Spring 2018
Volume 11, no 1

Volume 11, no. 1

Contents

ARTICLE

Are we Moving Closer Towards a More Unified Definition of Sustainable Events?

Laura Anne Hunt
University of North Texas & Centro Agronómico Tropical de Investigación y Enseñanza

This study was conducted to determine if practitioners of events around the world agree on how they understand the definition of a sustainable event. The study consisted of a 15-question, online survey sent out to more than 100 event practitioners around the world. There were 80 responses, but when stratified 72 were found to be usable. It was determined that there is not a unified definition of sustainable events among practitioners, but there are some common elements that practitioners have identified as being a part of sustainable events.

Why is the definition of a sustainable event important?

There are many words used today to describe events. Some of these words, may even have the same meaning, or are understood to be the same thing when in fact, they are very different. The opposite may also be true: when we have a variety of words that some may think are different, but, have the same definition, is also causing confusion. While we may not always be concerned with what the exact definition of these events are, it is important that when an event practitioner does decide to participate in a special event program, earn a certification or recognition, that we are recognizing them for the work they are doing, and that the work is understood across the industry. This is also important as when someone says they have put together a "sustainable event" that they have considered the full spectrum of sustainability and not just a partial concept. It should be clear to event practitioners as to what each event type is and what differentiates it from another type of event. According to Pernecky and Luck, 2013 p.155, "The relatively late adoption of sustainability within the events sector means that there is, as yet, little in the way of published research." Later, in 2015, Raj and Musgraves published a book title, *Event Management and Sustainability*, in which they proposed for definitions for sustainable events and suggested that the current trends and terminology have left a lot of confusion as to what a "sustainable event" is. They suggested that for sustainable events to have meaning in the future, the industry will need to come to a common understanding of what a "sustainable event" is and is not.

Two definitions are commonly cited in the literature that define events: 1) "Something that helps us celebrate and commemorate personal and public landmark occasions, they bring communities together and they provide opportunities for entertainment. Events take place in specific political, economic, environmental and social contexts and all events create impacts," (Holmes et.al., 2015, p.16). 2) "Planned events are spatial–temporal phenomenon, and each is unique because of interactions among the setting, people, and management systems—including design elements and the program," (Getz, 2008). Events are an important part of how humans interact, and are often used as business transactions, marketing tactics and as ways to demonstrate a commitment to a topic or campaign to constituents. "Events are about excitement, creativity and enthusiasm, and the generation of experiences and memories," (Preston & Hoyle, 2012, p. 2). One thing that many groups, companies, and businesses have been using to attract customers over the last decade increasingly is the idea that their company, event, or person being promoted, has a sense of responsibility and as a result is environmentally friendly or sustainable. This can be a slippery slope for all involved however, as one of the main quandaries in sustainability is "Who defines what sustainability is?" So first, we must establish that "sustainability is a word that is defined, interpreted, and imagined differently between individuals, organizations, and social groups," (Mowforth & Munt, 2009). This is part of the reason defining a "sustainable event" is so difficult. That said, as an industry using "sustainable events" as a part of the industry, meeting and event planners should be able to come to a general understanding of what exactly a sustainable event is if it is to be used as an industry term and is agreed upon as something necessary by many practitioners.

> *"Consequently, for the 'sustainable' concept to be meaningful and promote informed decision making within the events sector, it needs to be used in consistence with broader and already established definitions. If not, the term will lend itself to misuse – risking 'sustainability' becoming a passing fad rather than a changing trend,"*
>
> *-Raj and Musgraves, 2009, p.29.*

To understand what sustainability is in a general context, it is helpful to reference the current literature on sustainability and how scholars have defined it within the context of other industries and how scholars are positioning it within the context of events. There have been various definitions of sustainability since the 1950's, but the concept has been around since as early as 1798, when Thomas Malthus published *Limits to Growth.* (Holmes et.al., 2015). While there are numerous definitions that have been proposed over the years, one of the first and most cited definitions of sustainability was created in 1987 by the Brundtland Commission, which defined sustainable development as development that 'meets the needs of the present without compromising the ability of future generations to meet their own needs'

(WCED, 1987, Raj & Musgraves, 2009; Mowforth & Munt, 2009; Pernecky et.al., 2013). While this definition is one that has been considered to impact tourism for quite some time now, it wasn't until the signing of Agenda 21 in Rio de Janeiro in 1992 when events and their inevitable impact on the environment and host cities were considered (Pernecky et. al., 2013).

