, launch, and scale game-changing new ventures that simultaneously lift the poor and leapfrog to new and environmentally sustainable ways of living.

Change has not come quickly to business schools as the battle between paradigms continues. Bennis and O'Toole (2005) questioned whether business schools had lost their way nearly two decades ago, and we are still raising this question in 2021. Despite decades of societal criticism, some schools may not even be aware of the harm they have caused, and those that do are not reversing the harm they have inflicted. Some have only recently begun to address social, environmental, and ethical issues in their coursework, and often do so outside the core curriculum (Doh & Tashman, 2012; Sharma & Hart, 2014). The three “tip of the spear” pioneering programs described in this article help create new markets and value networks that eventually might serve to disrupt the existing business school model, displacing incumbent programs and curricula. Doing so will enable institutional legitimacy and reputation, and gain momentum and scale with 21st-century business programs on a path toward a more sustainable and just society.

The years ahead represent a continuing struggle for the soul of business schools. Business schools currently produce functional specialists. Business recruiters want problem solvers (Graduate Management Admission Council, 2019). By integrating more sustainability in management education and contemporary pedagogy, problem solvers will become *change-makers* with interdisciplinary competencies to manage financial, human, environmental, and informational resources toward the creation of shared value decision making (Corazza, Cisi, & Scagnelli, 2018; Porter & Kramer, 2019).

As businesses of the future meet the curriculum of the future, the authors welcome others to share their stories of innovation in business education—how they have overcome obstacles and achieved success. Like Elon Musk providing Tesla's technology in the public domain, the authors hope that the accounts in this article can help accelerate the transformation of business education as more schools realize that they must either change or die.

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THE SUSTAINABILITY MINDSET INDICATOR

A Personal Development Tool

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ABSTRACT

This paper addresses the problem of assessing, measuring, and further developing a Sustainability Mindset. This mindset is a way of thinking and being that predisposes individuals to act for the good of planet and people. It is a complex construct, developed via the path of an ecological worldview, a systems perspective, and aspects pertaining to emotional and spiritual intelligence. It is aimed at guiding individuals toward living and promoting a more sustainable life, which is crucial for humanity in the 21st century. As educators have been intentionally developing the Sustainability Mindset, it became important to find ways to assess and measure it.

The Sustainability Mindset Indicator (SMI) was designed to address this problem. This paper describes the method followed to develop the SMI: a) anchored in theories of psychology and pedagogy, objectives of the instrument and constructs of measurement were defined; b) a questionnaire was designed; and c) 320 personalized feedback reports were created. The questionnaire uses Johnson's (1992) framework of polarities and stages of human development (Kegan, 1994), whereas the reports follow the directions of Positive Psychology (Seligman & Csikszentmihalyi, 2014) and Appreciative Inquiry (Cooperrider, Whitney, & Stavros, 2008). Three validation phases were employed to confirm phrasing, improve comprehension and accurateness, and prepare for pilot studies.

The SMI represents an important addition to other scales available in the literature. It focuses on personal development and transformative learning to facilitate mindset change in individuals as well as in educational or coaching settings, and can be used to tailor interventions and assess the impacts thereof.

KEYWORDS

sustainability mindset; indicator; personal development;
transformative learning; human development stages

INTRODUCTION

The lack of understanding about the nature of mindsets and their development is constraining upshift movements. (McEwen & Schmidt, 2007: 29)

This paper addresses the problem of assessing, measuring, and developing a mindset for sustainability, and describes the creation of the Sustainability Mindset Indicator (SMI). The SMI is the latest milestone in a journey that started with a new construct, the Sustainability Mindset, followed by the definition of a framework of twelve principles that describe it, which then led the authors to develop an instrument to assess such a mindset. The authors are sharing their ongoing journey from the conception of creating this instrument to readying it for pilot studies.

In 2005, one of the authors started an exploratory qualitative study to identify the motivations of business leaders who decided to change their organization to improve their social and environmental footprint (Rimanoczy, 2010). From the perspective of Appreciative Inquiry (Cooperrider, Whitney, & Stavros, 2008) and Positive Psychology (Seligman & Csikszentmihalyi, 2014), the intention was to learn from successful cases. The hope was that the study would provide educators with input regarding aspects they could integrate into their courses to develop, intentionally, socially and environmentally responsible individuals. The study explored the role information played in the leaders' behavioral change, how they thought and analyzed information, and what prompted them to take unusual steps in a business context.

The findings of the study listed a number of developable aspects, describing for the first time what a mindset for sustainability could look like. The new concept of a Sustainability Mindset is thus defined as a way of thinking and being which results from a broad understanding of the ecosystem, social sensitivity, and an introspective focus on personal values and the higher self. It finds its expression in actions for the greater good (Kassel, Rimanoczy, & Mitchell, 2018). The elements identified were

grouped into four content areas: ecological worldview, systems perspective, and emotional and spiritual intelligence (see Figure 1).



Figure 1: The Four Content Areas of the Sustainability Mindset

An international community of academics was organized with the common interest of developing a Sustainability Mindset, researching it, and exchanging pedagogical approaches and results (Ivanova & Rimanoczy, 2021). This diverse network of educators multiplied studies and research on the impact of addressing the mindset (Indrajaya, 2018), the efficacy of different pedagogical tools (Onwuegbuzie & Ugwuanyi, 2018; Schutel, Becker, & Audino, 2018); the direct relationship between developing a sustainability mindset and entrepreneurial initiatives (Akolgo-Azupogo, Bardy, & Rubens, 2018), and on other actions related to the Sustainable Development Goals (SDGs) (Brugmann, Côté, Postma, Shaw, Pal, & Robinson, 2019).

The Mindset is Complex

We know so many things but we don't know ourselves. (Meister Eckhart)¹

What became increasingly clear was that education for sustainability could be approached in two ways. One is from the perspective of knowledge, competencies, and skills, preparing individuals with information, models, benchmarks, and training

¹<https://www.goodreads.com/quotes/441929-a-human-being-has-so-many-skins-inside-covering-the>

to operate in a complex world. This is observable, and we will call it external, adapting the All Quadrants All Levels (AQAL) model (Wilber, 2007; see Figure 2, right side). The external perspective focuses on enriching and expanding the knowledge base and developing individual mastery in subject areas. Individuals learn and become more proficient while staying within their way of seeing the world.

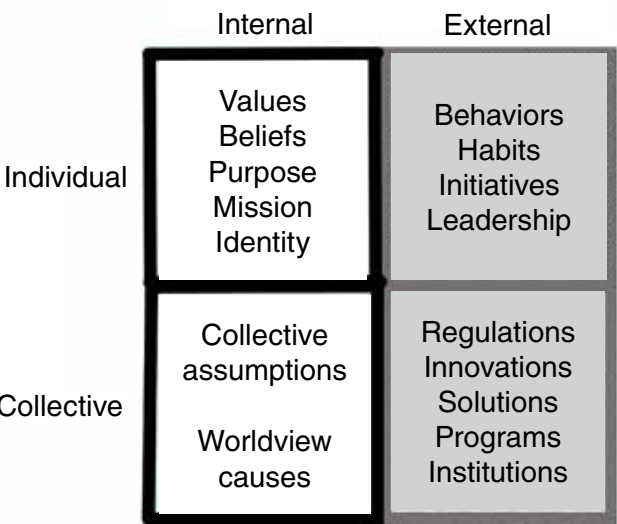


Figure 2: External and Internal Focus of the SM Education (adapted from the AQAL Wilber Integral Framework; see Wilber, 2007)

The other way of approaching education for sustainability is internal, focusing on individual values, beliefs, assumptions, anchors of identity, sense of purpose and mission, and thinking processes, as well as on collective paradigms and worldviews (see Figure 2, left side). The internal perspective addresses the foundation underlying our actions and decisions, our mindset. Individuals learn to notice the lens through which they see the world and are able to revise it, explore the up- and downsides of it, and identify alternatives. This way of approaching education for sustainability is developmental as it prompts transformative learning (Kegan, 1994; Mezirow, 1997), also called “vertical development” (Cook-Greuter, 2004; Sharma, 2018). Individuals move to broader ways of making meaning as they expand their consciousness (Torbert et al., 2004; Wilber, 2007).

To operationalize the various elements of the Sustainability Mindset and help translate them into learning goals, they were formulated as Sustainability

Mindset Principles (SMP) (see Table 1) (Rimanoczy, 2020). The twelve SMPs provide scaffolding for educators around which to design learning interventions that can accelerate the mindset shift.

PRINCIPLES IN CONTENT AREA	STATEMENT	CONSTRUCT
ECOLOGICAL WORLDVIEW		
1. Ecoliteracy	Understanding the state of the planet allows increasingly full awareness of the challenges involved, the complexity of their interrelation, and how we feel about them.	Sensitivity and emotional connection to the broad and humanistic picture of the state of the planet, including environmental and social challenges.
2. My Contribution	By identifying the ways in which we are contributing to the problems, we have a chance to act.	Being aware of and understanding the way in which we contribute to the problems.
SYSTEMS PERSPECTIVE		
3. Long-term Thinking	Considering the long-term when analyzing situations and making decisions creates positive impact on global sustainability.	Realizing the importance of considering the long-term impacts of our decisions and behaviors.
4. Both-and Thinking	Both-and thinking allows for understanding paradoxes and calls for creative solutions that are inclusive of all stakeholders. These types of solutions are key for the health of the ecosystem and create fair and peaceful societies.	Being aware of the importance of and practicing inclusion, being sensitive, appreciating diversity, showing interest in other perspectives, and the ability to put oneself in other people's shoes.
5. Cyclical Flow	There are no linear processes in Nature: all flow in cycles of birth, growth, death, and rebirth. Many aspects of the human-created unsustainability of the planet are a result of the misconception that we are not governed by this law of Nature.	Seeing oneself as governed by the laws of Nature. Accepting impermanence and balancing the capacity to analyze and plan with the understanding of natural cycles.

PRINCIPLES IN CONTENT AREA	STATEMENT	CONSTRUCT
6. Interconnectedness	When considering both diversity and interconnectedness, our decisions and actions are more inclusive and contribute to the sustainability of the whole.	Acting with the understanding that we are all different yet connected parts of a larger whole.
EMOTIONAL INTELLIGENCE		
7. Creative Innovation	When we neglect the non-rational wisdom we have in us, our solutions are missing critical information, have poor quality, and may create negative impacts on the ecosystem and society.	Incorporating non-rational information—intuitive knowing, non-verbal information, creativity and imagination to experiment, and to complement rational thinking.
8. Reflection	Speed and efficiency create automated actions, which may result in unintended consequences. Reflective practices help to pause, to ponder the situation and its implications before jumping into action.	Notice of own pace; practice pausing and pondering. Slowing down.
9. Self-Awareness	When we explore our personal values, beliefs, assumptions, and motivations, we gain greater control over our own actions and see new and alternative behaviors.	Scrutinizing the anchors of our identity, the values of our culture that shape our personal automatic behaviors. Exploring alternatives to address cognitive dissonance.
SPIRITUAL INTELLIGENCE		
10. Oneness with Nature	Understanding that we are one with Nature, i.e., a species within species, and that all Nature is in us, a powerful spiritual experience that can shape behaviors, leading to a more harmonious relationship with each other and all beings.	Experiencing a sense of oneness with Nature; having a sensorial, intuitive understanding. Redefining the personal relationship with Nature. A spiritual connection with all that is, even cosmo-centric.

PRINCIPLES IN CONTENT AREA	STATEMENT	CONSTRUCT
11. Purpose	Defining our purpose provides an unconscious compass, and when it is grounded in values of our higher self, we actively shape a better world.	Being fully present. Expanded consciousness and quiet alertness. Awakened connection with all that is, leading to compassion and empathy; a predisposition to social and environmental actions. Centered on being. Sense of peace.
12. Mindfulness	Mindfulness enhances awareness and compassion and predisposes to social and environmental actions.	Seeking or having found a purpose; connected with the greater good.

Table 1: Definition of the Sustainability Mindset Principles and Their Respective Constructs (SMPs)

What sort of mindset has this malaise? Why do we think what we do? (Stephen Sterling [2009a: 129])

Throughout the years, scholars have been asking for a way to measure the impact of developing a Sustainability Mindset. This prompted the authors to design the SMI, an instrument to map and profile where an individual is on their personal journey toward a Sustainability Mindset. The purpose of the SMI is neither the measurement nor the assignment of a score, like an Intelligence Quotient (IQ) that assesses human intelligence based on standardized tests, but the expansion of awareness of self and the personal mindset, as well as to prompt broader consciousness. The SMI was thus created as a personal development tool, providing questions and guidance for the individual and the educator/coach to support the shift toward a more encompassing and conscious mindset. Specifically, the SMI consists of a questionnaire of bipolar statements that provides, upon completion, a personalized, developmental feedback report.

The authors present a literature review, followed by a discussion of the theoretical frameworks used in the construction of the SMI. We further present the validation process of the instrument and a discussion of contributions to its current state. The paper presents applications, and finalizes with limitations, next steps, and opportunities for future research.

LITERATURE REVIEW

The search for leverage points to the impact of the mindset that has been present in many disciplines: systems thinking (Capra, 2007); quantum physics (Tsao & Laszlo, 2019); economics (Pirson, 2017a, 2017b; Werner & Stoner, 2018); human development stages (Hochachka, 2019; O'Brien & Hochachka, 2010); positive psychology (Cooperrider & Fry, 2012); spirituality and spiritual leadership (Dhiman & Marques, 2016; Fry & Slocum, 2008; Zsolnai, 2015); entrepreneurship and innovation (Indrajaya, 2018; Schaltegger, Hansen, & Lüdeke-Freund, 2016); consciousness (Eaton, Hughes, & MacGregor, 2016; Wamsler & Brink, 2018); transformative learning (Brunnquell, Brunstein, & Jaime, 2015; Sterling, 2001, 2009b); aboriginal wisdom (Burns, 2015; Wall & Masayesva, 2004); ethics (Biedenweg, Monroe, & Oxarart, 2013); art as pedagogy (Antonacopoulou, Ropo, & Taylor, 2019; Purg & Sutherland, 2017; Yang, Ivanova, & Hufnagel, 2019) and Corporate Social Responsibility (CSR) competency models (Muff, Liechti, & Dyllick, 2020; Wiek, Withycombe, & Redman, 2011). This wide spectrum of disciplines seeking frameworks and approaches to effect behavioral change is an indicator of the interest and urgency in finding new educational and developmental outcomes.

Some scholars focused on the thinking processes (systems thinking); others, on the paradigms at the foundation of our problems, the psychological stages of making meaning, and their connections to our sustainability behaviors. Some looked at the characteristics of entrepreneurial and spiritual leaders, and others at the pedagogical approaches to effect change. All these paths approach the cornerstone of the mindset, which has the power of leveraging transformation in how we act.

Addressing the mindset, therefore, implies critical reflection on assumptions and mental models (Senge, Scharmer, Jaworski, & Flowers, 2004; Sterling, 2007). When we go beyond content (what) and processes (how), we address the why, which can lead to transformative learning (Brunnquell et al., 2015; Mezirow, 1997). The SMPs operate at the premise level, addressing the mental maps and models, the feelings and values, and the anchors of our identity that shape our thinking and actions.

This is the approach taken by the Personal Sustainability framework (Parodi, 2011; Parodi & Tamm, 2018), which focuses on the individual (see Figure 2). The holistic approach of the SMPs— which includes cognitive, environmental, and personal/spiritual aspects—is also found in the movements of ecopsychology (Fisher,

2012), deep ecology (Cheney, 1987), human ecology (Bubolz & Sontag, 2009), and eco-feminism (Warren, 1993).

Literature on Measuring and Assessing

Measuring and assessing human behaviors has been at the center of attention for a considerable amount of time and has various goals: to inform research; predict, diagnose, and increase self-awareness, and guide educators/counselors/coaches. Focus areas have been, among others, personality traits, preferences, maturity levels, making meaning, emotional intelligence, and levels of moral development.

Linked to our concept of mindset for sustainability, an early instrument to measure the new environmental paradigm (NEP) was created in the 1970s (Dunlap & Van Liere, 1978) and revised in 2000 (Dunlap, Van Liere, Mertig, & Jones, 2000). It uses the concepts of limits to growth, balance of nature, and anti-anthropocentrism to measure acceptance of a “new environmental paradigm.” The twelve-item scale has predictive value; however, it does not address the relationship between acceptance of the paradigm and behaviors. Also, around that time, Maloney, Ward, & Braucht (1975) developed the Ecological Attitudes and Knowledge scale to explore what individuals are willing to do, what they actually do, how they feel, and their knowledge.

More recently, the attention on planetary un-sustainability has prompted the emergence of instruments linked to sustainability behaviors. The Ecological Intelligence Scale (EIS) (Akkuzu, 2016) is rooted in consumption behaviors, using ninety-five items to measure ecological consciousness, the hidden impact of products, ecological sensitivity, and knowledge sharing. The purpose of the EIS is to study demographic and gender variations and relationships between ecoliteracy, concerns, and attitudes. Another ecological intelligence instrument (Okur-Berberoglu, 2020) provides a twelve-item scale from a holistic perspective, social intelligence, and the economy. Other measurements are the Connectedness to Nature Scale (CNS)—fourteen items that assess environmental concerns and behaviors (Mayer & Frantz, 2004); the Inclusion in Nature Self Scale (INS) that assesses connectedness and environmental behaviors, biospheric concerns, and altruistic considerations (Schultz, 2001); and the Environmental Identity Scale (EID), which measures the perception of human superiority to plants and animals (Clayton, 2003).

The Ecocentric and Anthropocentric Attitudes toward the Environment Scale (EAATE) is a thirty-three item scale organized into Ecocentric, Anthropocentric, and Environmental Apathy sub-scales and is used for scholarly purposes (Thompson & Barton, 1994); the Nature Relatedness Scale (NR) explores the affective, cognitive, and experiential aspects of the connection to nature (Nisbet, Zelenski, & Murphy, 2009). Motivations toward ecological behaviors are studied through the MTES (Motivations Toward Environment Scale) (Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1998) with the aim of finding ways to encourage such behaviors.

While the purpose of these scales is mainly to further scholarly understanding and modeling, another branch of study directs attention toward the measurement of sustainability competencies, aiming at a population of students/educators, coaches, and leadership development professionals. Redman, Wiek, and Barth (2021) reviewed seventy-five tools being used to assess sustainability competencies (interpersonal competencies and systems-, future-, values-, and strategic thinking; see Wiek et al., 2011) clustered into categories of self-perception, observed competencies, and test-based approaches. The authors analyzed the strengths and weaknesses of each tool, and suggested improvements.

The Competencies Assessment for Responsible Leadership (CARL) is a questionnaire for assessing responsible leadership competencies organized around the knowledge, doing, and being dimensions (Muff et al., 2020). Subjects receive a brief automated report, including their scores, areas of potential development, and a list of readings and resources.

Looking at internal aspects that contribute to a sustainability mindset, the questionnaire assesses spiritual intelligence through twenty-one competencies (SQ21; see Wigglesworth, 2014) and addresses factors that are partially reflected in the SMPs, such as self-awareness, particularly awareness of one's own worldview (SMP 9), life purpose (SMP 11), values hierarchy (SMP 9), complexity of thought (SMP 4), and awareness of ego self/higher self (SMP 12). The SQ21 also addresses awareness of interconnectedness (SMP 6), of worldviews of others and transcendent oneness (SMP 10), and alignment with the flow of life (SMP 5).

Table 2 summarizes the focus and application of the discussed instruments.

INSTRUMENT	AUTHORS	FOCUS	APPLICATION
NEP—New Environmental Paradigm	Dunlap & Van Liere, 1978; Dunlap et al., 2000	Acceptance of new environmental paradigm: limits to growth, balance with nature, and anti-anthropocentrism	Prediction of acceptance
EIS—Ecological Identity Scale	Akkuzu, 2016	Consumption behaviors	To study demographic variations
Ecological Intelligence	Okur-Berberoglu, 2020	Holistic perspective, social intelligence, and economy	Predictive, scholarly research
CNS—Connectedness with Nature Scale	Mayer & Frantz, 2004	Environmental concerns and behaviors	Predictive, scholarly research
INS—Inclusion in Nature Self Scale	Schultz, 2001	Connectedness and environmental behaviors; biospheric concerns and altruistic considerations	Predictive, scholarly research
EID—Environmental Identity Scale	Clayton, 2003	Perception of human superiority to plants and animals	Predictive, scholarly research
EAATE—Ecocentric and Anthropocentric Attitudes toward the Environment Scale	Thompson & Barton, 1994	Ecocentric, anthropocentric, and environmental apathy	Predictive, scholarly research
Ecological Attitudes and Knowledge	Maloney et al., 1975	Relationship between knowledge, behaviors, and feelings	Predictive, scholarly research
NR—Nature Relatedness Scale	Nisbet et al., 2009	Affective, cognitive, and experiential aspects of the connection to Nature	Research of human/nature relationships
MTES—Motivations Toward Ecology Scale	Pelletier et al., 1998	Motivations toward ecological behaviors	Predictive, for research, and how to encourage ecological behaviors

INSTRUMENT	AUTHORS	FOCUS	APPLICATION
Sustainability Competencies Review	Redman et al., 2021	Review of 75 tools organized into self-perception, observed competencies, and test-based approaches. Pros and cons of each tool.	Assessment of different competencies in educational contexts
CARL—Competencies Assessment of Responsible Leadership	Muff et al., 2020	Responsible leadership competencies from the perspective of Knowledge, Being, and Doing	Assessment and development
SQ21	Wigglesworth, 2014	21 Competencies for Spiritual Intelligence	Assessment and development
SCTi-MAP	Cook-Greuter, 2004	Leadership Maturity levels	Assessment and development

Table 2: Instruments for measuring aspects related to the Sustainability Mindset, sorted by application, as identified in the literature review

The number and variety of instruments is evidence of the underlying thought that the ability to measure individual knowledge, behaviors, and emotions will ultimately help in facilitating change toward a more sustainable way of living. The SMI here adds to this effort as it evaluates all three perspectives—cognitive, behavioral, and affective—similar to the approach by Maloney et al. (1975); however, rather than focusing on being a predictive tool, the SMI provides holistic guidance for individuals and their educators in their journey toward a sustainability mindset. Such an approach appears to be thus far lacking in the currently available instruments.

THEORETICAL FRAMEWORK OF SMI CONSTRUCTION

Goals and Objectives of the SMI

The goals of the SMI are to provide a) new knowledge, b) guidance toward self-mastery, and c) opportunities for personal growth. These goals are further developed into objectives folded into the design of the questionnaire, personalized feedback reports, or both. Table 3a summarizes these objectives for individuals and educators. Table 3b presents where the objectives were addressed.

OBJECTIVES FOR THE STUDENT		
KNOWLEDGE	SELF-MASTERY	DEVELOPMENT
Open possibilities of alternative worldviews	Expand consciousness of self and others	Prompt “intentional change”
Introduce new angles that previously have not been considered	Expand self-awareness (values, hierarchy of values, contradictions between thinking, doing, being)	Prompt reflection via questions, suggestions
Provide language for aspects that the individual might not clearly grasp or describe	Prompt consideration of the “ideal self” versus the actual self, the ego self, and the higher self	Map and profile the current place in the personal journey
Develop awareness of the sustainability mindset	Challenge current assumptions	Offer resources
OBJECTIVES FOR THE EDUCATOR		
<ul style="list-style-type: none">• Offer a map showing where the individual/group is, with strong and weak areas• Provide suggestions, guides, and resources to plan and implement activities• Evaluate the impact of training and courses developing the SM• Allow for pre-post studies, longitudinal research, comparative studies, and demographic variations		

Table 3a: Objectives of the SMI for the Student and the Educator

OBJECTIVES	Addressed in questionnaire	Addressed in report
1) Open possibilities of alternative worldviews	x	x
2) Introduce new angles	x	x
3) Provide language	x	x
4) Expand consciousness of self and others	x	x
5) Expand self-awareness	x	x
6) Prompt consideration of “ideal self” versus the actual self	x	
7) Prompt “intentional change”	x	x
8) Challenge current assumptions	x	x
9) Prompt reflection	x	x
10) Develop awareness of the sustainability mindset		x
11) Map and profile the current place in the personal journey		x
12) Offer resources		x

Table 3b: Objectives of the SMI Addressed in Questionnaire, Report, or Both

Design Frameworks

The authors utilized several frameworks of psychology and pedagogy in establishing the criteria for the design of the SMI to meet the objectives outlined in Table 3a.

1) Open possibilities of alternative worldviews; 2) Introduce new angles and perspectives. Argyris (1976) describes the importance of our mental models as they affect how we see ourselves and others, interpret information, create action strategies, and navigate work and life. He conceptualizes profound inner transformation through his Model II, where an individual develops the ability to deal with complexity (SMP 4) and change (SMP 5), becomes more flexible (SMP 7) and inclusive (SMP 4), expands the thinking perspective to the long-term (SMP 3), becomes less self-defensive (SMP 9), and reduces automatic behaviors (SMP 8 and 9). Mental models, personal mastery, and systems thinking are also three of the five disciplines of a learning organization that address the individual level (Senge, 2006).

These conceptual frameworks were connected with the perspective of human development stages, which describes making meaning and interpreting the world in progressively wider scopes of consciousness and caring (Kegan, 1994; Loevinger, 1976; Torbert et al., 2004; Wilber, 2007). The levels of maturity have been associated with more prosocial (Bar-Tal, 1976) and pro-environmental mindsets (Brown, 2005; Hochachka, 2005; McEwen & Schmidt, 2007; Mirvis & Googins, 2006; O'Brien & Hochachka, 2010; Waddock, 2006; Willard, 2005). As a result of connecting these frameworks, the instrument was designed to represent the pre- and post-conventional stages of making meaning. This meant to include statements that would allow a clear identification with those major ways of seeing the world.

Introducing new angles and perspectives was also addressed in the Personalized Reports (PR) following development-oriented approaches (Cook-Greuter, 2004; McEwen & Schmidt, 2007; O'Brien & Hochachka, 2010; Sharma, 2018) by considering the possible developmental stage of the individual and providing appreciative questions to address the downsides of that perspective.

3) Provide language for aspects that the individual might not clearly grasp or describe. Sterling offers one of the most complete descriptions of essentials for developing a mindset and paradigmatic shift (Sterling, 2004, 2007, 2010; Jones, Selby, & Sterling,

2010). In his critique of the educational systems and pedagogies for sustainability, he highlights the importance of understanding life and natural cycles, long-term thinking, both-and thinking, and interconnectedness (SMP 3 to 6) while focusing on ecoliteracy, particularly exploring the values expressed in unsustainable decisions and our personal values (SMP 1 and 2). He further recommends exploring the habits of mind, the values of our civilization, and how individuals adopt a shared paradigm (SMP 8 and 9). He does not include emotions and feelings, or aspects like purpose, a sense of oneness, and mindfulness (SMP 10 to 12).

Other authors have studied the correlation between feelings/emotions and spiritual aspects with regard to prosocial and pro-environmental behaviors (Einolf, 2013; Garfield, Drwecki, Moore, Kortenkamp, & Gracz, 2014; Wamsler & Brink, 2018). The inclusion of these aspects became of particular importance for the SMI since the authors saw a way of providing subjects with new language, with the ability to name and recognize aspects they may have experienced but not discussed in academic or private settings (except in religious institutions).

4) Expand consciousness of self and others; 5) Expand self-awareness (values, hierarchy of values, contradictions between thinking, doing, being). The Leadership Development Profile-MAP (Cook-Greuter, 2004) is a personal development tool that assesses an individual's maturity level in the context of leadership. It is a modification of the Washington University Sentence Completion Test by Loevinger (1976), an ego-development assessment designed for clinical use. The items of the SMI were designed while paying attention to the hierarchy of values in different stages of the individual's development, particularly observing that the choice of words portrayed respect and value for the current developmental phase.

The conceptual framework of polarities (Johnson, 1992) offers an important distinction between problems to be solved and polarities to be managed. Problems need a resolution in time. Polarities are ongoing—the options are interconnected, like in the dilemma of being independent or of being sensitive to other stakeholders' opinions. Each pole has up- and downsides, and optimal management requires minimizing the downsides of both poles while keeping the upsides. This model became an essential criterion for the SMI as the authors sought to balance both poles in the questionnaire. For example:

- a. Focusing on the short-term is a way to speed up and bring useful certainty to decisions as the decision-makers do not have time to think of the long-term.
- b. It takes some imagination to visualize what the long-term impacts might be, and it slows the decision process, but it is very important.

Option a) states the upsides of short-term thinking and option b) states the down- and upsides of long-term thinking.

This approach has two goals: to facilitate the identification of the subject with one statement and to introduce an alternative that may not sound so bad, therefore opening the path for expanding consciousness. Choosing one of the statements is difficult when the individual has good management of the polarities, with neither predominating but being contextually applied. The instructions ask the subject who finds himself or herself represented by both to ponder if one fits slightly better than the other. This provides a report that considers the transition the subject may be in. The SMI also provides the option of “neither.” The statements are selected to include the most common paradigm and the aspects less present in the common paradigm (e.g., short-term efficiency is valued more frequently than long-term efficiency).

A literature review in the fields of CSR, management education, and ethics found common patterns in the categories of thinking/knowing, acting, and being (Kassel & Rimanoczy, 2018: 9). These categories are considered important for behavioral instruments, and therefore also when assessing sustainability motivations and behaviors. The authors used the categories of Cognitive (knowing), Behavioral (acting), and Affective (feeling) in the design of the SMI. Festinger’s (1962) theory of cognitive dissonance was also considered as the discordance between a subject’s knowledge, values, and behaviors was anticipated as a potential motivator for exploring behavioral alternatives (Harmon-Jones & Harmon-Jones, 2007).

Expansion of self-awareness (values; hierarchy of values; contradictions between thinking, doing, and being) was also met in the Personalized Report via questions and phrases that addressed the importance of one’s values, purpose, sense of oneness, and pace of life. These followed the conceptual frameworks of Spiritual Leadership (Fry, 2009), existential questions (Neal, 2001), hierarchy of values (Indrajaya, 2020), and vertical development (Sharma, 2018).

6) *Prompt consideration of the “ideal self” versus the actual self, the ego self, and the higher self*; 7) *Prompt intentional change*. An important contribution to the conceptualization of the SMI was Intentional Change Theory (ICT; see Boyatzis & Akrivou, 2006). The ICT describes the role of the ideal self, an image of a desired future, of hope, self-efficacy, optimism, and a positive sense of one’s identity based on strengths, traits, and dispositions. Inviting subjects to consider the ideal self creates positive emotions which can move the individual toward tipping points in a discontinuous process of transformation. “Who do you want to be?” is a question that the ICT authors think is not sufficiently asked. They suggest that individuals can be inspired to set their own personal development agendas, something the SMI invites to do through prompts and questions in the Personalized Report. Boyatzis and Akrivou (2006) point at the importance of “attractors,” which are positive emotional forces that destabilize and move the individual toward a better version of self. The authors used this conceptual framework in the formulation of the bipolar statements where one option may be “good” but the other may be “better” (if the subject is ready to see it). An additional benefit of this framework is that “dreams inspire others” (Boyatzis & Akrivou, 2006: 12), meaning that individuals who shape a positive image of their ideal selves become fractals with multiplying impact potential. The authors loved thinking of the SMI as an instrument for multiplying fractals of change!

8) *Challenge current assumptions*; 9) *Prompt reflection*. The Competency Assessment for Responsible Leadership (CARL; see Muff et al., 2020) uses time reaction as a criterion to minimize the social desirability factor in responses. When a subject takes more than a few seconds, the answer is automatically nullified. The authors discussed the purpose and context of the SMI: a personal developmental experience by itself that has the possibility to trigger new thoughts just through reading about unusual/unexpected statements and having to make a choice. The social desirability factor as well as subjective self-perception were considered irrelevant since the SMI is not meant to establish what an individual “objectively” is or feels; rather, it provides a mirror that reflects the subject and prompts new thinking. Being slow and thoughtful when pondering the options to choose from is actually welcome since it launches by itself a developmental process.

Mezirow (1997) explains that when one experiences a disorienting dilemma (in the SMI, this would be in the cognitive dissonance prompted by one’s awareness of

one's contradictions between values, feelings, and behaviors), one is on the path of profound transformative learning. Nowack (2017) indicates that self-awareness has to be complemented with social support, which the SMI provides through guides and special reports for the educator/coach. Lasting change requires three steps (Nowack, 2017): enlighten (SMI PR feedback information triggers the identification of strengths, addressing the ideal versus the real self), encourage (reports prompt goal setting, skill building, self-efficacy, and motivation), and enable (reports for individuals and educators/coaches provide resources, network possibilities for social support, and evaluation of progress).

Challenging assumptions and prompting reflection were implemented in the PR through thought-provoking questions (Sterling, 2010; Jones et al., 2010) which were proven to be more powerful than suggestions and tools (Adams, 2016).

10) Developing awareness of the sustainability mindset was planned into the PR via informational paragraphs, pointing at the importance of ecoliteracy for broadening one's understanding (Orr, 2006; Sterling, 2009b; Kumar, 2013) as well as at the theories of the Ideal Self and Intentional Change (Boyatzis & Akrivou, 2006) (i.e., "You may not have noticed that much of our un-sustainability is linked to how we think and make decisions" [quoted from the PR]).

11) Mapping and profiling the current place in the personal journey was covered in the PR following the models of Intentional Change (Boyatzis & Akrivou, 2006) and human development stages (Brown, 2005; Cook-Greuter, 2004; McEwen & Schmidt, 2007; O'Brien & Hochachka, 2010) by avoiding the use of scores, numbers, or levels and instead depicting the results graphically in a sunburst-chart (see Figure 3 and the explanation in the section on SMI development), with sections of different sizes suggesting that the "ideal" graph balances all the aspects.

Finally, the PRs are carefully worded following the Appreciative Inquiry (Cooperrider et al., 2008) and Positive Psychology (Seligman & Csikszentmihalyi, 2014) frameworks, seeking to convey an uplifting, caring, and sensitive tone through every line. According to theories of planned behavior (Ajzen, 1991), self-efficacy (Bandura, 1989), and Goal Setting Theory (Locke & Latham, 2002), having a vision of what is possible is of utmost value. Understanding the disadvantages of behavioral change is a predictor of sustained behavior, and for this the PR mentions how it will be difficult but worth the effort.

Report for Educators

The objectives with respect to educators are addressed in the Educator Report (EP), which features an overall, collective map of where the group is. The individual PR will not be shared; however, subjects are free to share these with their coach/educator if so desired. The Educators’ version of the report will provide additional resources, suggestions, and networking links to expand the circle of social support among colleagues. The EPs also offer the possibility to draw comparisons between pre- and post-course results, between results in different content areas, across different cohorts, and, furthermore, will allow the studying of demographics.

SMI DEVELOPMENT AND VALIDATION

Based on the theoretical frameworks discussed in the previous section, a construct for measurement was defined for each SMP (see Table 1). The next step was to identify the narrative of the mainstream paradigm and the aspects that could be developed for a Sustainability Mindset. The SMPs imply that we have an underdeveloped aspect-polarity and a significant preference for another, i.e., a preference for short-term, preference for individualistic thinking, preference for materialistic satisfaction, preference for business focus, and preference for rational thinking (see Table 4). These preferences are linked to the Dominant Social Paradigm (Dunlap & Van Liere, 1978) and to a subject’s developmental stage. The SMI’s intent is to open opportunities to rethink, challenge, and revisit existing beliefs and values.

PRINCIPLE	ASSUMED MOST COMMON MINDSET	WHAT DOES THE SUSTAINABILITY MINDSET PROPOSE?
Ecoliteracy	Siloed information, rational knowing, no feelings.	We need both: a broad, interconnected understanding needs to be further developed which also includes acknowledging feelings.
My Contribution	Blaming others for the problems, demanding solutions from others.	We need both: demanding solutions <i>and</i> acknowledging the ways in which we are personally (unintentionally) contributing to the problems. The latter needs to be further developed.

PRINCIPLE	ASSUMED MOST COMMON MINDSET	WHAT DOES THE SUSTAINABILITY MINDSET PROPOSE?
Long-term Thinking	Focus on the short term.	We need both: to pay attention to the short-term <i>and</i> the long-term impacts of our decisions and behaviors. The latter needs to be further developed.
Both-and Thinking	Either or logic, zero sum.	We need both: discerning when a problem can be solved with an either-or logic and when it is a polarity that has to be managed using both-and thinking.
Cyclical Flow	Linear planning for control, also narratives of linear growth.	We need both: planning, linear thinking, <i>and</i> understanding the larger cyclical flows of everything in Nature, considering it accordingly. Underdeveloped.
Interconnectedness	Focus on autonomy, self-determination, individualistic thinking.	We need both: we are all different yet interconnected, and we need to incorporate that perspective when making decisions and interacting. Underdeveloped, particularly in certain cultures.
Creative Innovation	Rational thinking prevails and is more accepted and expected than intuitive knowing.	We need both: our unsustainable planet requires innovation in all areas, which calls for unleashing creative thinking. Intuitive knowing, creativity, and alternate ways of knowing need to be accepted and promoted for a better balance of our human capacities.
Reflection	Act quickly, prompt reactions. Speed is valued greatly.	We need both: acting quickly is most appropriate in certain circumstances, yet pausing and pondering can provide more information and understanding, leading to more thoughtful actions. In our unsustainable world, the habit of reflecting needs to be brought back and developed as an important contribution to better decisions and actions.

PRINCIPLE	ASSUMED MOST COMMON MINDSET	WHAT DOES THE SUSTAINABILITY MINDSET PROPOSE?
Self-Awareness	Our unsustainability is anchored on many culturally valued aspects that shape the individual identity.	We need to scrutinize and explore the values anchoring our identity and ponder our alternatives. This requires introspective practices that can expand our self-awareness and bring about more sustainable and satisfactory behaviors.
Oneness with Nature	Disconnection from Nature, which is seen as instrumental or a resource.	We need to re-connect with Nature and re-establish the experience of oneness that had been lost, causing not only spiritual alienation but also the artificial separation of individual and ecosystem which is at the base of many unsustainability behaviors.
Purpose	Efficiency, focus on transactions and daily tasks.	We need both: taking care of the daily tasks <i>and</i> developing a sense of larger purpose, to bring fulfillment and contribute to the larger good. Underdeveloped.
Mindfulness	Focus on doing.	We need both: focusing on doing <i>and</i> cultivating our spiritual dimension that provides grounding and framework as well as balance and right perspective. Need development of contemplative practices.

Table 4: SMP, Dominant Paradigm, and Proposed Mindset Development Aspects

Next, Attributes were developed, to be assessed from the cognitive, behavioral, and affective perspectives (see example in Table 5).

This resulted in the formulation of 77 bipolar statements (see the example given in the previous section), covering the cognitive, behavioral, and affective attributes of each of the 12 SMPs. The formulation is grounded in the aforementioned ITC (Boyatzis & Akrivou, 2006), which suggests that something is GOOD (reflected by one statement) and that something else is BETTER (reflected by the other statement) while acknowledging and honoring the individual developmental stages, centers of gravity, worldviews, and perceptions of self toward the world. Over the course of the

validation phases, the number of statements was narrowed down to one per SMP and attribute, i.e., to 36.

The validation of these statements was performed in three phases which are summarized in Table 6.

CONSTRUCT	COGNITIVE ATTRIBUTES	BEHAVIORAL ATTRIBUTES	AFFECTIVE ATTRIBUTES
Sensitivity and emotional connection to the broad and humanistic picture of the state of the planet, including environmental and social challenges.	Knowing and thinking about the linkages between environmental and social challenges. <i>paired with</i> <i>Recognizing that some are not aware of or get confused by the connections.</i>	Changing habits to lower the carbon and/or social footprint. <i>paired with</i> <i>Recognizing that some focus on their own needs and don't see or consider changes.</i>	Feelings and emotional reactions to the challenges of the world (whether anger, guilt, despair, frustration, hopelessness, etc.). <i>paired with</i> <i>Recognizing that some protect themselves from negative feelings.</i>
	Examples of Statements: Social problems create environmental problems and vice versa. Some people say all the world's problems are related, but to me this complicates matters more than they already are.	Examples of Statements: My understanding of, or feelings about, the planet impact my habits/decisions. Unfortunately, my everyday needs <i>must</i> take priority over my carbon footprint.	Examples of Statements: When I hear about social or environmental challenges, I feel sad, anxious, angry, guilty, frustrated, scared, worried, and/or overwhelmed. I don't get sentimental with ecological problems I cannot solve.

Table 5: Examples of Constructs with Cognitive, Behavioral, and Affective Attributes

PHASE	OBJECTIVE	MAIN RESULTS
One	Validation of statements: is the meaning of an SMP correctly captured?	50% of the statements required review; eight were revised
Two	Identification of potential linguistic issues and logical flaws	Statements reduced to one pair per principle and attribute; 50% of statement pairs edited; “neither” option introduced
Three	Validation of improvements and reports	Two minor edits

Table 6: Overview of validation phases of SMI

Phase 1: Validation of the meaning of statements. The objective of this phase was to confirm if a statement indeed reflects the construct of the respective SMP as well as to test general comprehensibility, following a procedure suggested by Bento Ambrósio Avelar (personal communication, 2021). Participants were recruited from an international educator network familiar with the SMPs. The statement list was randomized to avoid easy identification of the underlying SMP.

The participants were given a statement together with four sentences. One sentence was a true match with the statement and up to two could be related. At least one sentence was unrelated. Participants were asked to identify the matching statement, and if more than one was identified, to rank them according to matching level. The choices and rankings were turned into scores, based on which 50% of the statements required review and eight were actually revised.

Phase 2: Mock-survey for the identification of issues of language and/or logic and development of PR coding. The validated and revised statements were now prepared with the aims a) of receiving input regarding comprehensibility and language and b) of generating sample data for the development of the automated PR system. 15 volunteers (some with knowledge of the SMPs and some without, to test the response also from an audience unfamiliar with what the authors intended to measure) participated.

A scoring scheme was developed that gave the cognitive and behavioral attributes equal scores while the affective dimension received a higher score, as research has shown that change only manifests itself once people develop emotions toward an issue (Brosch, 2021; Fröhlich, Sellmann, & Bogner, 2013; Kals & Maes, 2002; Kals & Müller, 2012).

The purpose of the scoring is two-fold. First, it creates a sunburst chart that shows the participants the current developmental stage of their sustainability mindset for each SMP (see Figure 3). Aligned with the principles of Positive Psychology (Seligman & Csikszentmihalyi, 2014), the graph is not numerical; rather, it shows the relative expression in the SMPs, avoiding judgmental sentiments. Second, the scoring codifies the PR, sending the participant the respective report for this combination of cognitive, behavioral, and affective attributes.



Figure 3: Example of the Sunburst Chart

Participants provided constructive feedback through comments. Again, about 50% of the statements were improved with regard to wording and expression. Furthermore, most participants stated that the option of “neither” should be included to reflect a situation where one does not identify with either of the options, which was done.

Phase 3: Validation of improvements and validation of report. This phase included individuals who had not seen the instrument previously and have various levels

of familiarity with the SMPs. Analyzing the comments resulted in two minor edits and confirmed overall that the instrument was now consistent. The results of this phase were used to develop and improve the reports further, which were sent to the participants again to receive feedback. Even with the results reported in this paper, this step continues until now in order to improve the reports further.

DISCUSSION AND APPLICATIONS

Following the direction of Positive Psychology (Seligman & Csikszentmihalyi, 2014) as well as of Appreciative Inquiry (Cooperrider et al., 2008), the SMI is a non-judgmental tool in that it points from GOOD to BETTER, prompts reflection, and assumes that individuals are who/where they are and have the autonomy to decide where they want to/will go. With that, it is an important addition to the rich sources of currently available instruments. By also including behavioral attributes, it goes beyond the NEP (Dunlap & Van Liere, 1978; Dunlap et al., 2000) and differs from Maloney et al.'s (1975) framework as it focuses on personal development and transformative learning rather than on predictive research. While several instruments aim at the assessment and development of various mindset attributes (CARL [Muff et al., 2020]; SQ21 [Wigglesworth, 2014]; SCTi-MAP [Cook-Greuter, 2004]), the SMI specifically addresses the sustainability mindset and therefore hopes to become an important tool for individuals, educators, and coaches.

In the three phases of development, the authors have tested and validated the representation of the SMP constructs throughout the 36 bipolar statements that comprise the final tool as well as the linguistic facets that are aimed at providing a truly appreciative and reflective instrument. Through diligent reviews and revisions, the questionnaire has been refined, and a similar process for the PRs is ongoing. To date, the SMI has been rated at an average of 4.7 points in terms of accuracy and usefulness on a 5-point Likert scale ($n = 72$).

The authors have been approached by professors in higher education who are interested in implementing the SMI as a pre- and post-tool in their courses to establish where the incoming students are in terms of mindset, focusing on the areas in need of development and assessing the impact of their respective courses. A similar request has been placed by institutions designing a new training program and by leadership development consultants of European financial institutions.

Other anticipated applications are studying variations in the sustainability mindset according to demographics, educational background, and disciplines, and using the SMI as a development tool for coaches and consultants in corporations, to support the training of employees in NGOs and community leaders, and as an instrument to assess the impact of higher education institutions in developing a sustainability mindset, be it as a component of their PRME (Principles of Responsible Management Education) reports or their AACSB/EQUIS (Association to Advance Collegiate Schools of Business/EFMD Quality Improvement System) certification. Longitudinal studies can further assess the impact of the learning experience beyond the classrooms.

Measuring the impact of sustainability courses is oftentimes focused on assessing the behaviors students engage in to make a difference in the world or to further the SDGs. While the SMI assesses the mindset, it has to be noted that behaviors make a mindset visible; they are the mindset in action. In other words, we cannot act outside of the paradigm/worldview that we are in unless we notice it and consciously try to act differently. Once we shift our mindset, our decisions and actions automatically become different too. This fact provides the development of a sustainability mindset with great leverage and potential for accelerating change.

LIMITATIONS AND OUTLOOK

The SMI has been developed based on the conceptual framework of the Sustainability Mindset Principles. They cover four content areas: Ecological Worldview, Systems Perspective, and Emotional and Spiritual Intelligence. Even though the SMI is designed with a holistic and comprehensive approach, a person's mindset may be influenced by other aspects beyond those covered in the SMP and assessed in this instrument, such as cultural context, for example. Furthermore, the SMI does not avoid self-perception bias (Robins & John, 1997) and social desirability factors (Chung & Monroe, 2003) based on the assumption that it mirrors where individuals see themselves, not where they "objectively" are. It is unclear what consequences or implications this may have for subjects with low self-awareness.

While the authors solicited the insights of SMP experts as well as of individuals unfamiliar with the concept, the number of participants in the different validation phases is limited. To further test the instrument, a pre- and post-pilot test with

students will be conducted to observe if the instrument is showing differences for groups that are consciously learning about Sustainability Mindset content compared to others that are not.

Of interest as well will be an investigation of participants choosing “neither” answers, their motivations, and reactions to their reports.

Translation of the SMI is being planned to allow adjustment to different cultural contexts. Lastly, case studies can provide a richer understanding of the application of the SMI in different contexts, such as, for example, with graduates and undergraduates, or leaders or educators, along with studies that explore the possible predictive value of the instrument.

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IDENTIFYING THE DOMINANT ECOLOGICAL WORLDVIEWS OF COMMUNITY LEADERS AND THE INFLUENCES THESE HAVE IN MANAGING CONSERVATION AREAS IN GHANA

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ABSTRACT

This study was set on the premise of a research question that sought to identify the dominant ecological worldviews of Community Resources Management Area (CREMA) leaders and the influences these have on the management prescriptions of their conservation areas. The relevance of the question was to identify whether the CREMA leaders subscribed to an eco-centric or an anthropocentric worldview which could have direct consequences for the control of resource levels of utilization after the devolution of authority. A phenomenological approach was thus applied to collect data from nine selected conservation leaders from three different CREMAs. Their ecological worldviews were found to be mixed—depending on the ecological worldview domain, the CREMA leaders showed leanings toward stances ranging from complete eco-centrism to ambivalent eco-centrism and ambivalent anthropocentrism. The findings, however, mostly suggested that the dominant ecological worldviews of the CREMA leaders were eco-centric and not anthropocentric. They exercised the middle ground, i.e., ambivalent ecological worldviews stances, to influence sustainable natural resource utilization while complete eco-centric worldviews were applied to protect balances in ecological functions. The leaders applied these determinations to promote the dual purposes of the CREMAs as they were set up for nature conservation and socio-economic development in Ghana. The study also recommends that the findings should be explored further to develop adaptable criteria that include ecological worldviews in the selection of CREMA leaders.

KEYWORDS

anthropocentric; conservation; eco-centric; ecological worldviews;
CREMA leadership; phenomenology; sustainability

INTRODUCTION

The Community Resource Management Areas (CREMAs) policy in Ghana is projected to promote participation of communities and their leaders in biodiversity conservation (Agyare, 2013; Asare, Kyei, & Mason, 2013). The arguments for community conservation programs are strengthened by empirical evidences that suggest common property management is possible under collaborative principles (Brooks, Waylen, & Mulder, 2013). The trump has been the notion that collaborative programs promote the interests of major stakeholders in natural resources management, thereby generating cooperation. In the CREMAs, the hitherto strict state conservation laws (which are not too effectively enforced) are replaced with locally generated constitutions and bylaws to govern biodiversity resource conservation (Owusu-Ansah, 2020).

The Wildlife Division of Ghana relinquishes biodiversity conservation and its utilization rights to communities that establish CREMAs by transferring authority to recognized structures and their leaders (Bandoh, 2010). The emphasis of CREMA constitutions and bylaws is not on selecting individuals with nature conservation ideals to assume leadership but rather on fair representation from participating communities. A CREMA is managed by a volunteer executive committee whose members are selected by each participating community in an equal representation format (Owusu-Ansah, 2020). The selection is based chiefly on the goodwill an individual enjoys from community members who look up to him/her to defend their interests at the executive committee level. The CREMA conservation programs flourish on effective interrelationships between the committee and the Wildlife Division. The CREMA leaders liaise between their communities and the Wildlife Division together with other state and non-state agencies to implement conservation activities.

Harley, Metcalf, and Irwin (2014) stated that environmental leaders emerge to address challenges that affect resources utilization in their communities. Again, it is noted that CREMA leaders emerge to pursue both personal and community interests (Owusu-Ansah, 2020). CREMA leadership emergence can therefore be related to personal beliefs and value judgments an individual places on the resources of the environment (Vining, Merrick, & Price, 2008). It is assumed then that these beliefs and value judgments would be informed by the individual's ecological worldviews (Schein, 2015).

Ashdown (2006) defined worldviews as unconscious assumptions by which a person defines reality by interpreting those assumptions as beliefs. According to Ashdown, Kearney's (1984) seven universals of self, other, relationship, time, space, classification, and causality have formed the basis of studying worldviews. Kearney's model is centered on the self and its influences on the individual relationship with others which goes beyond person-to-person interrelationships to the environment and the structures within society which shape behavior. Thus, the CREMA leaders' ecological worldview would be informed by the seven universals teased out from their environment/society. It can be argued that the CREMA leaders' ecological worldviews influence the identification of environmental challenges (Harley, Metcalf, & Irwin, 2014) which then allows for the classification of the causes of those challenges. The classification of the causes of these challenges is also defined by space and time (Valk, Belding, Crumpton, Harter, & Reams, 2011) and these will affect management prescriptions (Schein, 2015) that will be applied to biodiversity resources utilization.

According to Dunlap, Van Liere, Mertig, & Emmet Jones (2000), an individual has two ecological worldviews of which one is dominant. A person's dominant ecological worldview could be eco-centric or anthropocentric. The anthropocentric worldview is related to the belief in human superiority over nature—consequent to continuous growth, socio-economic development, and abundance (Schein, 2015) irrespective of ecological outcomes. The eco-centric ecological worldviews promote the balance of nature, limits to growth, and foretell possible looming eco-crises in the magnitude of apocalypses because of human abuses of nature (Kopnina, 2011).

The purpose of this study was to identify the CREMA leaders' ecological worldviews and the influences these had on their management prescriptions after they achieved devolution of authority for their conservation areas. This study's purpose stemmed from Schein's (2015) assertion that the role of sustainability leaders in ensuring global ecological stability has not received the needed attention. Schein mentioned that although understanding the roles of the ecological self in shaping the developmental paradigms of an individual is important, it has received little appreciation for its application in developmental psychology. Thus, this study's objective was to contribute to fill that gap by assessing the ecological worldviews of CREMA leaders. The relevance is that a CREMA leader's subscription to an eco-centric or anthropocentric worldview could have direct consequences on the kind of

management prescriptions they would pursue in controlling the levels of resources utilization after the devolution of authority (Kopnina, 2011; Vining et al., 2008).

ECOLOGICAL WORLDVIEWS AND CREMA LEADERSHIP

Schein (2015) drew inspiration from a number of theoretical frameworks including eco-psychology, integral ecology, deep ecology, and developmental psychology to study the ecological worldviews of corporate world leaders. He found out that the leaders' ecological worldview stances were explicit about eco-centrism or anthropocentrism. The sustainability leaders also connected their ecological views, which have been formed throughout their lives, with their beliefs about nature, and they again applied sufficient knowledge that emanated from their awareness of ecological issues on the global scale.