In 2000, two definitions came out defining sustainable development that are mentioned throughout the literature. These two definitions describe sustainability in two different ways, but show how differently people can interpret the word sustainability differently. Maxwell & Cannell (2000, p.321) define sustainable development as "where 'a balance is struck between the achievement of environmental and social objectives, and the drive for wealth creation and economic competitiveness."

The second definition comes from 'O'Riordan (2000, p.xii), who defines sustainable development as "the bonding of people to the planet in a placenta of care, equity, justice and progress". This definition brings out the moral and ethical force of the concept and emphasizes the right of other people (in the present and future), and organisms, to a decent life within the limits of available resources.

Taking these definitions into account, we will further explore the specifics of special events and how the literature defines them. This section will look at how the history of sustainability has shaped the development of sustainable events.

"The most important thing to establish about sustainability is that it is a word that is defined, interpreted and imagined differently between individuals, organizations and social groups …sustainability is considered a contested concept, a concept that is 'socially and politically constructed' and reflects the interests and values of those involved," "Who defines what sustainability is?" (Mowforth & Munt, 2009, p.20).

Traditionally, when the term sustainability has been brought up, it has lent itself towards the furthering of green agenda items. As the years have progressed, the meaning of the word has become more common knowledge, but the implementation still leaves something to be desired as it is still mainly focused on the environment. If implementing the true definition of sustainability, the social and economic impacts also need to be included, and many will argue that should also include measures for poverty reduction. In addition, those who wish to make sustainability something that is more than just a fad, they need to focus on owning the responsibility for reducing semantics and increasing transparency, accountability, and tracking (Raj &Musgraves, 2009, p. 2).

"Sustainability implies a link towards ecological impacts; namely, the consumption of natural resources and the deliberation of pollution and energy use, the concern for social inclusion and distribution of wealth, coupled with the economic themes of growth and longevity. The more affluent a society becomes, the more distant it is from the impacts of its lifestyle. Antithetically, the poor often lack the resources"

For the context of this paper, the term "event" will be used in the broadest sense to include all types of "events" that may occur. This means that events, festivals, meetings, gatherings etc. will be included. The term "sustainability" will refer to the first formal definition, and the most cited throughout literature with the addition that it must include reference to the TBL, or the Triple Bottom Line.

Defining the difference between events and tourism and learning from tourism- Or is there one?

While sustainability within the tourism industry seems to have established a variety of parameters to operate in, sustainability within the events industry is still working on determining what this means to practitioners.

Since 1987 (and before), the tourism industry has been making strides from big impact to big statements. The shift has been due to the increased call on the industry to fulfill constituent responsibility and increased demand from guests for the industry to demonstrate their commitment to the environment and communities that these businesses work within. As more guests have been questioning the practices in the tourism industry, they have also started to inquire as to the practices found within the event industry.

When considering how these two industries can combine the knowledge from the tourism industry and the innovation from the events industry, both are looking towards certifications to strategically demonstrate their commitment to the environment and communities while also establishing stakeholder partnerships (Raj &Musgraves, 2009).

Literature Review: Definitions Surrounding Sustainable Events

This study was conducted to determine if practitioners of events agree on how they understand the definition of a sustainable event. As such, there are a variety of definitions that were reviewed to determine if the literature agrees on one definition of a sustainable event. While some elements of sustainable events are agreed on, the definitions seemed to vary depending on the group who is defining "sustainable event." The following six terms are terms that are referenced throughout the literature and published materials that reference a "sustainable event" when they are also utilizing other terms

- Carbon Neutral Events & Meetings
- Eco-Events or Eco-Friendly Events
- Green Event
- Poverty Reduction Events
- Responsible Events
- Sustainable Events

Carbon Neutral Events & Meetings

Carbon neutral events and meetings are some of the trending terms being used by a variety of those in the industry. While many are saying that they are working on their carbon neutrality, there is much confusion as to what exactly this means (Wiedmann & Minx 2007; East, 2008; Finkbeiner, 2009; Peters, 2010; Pandey et.al., 2010). Being considered "carbon neutral" is when a group or company calculates their total carbon emissions generated. They get to carbon neutrality by reducing their emissions when possible and offsetting the

rest through programs such as planting trees or investing in renewable energy among other options (Alexander et.al., 2007; New Oxford American Dictionary, 2006).

While this might seem like a process that is easy enough to follow through with and measure, there are conflicting views in the industry as to how this might be achieved, the feasibility and exactly what steps need to be taken for an event to achieve complete carbon neutrality.

According to David Suzuki (2014), an internationally recognized academic, science broadcaster and environmental advocate: "Virtually all aspects of any event can have a reduced climate impact, including: venue, registration, accreditation, transportation, offices, food and beverage services, procurement, and production. Climate-friendly practices range from waste minimization and energy conservation to using renewable energy and carbon offsets to mitigate emissions that remain after reduction efforts."

On the other hand, groups such as the Sustainable Event Alliance are not so convinced that it is not the term that event practitioners should be using as the term for their focus. In fact, they state on their website that: "A carbon neutral event is not really a possibility. Carbon neutrality infers that a complete carbon footprint has been assessed, and within an event, this is not a practical undertaking."

Eco-Events or Eco-Friendly Events

Increasingly, many have been referring to things as "eco-friendly" or "eco-safe". This can be found in products across the board from cleaning and packaging to transportation and meetings. (Jones, 2014). However, outside of having an emphasis on the environment and its tone, exactly what "Eco-events" are is not clearly defined in the meeting and event industry. While not clearly defined, many practitioners and publishers have made suggestions towards what an eco-event might take into consideration.

Groups like Go-Green ae from the United Arab Emirates state on their website that "Eco-events are events, no matter the occasion that take steps to be greener and participate in social responsibility." To accomplish this, they suggest a variety of considerations for event planners such as: 1) Picking a location that is accessible, and has access to public transportation or carpooling. 2) Reducing paper products through online registration, invites, and printing on recycled paper when necessary. 3) Serving local food, or organic when possible. 4) Make eco efforts such as recycling at your event easy and clearly labeled.

There are those who have also been able to capitalize on "eco-events" by making these event types their main business model. Nancy Judd, utilizes Eco-Events as a way to combine a variety of categories including art and fashion into educational pieces seen at conferences and embedded in various eco-campaigns. Yet others seek to take any event and make it eco-friendly, like Evelina at Evelina's Eco Events (eee) who is a Certified B Corp that produces sustainable eco-events on a variety of scales. These eco-events promise to deliver conscious designs, unique experiences, zero

waste, inspire social responsibility and demonstrate dedication to sustainability and regenerative practices while also delivering a low-carbon footprint.

Green Events

There are many event venues and planners that claim to host "green events, meetings or festivals." In 2009, the United Nations Environmental Programme (UNEP) published A *Green Meeting Guide*. In this guide, they adapted the ICLEI's definition developed in 2004 at the *Greening Events Symposium* in Barcelona stating that: *"A green meeting is one designed, organised and implemented in a way that minimizes negative environmental impacts and leaves a positive legacy for the host community."*

While this is established to some organizations, and they are expected to follow certain guidelines laid out by groups such as UNEP, another definition was published in 2010 that was more encompassing of events: "An event that has a sustainability policy and/or implements sustainable management practices," (Laing & Frost 2010).

Poverty Reduction Events and Megaevents

Poverty reduction events have been an increasing trend and utilized often as a tool for sustainable development. (UNWTO, 2010). The term "poverty" here is used to be inclusive of definitions from the World Bank, Poverty-Environment Partnership and from interviews of those who are impoverished themselves to mean not only that there is a lack of income or assets and access to services but also that the people do not have civil and political rights, and includes the conservation of indigenous cultures (Roe, 2008).

While development through the utilization of events in developing and poverty ridden areas have become popular, the outcomes of these events leave much to be desired after all that was promised. The communities where these events are held are often pitched the event in a way that indicates that those who are impoverished might gain meaningful long-term work if they commit to helping the event be a success. The actual impacts of such events regarding the aspects of poverty reduction are much debated. The most studied group currently in events focused on poverty reduction are found within the production of megaevents in developing countries.