Ordinarily it would be expected that those who assumed CREMA leadership would subscribe to eco-centrism; however, Owusu-Ansah's (2020) report on CREMA establishment opportunities and leadership emergence lends credence to the belief that some leaders could possess anthropocentric views. His assertion that some CREMA leaders emerge to apply their personal knowledge and experiences in conservation could be positively linked to eco-centrism. Notwithstanding, the two other bases of CREMA leadership emergence, which were 1) expected personal benefits and 2) nominations of individuals with good standing in their communities into management positions, could be linked to different considerations other than ecological sustainability criteria. This assertion is buttressed by earlier findings of researchers like Brooks et al. (2013) that showed that some of the bane of community conservation projects is caused by dissonance in objectives, ineffectiveness at times in applying market incentives, and failure to identify power brokers in communities when it comes to participatory management issues.

Thus, identifying the dominant ecological worldviews of the CREMA leaders along the spectrum of Lundmark (2007) as cited in Kopnina (2011) and the delineation of ecological stances into five central domains that express individual-specific viewpoints and their influences on management motivated the study design. The five domains define the specificity of individual eco-centric or anthropocentric worldviews. The five domains are: 1) Human dominance over nature, 2) Human exemptionalism, 3) Balance of nature, 4) Risk of eco-crisis, and 5) Limits to growth.

However, due to the dichotomy between development and conservation (Romero et al., 2012), a person could possess an ambivalent worldview of the two extremes (Erdoğan, 2009) but one will be dominant (Dunlap, Liere, Mertig, & Jones, 2000).

This study design reflected on the aforementioned theoretical underpinnings in a participatory natural resources conservation context. This was in addition to the corporate sustainability leaders' roles in promoting policies like eco-labeling, corporate social responsibility, and eco-friendly technologies to gain social acceptance of products and good corporate citizenship (Wolfgramm, Flynn-Coleman, & Conroy, 2015). The CREMA leaders build on biodiversity conservation principles to solicit technical and economic support for community development (Owusu-Ansah, 2020). This study applied qualitative methods to understand how CREMA leaders leverage biodiversity conservation to promote socio-economic development in their communities without compromising on ecological integrity (Ekpe, Hinkle, Quigley, & Owusu, 2014).

The main research question of this study was: What are the dominant ecological worldviews of CREMA leaders and the influences these have in managing conservation areas? The relevance of the study question is in determining the kind of potential impact the dominant ecological worldview of the leaders could have on the resources entrusted to them for management. It can be assumed that a complete anthropocentric worldview leader would in no time cause serious degradation to resources while a complete eco-centric leader could also be a disincentive to the CREMA conservation ideals because there would be more restrictions to resources utilization (Schein, 2015).

MATERIAL AND METHODS

Study Areas

Sayinga-Kasena-Gavara-Kara (SKGK), Wechiau Community Hippopotamus Sanctuary (WCHS), and Zukpiri Integrated Wildlife Sanctuary (ZIWS) were selected for this study. These CREMAs were purposely selected because they have similarities in location and differences in origins and longevity. These areas occur in the same savanna vegetation of northern Ghana but their origins are marked by community initiatives to collaborate between communities together with state and non-state

agencies. The major conservation issues of concern in the CREMAs are annual bushfires and the unsustainable utilization of natural resources in the form of poaching and illegal logging. The differences and similarities were expected to generate data that could be useful in identifying the CREMA leaders' dominant ecological worldviews and how these have impacted on the management of their conservation areas.

The SKGK is located between latitudes 10°45'00" N and 11°00'00" N and longitudes 1°18'00" W and 1°39'00" W with a land area of 587.26 km². The CREMA was established through a partnership between the Wildlife Division and the nine communities that constitute the conservation area. The SKGK received its certificate of authority in 2016. The place is part of the migratory route of important fauna such as elephants (*Loxodonta africana*) and buffalos (*Syncerus caffer*) between Ghana and Burkina Faso. The main objectives of the SKGK are to conserve wildlife species and leverage these for socio-economic development through eco-tourism and to promote the sustainable development of Non-Timber Forest Products (NTFPs) trade such as in shea nuts (*Vitellaria paradoxa*) and beekeeping.

WCHS was founded in 1998 by the paramount chief of its 17 communities with the sole aim of conserving the declining hippopotamus (*Hippopotamus amphibius*) population along the Black Volta River (Agyare, 2013). WCHS is also known to be rich in biodiversity with recordings of 50 mammal, 237 bird, and 32 reptile species. The conservation of the hippopotamus has resulted in the protection of a 34 km² area which serves as the core zone. Among the three study sites, this CREMA has a comparatively developed and thriving eco-tourism enterprise and organic shea nut business within the larger agricultural landscape.

Asare et al. (2013) mentioned that ZIWS was established by an interest group of herbal medicine practitioners before the concept was accepted by the surrounding 17 communities which constitute the CREMA. Aside from the main interests of the herbal medicine practitioners who want to keep an undisturbed place to sustain their business, the other objectives of this CREMA include protecting the hippopotamus population found along the Black Volta River and other wildlife species for eco-tourism development. ZIWS received its certificate of devolution to operate as a CREMA in 2011 (Agyare, 2013). It covers an area of 420 km² lying between latitudes 10°00'00" N and 10°20'00" N and longitudes 2°30'00" W and 2°50'00" W.

Phenomenological Approach to the Study

The researcher applied a qualitative phenomenological approach to explore the ecological worldviews of the CREMA leaders through interviews. People's perceptions about the world or how the things of the world appear to them are best explored in phenomenological studies. Phenomenological studies allow researchers to cross beyond themselves and into universal views (Groenewald, 2004; Kafle, 2011). According to Finlay (2009) and Sloan and Bowe (2014), phenomenological concepts promote the study of human consciousness and of essences lived from within an individual's experiences.

Ecological worldviews are inherently lived experiences of people concerning nature and this makes the application of the phenomenological approach to this study appropriate (Finlay, 2009; Laverty, 2003). The CREMA leaders' ecological worldviews were assessed through interviews guided by the 15 statements of the New Ecological Paradigm (NEP) scale developed by Dunlap et al. (2000). Each of the five ecological domains has three statements under them (Lundmark, 2007). Two of the statements under human dominance over nature and human exemptionalism are anthropocentric whereas the other is eco-centric. For the balance of nature, risk of eco-crisis, and limit to growth domains, two of the statements are eco-centric and the other is anthropocentric. The CREMA leaders were asked to agree or disagree with each of the NEP statements. They were then made to express their lived experiences under each domain. The leaders' values, beliefs, attitudes, and behavior toward nature (Schein, 2015) gathered from probing questions during the interview, together with their stances on each of the NEP statements, were used to identify their dominant ecological worldviews. Interviews were framed with a dialogue approach to allow for understanding and interpretation of participants' lived experiences that informed their ecological worldviews. Interviews took place in the offices of the participants in the evenings and on nights after field visits to the CREMAs in the mornings.

Field visits were conducted to observe some of the conservation and socio-economic development activities of the CREMAs and also to generate global positioning system (GPS) coordinates for the development of satellite imagery maps. The researcher walked along the riverine forests of the core zones at each site to observe the vegetation. GPS coordinates were taken at points where the vegetation canopy was closed at each site (Owusu-Ansah, 2019). Notes were taken on animals sighted during the three kilometer walk at each site. Notes were also taken on fire

belts that had been created (cleared bushes and “green belts” planted with *Moringa oleifera*) and on beehives mounted in the core zones. The researcher visited some shea nut processing machines at the SKGK and the WCHS as well as beehives mounted in all the three sites. These data were used to triangulate with the interview data to improve the study credibility.

Selecting Participants

Nine participants took part in separate face-to-face interviews for data collection. Three participants from each of the three selected CREMAs were purposively sampled. Selected participants were the first three top management executives (the chairman, deputy chairman, and secretary) of each of the study areas. Five out of the nine participants were members of their local District Assemblies and one was a chief of his community, making the study of the ecological worldviews of the leaders relevant as those who are in pole position in their communities get selected into CREMA leadership. Per their positions in the CREMAs, they initiate policies and projects through collaboration with development agencies to promote both conservation and socio-economic development. According to both Boyd (2001) and Creswell (1998), it is enough to reach saturation point if a researcher samples between two to ten participants for phenomenological studies. Thus, this study scope was expanded with the selection of three different CREMAs and three participants from each of the study sites to ensure rigor and credibility.

Video Recording of Interviews

In this study, interviews were video recorded. It has been debated in the literature about the appropriateness of recording interviews by video because of ethical considerations (Downing, 2008). Another challenge of video recording interviews is the difficulty of taking recordings and at the same time concentrating on the interview. The argument is that data reliability and validity could be compromised. However, according to Bene (2014), video recordings are beneficial because these allow researchers and participants to recall and reflect on their thoughts, emotions, and actions during data analysis.

The researcher sought permission from participants to capture the essences of their dialogue on video. The use of dialogue during the interview also disengaged the participants' attention from the camera. The researcher's assistant did the video

recordings, thus enabling him to concentrate on asking questions and also to take notes on important points. The advantage of the video recording was that aside from allowing for the free flow of the interview sessions, the CREMA leaders' emotions and recollections of natural resources degradation in their communities were captured on camera. These were useful during data analysis.

Legal Issues, Participants' Rights, and Confidentiality

This study did not have any legal issues to be addressed. The most important thing was for the researcher to apply proper ethics that affect human participants (Laverty, 2003; Wilcke, 2002). The researcher wrote to the management executives of SKGK, WCHS, and ZIWS about the study. He contacted the executives via telephone calls and emails to ascertain their acceptance to take part in the study and to confirm the date and venue for the interviews.

A consent form was prepared and given to each participant to read and agree to its contents before the interviews began. One of the participants was not literate in the English language and thus the content of the consent form was read to him in the language of his understanding before he took part in the interview. Participants were assured that the study was for academic and practical purposes only. They were told of their choice to opt out of the interview without any penalties should they feel to do so at any point. Each leader was given a copy of the agreed upon and signed consent form before the interviews began.

The participants' confidentiality has been protected through labeling in attributing quotations to them in the results section. A1, A2, and A3 were participants from WCHS; B1, B2, and B3 were from ZIWS; and C1, C2, and C3 were from SKGK. Labeling was done not in any particular order or through any attributions that relate to the participants' positions in the CREMAs.

Data Analysis

The video recorded tapes were uploaded into the *easytranscript* software program. This free-to-use software was downloaded from <http://www.e-werkzeug.eu> on January 17, 2017. Each uploaded video was played and the audio recordings were transcribed verbatim by the researcher. The researcher translated and transcribed directly into the English language the responses of a participant who spoke in the Twi language.

Nine different transcripts were separately copied, pasted, and edited in a Microsoft Word document. Data analysis was aided by the Atlas.ti software program (version 7.0). Four different codes were developed to classify participants' ecological worldviews under each domain. The codes were complete eco-centric, ambivalent eco-centric, complete anthropocentric, and ambivalent anthropocentric. Participants were classified depending on their agreement or disagreement with each of the three statements under a domain. For example, under human dominance and human exemptionalism, a participant who disagreed with the two anthropocentric statements and agreed with the eco-centric statement was classified as complete eco-centric. However, if the participant disagreed with just one of the anthropocentric statements and agreed with the other together with the eco-centric statement, he was classified as ambivalent eco-centric while the opposite would be true for complete anthropocentric and ambivalent anthropocentric classifications under these two domains. Again, a participant who agreed with the two eco-centric statements and disagreed with the anthropocentric statement under balance of nature, risk of eco-crisis, and limits to growth was classified as complete eco-centric. Also, if a participant disagreed with just one of the eco-centric statements but agreed with the other together with the anthropocentric statement, he was classified as ambivalent eco-centric under these three domains. The reverse would be true under the above scenario for complete anthropocentric and ambivalent anthropocentric classifications under these three domains. It must be stated that the other two possibilities where a participant could have completely disagreed or agreed with all three statements under a domain to produce ambivalent classifications did not occur in this study.

RESULTS: CREMA LEADERS' ECOLOGICAL WORLDVIEWS

The results presentation is divided into the five domains of ecological worldviews. Under the domains, participants' statements were used to depict either eco-centric ecological worldviews that promote natural resources conservation to achieve sustainability or anthropocentric ecological worldviews that promote views of abundance and unlimited growth. Ambivalent leanings of the leaders' ecological worldviews between the two extremes are also presented. Emphases within participants' statements are *italicized* in the quotations. The results presentation ends with some socio-economic development that have been promoted by the CREMAs. However, the presentation begins with a brief profile of the participants.

Participants’ Demographics

Though the constitutions of the CREMAs have made room for women to participate in management, there was no woman at the top management level. All participants were men who have had at least a secondary education except for one who had never been to school. Participants’ ages ranged within the 20–29 and 60–69 brackets. Participants have been involved in conservation activities even before their CREMAs gained the certificate of devolution that enabled them to operate as certified entities, and this is expected as they are the people who lead the process for CREMA formation. Table One below provides the details.

Participant	Age Group/Years	Educational Level	Conservation Leadership Experience
A1	40–49	Tertiary	18 years
A2	20–29	Tertiary	11 years
A3	40–49	Secondary	15 years
B1	60–69	None	12 years
B2	30–39	Secondary	12 years
B3	40–49	Tertiary	18 years
C1	40–49	Tertiary	5 years
C2	40–49	Secondary	11 years
C3	60–69	Tertiary	17 years

Table 1: Participants’ Demographics

Human Dominance over Nature Domain

Human dominance over nature projects human beings as having power to rule over all other living organisms including abiotic elements. Individuals who subscribe to such a stance have complete disregard for ecological processes that permit the ecosystem to function within limits. None of the CREMA leaders showed leanings toward such an anthropocentric ecological worldview. However, they showed both complete eco-centric and ambivalent eco-centric stances.

Complete Human Dominance Eco-Centric Ecological Worldview Stance. A complete human dominance eco-centric ecological worldview stance rejects human dominance over nature and regards all species irrespective of their socio-ecological relevance to human wellbeing as important creations.

A1 from WCHS stated: “Nature, let me say people should learn how to protect it. *That is, to know every living organism has a purpose.* There is like a reason why other things were created.”

A complete human dominance eco-centric ecological worldview expressed by C1 from SKGK indicated how humans should live simple lives to promote human-nature relationships that will sustain the world’s ecosystem.

I think human beings should try living simple lives ... our relationship with the environment should not affect the future and should not affect other human beings and should not also affect the regeneration capacity of the trees and animals.

Ambivalent Human Dominance Eco-Centric Ecological Worldview Stance. An ambivalent eco-centric ecological worldview under human dominance over nature rejects human supremacy over nature but accepts that humans have the right to protect and use nature. See the statement of A2 from WCHS:

When we are able to protect nature then all the social and ecological benefits will be maintained and increased. Our objectives are to develop our communities and protect or conserve the environment for socio-economic benefits.

An ambivalent human dominance ecological worldview stance is one of the major foundations for setting up CREMAs. The CREMA concept accepts human protection over nature in order to use it sustainably but not to degrade it.

Human Exemptionalism Domain

The human exemptionalism ecological worldviews domain regards human beings as unique and superior to all other species in the ecosystem. None of the CREMA leaders accepted the human exemptionalism domain which promotes complete anthropocentrism. They rather showed leanings to both complete eco-centrism and ambivalent eco-centrism.

Complete Human Exemptionalism Eco-Centric Ecological Worldview Stance. A complete human exemptionalism eco-centric ecological worldview accepts that humans are part of nature while knowing that technological ingenuity is not enough reason to detach humankind from nature. That is, a complete human exemptionalism eco-centric ecological worldview rejects human mastery over nature

and rather accepts that humans are subjects and just a part of nature. A2 from WCHS stated: *"We are all living things. We are conserving plants, birds, hippos and even the human beings."*

Ambivalent Human Exemptionalism Eco-Centric Ecological Worldview Stance. An ambivalent human exemptionalism eco-centric ecological worldview rejects human mastery over nature. However, it accepts the responsible utilization of natural resources in the manner that shows human dependence on nature. A1's statement is an indication of how humans cannot detach themselves from nature because their very existence depends on the supply of oxygen, food, and medicine, among other things, from plants: *"If we go cutting all the trees it is not good because we will not be able to live in the world again."*

Balance of Nature Domain

The balance of nature ecological worldviews domain promotes deep sustainability thinking that rejects all human interferences in the functions of nature. Balance of nature ecological worldviews believe that ecosystem function is optimal when both biotic and abiotic elements are allowed to operate freely in equilibrium without human interference. Participants again showed leanings to both complete eco-centric and ambivalent eco-centric ecological worldviews under the balance of nature domain.

Complete Balance of Nature Eco-Centric Ecological Worldview Stance. A complete balance of nature eco-centric ecological worldview accepts that nature is delicate and that all ecological processes should not be tampered with by human activities. This notion has promoted prohibitory and restrictive regulations against certain negative human activities in ecological hot spots classified as core zones in the CREMAs. C2 and A1 reflected on such notions.

C2: *If we would have allowed the pollution of the River, just as I was saying about the type of fishing that was going on, it would have had disastrous consequences for us and the River...*

A1: *So the area is organic. Every product like shea and moringa coming out from the sanctuary is organic. We are now introducing beekeeping and this will be [an] organic product and therefore farmers, instead of say going to the core zone to farm, will say, "Why not put in ten beehives?"*

The two statements above indicate the basis for prohibitory regulatory regimes that are in place in the designated core zones of the CREMAs. In the core zones, inorganic agriculture, the grazing of livestock, and fishing practices that are viewed to be harmful to proper ecological functions are prohibited. The leaders organize patrols and anti-bushfire strategies together with some economic incentives to protect the core zones.

Ambivalent Balance of Nature Eco-Centric Ecological Worldview Stance. An ambivalent balance of nature eco-centric ecological worldview accepts that nature is delicate but does not reject the notion that certain negative human activities can be contained within nature constraints. B1 shows how certain socio-economic activities deemed to be ecologically harmful can be allowed in certain areas of the CREMA but not in the core zones:

B1: At a point in time you know that whatever actions we take in the environment, we may face the consequences. *Negative economic activities that degrade the environment like charcoal burning are allowed at the development zone and not in the core zone.*

The ambivalent leaning of the CREMAs on balance of nature means the leaders are also careful not to extend their objection to human interferences in the balance of nature to all areas of the ecosystem. It suggests that the leaders are mindful in meeting the socio-economic development demands of their people while still promoting conservation.

Risk of Eco-Crisis Domain

The risk of eco-crisis ecological worldviews domain envisages an impending ecological disaster due to human abuses of nature. All the participants were simply eco-centric, believing that the world was heading for an eco-crisis if the trend of nature abuses continued.

Complete Risk of Eco-Crisis Eco-Centric Ecological Worldview Stance. A complete risk of eco-crisis eco-centric ecological worldview stance accepts that humans are abusing nature to the point of destroying ecological systems and causing species extinction. B1 mentioned a series of issues that indicate how human beings are destroying nature which can be detrimental to human existence, along with eco-crisis warning signs:

Because God's creation is being destroyed. He did not tell us to do that. *[The time] has come; if we are not careful we will not get a place to farm, the rivers are drying, there are constant bushfires....* The benefit of the CREMA is [also] for the future generation and if we have not *[conserved] the forest, [today's] children [will] not have seen a hippopotamus.*

Again, B3 emphasized the threat of an eco-crisis by stating, "I agree because we can see the desert coming and if we do not do anything about it, it will catch up with us."

Amenity values of natural resources are essentially fueled by eco-centric ecological worldviews. One of the amenity values of a natural resource that is very much cherished is the mere knowledge that a species exists for those who behold such species. B2's statement emphasized the return of some species in the CREMA as averting an eco-crisis: "There were some animals *like the hartebeest, I only knew them by name since I was born, but now I am seeing [a] few of them.*"

C1 expressed climatic change impact on the ecosystem and its negative consequences on ecological processes and farmers' livelihoods in the SKGK as examples of an eco-crisis. His statement showed that changes in the weather conditions of the SKGK are yet to be understood by the farmers to enable them to adapt to climate smart agriculture, that is, to harmonize land tillage and the sowing and harvesting of crops to the changing climatic pattern.

If you look at even from infancy when we were children, *the nature of the crops and the yields, the timing of the rains and by this time of the year, we should have gotten more than one rainfall to begin planting by now;* certainly, there is an eco-crisis.

The above statements from the participants are rejections of the anthropocentric notion that suggests that the risk of eco-crisis is exaggerated. Although the participants' concerns were generated from and felt at the global scale, their experiences and ecological selves brought those issues to them at the local levels.

Limits to Growth Domain

The limits to growth ecological worldviews domain rejects the anthropocentric worldview that believes in the human ingenuity of technological advancement to solve the resources scarcity challenge. It opposes the promotion of continuous human population growth, unbridled socio-economic development, and the

accumulation of wealth irrespective of the limitedness of global resources. It is only under this domain that one leader accepted a complete anthropocentric ecological worldview; three accepted an ambivalent anthropocentric ecological worldview whereas the rest were eco-centric.

Complete Limits to Growth Eco-Centric Ecological Worldview Stance. A complete limits to growth eco-centric ecological worldview stance accepts that human population growth with its quest for socio-economic development is outpacing the earth's natural resources' levels of regeneration. A1 stated, "*We are competing with other creatures because of continuous human population growth which has increased our demand for other materials for economic development.*"

An acceptance of the notion of the limits to growth ecological worldviews domain implies that economic activities should not be at the expense of renewable natural resources and cause their degradation. The SKGK communities opting for a CREMA over a gold mining project is an example. Although the mining project would have generated employment for the locals, the long-term negative impact of mining instigated the communities to choose conservation of their land over gold mining.

C2: We came together and fought them. We wanted the place to be reserved because we have seen most of the other areas where they are doing gold mining [and] what has happened to their lands. That is why we rejected them and maintained the place as a reserve.

Thinking of sustainability informed this major decision which was not simply a rejection of a mining company with a concession but also a statement of rejection of a Ghana government economic activity which the people found was not compatible with their conservation objectives.

Ambivalent Limits to Growth Anthropocentric Ecological Worldview Stance. An ambivalent limits to growth anthropocentric ecological worldview accepts the notion that the earth has enough resources to contain the current human population's growth and economic development within a framework of proper planning and fairness in distributing resources.

A3: You know [the] human population will continue to grow and so for the demand of materials and economic development [it] will continue. However, a careful planning can assist us to be able to live on earth with many more people even under limited resources.

B3 accepted an ambivalent anthropocentric ecological worldview stance by noting how some of the highly populated areas of the world have been able to bring development to their people. He contended that the world can still contain many more people with its current resources.

I do not think we are getting overpopulated especially on our continent. *The number of people in the whole continent of Africa is smaller than [in] countries like China and India and yet they (countries) are able to manage their populations in a smaller space with development.*

C3 also argued for equitable distribution in resources utilization so that many more people could live on earth. He argued for fairness in sharing the earth's resources by straightening out the imbalances in population distribution and development even in Ghana.

I disagree, and you know northern Ghana, unlike [the] southern part, is sparsely populated although there [is] a lot of land and space for major development activities in the north. *So the earth can contain more people and provide for our needs only if [the] few rich people will not accumulate all the resources for themselves.*

Complete Limits to Growth Anthropocentric Ecological Worldview Stance. A complete limits to growth anthropocentric ecological worldview stance accepts that the earth's natural resources are enough to support the increasing human population and its economic activity at its current pace. C1 showed a complete limits to growth anthropocentric ecological worldview stance. He believed that through technology, the earth can contain the increasing human population even as the same technology can be used to regulate human population growth.

Human beings still have the ability to control the regeneration rate of populations. *So I think the earth will never be [so] full [as] not to contain us.... Now that we are even doing activities on the sea like drilling, it means human beings can even settle there with development.* You know, because of the level of our knowledge, certain things are even resources but now we do not know.

CREMA Development Initiatives and Conservation

This section provides some insights into the establishment and promotion of sustainable economic development initiatives in the CREMAs. These initiatives are facilitated by some Government of Ghana institutions as well as by international agencies together with non-governmental organizations (NGOs). Participant

statements and the researcher's field observations provide evidences for sustainable development initiatives in the CREMAs.

B3 mentioned a support grant ZIWS received from the Ministry of Food and Agriculture of Ghana for the cultivation of a new variety of cassava that would feed into their new enterprise of processing *gari*, a local staple. The participant again mentioned how the Food and Drugs Authority of Ghana was assisting them through USAID to modernize their traditional herbal medicine practice by providing them with an encapsulating machine. The organization was also assisting ZIWS in standardizing their herbal practice to national standards.

Another development initiative the researcher observed during a field visit to ZIWS was a three-acre woodlot *Senna siamea* plantation used for sustainable fuel production. B1 confirmed that it was established by the women of the Siro-a community within ZIWS, and that the project was supported by a local NGO through seedlings and cash payments to the women to nurture the trees for three years.

Apart from soliciting support that seeks to bring effectiveness and efficiency into existing livelihoods, a number of "green" economic activities such as shea nut gathering and processing, beekeeping, developing *Moringa oleifera* products, and eco-tourism are promoted in the three CREMAs. The following statements from some participants indicate how these new enterprises are being pursued to bring socio-economic development to the CREMAs.

C1: *These beehives have been given to them for free through external support. You can imagine if you can get five for each farmer and he gets at least ten gallons of honey a year ... if you quantify in monetary terms, you realize that it is better than going into small holder farming....*

A2: *A company came here wanting to do inorganic agriculture which meant what we are doing with organic shea nut will be lost completely with its premium prices. We put it on the table and vetted the proposal and we said this is not going to happen.*

A1: *If [a] tourist comes, first you have the community people here to welcome the person. He pays money. The money the tourist is paying is what we use to pay the workers.... If you go down to the site there are boatmen that take tourists out....*

The CREMA leaders' pursuit of socio-economic development as shown above is enshrined in both an ambivalent eco-centrism and an ambivalent anthropocentrism

that seek to satisfy both ecological functions and human socio-economic wellbeing. Activities deemed to be less ecologically harmful are allowed in the core zones. The researcher noticed, for example, during a field visit to WCHS, that *Moringa oleifera*, which is evergreen and litters few leaves, was planted to serve as a “green fire belt.” Under the moringa trees as well were beehives mounted along the core zone boundaries. The purpose of this was to prevent bushfires from entering the core zones by relying on the beehive owners’ motivation from sales of moringa products and honey. That is, as the owners prevent fires from reaching their hives and moringa trees, they also prevent the core zones from burning.

DISCUSSION: INFLUENCES OF CREMA LEADERS’ ECOLOGICAL WORLDVIEWS ON RESOURCE MANAGEMENT

This study was conducted on the premise of the research question “What are the dominant ecological worldviews of CREMA leaders and the influences these have on managing conservation areas?” The relevance of the study is that the role of sustainability leaders in ensuring ecological stability has not received the needed attention (Schein, 2015), and more so for those in community conservation. Understanding the awareness of the ecological self of individuals and its influences on conservation area management could promote the sustainability of the resources entrusted to them.

The findings under the human exemptionalism and human dominance over nature ecological worldviews indicated that the CREMA leaders rejected the anthropocentric stances of these two domains. Participants’ acceptance ranged between complete eco-centrism and ambivalent eco-centrism under these two domains. These findings showed implicitly that the CREMA leaders possessed the ecological self-awareness that did not subscribe to the unsustainable utilization of resources driven by anthropocentric views of human superiority over nature (Dunlap et al., 2000). The CREMA leaders were aware of the intricate linkages of human and nature relationships which sometimes lead to unintended negative impacts on each other. These ecological selves of the leaders informed management prescriptions of limiting human activities in ecologically sensitive zones with the view that biodiversity resources are finite (Kopnina, 2011). The acceptance of prohibitory and restrictive regimes (Shafer, 2015) at the core zones through patrols to arrest and

punish offenders is an indication of the leaders' stance on eco-centrism under these two domains.

The CREMA leaders' inclinations for maintaining a functional ecological balance were also shown in the findings of recordings of complete eco-centric responses which were particularly higher under the domains of balance of nature and risk of eco-crisis ecological worldviews. These two ecological worldview domains form the basis of accepting the limits to growth ecological worldview domain. That only complete eco-centric worldviews were recorded under the risk of eco-crisis ecological worldview domain was a statement of promoting ecological processes under the balance of nature domain and also to caution about how socio-economic development should not degrade biological resources under the limits to growth domain. This was evident in the SKGK leaders' rejection of a gold mining project for biodiversity conservation under the limits to growth domain. The strong eco-centrism stance of the leaders under these three domains indicated deep sustainability thinking on their part in view of the limitedness of biodiversity resources and the awareness (Schein, 2015) of the need to maintain proper ecological function for the production of the organic products of the core zones, which yield premium prices.

Although the three study sites have differences in focal species of conservation, they have similar management prescriptions culminating in what are called core zones where human activities viewed to be detrimental to biodiversity conservation are not allowed. The large acceptance of complete eco-centric ecological worldviews under balance of nature, risk of eco-crisis, and limits to growth is embedded in the concept of a "green economy" that seeks to promote economic development without causing an ecological upset in the CREMAs (Schein, 2015). The CREMA leaders of WCHS, for example, feared that allowing inorganic agriculture in the core zone would upset the balance of nature through the application of agro-chemicals that would cause them to lose the organic status of their NTFPs. The leaders then relied on marketing tools (Brooks et al., 2013) to promote products that earned them premium prices and on law enforcement (Shafer, 2015) to advance their core zone management strategy.

The CREMA leaders largely promote socio-economic development that seeks to disengage the people from acts that degrade the resources at both the core zones

and the larger agricultural landscape (Ekpe et al., 2014). WCHS, for example, has leveraged on charismatic wildlife species like the hippopotamus that occur in the area to develop eco-tourism that provides gainful employment to some members. Again, ZIWS leaders have solicited funding and technical support from donors to promote eco-friendly businesses such as standardizing their herbal practices to increase their products' acceptance while planting materials for fast growing cassava are provided for the larger community members to promote *gari* processing. These programs have benefit-sharing arrangements for the CREMA communities while individual benefits emanate from setting up personal eco-friendly businesses in NTFPs by leveraging sustainable ecosystem services provided through the conservation strategies (Asare et al., 2013).

The empirical evidences gathered from this study indicated that the CREMA leaders' ecological worldviews were embodied in their experiences, spirituality, and emotional attachment to nature especially in its degradation and the socio-economic opportunities that come with participatory natural resources conservation (Agrawal & Gibson, 1999; Brooks et al., 2013). However, the ambivalent stances of the CREMA leaders under the five domains (except for risk of eco-crisis) contrasted one of the key findings of the Schein (2015) study which showed that corporate sustainability leaders were explicit with their ecological worldviews. Nonetheless, the ambivalent stances of the CREMA leaders were expected because the CREMAs were set up to promote sustainable development by leveraging on biodiversity conservation (Agyare, 2013). Inasmuch as effort is applied to protect the core zones through prohibitory and "green" economic strategies, the CREMA leaders have ambivalently sited what are possibly non-ecologically friendly shea nut processing machines at the development zones in the WCHS and SKGK to improve livelihoods.

Overall, the findings again prove the bi-dimensional nature of individual ecological worldviews as reported in Dunlap et al. (2000) and Kopnina (2011). It is obvious from the study's findings that the CREMA leaders applied different ecological worldview stances under different natural resources utilization conditions based on the awareness of their ecological selves (Schein, 2015). However, the major ecological worldviews of the CREMA leaders were enshrined in eco-centrism and not in anthropocentrism.

CONCLUSIONS

The ecological worldviews of the nine selected CREMA leaders were found to be mixed. Whereas participants showed complete eco-centric ecological worldviews under all five domains, one participant, however, showed a complete anthropocentric ecological worldview under the limits to growth domain. Again, it was only under the limits to growth domain of ecological worldviews that ambivalent anthropocentric worldviews were expressed by the CREMA leaders. The CREMA leaders showed ambivalent eco-centric worldviews under three domains and not for risk of eco-crisis and limits to growth. Noticeably, it was only under the risk of eco-crisis domain that all the leaders were simply eco-centric.

The findings have largely established that the CREMA leaders exercised the middle ground ambivalent ecological worldview stances to influence natural resources utilization while complete eco-centric worldviews were applied to protect balance in ecological functions by promoting prohibitory regimes in ecologically sensitive zones. These determinations serve well the dual purposes of CREMA establishment by leveraging on sustainable biodiversity conservation to promote socio-economic development in rural communities.

These findings should be explored further to develop adaptable criteria that include ecological worldviews for selecting CREMA leaders. The Wildlife Division and other development agencies that promote CREMA establishment should vet the ecological worldview stances of individuals when selecting leadership to manage the CREMAs. A good balance of individuals with leanings from complete eco-centrism to ambivalent eco-centrism and ambivalent anthropocentrism to form leadership will serve better the dual purpose of using the CREMAs to achieve conservation ideals and promote socio-economic development. The assumption is that leaders with such awareness will manage the resources entrusted to them sustainably by using these to incentivize people to support biodiversity conservation efforts.

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ASSESSMENT OF TRAIN'S COAL AND PETROLEUM EXCISE TAXES

Environmental Benefits and Impacts on Sectoral Employment and Household Welfare¹

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ABSTRACT

This study assessed the impact of the first package of the Tax Reform for Acceleration and Inclusion (or TRAIN) Law, which includes an increase in petroleum and coal excise taxes, as passed by Congress in 2017. This study reviewed the context of the energy sector in the country given that petroleum and coal are the largest sources of energy in the country. Using a computable general equilibrium-microsimulation model, it mainly assessed the impact of this increase and of the whole TRAIN 1 package (which includes a reduction in the personal income tax and the broadening of the value added tax). The results from the simulations show that there is a slight adverse output effect for most industries under an increase in petroleum and coal taxes scenario, resulting in a lower level of carbon emissions. There is a slight decline

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in employment, and poverty incidence increased slightly as excise taxes have an adverse effect in terms of higher commodities prices among the poor.

KEYWORDS

tax reform; computable general equilibrium;
microsimulation; excise tax; coal; petroleum

1. INTRODUCTION

In 2016, the Philippine government launched a series of tax reform schemes designed to broaden the base for revenue collection and increase public revenues to fund critical infrastructure projects and social services. Dubbed as the Tax Reform for Acceleration and Inclusion (TRAIN) Law, the tax proposals not only involve changes in tax rates across various government revenue sources but also aim to improve tax administration by mandating the use of electronic invoices and receipts as well as real-time sales reporting, among others.

The tax reform proposals were originally aimed to be undertaken through six packages which then evolved into the current four-package Comprehensive Tax Reform Program (CTRP). The first package—signed into law in December 2017 as Republic Act 10963 and now called the TRAIN Law—covers changes in personal income tax rates, the restructuring of the estate and donors' taxes, the broadening of the value added tax (VAT), and staggered increases in taxes on petroleum, sugar sweetened beverages, and motor vehicles. Of special concern to many, however, were the so-called carbon taxes included in the first package. The TRAIN Law 1) imposes excise taxes on diesel, fuel oil, liquid petroleum gas, and kerosene as well as upward adjustments on other types of fuel, including premium and regular gasoline, aviation fuel, and other types of gasoline, with yearly increases starting in January 2018 until 2020, and 2) mandates a PHP 50 (USD 1.10)² per metric ton excise tax on domestic or imported coal and coke in January 2018, PHP 100 (USD 2.20) per metric ton in January 2019, and PHP 150 (USD 3.30) per metric ton in January 2020. Before 2018, the tax imposed on coal and coke was PHP 10.00 (USD 0.22) per metric ton.

²All conversions to USD are based on exchange rates as of March 2021.

The tax was imposed at a time when the economy was enjoying rapid growth. As energy is an integral part of economic activities, fuel consumption inevitably increases as the economy grows. Over the last 45 years, total energy consumption had been increasing by an average of 2.4% per year, from 15 million tons of oil equivalent (MTOE) in 1970 to 43 MTOE in 2015.³ Consequently, the Philippines's greenhouse gas (GHG) emissions also increased. In 1970, economic activities emitted 24.8 metric tons of CO₂ equivalent (mtCO₂e); by 2014, emission levels had reached 406.9 mtCO₂e, which is equivalent to an annual growth rate of 6.6%. Meanwhile, the Department of Energy (DOE, 2017) projects the energy use of the country to grow by 4.2% per year until 2030, when the country's total final energy consumption—excluding the consumption of the energy sector itself, losses during transformation (for example, from oil or gas into electricity), and the distribution of energy for non-energy purposes—will grow from 29.8 MTOE in 2015 to around 54.9 MTOE in 2030. Without substantial changes in the energy mix, increases in the consumption of fossil fuels will lead to increases in carbon emissions. Unless the tax reform succeeds in reducing GHG emissions significantly, the country is poised to miss its Intended Nationally Determined Contributions (INDC) commitments.

Taxes that regulate the consumption or production of certain commodities correct market failures. The increase in carbon taxes was an attempt to limit anthropogenic carbon emissions. In developing countries like the Philippines whose domestic industries rely heavily on fossil fuels, such tax policy reforms are a bold step toward low-carbon development. However, these may undermine growth.

Carbon taxes create a trade-off between growth and emissions. However, growth and emissions are only among some of the considerations in evaluating the soundness of tax policy. A full assessment of the economic impacts of tax reform would require a comprehensive approach. Thus, macroeconomy-wide models like computable general equilibrium (CGE) can be useful for analyzing the impacts of carbon taxes not only on economic growth and emissions but also on other socio-economic variables such prices, incomes, and household welfare.

This paper aims to evaluate the impacts of changes in carbon taxes as indicated in the TRAIN law by examining the macroeconomic impacts of carbon taxes using a CGE model, computing the impacts on household income and poverty through

³Based on data from the *Philippine Statistical Yearbook* (various years; Philippine Statistics Authority, n.d.).

microsimulation, and estimating changes in sectoral GHG emissions levels using output-emission ratios.

The paper is organized as follows: Section 2 discusses literature while Section 3 presents the methodology. Section 4 discusses the data and simulation scenarios used. Section 5 presents the simulation results. Section 6 discusses the implications of the results for government, business, and households.

2. THEORETICAL AND EMPIRICAL METHODOLOGY FOR ASSESSING COAL AND PETROLEUM TAX IMPACTS

In most cases of domestic price surges, the source of a fuel price hike is the increase in world prices that is transmitted to prices in domestic markets (Arndt, Benfica, Maximiano, Nucifora, & Thurlow, 2008). This is due to the fact that fuel products are usually imported commodities in developing countries. Owing to interindustry linkages, higher fuel prices are then transmitted to other sectors and end up influencing the prices in food and transport markets. Hence, fuel prices can also have substantial impacts on the poverty situation of the country owing to the network effects of the fuel industry. Furthermore, the discussion can then be extended to understanding who among the vulnerable sectors become most affected due to such fuel price surges.

2.1. Impacts on the Economy

It goes without saying that most industries depend on coal and petroleum for power generation and transportation fuel. Historical trends, however, show that fuel prices have been increasing over the past decades as a result of the growing global economy. Unfortunately, oil and gas rigs and refineries do not have the capacity to keep up with the growth in energy consumption (Van der Heijden & Tsedu, 2008).

Such a scenario of increasing fuel prices may thereby constrain the growth of manufacturing in the country. In the case of South Africa, Van der Heijden and Tsedu (2008) explain that the negative impacts of high fuel prices are substantial due to the country's reliance on roads for transporting goods as well as people. Furthermore, the authors then remind us that the economic constraints associated with increasing fuel prices seem to fall on the micro and small enterprises (MSEs) that are without

access to efficient logistics systems or even to just larger trucks. Instead, they are forced to contend with the available transport for hire.

Empirical studies from different countries, however, have failed to conclude that fuel price increases influence prices in other sectors. Chapa and Ortega (2017) used a SAM (Social Accounting Matrix)-based price model in Mexico to assess the impacts of carbon taxes on production cost, consumer prices, household consumption, and government revenue. The carbon tax had a direct impact on sectors like coke, refined petroleum, and nuclear fuel as these sectors showed the highest price increases. Furthermore, large indirect impacts on air and inland transport were found given that transportation sectors consume fuel.

In the U.S., the same conclusion was reached by Baumeister and Kilian (2013). Using a structural econometric framework, the authors report that there seems to be no evidence that higher corn ethanol prices led to higher prices in agricultural markets in the U.S. Rather, both markets are simply affected by the same macroeconomic determinants. Furthermore, there is also no evidence that higher fuel prices lead to higher costs along the value chain which in turn lead to higher retail food prices.

2.2 Impacts on Vulnerable Sectors

In the case of households, higher energy prices cause production costs to increase, pushing the prices of fossil fuel-intensive goods such as manufactured goods and transportation services to spike up. This also leads to higher costs in purchasing fuel, which is approximately 10% of total household consumption (Baker, 2008). According to Reyes, Sobrevinas, Bancolita, & de Jesus (2009), the impacts of higher fuel prices have two components: 1) the direct effect of higher prices of petroleum products consumed by households and 2) the indirect effect on the prices of other goods and services consumed by the household that use fuel as an intermediate input. Hence, increasing fuel prices also affects household groups in varying ways.

In the Philippines, Reyes et al. (2009) analyzed the impacts of price surges caused by the 2008 global financial crisis. Focusing on the demand side given that most households in the Philippines are consumers rather than producers, a nonparametric analysis of fuel consumption patterns across different groups of households was used to analyze the impact of fuel price increases.

Using data collected from the Family Income and Expenditure Survey (FIES; Philippine Statistics Authority, 2017b), the study observed that poorer households tend to have higher expenditures for fuel as compared to richer households. In terms of the vulnerability of sectors to fuel price changes, agriculture-related industries made it to the list, where the prices of pesticides/insecticides and fertilizer are expected to increase by about 6% and 4.9%, respectively, because of the fuel price increase. Based on the study’s estimation, the fuel price increase would push total household spending up by 5.2%, resulting in a higher poverty threshold of 15,840 Philippine pesos per capita per year.

During the same period, Son (2008) checked whether inflation has hurt the poor. Using the price elasticity for the headcount ratio to predict the additional number of people who would be forced into poverty because of a 10% increase in the price of fuel, the study concluded that the increase in fuel prices would result in an additional 0.16 million poor people.

Expenditure Item	Price elasticity with respect to				Additional number of poor due to 10 percent increase in price (in millions)
	Average standard of living	Headcount	Poverty gap ratio	Severity of poverty	
Rice	-0.08	0.32	0.51	0.62	0.66
Fuel	-0.02	0.08	0.13	0.16	0.16
Transport and communication	-0.08	0.07	0.09	0.1	0.15

Table 1: Poverty impacts of changes in rice, fuel and transportation prices (Son, 2008)

2.3 Impacts on Environment

Fernandez (2018) mentioned that a tax increase on coal aims to slash the carbon emissions of the Philippines. She also mentioned that the Climate and Energy Program of the World Wildlife Fund (WWF)-Philippines stated that the passage of a coal tax hike is necessary to help protect the people and environment against the devastating impacts of coal consumption. La Viña (2017) added that an increase in the coal tax in the Philippines would allow the country to transition from coal to a cleaner, cheaper, and more sustainable energy system that is good for the environment. He also added that coal-fired power plants cannot function without using more natural resources (e.g., water) to operate their turbines and cool

their thermoelectric plants. Mayuga (2017) quoted Renato Constantino, executive director of the Institute for Climate and Sustainable Cities, in saying that the carbon tax approach will help the country achieve its Conference of Parties (COP) 21 commitment, which is to reduce the country's carbon emissions by 70% between 2020 to 2030.

Shi, Tang, & Yu (2015) used a CGE model to understand the environmental effects of coal resource tax reform in China. The environmental influence of the coal resource tax reform would decrease total carbon emissions which could effectively improve China's environment. Dong et al. (2017) used a 30-Chinese province CGE model to conduct provincial evaluations of a carbon tax. They mentioned that a carbon tax can effectively reduce industrial carbon emissions after 2020 given the increase in the carbon price. Lin and Jia (2018) mentioned that while a medium carbon tax rate that meets a reasonable carbon tax coverage of industry would allow China to achieve certain emission reduction effects, the emission reduction effect would be very significant with a high carbon tax rate.

3. METHODOLOGY FOR ANALYSIS

The assessment of the impact of excise tax changes in the Philippines is undertaken using a CGE model. Such an approach has become useful in analyzing the economy-wide effects of policies like tax reforms because it can trace the reverberations of a policy shock throughout the economy. For instance, an increase in taxes on consumer goods may raise the prices of goods for households and reduce the demand for these goods depending on the price elasticity of demand. Changes in demand for goods and services would then have effects on firm production and also on the demand of firms for factors. On one hand, in the neoclassical sense, changes in wage rates affect employment and household incomes, which further affects the demand for goods; on the other, changes in returns to capital affect investment decisions.

3.1. Computable General Equilibrium Framework

In developing the CGE model for the current study, a standard Walrasian CGE model described in Rutherford (1999) was utilized. In this framework, consumer and firm behaviors are explicitly modeled: firms maximize their profits subject to

their production function, consumers maximize their utility constrained by their income from labor and capital,⁴ and supply equals demand in all markets. The levels of demand, supply, and prices settle to an equilibrium. The resource and economic transaction flows are illustrated in Figure 1. A shock perturbs the economy and brings markets to a new equilibrium.

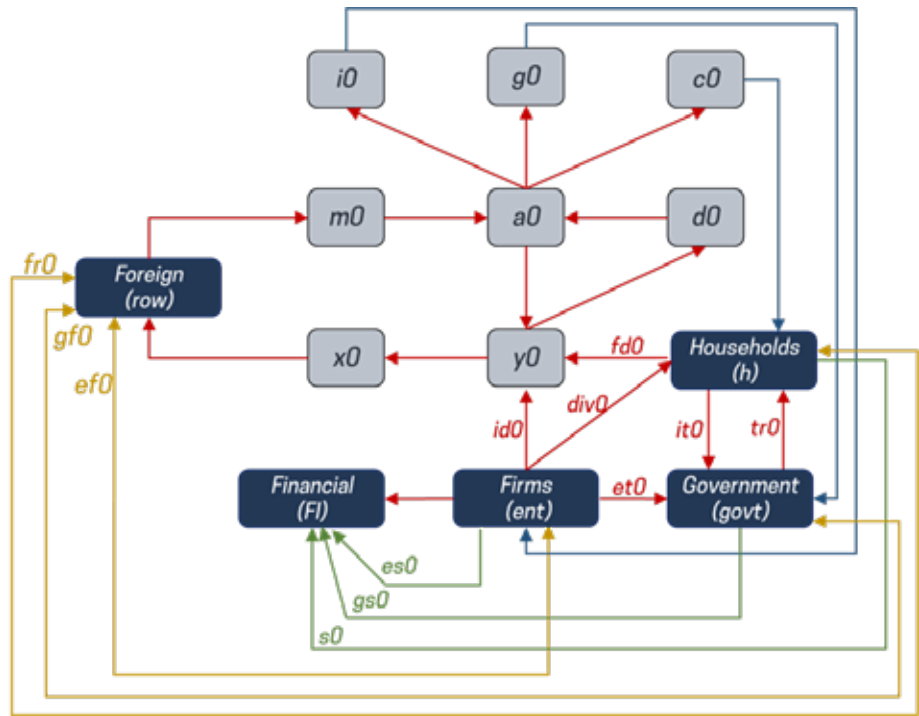


Figure 1: Economic flows in a computable general equilibrium model (modified from Markusen & Rutherford, 2004)

3.2. CGE Model for Coal and Petroleum Excise Taxes

The CGE model for the current study contains 44 production sectors, of which eight are agricultural activities, 20 are manufacturing/industrial activities, and eight are in services. In addition, there are seven other sectors that are utilized to specific types of energy sources specified in this model that, in turn, are utilized to create an “energy-composite”; these energy sources include coal, gas, hydroelectric, wind,

⁴Capital refers to buildings, durable equipment, breeding stocks and orchards, intellectual property products, and inventories.

oil, solar, and other electricity sources. There is also the electricity transmission sector, which provides the spread for the sources of energy in the composite sector. In addition, there are three production factors (skilled labor, unskilled labor, and capital), ten households (representing the ten income deciles), and several institutions (representing government, firms/enterprises, savings-investment, and the rest of the world). The data utilized for numerically specifying the economic stocks and flows of each of these sectors and institutions are specified in the succeeding section.

The production and consumption structure may be defined by showing the linkages between sectors and the elasticity of substitution in consumption and production; an illustration showing the nesting structure for production is shown in Figure 2. Furthermore, in order to feature the linkages in the energy sector, including the substitution of the different sources of energy (i.e., coal, hydroelectric, and geothermal), the CGE model in this study utilizes an “energy- composite” as the ability of firms to shift between the different sources of energy.

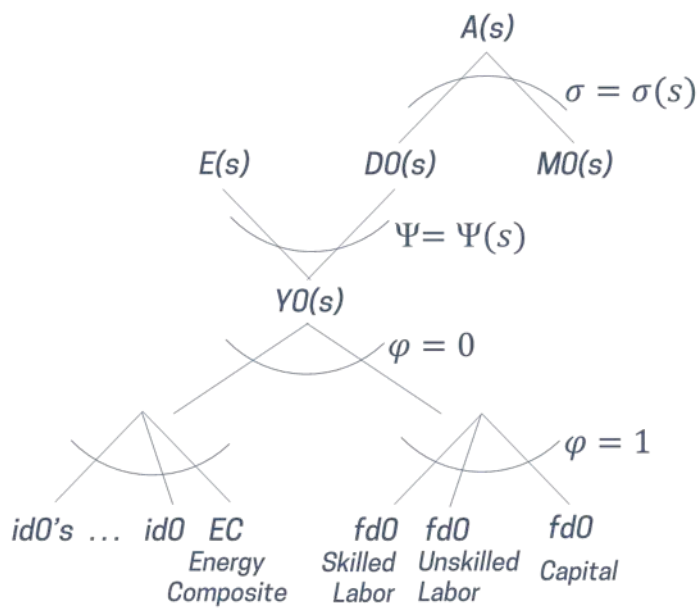


Figure 2: Production Nesting Structure of the Model (authors' illustration)

The use of this function simplifies the modelling system, which is based on the Mathematical Programming System for General Equilibrium

(MPSGE) (Rutherford, 1999). The price and quantity, marginal rate of substitution, and convexity of these functions characterize the production and consumption functions utilized in this system. This implies that the data requirements would be the share and elasticity parameters for all the consumers and production sectors.

3.3. Modeling Philippine Excise Taxes and other Taxes in the TRAIN

In a general equilibrium model, taxes are typically specified in an ad valorem manner. In this case, the tax at a given rate determines the fractional increase in the price level of the taxed commodity as in the case of excise and value added taxes. On the other hand, in terms of household income taxes, these are calculated as a reduction in return on both the capital and labor income of households.

In this model, the amount of the excise tax on domestic goods (*exct*) for each production sector (*s*) is calculated as the excise tax rate (*txrext*) multiplied by the domestic demand (*d*) minus the excise tax, other indirect tax (*oit*), percentage tax (*petx*), and road users tax (*rutx*), while the amount of excise tax on imported goods (*extm*) is calculated from the value added tax rate (*txrextm*) and the total value of the imported goods (*m*), and would thus be:

$$\begin{aligned} \text{extd0}(s) &= \text{txrext}(s) * (d(s) - \text{oit}(s) - \text{petx}(s) - \text{rut}(s)) \\ \text{extm}(s) &= \text{txrextm}(s) * m(s) \end{aligned}$$

In addition, to assess the inflationary impact of the tax policy, another scenario is for calculating and assessing the impact of an endogenous price change on commodities from the petroleum industry and rice processing sector. This is calculated as a 20% change in the prices of these commodities in these sectors.

The model utilized in this study was computed numerically through MPSGE analysis (Rutherford, 1999) using Generalized Algebraic Modelling System (GAMS) software. As noted above, in the MPSGE system, the underlying algebraic formulation of the functional forms need not be programmed into the system; thus, only the general format of the underlying economic behavior and flows should be specified.

Using the results in the model, we analyzed the effects of the tax changes in two areas—household welfare and carbon dioxide (CO₂) emissions—through a

microsimulation using the accounting approach. Prices and factor price changes were utilized to calculate the change in welfare while changes in output were used to calculate the change in emissions caused by production in the economy.

3.4. Calculation of the Poverty and Employment Impact

The study calculates for changes in poverty incidence in the economy utilizing a micro-accounting approach. The method utilizes the information on factor income and price changes in the CGE model and then applies these changes separately for each of the households in the 2015 FIES. Since the income and price information are available for each of the income deciles in the CGE model, each of the households in the FIES is identified by this income decile information and then the appropriate income and price changes are undertaken. The growth rates or changes are then applied separately to the per capita disposable income or consumption expenditure of each household in the household survey. This provides absolute income or consumption expenditure levels following the shock.

Then, using the new absolute nominal levels of income and consumption for each group, we can then calculate standard income distribution measures such as the headcount index, the poverty gap, and the Gini coefficient. Then, we can compare the post-policy poverty and income distribution indicators with the baseline values to assess the impact of the shock on the different households. The poverty indicator used is the headcount index, which can be derived from Foster, Greer, and Thorbecke's (2010) FGT poverty measure,

$$P_{\alpha t} = \frac{1}{N} \sum_{y_{it}}^{z_t} \left(\frac{z_t - y_{it}}{z_t} \right)^{\alpha}$$

where α is the poverty aversion parameter, N is the total number of individuals or households, y_{it} is the individual or household's income at time period t , z_t is the poverty line, and t is the time period (before and after the shock). The poverty headcount, in which $\alpha = 0$, is utilized in the calculation of poverty/welfare.