Megaevents have been touted to be the best way to enable regions of poverty out of their own struggles and into a life that has a purpose and hopefully pays a meaningful wage. (Pillay & Bass, 2008). While this might be argued as a good way to ignite development (Humphreys & Prokopowicz, 2007), the sustainability, effectiveness, and actual reduction of poverty in areas where megaevents have occurred lack evidence and longitudinal studies that prove the effectiveness of these being a tool for poverty reduction. (Baade and Matheson; Pillay & Bass, 2008). While the following benefits have been noted:

- Reinforcement of authoritarian regimes
- Infrastructure development and improvement
- Changes in stereotypical images of countries such as South Africa, India, Pakistan, and Sri Lanka

- Temporary job development and creation

(Dimeo & Kay 2004; Pillay & Bass, 2008; Black & Van der Westhuizen 2004)

The following drawbacks have also been noted (Cornelissen 2007; Horne and Manzenreiter 2006; Matheson and Baade 2004; Pillay & Bass, 2008; Whitson and Horne 2006):

- Lack of long-term employment opportunities to locals, particularly after the event ends
- Cost of construction often borne by residents
- Cost of operation often continued to be expected from residents
- Increased infrastructure does not add to local social or economic capital
- A venue locals are often denied access to
- Inequality often increased after hosting a megaevent

Furthermore, there is currently no evidence in the literature that events produced with the intention of poverty reduction will result in "meaningful job creation, a significant contribution to the GDP or infrastructural, service and facilities provision that is appropriate beyond the lifespan of the event," (Pillay & Bass, 2008). This is because often in areas where events are held, the long-term use of facilities such as soccer stadiums and large hotels are not considered for the long term, that is, what happens after the event finishes and the people return home. Some have made suggestions such as seen in many Brazil Olympics stadium proposals, where the stadium could be turned into variety of housing to address the housing deficit, while keeping a common soccer field available to residents (Couch, 2014).

This type of event is further tricky to measure the impacts as events are often one-time occurrences and are hard to measure improvements within.

Responsible Events

Responsible events are a relatively new concept to the industry, but some practitioners feel that the use of "sustainability" is overplayed out among their clients and to attract the clients choosing these events for the right reasons that a name change might be in order to clarify what this type of event entails, as most feel that the term "sustainable events" seems to imply too much of an emphasis on solely the environment and ignores the other important aspects of the Triple Bottom Line concept.

Event Research International (2012) defines a responsible event as one that is: "*locality-centric in nature taking proactive measures to contribute to local sustainable development across the triple bottom-line*."

In their book *Events and Sustainability*, Raj and Musgraves (2009), proposed several definitions to best define a sustainable event. In their third proposal, they propose changing the industry term from "sustainable event" to "responsible event" and define them as: "*events sensitive to the economic, sociocultural and environmental needs within the local host community, and organized in such a way as to optimize the net holistic (positive) output*."

Sustainable Events

This is the term that many practitioners are utilizing, yet few recognize the entirety of its meaning.

As early as 2004, groups were attempting to define sustainable events for the world. In 2004, the group "ICLEI-Local Governments for Sustainability" (which originally stood for the "International Council for Local Environmental Initiatives," but in 2003 the organization dropped the acronym to "reflect a broader focus on sustainability, not just environmental initiatives.") met in Barcelona to develop principles of Green Events at their Greening Events symposium. They sculpted the following definition:

"A sustainable event is one designed, organized and implemented in a way that minimizes potential negative impacts and leaves a beneficial legacy for the host community and all involved."

Later in 2008, Andersson and Getz published a paper with the definition:

"The ability of host cities to accommodate events without spoiling the quality for locals or future generations."

In attempt to rectify the situation of the use of the term "sustainable events," Raj and Musgraves (2009), proposed multiple definitions in attempt to capture the full essence of what a sustainable event should contain. (Note they offered 4 definitions, however, one is of a "responsible event," presented earlier.)

Proposed Definition 1:
Sustainable events: events managed as an autonomous cyclical process through the interaction between event management, host community and event-goers."

Proposed Definition 2:
Sustainable events: events managed as an autonomous cyclical process through the interaction between event management, host community and event-goers, providing human resources, infrastructure and funds."