3.5. Calculation of the Environmental Impact

To calculate the trajectory of changes in emissions impact, emission multipliers are calculated from the Global Trade Analysis Project Energy (GTAP-E) information which has information on CO₂ emissions (see Global Trade Analysis Project, 2011a, 2011b).

Two sets of information were obtained from the GTAP-E database: the CO₂ emissions associated with a firm's usage of domestic commodities in sector *s* (also called the CODF in the database) and with a firm's usage of imported commodities in sector *s* (also called the COIF). CO₂ multipliers (defined as the impact of the CO₂ emission coefficient resulting from a specific value of output) in each industry were then calculated by using the information on the CO₂ emission coefficient from each industry multiplied by the total amount of carbon emissions in the base year.

4. DATA USED IN THE CGE MODEL AND SIMULATION SCENARIO

4.1 Social Accounting Matrix and Emissions Multipliers

The primary dataset used in numerically specifying the CGE model is the Social Accounting Matrix or SAM. The dataset traces the circular flow of incomes from producers/suppliers through factor payments to households and back to product markets through expenditures on final goods (or sales from activities). Additionally, income flows involving producers, government, financial intermediaries, and the rest of the world (*row*) are also accounted for in the SAM.

A national SAM was constructed for the year 2015 initially based on the 2012 65x65 Input-Output (IO) Table of the Philippines published by the Philippine Statistics Authority (PSA).⁵ The 2012 values in this latest IO Table were simply inflated to reflect the 2015 level of the gross domestic economy in nominal terms. The various data required in the SAM were then collected from various sources while those data that were also available in the 2012 IO Table were validated using other sources (e.g., imports and exports). Table 2 below provides a list of production sectors utilized in the model.

⁵The procedure mostly follows that of Cororaton (2003), who assembled a 1994 Philippine SAM. Meanwhile, the 2012 65x65 Input-Output Table is the latest one available (Philippine Statistics Authority, 2017a).

SECTOR NO.		DESCRIPTION
AGRICULTURE		
1	rice	Paddy rice
2	corn	Corn
3	othcr	Other crops
4	sugr	Sugarcane
5	bana	Banana
6	live	Livestock and other animal products
7	fors	Forestry
8	fish	Fishery
INDUSTRY		
9	ming	Mining and quarrying
10	coal	Coal
11	crdo	Crude oil
12	ngas	Natural gas
13	food	Food manufacturing
14	sugm	Manufacture of sugar
15	beve	Beverage and tobacco
16	txtg	Textile and garments, tanneries and leatheries
17	wood	Wood and wood products
18	paper	Paper and printing
19	peta	Petroleum and other fuel products
20	chem	Chemicals, cosmetics, rubber, and plastic products
21	minl	Non-metallic mineral products
22	metl	Metals (except for iron and steel)
23	irst	Iron and steel
24	elec	Computer, electronic, and optical products
25	mach	Machineries and equipment (except for engine and turbines, etc.)
26	engines	Manufacture of engines and turbines, except aircraft, vehicle, and cycle engines
27	treq	Transport equipment
28	otmg	Other manufactured goods
ELECTRICITY AND POWER		
29	elet	Electric transmission
30	cole	Coal power generation

SECTOR NO.		DESCRIPTION
31	gas	Natural gas power generation
32	hydr	Hydroelectric power generation
33	wind	Wind power generation
34	oil	Oil power generation
35	solr	Solar power generation
36	othe	Other energy generation
SERVICES		
37	othu	Utilities, excluding electricity
38	cons	Construction
39	trde	Wholesale and retail trade and maintenance and repair of motor vehicles
40	trans	Transport services and storage
41	telc	Telephone and communications
42	otsr	Other services, including business services, and tourism
43	Puba	Public administration, education, and health

Table 2: Listing of the Production Sectors in the Model (authors’ classification)

The change in emissions resulting from production activities is assessed using CO₂ emission multipliers computed as CO₂ emissions in kilograms per PHP 1 billion (USD 22 million) output in each sector. The CO₂ emissions data came from the Global Trade Analysis Project (GTAP) 9 database. The computed multipliers can be found in Appendix 2.

4.2 Simulation Scenario

To assess the impact of excise taxes on petroleum, the calculation of tax rates was undertaken. Table 3a shows the new specific tax rates following the tax reforms detailed in the TRAIN Law for coal and coke products. However, until the end of December 2018, the tax rate on coal and coke has remained at PHP 10 (USD 0.22) per metric ton. On the other hand, Table 3b shows the original and revised specific tax rates for petroleum products.

EFFECTIVE ON	TAX TO BE PAID IS
1-Jan-19	Php 100/metric ton
1-Jul-20	Php 150/metric ton

Table 3a: Revised Specific Taxes on Coal and Coke (TRAIN Law [RA 10963])

PETROLEUM PRODUCTS	NIRC 1997 RATES	PETROLEUM PRODUCTS	TRAIN LAW RATES		
			Effective on		
			Jan. 1, 2018	Jan. 1, 2019	Jan. 1, 2020
Lubricating oils (per liter) and greases (per kg)	Php 4.50	Lubricating oils (per liter) and greases (per kg)	Php 8.00	Php 9.00	Php 10.00
Processed gas (per liter)	0.05	Processed gas (per liter)	8	9	10
Waxes and petrolatum (per kg)	3.5	Waxes and petrolatum (per kg)	8	9	10
Denatured alcohol (per liter)	0.05	Denatured alcohol (per liter)	8	9	10
Naphtha, regular gasoline and other similar products of distillation (per liter)	4.35	Naphtha, regular gasoline, PYROLYSIS GASOLINE and other similar products of distillation and (per liter)	7	9	10
Leaded premium gasoline (per liter)	5.35	UNLEADED premium gasoline (per liter)	7	9	10
Aviation turbo jet fuel (per liter)	3.67	Aviation turbo jet fuel, AVIATION GAS (per liter)	4	4	4
Kerosene (per liter)		Kerosene (per liter)	3	4	5
Diesel fuel oil (per liter)		Diesel fuel oil (per liter)	2.5	4.5	6
Liquefied Petroleum Gas (per liter)		Liquefied Petroleum Gas (per kg)	1	2	3
Asphalt (per kg)	0.56	Asphalt (per kg)	8	9	10
Bunker fuel oil (per liter)		Bunker fuel oil (per liter)	2.5	4.5	6
		Petroleum coke (per metric ton)	2.5	4.5	6

Table 3b: Original and Revised Specific Taxes on Petroleum Products (National Internal Revenue Code of 1997 [RA 8424]; TRAIN Law [RA 10963]; Isla Lipana & Co./PwC Philippines, 2018)

The specific tax rates above are then transformed into their ad valorem counterparts. Hence, the baseline excise tax rates (ETR) in the CGE model are in ad valorem rates. The process of transformation into ad valorem rates involves knowing the actual volume of sales or consumption of the various production sectors and using the sectoral consumption to weight the specific tax rates. In the petroleum products sector, the weight comes from the consumption of petroleum products based on Department of Energy data.

We also include the revision in excise rates in the entire mining sector and not just in coal. For the coal mining sector, the excise tax on coal and coke will now be increased from PHP 10 (USD 0.22) per metric ton to PHP 150 (USD 3.30) per metric ton by 2020, which constitutes a 1,400% increase in the specific tax rate. On the other hand, all nonmetallic and metallic mineral products will now be subject to 4% from 2%, which is equivalent to a 100% rise in the ad valorem rate. Meanwhile, the mining of indigenous petroleum (i.e., crude oil), which was subject to 3% excise tax, is now subject to 6% excise tax, which also constitutes a 100% increase in the ad valorem rate. Table 3c shows the summary of the changes in excise taxes vis-à-vis the sectors of the model that have excise taxes.

SECTOR	ESTIMATED SHOCK (%)
Mining	100
Coal	1400
Crude Oil	100
Petroleum	281.0118

Table 3c: Summary of Changes in Effective Tax Rates, Excise Tax Rates, Petroleum and Coal (authors' calculations)

5. SIMULATION RESULTS AND DISCUSSION

The change in domestic output, domestic supply, and prices for each of the sectors and the change in each of the factors (i.e., skilled and unskilled labor and capital) were computed from the CGE model. Using these results, changes in welfare and emissions were calculated. The results are discussed below.

5.1. Sectoral Output

Table 4 shows the changes in production output. The results from the petroleum and coal excise tax simulation show that the sectors that are affected by the increased excise tax rates are the ones that suffer from a significant decline in output: petroleum and other fuel products (-4.3%), coal (-1.3%) and crude oil (-1.4%).

SECTOR	% CHANGE (in output)
AGRICULTURE	
Paddy rice	-0.2
Corn	-0.1
Other crops	-0.1
Sugarcane	-0.3
Banana	0
Livestock and other animal products	-0.3
Forestry	0.1
Fishery	-0.1
INDUSTRY	
Mining and quarrying	-0.1
Coal	-1.3
Crude oil	-1.4
Natural gas	0
Food manufactures	-0.3
Manufacture of sugar	-0.4
Beverage and tobacco	0
Textile and garments, tanneries and leather	-0.8
Wood and wood products	-0.4
Paper and printing	-0.3
Petroleum and other fuel products	-4.3
Chemicals, cosmetics, rubber and plastic products	-0.6
Non-metallic mineral products	-0.7
Metals (except for Iron and Steel)	-3.5
Iron and steel	-2.5
Computer, electronic and optical products	-0.9
Machineries and equipment (except for engine and turbines, etc.)	1

SECTOR	% CHANGE (in output)
Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	-1.5
Transport equipment	-1.1
Other manufactured goods	-0.8
SERVICES	
Utilities, excluding electricity	0.2
Construction	-0.4
Wholesale and retail trade and maintenance and repair of motor vehicles	0.1
Transport services and storage	-1.8
Telephone and communications	1.6
Financial services	1.2
Other services, including business services, and tourism	0.1
Public administration, education and health	1.1
ENERGY AND POWER	
Electric transmission	-0.1
Coal power generation	-0.1
Natural gas power generation	-0.4
Hydroelectric power generation	0
Wind power generation	0
Oil power generation	-2.5
Solar power generation	0
Other energy generation	-0.5

Table 4: Changes in Production Output, % Change from Base (authors' calculations)

Manufacturing in general shows a decline in output as these activities are highly dependent on the energy inputs. Metals (-3.5%), iron and steel (-2.5%), engine manufacturing (-1.5%), transportation equipment (-1.1%), and other manufacturing (-0.8%) are the sectors that are adversely affected in this scenario. Similar to the industrial sectors, agricultural production shows a decline under higher excise taxes. Palay (-0.2%), corn (-0.1%), sugarcane (-0.3%), and other crops (-0.1%) show a decline in sectoral output. Forestry (+0.1%) shows a slight improvement.

Service sectors show mixed results in terms of output. There is a slight output increase in the sectors that are intensive in capital and skilled labor:

telecommunications (+1.6%) and finance (+1.2%). Service sectors that rely more on low-skilled workers, such as transport services (- 1.8%) and construction (-0.4%), showed a decline in output.

There is a slight output decline across all energy sectors: gas power (-0.4%), coal (-0.1%), and other energy sources (-0.5%). The biggest decline in output was recorded by the oil power generation sector (-2.5%).

5.2. Domestic Supply

Changes in domestic supply, which includes both domestic production and imports, are shown in Table 5. Changes in domestic supply follow the trend of changes in domestic production. However, there is a slight decrease in domestic supply under higher excise taxes resulting from a foreign exchange devaluation, which reduces imports for many of the industrial and service sectors. For example, the reduction in petroleum supply is more than 5% but the reduction in domestic output is only slightly above 4%.

SECTOR	% CHANGE (in supply)
AGRICULTURE	
Paddy rice	-0.2
Corn	-0.1
Other crops	0
Sugarcane	-0.2
Banana	0
Livestock and other animal products	-0.3
Forestry	0.1
Fishery	-0.1
INDUSTRY	
Mining and quarrying	-4.1
Coal	-1.2
Crude oil	-1.6
Natural gas	0
Food manufactures	-0.2
Manufacture of sugar	-0.2
Beverage and tobacco	0

SECTOR	% CHANGE (in supply)
Textile and garments, tanneries and leather	-0.3
Wood and wood products	-0.5
Paper and printing	0.1
Petroleum and other fuel products	-5.2
Chemicals, cosmetics, rubber and plastic products	-0.2
Non-metallic mineral products	-0.3
Metals (except for Iron and Steel)	-1
Iron and steel	-0.9
Computer, electronic and optical products	-0.3
Machineries and equipment (except for engine and turbines, etc.)	-0.3
Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	-1.5
Transport equipment	-1.1
Other manufactured goods	-0.8
SERVICES	
Utilities, excluding electricity	0.2
Construction	-0.4
Wholesale and retail trade and maintenance and repair of motor vehicles	0.1
Transport services and storage	-1.3
Telephone and communications	1.6
Financial services	1.2
Other services, including business services, and tourism	0.2
Public administration, education and health	1.1
ENERGY	
Electric transmission	-0.3
Coal power generation	-0.5
Natural gas power generation	-1.4
Hydroelectric power generation	-0.1
Wind power generation	-0.2
Oil power generation	-5.7
Solar power generation	-0.1
Other energy generation	-1.2

Table 5: Changes in Domestic Supply, % Change from Base (authors' calculations)

5.3. Prices

Changes in prices are presented in Table 6. When excise taxes on fossil fuels increase, the coal price increases by 0.4% while the price of mining sector output increases by 5.2% and the petroleum price increases by 8.5%. Prices of agricultural products show a slight increase between 0.1% and 0.3%; these include rice (+0.2%), corn (+0.2%), sugar (+0.3%), and livestock (+0.2 %).

	% CHANGE (in prices)
Paddy rice	-0.2
Corn	-0.1
Other crops	0
Sugarcane	-0.2
Banana	0
Livestock and other animal products	-0.3
Forestry	0.1
Fishery	-0.1
Mining and quarrying	5.2
Coal	0.4
Crude oil	-0.1
Natural gas	2.1
Food manufactures	0.2
Manufacture of sugar	0.2
Beverage and tobacco	0.3
Textile and garments, tanneries and leather	0.3
Wood and wood products	0.8
Paper and printing	0.5
Petroleum and other fuel products	8.5
Chemicals, cosmetics, rubber and plastic products	0.3
Non-metallic mineral products	0.7
Metals (except for Iron and Steel)	1.9
Iron and steel	1.6
Computer, electronic and optical products	0.4
Machineries and equipment (except for engine and turbines, etc.)	0.2

	% CHANGE (in prices)
Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	0
Transport equipment	0.3
Other manufactured goods	0.4
Utilities, excluding electricity	0.2
Construction	0.8
Wholesale and retail trade and maintenance and repair of motor vehicles	0.4
Transport services and storage	2
Telephone and communications	0.4
Financial services	0.2
Other services, including business services, and tourism	0.3
Public administration, education and health	0.4
Electric transmission	0.1
Coal power generation	0.1
Natural gas power generation	0.8
Hydroelectric power generation	-0.1
Wind power generation	0
Oil power generation	6.4
Solar power generation	-0.1
Other energy generation	1.3

Table 6: Changes in Sectoral Prices, % Change from Base (authors' calculations)

The prices of the transportation sector show a 2.0% increase, the highest among the service sectors. Together with the price of construction, which increased by 0.8%, the prices of other service sectors show an increase of less than 0.5%; these include trade (+0.4%), telecommunications (+0.4%), financial services (+0.2%), and other services (+0.3%).

The prices of the electricity generation industries also show only a slight increase, except for the prices of oil generating plants which increased by 6.4%. The price of solar energy shows a slight decline of 0.1%.

5.4 Factor Returns, Employment, and Welfare

Table 7 shows the changes in wage rates and rates of return to capital. With higher excise taxes on coal and petroleum, wages of low skilled laborers and income from capital declined slightly by 0.1% and 0.2%, respectively. Capital returns suffered the most among factors of production because capital-intensive sectors are also fossil fuel intensive.

FACTOR	% CHANGE (in Factor Returns)
Unskilled	-0.1%
Skilled	0.3%
Capital	-0.2%

Table 7: Change in Factor Returns (authors' calculations)

Table 8 shows the changes in employment based on the simulated changes in output by sector. With an excise tax increase, the biggest drop in employment is experienced by the transport services and storage sector, which loses more than 50,000 workers—greater than the net employment loss of more than 36,000 workers. Construction and metal industries show a decline in employment while public administration, education, and health show gains.

SECTOR	% CHANGE (in thousands of workers)
Paddy rice	-5,061
Corn	-1,421
Other crops	-2,388
Sugarcane	-1,231
Banana	-
Livestock and other animal products	-2,538
Forestry	223
Fishery	-1,331
Mining and quarrying	-217
Oil and gas	-13
Food manufactures	-2,396
Manufacture of sugar	-74
Beverage and tobacco	-
Textile and garments, tanneries and leather	-4,872

SECTOR	% CHANGE (in thousands of workers)
Wood and wood products	-1,377
Paper and printing	-1,545
Petroleum and other fuel products	-392
Chemicals, cosmetics, rubber and plastic products	-920
Non-metallic mineral products	-638
Metals (except for Iron and Steel)	-7,039
Iron and steel	-129
Computer, electronic and optical products	-3,463
Machineries and equipment (except for engine and turbines, etc.)	762
Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	-121
Transport equipment	-1,146
Other manufactured goods	-1,779
Utilities	-341
Construction	-12,186
Wholesale and retail trade and maintenance and repair of motor vehicles	7,686
Transport services and storage	-52,949
Telephone and communications	597
Financial services	5,845
Public administration, education and health	45,578
Other services, including business services, and tourism	8,619
Total	-36,256

Table 8: Change in Employment, Various Scenarios (basic data from the 2015 Labor Force Survey [Philippine Statistics Authority, 2015]). Note: Coal, natural gas, and crude oil have been integrated into the oil and gas sector while electricity transmission, the electricity generation sectors (coal, hydroelectric, geothermal, etc.), and other utilities have been integrated into the utilities sector as the Labor Force Survey does not have disaggregated information in the different industrial and service sub-sectors.

Changes in welfare are measured by the change in poverty incidence, which is affected by the change in incomes (through the changes in factor returns) and the change in commodity prices. Impact on poverty incidence is provided in Table 9. Given that increases in commodity prices are higher than increases in returns to

labor and capital (which proxy for the change in income), there is a slight decline in real income and therefore an increase in poverty incidence.

SECTOR	BASELINE	PERCENTAGE POINT CHANGE FROM BASELINE
Households	16.5	0.16
Individuals	21.6	0.2
Women	21.2	0.19
Fisherfolks	38.9	0.17
Transport workers	10.5	0.26
Farmers	42.2	0.32

Table 9: Poverty Incidence by Scenarios (authors' calculations)

5.5. Emissions

Table 10 shows the changes in emissions. Across all sectors, the increase in excise taxes resulted in CO₂ emissions declining by 0.8% and this is due primarily to the decline in transport service activities and electricity generating sectors, particularly oil and coal. The net decline is small because, despite declines in emissions from transportation and electricity generation, there are sectors that had increases in production and hence emissions.

SECTOR	BASELINE	COUNTERFACTUAL
CO2 emissions	97670.3	96904.5
Change from baseline	0	-0.78%

Table 10: Changes in CO2 Emissions, Various Scenarios (authors' calculations)

6. SUMMARY AND IMPLICATIONS FOR GOVERNMENT,
BUSINESS, AND HOUSEHOLDS

This study analyzed the impacts of increased taxes on petroleum and coal in the country in the midst of increasing energy utilization. The initial results show that the excise tax component in the TRAIN 1 would have a slight impact in terms of sectoral output and prices, and therefore on household welfare through incomes and employment and on carbon emissions in the country. Sectors that are energy-

intensive would see a slight decline in output, and there would be a slight increase in poverty given heightened prices.

This leads to two considerations that policymakers have to undertake when designing tax policies. While the ultimate goal of the TRAIN as a tax reform and its impact on environmental sustainability are very commendable—raising public revenues to improve the delivery of basic services and improve social and economic outcomes in the future while, at the same time, indirectly mitigating negative externalities on the climate and the environment—there are short-term considerations that the government should make. One would be the impact of the policy reform on sectors; another would be the impact on the targets that the Philippines must observe in terms of emissions.

Regarding the first, complementary measures are necessary to mitigate the negative effects of the tax reform on marginalized groups especially in the short-term. Besides the unconditional cash transfer program, which the government provided to the lowest seven income deciles, the government also undertook an assistance program for jeepney drivers called the Pantawid Pasada program, which provided a fuel subsidy amounting to PHP 5,000 (USD 110) in 2018 and PHP 20,500 (USD 451) in 2019 and is managed by the Land Transportation Franchising and Regulatory Board, the government agency in charge of jeepney transfers.

It is thus important to make sure that the poorest households continue to be supported by additional measures that may reduce the impact of the indirect taxes. These may include an additional cash transfer subsidy beyond the subsidy that is being provided under the unconditional cash transfer program. In addition, Mapa (2018) suggested that the poor households can also be provided with additional assistance in the form of discounted rice prices from the National Food Authority, which is promised under the TRAIN Law.

Besides the impact on incomes and therefore on poverty as noted above, increases in prices also have other effects such as those on children. This is a very important consideration especially in the context of the high incidence of child malnutrition and stunting in the country. Given that under the TRAIN Law there is a slight increase in prices, it would also be good to consider mitigating mechanisms for reducing the impact on one of the most vulnerable socio-economic groups.

For the second consideration, the design of measures to raise revenue may also consider how these would lead to the improved use of alternative energy policies that would lead to greater sustainable development outcomes. The results in this simulation had shown that while the increase in excise taxes slightly reduced the use of fossil fuels, increased economic production due to the impact of the other TRAIN components increased, ironically, the use of these types of energy sources only due to the fact that these types of plants have a higher generating capacity. Greater mitigation efforts in the use of energy by businesses and households would also allow for a reduction in emissions while minimizing the impact on the overall output of the economy.

The implication here is that measures that improve public revenue, while having a positive impact on the environment, have an adverse impact on welfare. Businesses and communities should also strive to help mitigate these negative impacts by contributing to development efforts and programs that raise the incomes of marginalized households.

Given that the simulation exercise focused only on changes in excise tax rates, there may also be intertemporal effects of the tax reform on output, employment, and welfare. In this case, a dynamic, i.e., multi-period, model would be more appropriate. Another scenario where dynamic simulation would be useful is in modeling the transition into low carbon development pathways and whether such a transition leads to the creation of an adequate number of green jobs—those that contribute to a reduction in carbon emissions—to offset job losses in fossil fuel-intensive sectors. Future work in this area may also explore the appropriate interventions from government to support low-carbon development that also reduces poverty through green jobs.

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APPENDICES

Appendices 1a–1e: Macro-SAM for 2015 (sourced from authors' calculations on PSA and Bangko Sentral ng Pilipinas [BSP] data).

ACTIVITIES				
	Agriculture	Industry	Service	Energy
Agriculture				
Industry				
Service				
Energy				
Agriculture	217,277.22	900,842.57	243,752.25	2,378.52
Industry	186,056.97	2,988,767.55	2,450,995.28	103,777.15
Service	542,650.31	1,900,394.15	5,237,136.94	139,943.11
Energy	3,330.98	108,604.65	323,759.11	40,404.49
Low skilled	540,286.58	300,102.26	1,008,735.63	9,072.89
High skilled	364,322.85	702,540.38	3,456,685.60	68,104.69
Capital	726,559.09	1,987,433.08	3,643,554.54	436,313.75
Tax collection	2,370.58	242,320.27	327,074.98	23,972.04
Household				
Enterprises				
Government				
Savings-Investment				
Rest of the World				
Total	2,582,854.58	9,131,004.91	16,691,694.33	823,966.64

Appendix 1a: Macro-SAM for Activities

COMMODITIES				
	Agriculture	Industry	Service	Energy
Agriculture	2,428,891.21			
Industry		7,281,918.56		
Service			15,406,815.86	
Energy				823,966.64
Agriculture				
Industry				
Service				
Energy				
Low skilled				
High skilled				
Capital				
Tax collection	7,479.80	186,704.70	159,345.50	-
Household				
Enterprises				
Government				
Savings-Investment				
Rest of the World	131,190.23	2,900,298.70	1,074,264.57	-
Total	2,567,561.24	10,368,921.96	16,640,425.93	823,966.64

Appendix 1b: Macro-SAM for Commodities

FACTORS				
	Low skilled	High skilled	Capital	Tax collection
Agriculture				
Industry				
Service				
Energy				
Agriculture				
Industry				
Service				
Energy				
Low skilled				
High skilled				
Capital				
Tax collection	-	-	-	
Household	1,858,197.36	4,591,653.52	3,515,619.72	
Enterprises			3,278,240.74	
Government				2,679,594.33
Savings-Investment				
Rest of the World				
Total	1,858,197.36	4,591,653.52	6,793,860.46	2,679,594.33

Appendix 1c: Macro-SAM for Factors

INSTITUTIONS					
	Household	Enterprises	Government	Savings-Investment	Rest of the World
Agriculture					153,963.37
Industry					1,849,086.35
Service					1,284,878.47
Energy					-
Agriculture	944,371.74		15,094.29	243,844.65	
Industry	3,329,563.61		119,220.49	1,190,540.91	
Service	5,204,131.32		1,742,947.20	1,873,222.90	
Energy	347,816.32		51.09	-	
Low skilled					
High skilled					
Capital					
Tax collection	847,224.92	870,048.50	-	-	13,053.04
Household			254,747.00		1,095,911.38
Enterprises			89,619.00		437,818.83
Government					
Savings-Investment	605,580.68	2,587,754.05	455,967.98	-	104,674.67
Rest of the World	37,440.39	347,876.02	1,947.28	446,368.92	-
Total	11,316,128.98	3,805,678.57	2,679,594.33	3,753,977.38	4,939,386.11

Appendix 1d: Macro-SAM for Institutions

	Total
Agriculture	2,582,854.58
Industry	9,131,004.91
Service	16,691,694.33
Energy	823,966.64
Agriculture	2,567,561.24
Industry	10,368,921.96
Service	16,640,425.93
Energy	823,966.64
Low skilled	1,858,197.36
High skilled	4,591,653.52
Capital	6,793,860.46
Tax collection	2,679,594.33
Household	11,316,128.98
Enterprises	3,805,678.57
Government	2,679,594.33
Savings-Investment	3,753,977.38
Rest of the World	4,939,386.11

Appendix 1e: Totals for Activities, Commodities, Factors, and Institutions

	Sector	Domestic Inputs	Imported Inputs	All Inputs
1	rice	0.0995	0.0734	0.1729
2	corn	0.2268	0.1701	0.3968
3	othcrops	0.0295	0.0241	0.0536
4	sugarcane	0.7294	0.5835	1.3129
5	banana	0.1149	0.0919	0.2068
6	livestock	0.0065	0.0043	0.0108
7	forestry	1.5354	1.1811	2.7165
8	fishery	0.6107	0.4852	1.0958
9	mining	3.7287	2.6747	6.4035
10	Coal	2.2315		-
11	Oil	1.7502	0.1795	1.9297
12	Gas	1.2696	- 1.2696	-
13	foodmfg	0.2704	0.1502	0.4206
14	sugarmilling	0.5126	0.2278	0.7404
15	othbeverages	0.5354	0.3189	0.8542
16	textile	0.1199	0.0658	0.1857
17	wood	0.2999	0.1941	0.4940
18	paper	1.0021	0.1462	1.1483
19	petroleum	0.4484	1.4666	1.9150
20	chemicals	0.9293	0.4772	1.4065
21	minerals	15.3602	26.1491	41.5093
22	metals	0.2780	0.1192	0.3972
23	ironsteel	1.4393	1.5249	2.9641
24	electronics	0.0911	0.0674	0.1585
25	machineries	0.7298	0.4320	1.1618
26	engines	4.8802	0.9760	5.8563
27	transequip	0.0060	-	0.0060
28	othmfg	0.1316	0.0351	0.1667
29	Electrans	-	-	-
30	coal	127.8474	179.3900	307.2374
31	Gas	43.5736	0.0280	43.6016
32	Hydro	-	-	-
33	Wind	-	-	-
34	Oil	31.5297		-

	Sector	Domestic Inputs	Imported Inputs	All Inputs
35	Solar	-	-	-
36	OtherSource	-	-	-
37	otherutil	1.0785	0.0200	1.0985
38	construction	0.2045	0.1091	0.3137
39	trade	0.2174	0.1696	0.3870
40	transport	13.4029	10.1514	23.5543
41	comms	0.3033	0.2406	0.5439
42	finance	0.1678	0.1324	0.3001
43	othservice	0.0896	-	0.0896
44	publicadmin	0.1610	0.1235	0.2846

Appendix 2: CO2 Emission Multipliers for 2014 (authors' calculations)

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ADDRESSING SUSTAINABILITY IN FASHION THROUGH GOAL FRAMES AND THE THEORY OF PLANNED BEHAVIOR PERSPECTIVES

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ABSTRACT

The throwaway fast fashion culture leads to increasing wasteful consumption and the dwindling of the world's natural resources. Thus, it has become apparent that for the good of the environment, consumers need to decrease frequency of buying clothes as a form of pro-environmental behavior (PEB). By linking the Theory of Planned Behavior and Goal-Framing Theory, this study determined factors that can encourage consumers towards PEB performance as well as the influence of goal frames on these factors. This study also explored how consumers' clothing involvement moderates the effectiveness of these goal frames. Experiments with 350 female respondents were conducted. Results showed that attitude was significantly influenced by environment-frame, while subjective norms was influenced both by environment-frame and image-frame. Results also established a moderating effect of clothing involvement due to enjoyment on the influence of image-frame on subjective norms. The implications in the field of environmental communications were also discussed.

KEYWORDS

fast fashion; goal frames; clothing involvement; pro-environmental behavior

INTRODUCTION

The Brundtland Commission defines sustainable development as “development that meets the needs of the present without compromising future generations’ ability to meet their own needs” (World Commission on Environment and Development, 1987: 27). In the September 2015 U.N. Sustainable Development Summit, the 2030 Sustainable Development Agenda proposed 17 key goals, including the goal of responsible consumption and production (United Nations, 2015). However, industrialization continuous to undermine this concept of development because of high-level consumerism and marketing (Claudio, 2007). In particular, the clothing industry, which accounts for about 1.2 billion tons of carbon dioxide per year, has an enormous environmental impact equivalent to 3–6.7% of the world’s greenhouse gas emissions (Laitala, Klepp, & Henry, 2018). Moreover, about 80% of the global clothing wastes goes into landfills. Disposed clothing could take approximately 200 years to decompose, during which these materials release methane, a type of greenhouse gas that is more harmful to human health than carbon dioxide (McCarthy, 2018).

In the clothing industry, the fast fashion trend drives the increasing rate of purchasing clothes due to the speed of changing styles (Bianchi & Birtwistle, 2012). Fast fashion refers to mass-produced, highly in-demand, low cost, and low-quality clothing collections that imitate authentic and luxury fashion brands (Joy, Sherry, Venkatesh, Wang, & Chan, 2012; Fernie & Sparks, 2004). However, this fashion trend is linked with unsustainability as it eventually results in adverse environmental impacts, particularly natural resource depletion and waste generation (Joy et al., 2012). Because of this wasteful consumption, environmentalists are finding ways to influence consumers’ purchase behavior as regards fashion (Boström & Micheletti, 2016).

The industry has been initiating a shift towards a sustainable fashion trend known as slow fashion, which encourages consumers to reduce their frequency of buying clothes (Cataldi, Dickson, & Grover, 2017) and which considers practicality, simplicity, and authenticity as fundamental (Karg, 2015). Pookulangara and Shephard (2013) established that slow fashion never goes out of style and consists of clothes made with care and precision. Moreover, the quality of materials used ensures that slow fashion garments last long (Wood, 2009). Consumers also usually develop emotional connection with these clothes (Holt, 2009). However, slow fashion has

yet to be widely adopted unlike fast fashion (McNeill & Moore, 2015) due to its relatively higher prices.

To promote sustainability in the clothing industry, there is a need to establish a greater awareness of the link between decreased patronage of fast fashion and pro-environmental behavior (PEB). Steg and Nordlund (2012) define PEB as actions that improve environmental welfare. Lessening one's frequency of purchase of clothes will be a move away from the fast fashion trend and it certainly qualifies as PEB since it promotes waste reduction and decreased consumption of resources. In this regard, this study then proposes that reducing frequency of clothing purchases can be encouraged if people are made more aware of the environmental impact of fast fashion. The Goal Framing Theory and the Theory of Planned Behavior are the theoretical frameworks used to determine if goal-framed messages can create this awareness and influence a change in attitudes, subjective norms, and perceived behavioral control (PBC) towards intention to reduce frequency of buying clothes. These message frames are based on hedonic, gain, or normative goals as they relate to the environment.

The Theory of Planned Behavior

Ajzen's (1991) theory of planned behavior (TPB) proposes that one's intention depends on three antecedents, namely, attitude, subjective norms, and PBC. *Attitude* towards a specific behavior is determined by the belief that performing such behavior would result in either good or bad outcomes, which then is assumed to influence intention to engage in such particular behavior. Normative belief is the expectation that relevant others would want a person to perform certain behaviors. The combined normative beliefs of various referent others such as family and friends produce social pressure referred to as *subjective norms*. *Perceived behavioral control* (PBC) is the degree to which people believe they can accomplish a specific task. It is also likely to influence the intention to perform such a specific act. Ultimately, TPB suggests that *intention* is the closest antecedent of behavior (Ajzen, 1991), making it tantamount to assuming that a behavior will be performed.

TPB has been applied in many areas of PEB research such as waste reduction, reuse, and recycling (Chan, 1998) and as regards intention to visit green hotels (Chen & Tung, 2014). In the field of fashion, Jain, Khan, and Mishra (2017) examined the purchasing behavior of high fashion consumers using the TPB framework. Subjective

norms had the strongest influence on consumers' intention to purchase expensive fashion brands, followed by attitude. In that same study, PBC had no significant relationship with intention as regards purchasing expensive clothes but showed a strong positive, significant relationship with the actual buying behavior. In general, however, there is a dearth of literature on TPB and PEB in the clothing industry.

The Goal-Framing Theory

Framing is a communication strategy whereby the perception of others toward a certain issue can be influenced, resulting in a change of perception, to which people respond accordingly (Chong & Druckman, 2007). The framing theory suggests that information can be communicated and understood through various perspectives and that the role of communication is seen as key in the effort to invoke behavioral change (Pelletier & Sharp, 2008). Communication was also established to be crucial in making people consider the environmental and societal value of adopting slow fashion (Bolderdijk, Gorsira, Keizer, & Steg, 2013). Consideration of peoples' goals is likewise essential to effect this change in perception and the Goal-Framing Theory (GFT) proposes that goals can frame the way people perceive information. GFT considers three overarching goal frames, namely, hedonic, gain, and normative (Lindenberg & Steg, 2007, 2013).

Hedonic goal pertains to the longing to address the desired feeling or emotional need at a certain point in time (Etienne, 2011). A hedonic goal is a desire for positive feelings such as convenience and pleasure. Hedonic factors have been shown to significantly influence a person's PEB (Lindenberg, 2008). *Gain goals* aim to advance a person's wealth or image and influence people to seek opportunities that maximize their benefits (Etienne, 2011). Gain goals also have a significant influence on PEB depending on how a person thinks about the benefit of acting upon the behavior (Lindenberg & Steg, 2013). When people believe that they will improve their image, they will likely act pro-environmentally (Noppers, Keizer, Bolderdijk, & Steg, 2014). Finally, *normative goals* denote doing the right thing for the common good (Etienne, 2011). Since PEB generally results in social benefits, normative goal frames can become the instrument to promote PEB (Steg & Nordlund, 2012). Studies on fashion and GFT suggest that messages linked with hedonic, gain, and normative goals encourage people to act toward a targeted PEB (Michaelidou & Dibb, 2006; Lindenberg & Steg, 2007). Overall, the three overarching goals of GFT

are important considerations in effectively framing messages to influence people to act pro-environmentally (Gifford & Nilsson, 2014; Petersen & Posner, 2012).

Clothing Involvement and the Effect of Goal Frames on TPB

Clothing involvement refers to the degree of a person's interest to spend on fashion products (Manchiraju & Damhorst, 2016). In line with this, Michaelidou and Dibb (2006) propounded that a person's clothing involvement is predominantly based on the *enjoyment* of shopping, as well as on the *appearance* derived from the symbolic function of clothes. Clothing is a means of self-expression (Piacentini & Mailer, 2004), especially among young middle-class consumers (Jang, Ko, Chun, & Lee, 2012), and encouraging them to move towards sustainable consumption requires much more understanding of behavioral factors regarding clothing involvement (Gwozdz, Nielsen, & Müller, 2017). Considering that a person's clothing involvement is either due to enjoyment or appearance, the effect of each goal frame on TPB constructs could become different as well.

Clothing involvement due to enjoyment (CIE) has a uniquely positive effect on how a person perceives goal frames for PEB. A natural tendency of a person to be involved with activity due to enjoyment (e.g., purchasing clothes, etc.), only makes a hedonic goal frame much more effective in the context of TPB, especially as regards attitude and intention (Botti & McGill, 2011). When a goal frame promotes image, CIE remains an enhancer, as according to Hillhouse, Turrisi, and Kastner (2000), enjoyment reinforces a desire for a positive self-image. Conversely, CIE could weaken how normative goal frame affects TPB since CIE promotes one's enjoyment (Olsen & Skallerud, 2011), instead of the common good, which is the purpose of normative goal frames. CIE generally strengthens intentional antecedents (except only PBC), and according to Ajzen (1991), stronger attitude and subjective norms, result in stronger intention.

Clothing involvement due to appearance (CIA), just like CIE, expectedly has a positive effect on the influence of goal frames towards the PEB under the TPB perspective (Lindenberg & Steg, 2013). When a person buys clothes to make one look good, receiving a message that the shopping activity is pleasurable (hedonic-frame), further strengthens that person's behavioral tendency to shop more often (Lindenberg, 2008). When the theme of a goal frame is about having a good image,

CIA—being consistent with and in favor of one's image goal (Etienne, 2011)—reinforces the framing effect (Chong & Druckman, 2007). Furthermore, a goal frame for the environment conveying that a positive image could stem from performing PEB such as less frequent shopping for clothes, also strengthen the framing effect (Steg & Nordlund, 2012; Chong & Druckman, 2007). CIA therefore, as an effectiveness enhancer of goal frames on attitude, subjective norms, and PBC, generally leads to an increased level of intention (Ajzen, 1991).

Currently, there is a gap in the literature on understanding clothing consumption using the framing theory and TPB. This research applies GFT and TPB frameworks as approaches to promote the PEB. Within the context of communication, it is important to understand what types of messaging would be influences on reducing frequency of buying clothes. Specifically, this research centers on hedonic, gain, and normative goal-framed messages and establishes its influence on the constructs of TPB intending to move people to shift towards lessening frequency of buying clothes. Furthermore, this study explores whether clothing involvement has a moderating effect on goal frames and TPB constructs. In doing so, a better understanding of how to promote reduced frequency of buying clothes among consumers is obtained.

Research Questions and Hypotheses

Ajzen (1991) proposed that attitude, subjective norms, and PBC influence intention towards behavior. This research extends the TPB by answering the following question: (1) *Do attitudes, subjective norms, and PBC predict intention to reduce frequency of buying clothes?* To this research question, this study proposes the following hypotheses:

- H₁: Attitude significantly and positively predicts intention to reduce frequency of buying clothes.
- H₂: Subjective norms significantly and positively predict intention to reduce frequency of buying clothes.
- H₃: PBC significantly and positively predicts intention to reduce frequency of buying clothes.

Lindenberg and Steg (2007) suggest that GFT can be the most powerful strategy in promoting PEB. In line with this, this study aims to discover how hedonic, gain, and normative goal frames influence the constructs of TPB towards the desired

PEB of reducing frequency of clothing purchases. This study, therefore, also poses the following research question: (2) *Do goal frames influence TPB factors towards reducing frequency of buying clothes?* To this question, this research proposes the following hypotheses:

- H₄: Pleasure (hedonic) frame, image (gain) frame, and environment (normative) frame positively and significantly influence attitude toward PEB
- H₅: Pleasure (hedonic) frame, image (gain) frame, and environment (normative) frame positively and significantly influence subjective norms toward PEB
- H₆: Pleasure (hedonic) frame, image (gain) frame, and environment (normative) frame positively and significantly influence PBC toward PEB
- H₇: Pleasure (hedonic) frame, image (gain) frame, and environment (normative) frame positively and significantly influence intention toward PEB

Michaelidou and Dibb (2006) proposed that understanding clothing involvement is crucial in gaining a deeper understanding of people's purchase of clothing, particularly as it relates to frequency. Thus, the study also aims to answer the question: (3) *Does clothing involvement moderate the influence of goal frames on attitude, subjective norms, PBC, and intention to reduce frequency of buying clothes?* Literature on fashion suggests that people's clothing involvement is based on the enjoyment of buying clothes (CIE), and/or the appearance (CIA) derived as a benefit of purchasing clothes. Thus, cogently, the effect of goal frames on one's attitude, subjective norms, PBC, and intention could be different depending on whether the respondent's clothing involvement is more for enjoyment or more for appearance sake. To the question above, this study proposes the following hypotheses:

- H₈: The influence of goal frame/s (pleasure and image) on attitudes, subjective norms, and intention towards PEB is enhanced by level of CIE.
- H₉: The influence of goal frame/s (pleasure, image, or environment) on attitudes, subjective norms, PBC, and intention towards PEB is enhanced by level of CIA.

The conceptual framework below illustrates the proposed relationships of the various goal frames with antecedents of intention and the final intention to reduce frequency of buying clothes, as well as the moderating effects of clothing involvement.

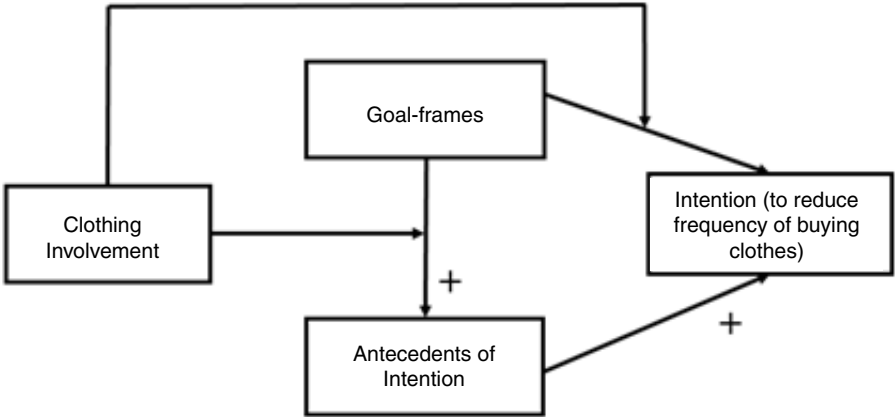


Figure 1: Conceptual Framework

This research considers communication as a key approach toward the pursuit of PEB (Pelletier & Sharp, 2008). It addresses the research gap on determining the influence of goal frames on TPB constructs as it relates to sustainable clothing consumption and seeks to help address the adverse environmental impact of fast fashion’s throwaway culture.

METHODOLOGY

Development of Research Materials

Goal frames were developed based on the outcomes of a focused group discussion (FGD) about clothing purchase considerations among six young women. In particular, four messages were developed, i.e., messages supportive of an individual’s pleasure, image, or environmental goals as considerations in purchasing clothes, plus one control statement. The messages consisted of approximately 29 to 56 words. Posters (Appendix A) were used to communicate these messages as a poster offers visual exposure, affordability, size flexibility, and the capacity of reaching a wider audience (Wroblewski, 2018). Four posters were utilized and each poster communicated a

different goal frame or the control message. The messages were further tested among 32 participants for the quantitative manipulation checks. Except for the difference in messages, uniformity in the execution of the posters was ensured to avoid bias resulting from differences in the visual elements.

Manipulation Checks

Manipulation checks ensure that each message is perceived uniquely relative to the other messages, and therefore understood the way it is intended for. Through a 5-point Likert scale, each respondent indicated their level of agreement with each of the goal frames. One-way repeated measures of ANOVA were performed to compare the mean scores of pleasure, image, and environmental goal frames to confirm if the message for each was perceived as a goal related to pleasure, image, and environment, respectively. These results are presented in the table below.

Primary Message	N	Mean	Standard Deviation	Wilks's λ
Pleasure M-Pleasure	32	3.59	0.76	.36*
Pleasure M-Image	32	2.31	1.26	
Pleasure M-Environment	32	2.65	1.33	
Image M-Pleasure	32	2.19	0.97	.24*
Image M-Image	32	3.75	0.95	
Image M-Environment	32	2.56	1.32	
Environment M-Pleasure	32	2.25	1.11	.17*
Environment M-Image	32	2.50	1.05	
Environment M-Environment	32	3.81	1.00	

Table 1: Descriptive Statistics and Wilks's Lambda (λ) for Pleasure, Image, and Environment Scores Seen as Primary Message (*p < 0.05)

Based on these outcomes, goal frames on pleasure, image, and environment were seen to be significantly different from each other and were understood to be communicating what the message meant to communicate for a particular theme. Manipulation checks respondents were not participants in the main test.

Participants

Survey participants were selected according to three demographic considerations of gender, age, and socio-economic classification. Only females were considered, given that literature on fashion suggests that women are significantly more involved in fashion, shop significantly more often, and have stronger recreational motivation in shopping for clothes than men (Cox & Dittmar, 1995; Chen-Yu & Seock, 2002). Participants included only those born after 1975 (Millennials) and Generation Z. According to Crewe and Davenport (1992), people in these age cohorts generally buy clothes more frequently at low cost but high quantity. Finally, participants included those who classified themselves as middle-class. Generally, the middle-class are those having a stable source of income, living in a decent place, meeting their basic needs, and wants (Atkinson & Brandolini, 2013). Participants were invited to join the survey through a face-to-face approach and invitations. No incentives were given to them and an assurance of confidentiality of their responses was provided. Each participant was asked to sign a consent form at the beginning to document their willingness to participate in the survey.

Setting

The experiments for all of the four clusters of respondents were conducted in the same venue that was convenient for participants and had all the necessities to accomplish the experiment properly. The principal investigator also served as the sole facilitator of the experiments across all of the four clusters of respondents.

Procedure

The research involved 378 young working females. Of these, 350 respondents of age ranging from 18 to 33 years old ($M = 27$, $SD = 1.22$) completed the experiment. In terms of occupation, the distribution is as follows: 5% classified themselves as in a top-level company position, 18% in the middle-level, 28% as independent professionals, 29% as entrepreneurs, and 20% as rank-and-file employees. Each respondent was randomly assigned to one of four experimental clusters. These four are the control cluster, and the three experimental clusters namely, those for the pleasure-frame, image-frame, and environment-frame. Respondents exposed to the control-frame were at 23% (81 respondents), pleasure-frame at 25% (88 respondents), image-frame at 26% (91 respondents), and environment-frame at 26% (90 respondents). For the experimental procedure, each respondent was first required

to complete the questionnaire, after which a poster was shown to them. After seeing the poster, a 10-minute break was given, based on previous research using the framing approach to influence behaviors (Rothman, Salovey, Antone, Keough, & Martin, 1993). Finally, participants were asked to complete the post-questionnaire.

Measures

The study utilized three scales namely the TPB Scale (Ajzen, 1991), the Clothing Involvement Scale (Michaelidou & Dibb, 2006), and the Social Desirability Scale (Crowne & Marlowe, 1960). Reliability tests, factor analyses, and partial correlation were likewise performed to ensure reliability and consistency of these scales with the data collected. Appendix B shows the outcome of pre-tests in table form, providing validity and reliability of these measures.

The TPB scale (Ajzen, 1991) was used to measure a person's attitude, subjective norms, PBC, and intention as applied to frequency of clothing purchase. Participants indicated the degree of their agreement as regards considerations in reducing clothing purchases using a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Analysis of data shows sufficient correlations greater than 0 with the factor correlations showing a sufficient number of $r > 0.3$ establishing factorability of the data. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy has a value of .71 suggesting an adequate sample size. The Bartlett's Test of Sphericity was likewise significant at $\chi^2(120) = 355.031, p < .001$. Factor analysis using Principal Axis with Oblimin (oblique) rotation showed a four-factor solution with 15 items, and total variance explained of 74.6%. Reliability analyses were also performed for the 15 TPB-questionnaire items to test for internal consistency. The Cronbach's alpha showed good internal consistency for attitude with five (5) items at $\alpha = 0.88$, subjective norms with three (3) items at $\alpha = 0.97$, and PBC with four (4) items at $\alpha = 0.75$. Finally, intention has three (3) items that have good internal consistency at $\alpha = 0.75$.

The Clothing Involvement Scale identifies the dimensions of clothing involvement that give a deeper understanding of why people buy clothes (Michaelidou & Dibb, 2006). This is a 15-item Likert scale questionnaire that measures clothing involvement as a multi-dimensional construct with these dimensions identified as importance of clothing, enjoyment in buying clothes, interest in clothes, appearance through clothes, and sign value. This study considered *enjoyment* and *appearance* as the most predominant motives in clothing involvement. The analysis for this

purpose indicated that there were significant correlations greater than 0 with the factor correlations presenting a sufficient number of $r > .03$ indicating factorability of the constructs. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy provided a value of .78 suggests an adequate sample size. The Bartlett's Test of Sphericity was likewise significant at $\chi^2(105) = 372.391, p < .001$. Factor analysis using Principal Axis with Oblimin (oblique) rotation through SPSS Version 23 showed a two-factor solution with seven (7) items, and total variance explained of 74.05%. Reliability analyses were also carried out on the fashion involvement factors (enjoyment and appearance) to test for internal consistency. The Cronbach's alpha for the construct on enjoyment with four (4) items was at $\alpha = 0.86$ and for appearance with three (3) items at $\alpha = 0.71$.

Social desirability is defined as the need of people for acceptance by responding appropriately in a given cultural context (Crowne & Marlowe, 1960). This scale serves as an instrument to detect any form of social desirability bias among respondents of a survey that may affect their responses. Partial correlation analysis through IBM SPSS version 23 show zero-order correlations ($r = .004, r = -.032, r = -.059, \text{ and } r = -.080$) indicating that social desirability responses did not have a significant influence on the respondents' answers to the survey.

Data Analyses

In the preliminary analyses, repeated measures of ANOVA, confirmatory factor analyses, reliability analyses, and partial correlation were performed using IBM SPSS version 23 to screen for errors and outliers. Furthermore, descriptive statistics and tests of assumptions have been done.

TPB Factors	Mean	Std. Deviation	Skewness	Kurtosis
Attitude	2.57	1.07	.281	-.569
Subjective Norms	2.49	1.00	.364	-.329
PBC	2.92	1.21	.160	-.890
Intention	2.69	1.11	.385	-.429

Table 2: Descriptive Statistics

Skewness of each TPB factor ranged between -0.5 and 0.5 indicating essentially normal distribution (Tabachnick & Fidell, 2019). Multiple regression was done to examine if attitude, subjective norms, and PBC predict intention to reduce frequency of buying clothes. Furthermore, one-way analysis of covariance (ANCOVA) was conducted to compare the effects of goal frames on attitude, subjective norms, PBC, and intention. Effect size's (η_p^2) interpretations are based on Lakens (2013) where η_p^2 values of 0.01 indicate a small effect, 0.06 as medium effect, and 0.14 as large effect. With the control group as the reference among the dummy coded variables (goal frames), eight hierarchical regression analyses were performed with separate analyses conducted for each of the four TPB constructs (DVs), repeated twice for each moderator variable (CIE & CIA). Main effects, which are the influence of goal frames on TPB constructs were entered in step one, while the interaction terms of goal frames with both CIE or CIA were entered in step two. To probe for significant interactions between goal frames and the moderator variable, simple slopes analysis was performed with conditional values of CIE or CIA as 1 standard deviation (SD) above and below the mean.

FINDINGS

The TPB constructs were confirmed applicable in the context of this study since based on multiple regression, the TPB antecedents predicted significantly and positively the final intention to reduce frequency of buying clothes at $F(1, 554) = 287.90, p < .001$ with attitude ($B = .10, SE = 0.027, p < .05$), subjective norms ($B = 0.78, SE = 0.029, p < .01$), and PBC ($B = .18, SE = 0.026, p < .001$). These results validate H_1 , H_2 , and H_3 .

Relationships Between Goal Frames and TPB Constructs

A one-way analysis of covariance (ANCOVA) was performed to compare goal frames' effectiveness in terms of strengthening TPB constructs in the context of reducing frequency of buying clothes. Levene's test and normality checks were carried out and assumptions are met with attitude, subjective norms, PBC, and intention scores essentially normally distributed. Results are shown in the succeeding tables.