Proposed Definition 4:
Sustainable events: events efficiently utilizing available resources (human resources, infrastructure and funds), thereby being self-sustaining without, or, in the case of externalities, with a minimum of, public sector support."

In 2010, Heitmann and Lóránt likened a sustainable event to:

"A strategic development approach and local management practices within national, regional and local governmental contexts to: minimize negative impacts while enhancing positive impacts; assure economic viability for the event organization or government; safeguard local culture and heritage; protect natural environments and provide residents and visitors with an enjoyable experience."

With these definitions, we can see the broad spectrum of what needs to be considered and what the literature suggests that sustainable events could potentially encompass and the confusion that it has brought to the industry.

Interchanged Words

There are many times in literature, articles, and the industry and in day-to-day activities when any mix of these words are used interchangeably. This adds to the

amount of confusion that continues to occur in the industry. Here are some examples of these words being interchanged that are documented through various sources:

- "Carbon neutral and Sustainable Events" (Sorrells, 2015 article *9 steps for hosting a carbon-neutral event*).
- "Carbon neutral events and Green Conferences" by Zero GHG Inc.
- "Carbon neutral and Green Event," "Make your event more sustainable by implementing greening practices…" by David Suzuki in *How to Host a Sustainable, Carbon Neutral Conference or other Event*.
- "Eco-Friendly events and green events" by go-green.ae
- "*World's most Eco-Friendly events and World's most Green Events*" by Event Academy's Matt Kendall
- "A "green" or sustainable meeting is…" Green Hotelier, *what is a Green Meeting?*

While UNEP offers a definition for a "green event," (This definition is often claimed to be the most commonly cited) they state: "In the international debate, "Green events" include health and social concerns which should also be taken into consideration when aiming for a 'sustainable' event." The main problem with this is like the UNEP "Green Meeting Guide, 2009," they suggest that the "Green Meeting needs to add additional considerations to become a "sustainable meeting". Acknowledging that they are two separate items does not come across unless you read the beginning of the guide in its entirety. Even in the context of these parameters, the words are used interchangeably and if not reading or listening carefully could be understood as the same thing, when in fact the "Green Meeting" is honed in on the environmental aspects and is somewhat neglecting of the other two elements (social and economic) that would make an event "sustainable" according to their definition.

In fact, in their summary guide, they provide a list titled *Why green your meeting?* The third point is as follows: "Positive reputation – a green meeting is a visible demonstration of your organizations commitment to sustainable principles. Communications around the green meeting will raise its profile and attract participants." If there was truly a commitment to the TBL (or Triple Bottom Line consisting of Environmental, Economic, and Social factors), then should they not have stated a commitment to "environmental principles" instead?

These are just a few examples of the ways that the words are being interchanged. As mentioned here, it is highly likely that elements of each of these events may align with an event type, but shows that the articles and information being published is not clear in differentiating one event type from another.

Examples of Events that have used "Sustainable Event" as a part of their advertising

There are several venues, companies and groups that are claiming to hold "sustainable events" or to offer services that will help a group or planner achieve a sustainable event. For instance, Cavendish

Venues in London (London Sustainable Venue of the Year Award 2009, 2010 and runner up in 2011), and Zero GHG Inc.in Montreal, Quebec offer services in sustainable events through determining the total carbon footprint an event creates. They claim that the utilization of their carbon calculators help determines the overall carbon the event creates and seeks to offset it through determining the carbon cost and neutralizing it with a partner carbon company.

Another company, *Green Meeting Ninjas*, states "We do not plan events but rather, we help those that do, do so in a more sustainable manner," (Green Meeting Ninjas website).

According to various resources (including David Suzuki's Green Event List), these are some examples of sustainable events, or events that have achieved recognition as falling into a category of one of the events listed above:

Examples of Carbon Neutral Events, Tours & Conferences

2010 Winter Olympics
The Academy Awards 2007
Turin Winter Olympics 2006
Super Bowl 2006
FIFA World Cup 2006
World Economic Forum
Barenaked Ladies Tour