Attitude	N	Pre-test Mean	Post-test Mean		Effect Size (η_p^2)
			Estimated Marginal Value	Std. Error	
Pleasure-frame	88	2.58	2.76	0.08	0.03
Image-frame	91	2.57	2.75	0.09	
Environment-frame	90	2.40	2.97 ^a	0.09	
Control	81	2.02	2.20	0.09	

Table 3: ANCOVA for Attitude

^aThe post-test mean for environment-frame was significantly different from that of the control group ($p < 0.01$)

There is a significant difference in the post-test attitude scores of the participants under the different goal frames [$F(3, 345) = 5.23, p = .002$] after controlling for pre-test scores. Despite this significant difference, the actual difference in mean scores between the groups was small as the effect size was 0.03. Estimated marginal values showed that the highest score for attitude was associated with the environment-frame ($M = 2.97$), followed by the pleasure-frame ($M = 2.76$), and the image-frame ($M = 2.75$). The post-hoc test using Tukey Honestly Significant Difference (HSD) method showed a significant difference between the environment-frame’s and control-frame’s ($M = 2.20$) influence on attitude, $p < 0.01$. Results also show the environment-frame score as significantly different from those of the pleasure-frame and the image frame, $p < 0.05$. There was no significant difference in scores between the pleasure-frame and the image frame. Such outcomes therefore partially accept H_4 , i.e., environment frame positively and significantly influence attitude.

Subjective Norms	N	Pre-test Mean	Post-test Mean		Effect Size (η_p^2)
			Estimated Marginal Value	Std. Error	
Pleasure-frame	88	2.39	2.54	0.08	0.06
Image-frame	91	2.48	3.93 ^a	0.07	
Environment-frame	90	2.29	2.75 ^a	0.07	
Control	81	2.09	2.04	0.08	

Table 4: ANCOVA for Subjective Norms

^aThe post-test means for the the image-frame and the environment-frame were significantly different from that of the control group ($p < 0.05$)

There is a significant difference in the post-test subjective norms scores of the participants under the different goal frames [$F(3, 346) = 4.40, p = .005$] after controlling for pre-test scores. The results suggest a medium effect size at 0.06. Estimated marginal values showed that the highest score for subjective norms was associated with the image-frame ($M = 3.93$), followed by the environment-frame ($M = 2.75$), and the pleasure-frame ($M = 2.54$). The post-hoc test using Tukey HSD yielded significant differences between the image-frame's, environment-frame's, and control-frame's ($M = 2.04$) influence on subjective norms, $p < .001$. Results also show the environment-frame score as significantly different from those of the pleasure-frame and the image frame, $p < 0.05$. Likewise, there was a significant difference in scores between the pleasure-frame and the image frame, $p < 0.05$. These outcomes partially accept H_5 , i.e., image-frame and environment-frame positively and significantly influence subjective norms.

PBC	N	Pre-test Mean	Post-test Mean		Effect Size (η_p^2)
			Estimated Marginal Value	Std. Error	
Pleasure-frame	88	2.56	2.76	.10	0.03
Image-frame	91	2.89	3.09	.10	
Environment-frame	90	2.78	2.98	.09	
Control	81	2.09	2.29	.09	

Table 5: ANCOVA for PBC

There was no significant difference in the post-test PBC scores of the participants under the different goal frames [$F(3,346) = 2.00, p = .118$] after controlling for pre-test scores. Estimated marginal values showed that the highest PBC score was associated with the image-frame ($M = 3.09$), followed by the environment-frame ($M = 2.98$), and the pleasure-frame ($M = 2.76$). Although there were significant differences between the scores of the various frames, the post-hoc test using Tukey HSD yielded no significant differences between the control-frame and all other goal frame's effectiveness ($p = .07$) in affecting PBC. Such outcomes therefore completely reject H_6 .

Intention	N	Pre-test Mean	Post-test Mean		Effect Size (η_p^2)
			Estimated Marginal Value	Std. Error	
Pleasure-frame	88	2.50	2.67	0.09	0.05
Image-frame	91	2.51	2.68	0.08	
Environment-frame	90	2.41	2.58	0.08	
Control	81	2.13	2.40	0.09	

Table 6: ANCOVA for Intention

There was no significant difference in the post-test intention scores of the participants under the different goal frames [$F(3,346) = 2.45, p = .063$] after controlling for pre-test scores. Estimated marginal values showed that the highest score for intention was associated with the image-frame ($M = 2.68$), followed by the pleasure-frame ($M = 2.67$), and the environment-frame ($M = 2.58$). The post-hoc test using Tukey HSD yielded no significant differences between the control-frame and all other goal frame’s effectiveness ($p = .11$) in affecting intention. These results point to the complete rejection of H_7 .

Moderating Effect of Clothing Involvement on the Influence of Goal Frames on TPB Constructs

Moderating effects of clothing involvement on the significant relationships between the dummy-coded goal frames and TPB factors were also tested using hierarchical regression analyses. Based on results, the image-frame’s effect on subjective norms is significantly moderated by CIE at $R^2 = .16, p < .001$. To further explore this significant interaction, slopes analysis was performed. Step one of the regression model was significant, $F(1, 146) = 12.32, p < .001, R^2 = .20$. The image-frame significantly predicted subjective norms ($\beta = 0.55, SE = .07, p < .05$) and exposure to image-frame was associated with a 0.55-degree increase in subjective norms. Step two of the regression model was significant, $F(2, 145) = 6.87, p < 0.001, R^2 = .24$. Results showed statistically significant interaction between the image-frame and CIE ($p < .001$). As a result of this interaction, the image-frame showed greater influence on subjective norms ($B = 0.71, SE = 0.17, p < 0.001$) at high-level CIE 1-SD above the mean, while at low-level CIE 1-SD below the mean, the image-frame showed weaker influence ($B = 0.44, SE = 0.17, p < 0.001$). Such outcomes partially validate H_8 (CIE

leads to stronger influence of image-frame on subjective norms). CIA, on the other hand, established no significant moderating effect $R^2 = .01$, $p = .32$ on goal frames influence on TPB factors, thus completely rejecting H_9 .

DISCUSSION

In summary, this research adds to existing literature with its three significant findings: (1) It validates TPB in the context of PEB, specifically as it relates to reducing frequency of buying clothes; (2) it provides support for GFT and its utility towards shaping people's intention towards a specific PEB; and (3) it establishes the moderating effect of the type of clothing involvement on the relationships between goal frames and TPB constructs. The succeeding discussions provide insights into the significant findings of this study.

Applicability of TPB in Reducing Frequency of Buying Clothes

The results support the TPB as it applies to PEB as they show that respondents' attitudes, subjective norms, and PBC positively and significantly correlate to intention towards reducing the frequency of buying clothes. This means that the more positive is one's attitude towards PEB, the more likely it is that one would reduce frequency of buying clothes. It appears too that the more people feel that other persons significant in their lives find PEB to be important, the more likely it is that they would try to buy fewer clothes. And finally, the more that people feel they have control over their PEB, the more likely would they lessen their frequency of buying clothes. The relationship of attitudes, subjective norms, and PBC to intention to reduce frequency of buying clothes then suggests that deliberate efforts may be necessary to influence consumers along these parameters.

Significant Influence of Environment-Frame on Attitude

As a normative goal, the environment-frame promoted that by purchasing fewer clothes, one can help minimize waste from having too many clothes that are not needed. This relationship is crucial as a positive attitude towards a particular behavior, arguably, has a longer-lasting effect. If a person feels that doing a certain activity is right, meaningful, and for the greater good, then greater zeal and more deliberate efforts to act upon it can be expected. Delivering a message supportive of environmental welfare would then be a concrete way to lead to PEB that is

sustainable and enduring. However, the small effect size result may indicate that the strength of the association between the environmental frame and attitude may not be that strong.

Significant Influence of Image-Frame and Environment-Frame on Subjective Norms

The image-frame proposed that one can buy fewer clothes to benefit the environment and still look fashionable at the same time. The *image-frame* has a significant influence on how participants give importance to what others think of them, or their subjective norms with a medium effect size. The message that PEB is consistent with being seen as fashionable may have made participants realize that showing environmental concern and responsibility is not inconsistent with being seen as fashionable. On another aspect, the *environment-frame* conveying that purchasing clothes less frequently would minimize wastes, suggests that emphasizing the targeted PEB as a norm would work sufficiently since the result showed a significant influence with a medium effect size. In support of this argument, Huang (2016) suggested that encouraging PEB by showing it as highly socially accepted, such as through social media, prompts greater environmental actions and encourages consistency of these actions.

Non-Significant Influence of Goal Frames on PBC

This result established that no goal frame significantly affected PBC. In the context of buying clothes, it means that PBC over frequency of buying clothes is not influenced by any of the goal frames. Related studies support such finding, wherein PBC was found to be influenced more by internal factors rather than externalities such as outside messages (Kidwell & Jewell, 2003; Lee & Park, 2007). Based on their research, shopping behavioral control, particularly for fashion products, was only significantly correlated with internal influences including self-mastery and mental health factors.

Non-Significant Influence of Any of the Goal Frames on Intention

Based on the results, goal frames did not directly affect the participants' intention to perform the PEB. In reference to literature, the way by which goal frames were formulated may have something to do with this result. In this research,

the frames highlighting goals achievement, including pleasure of shopping, image enhancement, and environmental protection, were all formulated with the purpose of promoting PEB. However, such positive goal frames can work less effectively compared to negative goal frames (conveying non-achievement of a goal) to influence people's intention (Krishnamurthy, Carter, & Blair, 2001). Furthermore, these findings also support TPB which establishes that influencing intention is not done directly but through the routes of attitudes, subjective norms, and PBC.

Moderating Effect of CIE on the Influence of Image-frame on Subjective Norms

Receiving a message that a PEB, particularly less frequent buying of clothes, would not be inconsistent with having a fashionable image, encourages the intention towards that PEB as a form of conformance to other people's expectations. Results show that if a person's clothing involvement is for enjoyment, the more likely would that person link the purchase of clothes to what other people think. It would indicate that the enjoyment of shopping does not necessarily translate to buying more clothes but would translate perhaps to more discerning purchases that would be consistent with the expectations of others. This finding is particularly interesting as it challenges the common impression that people who enjoy shopping would quite likely purchase clothes more often. It seems that clothing involvement as a form of enjoyable activity would not be inconsistent with less frequent purchase of clothes for environmental reasons.

No Moderating Effect of CIA on Goal Frames Influence on TPB Constructs

CIA was hypothesized as having a moderating effect on goal frames' influence on attitude, subjective norms, and PBC. However, findings proved otherwise. This means that the relationship of these three constructs with the intention of buying less clothes does not depend on clothing involvement that is image-related. This result can be seen as surprising given that the image-frame significantly influenced subjective norms. It can be surmised, however, that CIA may relate more to one's image in terms of self-expression or as a projection of social status and, thus, have little influence on one's intention to perform PEB.

Managerial Implications

Given adverse environmental consequences of fast-fashion, this study suggests that messages, when associated with consumers' goals on fashion, could be influential in moving them towards reducing their frequency of purchase for clothes. Among all the message frames studied, an image-frame could more effectively influence people to lessen frequency of clothing purchase given its effect size relative to subjective norms. Such communication route may be the most appropriate when talking to younger people who are the biggest purveyors of fast fashion and who value what other people think of their behaviour. The image-framed message would perhaps be even more effective for young people who consider fashion as one of the considerations in classifying people on a social level. Generally, when people believe that they will improve their image, they will likely act pro-environmentally. In addition, it appears that focusing on young people whose clothing involvement is for enjoyment may further spur efforts towards decreasing clothing purchases.

From a different perspective, it can be argued that awareness of the effect of fast fashion on the environment is not yet as salient in the minds of consumers as plastic consumption or waste recycling (Ozdamar-Ertekin, 2017). Awareness can therefore be generated through an environment-frame that clearly communicates the negative environmental impact of fast fashion. This is important as this kind of message is the only frame that influenced attitude and could be an effective way to communicate to consumers who have the ability and freedom to shift into more sustainable clothing purchase habits through reduced purchases. A change in attitude towards frequent purchases of clothes is expected to have a longer-lasting effect on the person's purchase behavior. Furthermore, use of an environmental frame would not just potentially influence attitude but could also be used to influence subjective norms. An environmental message could have a strong impression on the youth who are influenced by their significant others' perception of the environment.

Conclusively, communication through goal frames is pivotal in influencing people to think of the environment in terms of clothing purchase considerations. It is hoped that these findings could be useful for green marketing efforts as a starting point on what messages can be used to help drive down demand for fast fashion.

Limitations and Areas for Future Research

The current study only includes young female workers and, as such, cannot be representative of the total population. The correlation values of attitude, subjective norms, and PBC with intention may be inflated because of shared method variance, given that measures for all the TPB constructs were derived from the same questionnaire. The cross-sectional nature of these relationships is also a limitation. Furthermore, this study can only help predict participants' intention to reduce their clothing purchases but not the actual behavior of buying less clothes. Moreover, this study only attempts to understand the environmental challenges of fast-fashion from consumers' perspectives without considering manufacturers' considerations. For future studies, researchers can look at both manufacturers' environmental and social considerations, particularly ethical labor practices. Goal-framed messages on pleasure, image, and environmental protection could also be tested for difference between traditional and online shopping. Future research may also consider other goals depending on the desired PEB and target population, and/or expand study coverage to respondents from other age brackets and gender classifications.

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APPENDICES



Pleasure-frame



Image-frame



Environment-frame



Control-frame

Appendix A: Goal-frame Posters

Factor			
	Enjoyment	Appearance	Communality
CIE2	.953		.935
CIE4	.861		.782
CIE3	.799		.643
CIE1	.741		.649
CIA2		.930	.877
CIA3		.825	.786
CIA1		.568	.397
Cronbach's Alpha	.860	.710	

Appendix B1: Construct Validity and Reliability of Measures. Clothing Involvement Scale (CIS) Factors, Principal Axis Factoring, Oblimin with Kaiser Normalization Rotation, Pattern Matrix for 7 CIS Items (N=350). Note: Factor loadings < 0.4 are suppressed.

	Factor				
	Attitude	PBC	Subjective Norms	Intention	Communality
A4	.950				.983
A2	.937				.966
A5	.928				.977
A1	.870				.984
A3	.828				.928
P2		.982			.966
P4		.962			.956
P3		.832			.951
P1		.816			.942
S4			.964		.977
S1			.905		.986
S2			.858		.937
I3				.966	.964
I1				.901	.989
I2				.900	.983
Cronbach's Alpha	.880	.750	.970	.750	

Appendix B2: Theory of Planned Behavior Factors, Principal Axis Factoring, Oblimin with Kaiser Normalization Rotation, Pattern Matrix for 15 TPB Items (N=350). Note: Factor loadings < 0.4 are suppressed.

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LA PERTURBACIÓN BENDITA EN LA EDUCACIÓN EMPRESARIAL

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En 2007, en su libro *Blessed Unrest: How the Largest Movement in the World Came into Being, and Why No One Saw It Coming* (La perturbación bendita: Cómo se empezó el movimiento más grande del mundo y por qué nadie lo esperaba) el experto, activista y líder ambiental Paul Hawken describe el movimiento mundial de millones de personas y grupos trabajando para crear un mundo mejor.

A principios del primer capítulo, informa haber visto:

congregaciones convincentes, coherentes, orgánicas y autoorganizadas que involucran a decenas de millones de personas dedicadas al cambio. Cuando me preguntan en las universidades si soy pesimista u optimista sobre el futuro, mi respuesta es siempre la misma: si miras la ciencia que describe lo que está sucediendo en la Tierra hoy y no eres pesimista, no tienes los datos correctos. Si conoces a la gente en este movimiento sin nombre y no eres optimista, no tienes corazón. (4)

Desde 2007, las razones por tener tanto el pesimismo como el optimismo han aumentado.

El ecosistema del planeta ha seguido siendo atacado y deteriorándose. Y ha pasado la última oportunidad de 10 años para tomar las acciones necesarias a fin de prevenir una catástrofe ecológica global, al igual que todas las otras oportunidades de 10 años para acciones urgentes. Estas oportunidades siguen pasando sin inspirar el nivel de compromiso y acciones a nivel mundial para evitar esa catástrofe, y con cada década se crecen la magnitud y el precio de las acciones necesarias. Aunque muchos países han hecho avances significativos en tratar con los desafíos existenciales planteados por el cambio climático y la insostenibilidad global, estos esfuerzos están lejos de ser suficientes (Wallace-Wells, 2020).

En muchos aspectos, el evento más preocupante en este período posterior a 2007 es la oposición continua a acciones positivas por parte de algunos políticos y negocios en los Estados Unidos, bloqueando, en gran medida, las iniciativas nacionales e internacionales lideradas antes por la administración Clinton, y después, por la administración Obama. Este conjunto de acciones destructivas ideológicas e impulsadas por la codicia culminó en el abandono de cualquier esfuerzo por parte de los Estados Unidos de liderar para un mundo sostenible de 2016 a 2020. En ese período, el gobierno nacional estadounidense luchó activamente contra las medidas necesarias, a nivel nacional e internacional, no solo para la prosperidad y el bienestar nacionales, sino también muy probablemente para la supervivencia de nosotros mismos y de nuestra especie. Desafortunadamente, hay muchas razones por tener pesimismo en todo el mundo.

En comparación con las razones por ser pesimistas, las razones por ser optimistas parecen pocas pero sí, existen. Se siguen buscando y avanzando intentos de establecer acuerdos multilaterales para la curación ambiental, aunque mesuradamente y vacilante. Las tecnologías duras para crear energía limpia han progresado rápidamente con reducciones drásticas en costos y aumentos en la implementación. Se está creciendo la conciencia de que tenemos la capacidad y los recursos para eliminar la pobreza mundial a un precio económico casi insignificante a nivel mundial. El catálogo de iniciativas viables y potentes que tratan con los múltiples aspectos de la insostenibilidad global sigue creciendo e inspirando acciones positivas. Y en los Estados Unidos, una nueva administración nacional está buscando recuperar un papel positivo para Estados Unidos en el tratamiento del cambio climático, uno de los dos grandes desafíos existenciales de nuestras vidas. Y por cierto, hemos seguido evitando, por pura suerte y buena fortuna, la segunda mayor amenaza existencial a la existencia de nuestra especie y la de otras: el Armagedón nuclear (Sherwin, 2020).

Esta revista tiene un historial de optimismo sobre las oportunidades que tienen las escuelas de negocio para contribuir a enfrentar los desafíos de la insostenibilidad global, y los acontecimientos posterior a 2007 han añadido a ese optimismo. En este editorial, elaboraremos el caso muy básico para ese optimismo sobre el papel que puedan desempeñar las escuelas de negocios, y que ahora parece que desempeñan cada vez más. Luego, enumeraremos dos dominios amplios en los que vive ese optimismo. Finalmente, le invitaremos a usted a leer los artículos excelentes en este número de la revista.

EL CASO POR EL OPTIMISMO SOBRE EL PAPEL QUE PUEDAN DESEMPEÑAR LAS ESCUELAS DE NEGOCIOS

Si vamos a encontrar una forma de vivir en este planeta sin destruirlo, tenemos que hacer al menos tres cosas. Ocurren a nivel individual, organizacional y global:

1. tenemos que convertirnos en el tipo de personas que puedan vivir en este planeta sin destruirlo;
2. tenemos que producir, distribuir y consumir los bienes y servicios que necesitamos en formas que el planeta pueda soportar; y
3. Tenemos que crear sistemas económicos y políticos globales que permitan el florecimiento de todas las personas del mundo.

Cada una de estas tres tareas tiene un lado de descubrimiento y un lado de acción. En cuanto al descubrimiento: “¿Qué hay que hacer?, ¿Cómo se ve?”, y para la acción: “Hacer que suceda”.

Ambas tareas, de descubrimiento y de acción, deberían ser el objetivo de cualquier esfuerzo educativo, especialmente el esfuerzo educativo de la educación empresarial.

Es cierto que las escuelas de negocios como grupo durante mucho tiempo han sido negligentes en ver y actuar sobre esa visión, dado el papel que tienen. Muchas de ellas se han contentado con aceptar la postura cómoda de ver el propósito de la empresa y toda actividad económica como algo neoliberal, maximizando la riqueza de los accionistas: “el propósito del negocio es ganar dinero, punto”.

Sin embargo, una perturbación bendita y muy necesaria ha estado creciendo rápidamente en la educación empresarial y sus alrededores (Laszlo, Sroufe & Waddock, 2017), y en la comunidad mundial. Es cada vez más evidente que la práctica empresarial alineada con el paradigma neoliberal dominante es un fracaso: está destruyendo el planeta, está dejando un tercio de los pueblos del mundo en extrema pobreza, ha aumentado la desigualdad de ingresos y riqueza a niveles tan grandes que la mente no es capaz de captar completamente tanto el alcance como las implicaciones de esa desigualdad, y sus defensores observan, o tal vez incluso celebran, el alarde de un yate de 500 millones de dólares por uno de los mayores beneficiarios de ese conjunto de prácticas, ya que dirige una empresa cuyos empleados de tiempo completo parecen necesitar cupones de alimentos para alimentar a sus familias.

No se puede negar estos fracasos sistémicos y la fealdad de los excesos relacionados, y están fomentando la búsqueda de una aventura más valiosa, creativa y emocionante para la educación empresarial. Uno de los posibles enfoques para aprovechar las oportunidades disponibles a la educación empresarial es incorporar material sobre la sostenibilidad, la justicia social y el alivio de la pobreza en todo el currículo empresarial. Otro enfoque es basar todo el currículo en el compromiso con la sostenibilidad, la justicia social y el alivio de la pobreza desde el principio, para empezar con la premisa de que el propósito de la educación empresarial y la empresa comercial es crear un mundo sostenible / floreciente / regenerativo.

A medida que ambos enfoques están ganando aceptación, están inspirando descubrimientos y actividades de investigación de literalmente decenas de miles de profesores, estudiantes y equipos de estudiantes, muchos de ellos centrados en los 17 proyectos de los Objetivos de Desarrollo Sostenible de las Naciones Unidas. Mientras se redactaba este editorial, el *Fowler Center for Business* (Centro Fowler para los negocios) como un *Agent of World Benefit* (Agente de Beneficio Mundial) anunció los premios Flourish de este año. Los premios reconocen a las empresas con fines de lucro por sus contribuciones al logro de los ODS, como se describe en los proyectos de investigación estudiantil Aim2Flourish: 17 empresas, 17 ODS y 17 proyectos de investigación (Aim2Flourish, 2021). Están ocurriendo iniciativas similares en todo el mundo.

INTEGRAR Y TRANSFORMAR: DOS DOMINIOS ÁMPLIOS PARA LA CONTRIBUCIÓN DE LA ESCUELA DE NEGOCIOS

A medida que ha aumentado el malestar en la educación empresarial, los medios para traducir el malestar en acciones positivas también han crecido. Quizás el enfoque adoptado con más frecuencia para aumentar la contribución de la educación empresarial a un mundo mejor implica incorporar proyectos y contenido en cursos empresariales de nivel superior y básico ya existentes, como los proyectos que obtuvieron los diecisiete premios “Flourish” en 2021. Un segundo enfoque implica “empezar de cero” y transformar todo el plan de estudios de la educación empresarial desde el primer curso hasta el último. Ambos enfoques son importantes y deseables, y cada enfoque aporta ideas y contenido al otro.

Incorporar la sostenibilidad en el currículo existente de “negocios como siempre”

Al incorporar el contenido de sostenibilidad en cursos de un currículo existente de “negocios como siempre”, se permite hacer cosas buenas en este momento, se comienza a dar forma a la mentalidad y desarrollar las habilidades para un cambio más fundamental, y se aumentan los deseos de más cambios fundamentales en lo que es la educación empresarial y lo que logra.

Los esfuerzos para incorporar el contenido de sostenibilidad / florecimiento / regeneración en cualquier curso están respaldados por una rica literatura y un conjunto de ideas para los Objetivos de desarrollo sostenible de la ONU (p.ej. La Organización de las Naciones Unidas, s.f.), el programa de Aim2Flourish (p.ej. Aim2Flourish, 2021), los materiales y conferencias de los Principios para la Educación en Gestión Responsable de la ONU (p.ej. UNPRME, 2021), los programas de la Investigación responsable en negocios y gestión (p.ej. RRBM, 2021) y muchas otras contribuciones como los materiales del curso desarrollados y proporcionados por Jeffrey Sachs y la Academia SDG (<https://sdgacademy.org/>) y los del grupo LEAP (<https://isabelrimanoczy.net/leap/>) que juega un papel importante en el cambio de contenido del curso, a través de su trabajo sobre la mentalidad de sostenibilidad, descrita anteriormente por Isabel Rimanoczy en esta revista (Rimanoczy, 2014) y en un segundo artículo, con Beate Klingenberg, en este número.

Por supuesto, tan valioso como es “practicar la sostenibilidad” dentro del paradigma de los negocios como siempre, es difícil imaginar que incluso un gran crecimiento de actividades comerciales que implican ganar más dinero haciendo menos daño nos llevará a donde tenemos que ir. El “caso de negocios para la sostenibilidad” dentro del paradigma neoliberal existente no creará un mundo sostenible.

“Empezar desde cero”—transformando de verdad el currículo y la investigación empresariales

Muy poco tiempo después de la publicación de este número del *Journal of Management for Global Sustainability*, el *Journal of Jesuit Business Education* publicará un número especial dedicado a la iniciativa descrita por Michael Garanzini hace un año en esta revista (Garanzini, 2020). En una reunión virtual los días 15 y 16 de julio de 2020, once equipos de las escuelas de negocios jesuitas comenzaron a trabajar en

el desarrollo de un conjunto de cursos básicos que se mueven lejos de los programas neoliberales basados en la práctica habitual que se enseñan en la mayor parte del mundo de la educación empresarial. Aceptando la estructura del plan de estudios empresarial tradicional como punto de partida, estos cursos nuevos de funciones empresariales y los nuevos manuales que se pretenden desarrollar se alinearán con un nuevo propósito para la empresa comercial y un nuevo paradigma para la educación empresarial (Garanzini y Santos, s.f.).

Es muy probable que los nuevos cursos que están desarrollando estos once equipos tengan muchas similitudes con los cursos en los MBA de Sostenibilidad ofrecidos por algunas universidades.

Por estos nuevos cursos, el nuevo paradigma en el que se basan y por la apreciación creciente por los MBA en Sostenibilidad como los descritos por Sroufe, Hart y Lovins en este número, también es probable que aumente el deseo en muchas universidades y en sus escuelas de negocios para alejarse del fallido paradigma neoliberal y encaminarse hacia un currículo alineado con la necesidad de un mundo sostenible / floreciente / regenerativo. Estos nuevos cursos, currículo e investigación centrada en la sostenibilidad también reducirán los gastos percibidos, la dificultad y el riesgo de alejarse de los currículos basados en ese paradigma obsoleto. El terreno está cambiando desde el currículo tradicional cuyo propósito es maximizar la riqueza de los accionistas de la empresa comercial. Esos currículos ya no proporcionan el mismo puerto seguro que solían ofrecer. Se están convirtiendo en lugares peligrosos.

¿Y ahora qué?

Hace tres años, esta revista informó sobre una iniciativa de 2016 liderada por la Asociación Internacional de Escuelas de Negocios Jesuitas y los Colegas en la Educación Empresarial Jesuita (nombre oficial en inglés: *Colleagues in Jesuit Business Education*) para inspirar la transformación de la educación empresarial en la línea de lo que ahora vemos que comienza a suceder en un número cada vez mayor de escuelas de negocios (Stoner, 2018). Esa iniciativa tomó la forma de una solicitud a la Fundación MacArthur en su concurso *100&Change* que ofrecía un premio de 100 millones de dólares. El concurso *100&Change* convocó proyectos que logran un progreso real en resolver un problema social importante. En esa solicitud de 2016, 40 escuelas de negocios recibirían 2.4 millones de dólares estadounidenses cada una para transformar sus planes de estudio y algunas de sus investigaciones para que estén

plenamente alineadas con las necesidades de un mundo sostenible, y para hacerlo en solo tres años. En 2016 hubo mucha duda que una tarea tan hercúlea pudiera lograrse en tan solo tres años, si es que se pudiera lograrse.

Cuando se presentó la solicitud, se reconoció que la oportunidad de ganar el concurso fue esencialmente cero; resultó que hubo 1.904 solicitudes enviadas. Sin embargo, el verdadero propósito de la solicitud no fue para ganar los 100 millones de dólares sino para inspirar a la Fundación MacArthur a hacer una declaración global de que el cambio climático y la insostenibilidad global son realmente una amenaza a la existencia de nuestra especie y de que todos debemos tomar medidas audaces inmediatamente. Se esperaba que la Fundación MacArthur inspirara a otras fundaciones a tomar acciones igualmente audaces para enfrentar el cambio climático y la insostenibilidad global.... Y tal vez incluso inspirar a los negadores del cambio climático en el gobierno y las empresas para que comenzaran a repensar sus posturas y acciones.

Otra solicitud muy similar fue presentada en 2019 por otro grupo y una tercera se presentará en 2022 si se repite el concurso (globalmovement.net). Esa solicitud tiene el mismo objetivo que las dos primeras: animar y apoyar toda la comunidad de escuelas de negocios del mundo para dedicar muchos de sus grandes recursos intelectuales a descubrir cómo podemos prosperar en este planeta para siempre, y para proporcionar liderazgo en la adopción de las medidas necesarias para lograrlo. El proceso de transformar el plan de estudios de negocios fue y es considerado como algo que genera muchos aspectos interesantes y posibilidades valiosas de investigación a medida que los profesores y estudiantes hacen nuevas preguntas y buscan nuevas respuestas ya que siguen modificando cada curso en cada disciplina empresarial. El valor verdadero de las transformaciones curriculares fue y es visto como descubrimientos y acciones de cambio que resultarán en cambios curriculares. Se consideraron importantes y deseables las contribuciones que los graduados de los nuevos programas harían en 5, 10 o 20 años cuando alcancen los cargos de influencia organizacional, pero la verdadera recompensa sería crear un cambio inmediato a través del liderazgo de las escuelas de negocios.

La solicitud de 2022 tiene una gran diferencia con las dos primeras. Entre 2016 y 2021 ha quedado claro que no se requieren esfuerzos audaces, arriesgados y hercúleos para transformar la educación empresarial y tres años no es un período de tiempo increíblemente corto para hacerlo. Y tampoco se requieren grandes

inversiones para lograr los cambios. Lo que se necesita es el reconocimiento de la necesidad de compromisos profundos para hacer cambios rápidos y acciones basadas en esos compromisos.

Puesto que la Fundación MacArthur está “ofreciendo” esos 100 millones de dólares, la solicitud de 2022 se está diseñando para invertir la mayor parte de los 100 millones en 400 becas de 240.000 dólares a escuelas de negocios de todo el mundo para informar sobre su progreso en hacer esas transformaciones curriculares y de investigación a medida que se involucran en el viaje. La solicitud supone, y la experiencia lo demuestra, que esas transformaciones no necesitan los 2,4 millones de dólares que parecían no ser suficientes en 2016, y que se pueden lograr “prácticamente por nada”. Las becas a las 400 escuelas serán para compartir su progreso, éxitos y obstáculos en el camino para hacer sus transformaciones. La solicitud también buscará incluir 40 escuelas de negocios que ya han hecho esa transformación o están en el camino de hacerlo dentro de ese objetivo de tres años para el cambio transformador.

Los artículos en este número de la Revista

En el artículo principal de este número, “Transformando la educación empresarial: Programas de MBA sostenibles para el siglo 21”, Robert Sroufe, Stuart Hart y Hunter Lovins plantean grandes preguntas para los lectores de JMGS. ¿Hacen más daño que bien los programas tradicionales de las escuelas de negocios? ¿Se están preparando las escuelas de negocios a sus estudiantes para los complejos desafíos globales? Mientras nos esforzamos para salir de una pandemia y nuestro pensamiento se centra en la creación de un futuro más sostenible, ¿qué tipo de planes de estudio de las escuelas de negocios son necesarios para un futuro que integre la sostenibilidad global en el pensamiento del líder empresarial? Para ayudar a responder estas preguntas, los autores destacan el panorama cambiante de las escuelas de negocios, exige cambios por parte de las partes interesadas y describe cómo sus programas se hicieron pioneros en el desarrollo y el comienzo de una pedagogía en un MBA en Sostenibilidad. La discusión de estos tres programas expone los lectores a los estudios de caso en la gestión del cambio, el diseño, el aprendizaje experiencial y la acción, a medida que describen sus intentos de cambiar el ADN fundamental de planes de estudio de la escuela de negocios para el siglo XXI.

Dados los desafíos existenciales que enfrentan la humanidad, las escuelas de negocios deberán hacer más que crear cursos de alforjas para colgar de un plan de estudios de negocios tradicional como lo han hecho algunas escuelas, para que puedan marcar una casilla para incluir la ética o la sostenibilidad dentro de un programa. Envuelto en la narración de historias sobre cada estudio de caso es la defensa de un cambio de paradigma en curso en la pedagogía de las escuelas de negocios, es decir, continuar con el contenido neoliberal tradicional arraigado, o cimentar el plan de estudios en el contenido social y ambiental relevante para una nueva generación de estudiantes y los complejos desafíos de este siglo dinámico. Estos autores y este artículo desafían a otros a desarrollar un plan de estudios que haga de la sostenibilidad el núcleo de sus programas, investigación y misión. Sroufe, Hart y Lovins sostienen que el profesorado y el liderazgo de las escuelas de negocios deben ir más allá de un núcleo impulsado por la primacía de los accionistas a un plan de estudios basado en las realidades del siglo XXI.

Los tres programas que describen los autores son, por supuesto, importantes para los campeones de sostenibilidad comprometidos y capacitados que ya tienen y continuarán a producir. Sin embargo, en el contexto de las perturbaciones crecientes y bendecidas en la educación empresarial, tienen papeles mucho más importantes que desempeñar. Estos programas están haciendo en el nivel de MBA especializado exactamente lo que se debe hacer en toda la educación empresarial en todo el mundo en todos los niveles: alinear el plan de estudios y algunos, hasta muchos, de las investigaciones de la escuela plenamente con la necesidad de un mundo sostenible / floreciente / regenerativo.

Cada uno ha demostrado que es posible crear dicho plan de estudios y sobrevivir y prosperar con él en un entorno relativamente hostil. Hostil en el sentido de que el entorno de educación empresarial estaba compuesto por escuelas de negocios, profesores, estudiantes, empresas que emplean, e incluso fundaciones, involucrados en las formas de los negocios como siempre que son muy diferentes de lo que tratan sus nuevos programas. Y tan diferente de lo que necesita el mundo.

Pero ese entorno está cambiando lentamente a favor de esos tres programas y todas las demás escuelas de negocios comprometidas con la creación de un mundo sostenible. Los profesores, estudiantes potenciales y actuales, e incluso muchos exalumnos y organizaciones empleadoras se están dando cuenta de que la educación empresarial debe cambiar si queremos llegar a donde queremos ir.

Más allá de las contribuciones que harán y están haciendo sus graduados, una segunda contribución principal de esos tres programas MBA sostenibles, y otros similares, es el hecho de que podrían escalar el “monte del plan de estudios de sostenibilidad”, para modificar y robar en broma una frase del maravilloso y amado campeón de sostenibilidad, Ray Anderson de *Interface*, una empresa comprometida con la sostenibilidad. La tercera contribución importante son sus planes de estudio. Esas escuelas proporcionan diseños de cursos e ideas de programas de las que otras escuelas en el mismo viaje pueden aprender y a las que pueden añadir. Han mostrado el camino, proporcionando no una “solución sencilla” a la insostenibilidad global, sino ejemplos valiosos que otras escuelas pueden utilizar para crear enfoques innovadores para sus situaciones únicas y oportunidades únicas ... como los cursos que los once equipos en la iniciativa del Nueva Paradigma para la Educación Empresarial (nombre oficial en inglés: *New Paradigm for Business Education*) están haciendo.

Este artículo es un llamamiento a la acción: las historias de perturbación del autor dan prueba de éxito y esperanza para la próxima transformación de la educación empresarial y del mismo capitalismo. Las lecciones aprendidas y los conocimientos en este artículo brindan orientación para los líderes de escuelas de negocios que aspiran a redefinir la gestión para la sostenibilidad global y los programas de negocios. Los autores afirman que estamos en medio de una lucha por el alma de las escuelas de negocios y ahora es el momento para cambiar. Es una invitación abierta para que otros colaboren, interrumpan, reconsideren e integren la educación empresarial antes de que sea muy tarde.

En el segundo artículo de la revista, “El indicador de la mentalidad de sostenibilidad: una herramienta para el desarrollo personal” Isabel Rimanoczy y Beate Klingenberg informan sobre el progreso continuo en el desarrollo de las formas de crear los cambios de mentalidad necesarios para ayudarnos a nosotros mismos, como especie, y encontrar formas de convertirnos en el tipo de personas que pueden vivir en este planeta sin destruirlo. Continuando su trabajo en el concepto de la mentalidad de sostenibilidad, Rimanoczy y Klingenberg ofrecen una breve descripción de los orígenes de este constructo e introduce la investigación exploratoria que busca determinar si se puede desarrollar intencionalmente una mentalidad para la sostenibilidad. De las primeras investigaciones se desarrollaron 12 principios de mentalidad de sostenibilidad. El trabajo actual se centra en desarrollar

un nuevo instrumento de medición: el Indicador de mentalidad de sostenibilidad (IMS). El instrumento evaluará el impacto de las iniciativas centradas en un cambio de mentalidad. Como tal, el IMS representa la posibilidad de una herramienta nueva e innovadora que apoye ese cambio de mentalidad necesario hacia la sostenibilidad.

La complejidad de la mentalidad se describe cuidadosamente en este documento, lo que permite a los lectores ampliar su comprensión de los componentes en juego y sus vínculos con un amplio espectro de marcos académicos. Una comparación con otros marcos de medidas disponibles en la literatura existente muestra qué características adicionales y oportunidades ofrece el IMS. Este trabajo busca sentar las bases de una nueva herramienta de evaluación que servirá como instrumento de desarrollo personal y como guía para educadores y formadores.

En el tercer artículo “La identificación de las cosmovisiones ecológicas dominantes de los líderes de comunidad y su influencia en la gestión de áreas de conservación en Ghana,” Nana Owusu Ansah explora las cosmovisiones ecológicas de los altos ejecutivos en las organizaciones de apoyo a la conservación, llamadas CREMA, en Ghana. La División de Vida Silvestre de la Comisión Forestal de Ghana está llevando a cabo una estrategia de gestión de recursos naturales a través de la colaboración comunitaria para promover la sostenibilidad de la biodiversidad en tierras comunales y familiares. Para ello, la División está facilitando el establecimiento de Áreas de Gestión de Recursos Comunitarios (en inglés: *Community Resource Management Areas* o CREMA). Las constituciones y los estatutos de las CREMA que establecen tales áreas enfatizan la representación justa de los líderes de comunidades participantes y no solo de personas con inclinaciones hacia la sostenibilidad. Su artículo examina cómo se podrían usar las cosmovisiones ecológicas de los líderes de CREMA para evaluar sus consideraciones de sostenibilidad en la gestión de las CREMA.

El artículo explora cómo la suscripción de los líderes a visiones del mundo ecológicas antropocéntricas o ecocéntricas podría afectar sus recomendaciones de gestión. Se utilizaron cinco dominios de cosmovisión ecológica para evaluar las cosmovisiones ecológicas de los líderes: el dominio humano sobre la naturaleza, el exencionalismo humano, el equilibrio de la naturaleza, el riesgo de crisis ecológica y el límite al crecimiento. En el artículo se asumió que los líderes con fuertes cosmovisiones antropocéntricas respaldarían la recolección insostenible de los recursos de biodiversidad, mientras que los líderes con una sólida visión del mundo

ecocéntrica promoverían una postura prohibitiva que podría sofocar la utilización de los recursos y, por lo tanto, inhibir el desarrollo socioeconómico en sus comunidades.

Al enfocar la interfaz entre los paradigmas de la conservación de naturaleza y el desarrollo socioeconómico, el artículo explora cómo las cosmovisiones ecológicas de líderes influyeron en las actividades de desarrollo socioeconómico que se permiten realizarse en los focos ecológicos designados en las CREMA. La conclusión es que los líderes emplearon cosmovisiones ecológicas ecocéntricas para mantener el funcionamiento de los procesos ecológicos, mientras que se utilizaron las cosmovisiones ecológicas ambivalentes para promover las actividades socioeconómicas consideradas menos dañinas en las zonas ecológicas sensibles.

En el artículo “Una evaluación de los impuestos sobre las ventas de carbón y petróleo de la Ley TRAIN: los beneficios medioambientales y los efectos en el empleo sectorial y bienestar del hogar,” Philip Arnold P. Tũaño, Ramon Clarete, Marjorie Muyrong y Czar Joseph Castillo destacan las compensaciones políticas del aumento de los impuestos a la energía en Filipinas. El aumento de los impuestos al carbono y petróleo en la primera fase de los programas actuales de reformas fiscales del gobierno filipino tiene un leve efecto adverso en la mayoría de las industrias, una disminución en el empleo y un aumento en la incidencia de la pobreza debido a que los impuestos especiales tienen un efecto adverso de precios más altos de los productos básicos que pagan los pobres. Por otro lado, se estima que las emisiones de carbono son menores.

Los autores concluyen que al emprender reformas que mejorarían el medio ambiente, medidas complementarias son necesarias para asegurar que los grupos marginados no se ven afectados negativamente por las reformas fiscales, ni siquiera a corto plazo. Al mismo tiempo, las políticas gubernamentales para recaudar ingresos también deben considerar cómo tales políticas pueden conducir a mejorar el diseño de políticas de energía alternativa. Este papel destaca el hecho de que cualquier rediseño de la política económica debe tener en cuenta los efectos sobre el bienestar económico y la sostenibilidad de los recursos.

En el último artículo de esta revista, “Abordando la sostenibilidad en la moda a través de la teoría de marco de objetivos y la teoría de perspectivas de comportamiento planificado,” Jomel J. Reyes y Anna A. Mendiola aborda el problema de la moda rápida, que es insostenible principalmente porque genera más residuos y contribuye al agotamiento de los recursos naturales. Observan que el interés por la moda rápida

ha aumentado exponencialmente en los últimos años, principalmente porque ofrece ropa de moda que es relativamente asequible y conveniente para comprar. Una mirada a un armario típico de la generación *millennial* o de la generación Z confirman fácilmente este aumento de la popularidad de la moda rápida. Según los autores, se podría decir con seguridad que la mayoría de la gente tiene mucha más ropa de la que realmente necesita. Una solución sencilla al problema de la moda rápida sería reducir la frecuencia de comprar ropa y comprar menos ropa cada vez. Este curso de acción es bastante coherente con la tendencia creciente hacia el minimalismo, una simplicidad ilustrada como ejemplificado por lo que predica Marie Kondo. Su investigación muestra cómo la comunicación puede ayudar a las personas a darse cuenta de los aspectos ambientales positivos de comprar menos ropa. Muestra que las actitudes y las normas subjetivas de uno pueden verse significativamente influenciadas cuando se expone a mensajes que enmarcan los objetivos de uno junto con una preocupación por el medio ambiente. Dado que estos mensajes tienen en cuenta los objetivos de una persona, son una forma eficaz de fomentar un cambio de percepción hacia un comportamiento favorable al medio ambiente.

Los autores sugieren que una de las muchas realizaciones que ha engendrado esta pandemia engendrado es sencilla: no necesitamos de verdad toda la ropa que tenemos en nuestros armarios y una vida menos complicada en algunos dominios puede ser más satisfactoria. Señalan que, quizás, esta vez puede ser bastante oportuna para vincular esta realización práctica con la conciencia de que comprar menos ropa en realidad podría ser una forma de ayudar al medio ambiente y también a nosotros mismos.

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RESÚMENES

Transformando la educación empresarial: Programas de MBA sostenibles para el siglo 21

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La educación empresarial debe brindar a los estudiantes las habilidades para resolver los desafíos globales complejos. Debe alinear las prácticas administrativas con los objetivos para un futuro sostenible. Desafortunadamente, solo algunas escuelas de negocios hablan de los verdaderos problemas a los que los líderes de empresas se enfrentan hoy en día. Este artículo desafía a las otras escuelas a desarrollar un plan de estudios que incorpora la sostenibilidad en el núcleo de sus programas. Los autores afirman que tanto los profesores como la administración de las escuelas de negocios deben ir más allá de las iniciativas de “alforja”, las iniciativas adicionales, que une la sostenibilidad con el núcleo tradicional impulsado por la primacía de los accionistas. Este artículo describe tres programas como estudios de casos que transforman la educación empresarial para preparar a los líderes para tener un mundo más sostenible. Las escuelas de negocios se debaten entre dos paradigmas contrarios. Teniendo en cuenta los desafíos existenciales a los que se enfrentan la humanidad, las escuelas de negocios deben cambiarse o perder la relevancia. Nuestras historias de perturbación dan prueba de éxito y esperanza para el próximo cambio de la educación empresarial y del mismo capitalismo. Las lecciones y los conocimientos que se aprenden en este artículo dan dirección a los líderes de las escuelas de negocios que quieren redefinir la gestión para la sostenibilidad global y los programas de las escuelas de negocios. Es una invitación a todos a perturbar y reconsiderar la educación empresarial antes de que sea demasiado tarde.

Palabras clave: educación empresarial; MBA sostenible; iniciativas de “alforja”; experiencia transformacional; administración integrada; perturbador; innovación, cambio de paradigma

El indicador de la mentalidad de sostenibilidad: una herramienta para el desarrollo personal

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Este artículo aborda el problema de evaluar, medir y desarrollar una Mentalidad de sostenibilidad. Se trata de una manera de pensar y ser que predispone a las personas a actuar por el bien del planeta y de la gente. Es un constructo complejo, desarrollado a través del camino de una cosmovisión ecológica, una perspectiva de sistemas y aspectos relacionados con la inteligencia emocional y espiritual. Tiene como objetivo orientar a las personas para que vivan y promuevan una vida más sostenible, que es crucial para la humanidad en el siglo 21. Puesto que los educadores han estado desarrollando deliberadamente la Mentalidad de sostenibilidad, ha sido de importancia encontrar maneras para evaluarla y medirla.

Se diseñó el Indicador de mentalidad de sostenibilidad o IMS (*Sustainability Mindset Indicator* o SMI por sus siglas en inglés) para abordar este problema. Este trabajo describe la metodología que se empleó para desarrollar el IMS: a) se definieron los objetivos del instrumento y los constructos de medición basándose en teorías de la psicología y de la pedagogía; b) se diseñó un cuestionario; y c) se crearon 320 informes de feedback personalizados. El cuestionario utiliza el marco de Johnson (1992) sobre las polaridades y etapas del desarrollo humano (Kegan, 1994), mientras que los informes siguieron la orientación de la psicología positiva (Seligman & Csikszentmihalyi, 2014) y de la indagación apreciativa (Cooperrider, Whitney, & Stavros, 2008). Se emplearon tres fases de validación para confirmar la redacción, mejorar la comprensión y la precisión, y prepararse para los estudios piloto.

El SMI es una adición importante a otras escalas disponibles en la literatura. Se centra en el desarrollo personal y el aprendizaje transformador para facilitar el cambio de mentalidad en las personas, así como en entornos educativos o de formación, y se puede utilizar para adaptar las intervenciones y evaluar sus impactos.

Palabras clave: mentalidad de sostenibilidad; indicador; desarrollo personal; aprendizaje transformador; etapas de desarrollo humano

La identificación de las cosmovisiones ecológicas dominantes de los líderes de comunidad y su influencia en la gestión de áreas de conservación en Ghana

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Este estudio se basa en una pregunta de investigación que trata de identificar las cosmovisiones ecológicas dominantes de los líderes de Área de Gestión de Recursos Comunitarios (o CREMA por sus siglas en inglés), y sus influencias sobre los órdenes administrativos de sus áreas de conservación. Se hace la pregunta para identificar si los líderes de CREMA suscriben a una cosmovisión ecocéntrica o antropocéntrica, los cuales tienen consecuencias directas sobre el control de los niveles de utilización de los recursos después de la delegación de autoridad. Se usó entonces un método fenomenológico para recopilar datos de nueve líderes de conservación de tres CREMAs. Se descubrió que tenían una cosmovisión mezclada. Según su campo de cosmovisión ecológica, los líderes de las AGRC se inclinan por o un ecocentrismo total hacia ambivalente, o un antropocentrismo ambivalente. Sin embargo, los resultados muestran que la cosmovisión ecológica dominante de los líderes de CREMA es ecocéntrica y no antropocéntrica. Aplicaron el punto medio, es decir, una cosmovisión ecológica ambivalente para influir en la utilización sostenible de los recursos naturales mientras se aplicaba una cosmovisión ecológica completa para proteger el equilibrio entre las funciones ecológicas. Los líderes usaban estas posturas para promover el doble objetivo de las CREMA que son la conservación ambiental y el desarrollo socioeconómico de Ghana. Asimismo, el estudio recomienda que se haga más investigaciones sobre los resultados para desarrollar un criterio adaptable que incluye la cosmovisión ecológica en la selección de los líderes de las CREMA.

Palabras clave: antropocéntrico; conservación; ecocéntrico; cosmovisiones ecológicas; liderazgo CREMA; fenomenología; sostenibilidad

Una evaluación de los impuestos sobre las ventas de carbón y petróleo de la Ley TRAIN: los beneficios medioambientales y los efectos en el empleo sectorial y bienestar del hogar

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Este estudio evaluó el efecto del primer paquete de la ley TRAIN (*Tax Reform for Acceleration and Inclusion* o Reforma fiscal para la aceleración y la inclusión) tal como se aprobó el Congreso en 2017, que incluye una subida en los impuestos sobre las ventas del petróleo y del carbón. Esta investigación estudió el contexto del sector de energía en el país puesto que el petróleo y el carbón son sus mayores fuentes de energía. Usando un modelo de equilibrio general computable-microsimulación, se evaluó principalmente el efecto de esta subida y de todo el primer paquete de TRAIN (que incluye una reducción del impuesto sobre la renta personal y la expansión del impuesto sobre el valor añadido). Los resultados de las simulaciones muestran que hay un poco de efecto output adverso para la mayoría de las industrias bajo una situación de un aumento de impuestos sobre el petróleo y carbón, lo cual resulta en niveles disminuidos de emisiones de carbón. Hay una ligera disminución en el empleo y se aumentaron levemente las incidencias de pobreza debido a que los impuestos especiales tienen un efecto adverso en términos de precios más elevados de los productos básicos para los pobres.

Palabras clave: reforma fiscal; equilibrio general computable; microsimulación; impuestos sobre ventas; carbón; petróleo

Abordando la sostenibilidad en la moda a través de la teoría de marco de objetivos y la teoría de perspectivas de comportamiento planificado

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La cultura de usar y tirar de la moda rápida lleva a un consumo cada vez más derrochador y a la disminución de los recursos naturales del planeta. Por lo tanto, se ha hecho evidente que, por el bien del medio ambiente, los consumidores deben reducir la frecuencia de compra de ropa como una forma de comportamiento proambiental (*pro-environmental behavior* o PEB por sus siglas en inglés). Basándose en la teoría de Comportamiento Planificado junto con la teoría del Marco de Objetivos, este estudio determinó los factores que pueden motivar a los consumidores hacia un comportamiento proambiental, así como la influencia de los marcos de objetivos sobre esos factores. También exploró cómo el compromiso de los consumidores en las prendas de vestir modera la efectividad de estos marcos de objetivos. Se encuestaron a 350 mujeres y los resultados mostraron que la mentalidad estaba significativamente influenciada por el marco ambiental, mientras que las normas subjetivas estaban influenciadas tanto por el marco ambiental como por el marco de la imagen. Los resultados también establecieron un efecto moderador de su compromiso en las prendas de vestir debido al disfrute sobre la influencia del marco de la imagen en las normas subjetivas. Asimismo se discutieron las implicaciones en el campo de las comunicaciones ambientales.

Palabras clave: moda rápida; marcos de objetivos; compromiso en las prendas de vestir; comportamiento proambiental

The *Journal of Management for Global Sustainability* welcomes submissions from all management disciplines (e.g. international business, accounting, marketing, finance, operations) and from related disciplines (e.g. economics, political science) so long as the manuscript contributes to our academic understanding of the role of management in achieving global sustainability.

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The manuscript must adhere to the stylistic and bibliographic requirements of the Academy of Management Journal Style Guide (2014) for both in-text citations and references. URLs (where available) should also be provided for the references.

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EDITORIAL

The Blessed Unrest in Business Education

James A. F. Stoner

ARTICLES

Transforming Business Education: 21st Century Sustainable MBA Programs

Robert Sroufe, Stuart L. Hart, & Hunter Lovins

The Sustainability Mindset Indicator: A Personal Development Tool

Isabel Rimanoczy & Beate Klingenberg

Identifying the Dominant Ecological Worldviews of Community Leaders and the Influences These Have in Managing Conservation Areas in Ghana

Nana Owusu-Ansah

Assessment of TRAIN's Coal and Petroleum Excise Taxes:

Environmental Benefits and Impacts on Sectoral Employment and Household Welfare

Philip Arnold P. Tuaño, Ramon Clarete, Marjorie Muyrong, & Czar Joseph Castillo

Addressing Sustainability in Fashion Through Goal Frames and the Theory of Planned Behavior Perspectives

Jomel J. Reyes & Anna A. Mendiola

SPANISH TRANSLATIONS

La perturbación bendita en la educación empresarial

James A. F. Stoner

Resúmenes