Examples of Events listed as sustainable

Nasdaq Sustainability Webinar: Companies & Investors Address Water Issues
GSSB Semi-Annual Meeting
BCCC Corporate Citizenship Conference 2017
CSHS Human Capital Forum
ESG3 Summit
Eurovision, 2013
Hope Global Forum/2017 Annual Meeting
Ceres Conference 2017
Findhorn International Forum on Sustainability
WFE Annual General Assembly & Meeting 2017
Ecosummit Stockholm Conference
TBLI Conference Nordic 2017
2017 Net Impact Conference
The Glasgow 2014 Commonwealth Games (the first Commonwealth Games to secure the ISO 20121 sustainability standard.)
CIBJO Congress
ITB Asia – The Energy Saving Event
Oracle OpenWorld – The Give Something Back Event
The Croissant Neuf Summer Party – The Self-Sufficient Event (Also voted Greenest event)

Translation from definitions to practice: Methods

Since the literature has so many inconsistencies about "sustainable events", it made sense to interview those who work in events every day to see if they had a more unified understanding.

A survey was developed with the intent to solicit this information from event practitioners. The survey link was sent to known event planners, posted on social media, Linked In and posted in 5 event planner member group discussion boards. The survey period was 2 weeks, or 14 days. 81 responses were initially received. Of

these, 8 were removed due to respondent duplication (One respondent submitted the same response to the survey 9 times within two minutes.) This reduced the number of useable surveys down to 72.

To get a more accurate count of those planners who rely on event planning as the main portion of their income, the data was further reduced. First, those who responded that event planning was less than 50% of their job were removed, bringing the number of surveys down to 54. Second, those who responded that the successful production of events was not their primary source of income were removed, leaving 38 responses. These were both used as elimination factors, as these are those professionals who are most often dealing with events on a full-time basis.

There was one data oversight, in that a location question was omitted due to human error. Should further studies be conducted, it is recommended that this is added as part of future studies.

Findings

The survey received 80 responses, 43 of which were respondents who stated that their income relied on successful event production and they responded that their job responsibilities included at least 50% event planning or production. The majority of respondents had more than 10 years in the industry, and worked full-time. There were a variety of job titles, including administrative workers, planners, coordinators, directors, senior directors, and president/CEOs that responded. Respondents also worked within a wide variety of event types, ranging from Academic, Benefit, Business, Family, Household, Lifetime, to weddings and professional events and festivals. Most, many respondents had heard of green events (58) and sustainable events (48), previously, while 7 had never heard of any of the six event types listed.: Only one respondent had heard of all 6 event types, and the % of their job they are responsible for event production is 40%. 9 respondents had heard of 5 out of 6 event types, but when reduced to IDE, only 7 had heard of 5 of the 6 event types. 40 respondents stated they had never worked these event types, while 25 claimed to have worked a green event previously. When narrowed down to those who both had 50% of their job duties dependent on events and stated that events were their main source of income, 20 had not heard of any of these event types while 13 had implemented a green event. When asked if respondents felt that there was a difference in the six terms and their understanding of a sustainable event, the majority said yes, or somewhat. This response stayed the same when paired down to 50% with IDE, 17 (yes), 17 (somewhat) and 4 (no). Respondents were close to evenly split when asked if they could define a sustainable event. With the total response rate, there were 25 who felt they were confident they could define it, 26 who were unsure and 21 who said they would not be able to define a sustainable event. When paired down, 13 said yes, 14 said maybe and 11 said they would be unable to define a sustainable event. When it came to defining a sustainable event, a variety of responses were recorded. Of these responses, the definitions could be

narrowed into 35 categories. Of these, the top choices for sustainable events definitions were consistent, with the following results: 19 respondents stating: "good for the environment" or being "environmentally friendly" as the main definition. 15 defined it as relating to economic, social, and environmental concerns, 14 defined it as an event that has little or zero waste, 12 defined it as an event that follows and implements some form of sustainable practices. Tied for 5th with 10 votes each are events that work to reduce its carbon footprint and an event that has a minimum negative environmental impact. Finally, there were 8 who suggested that a sustainable event that is one that utilizes efficiency practices. When reduced to those respondents who do 50% + IDE, the order of these changed, but the top responses did not. The top result was still an event that does good for the environment or that is environmentally friendly with 11 votes, tied for 2nd with 8 votes each is an event that has economic, social, and environmental concerns and leaves little or zero waste while minimum negative impact moved up to 3rd place with 6 votes. Another tie occurred for 4th place with 4 votes each to defining it as an event that follows and implements some form of sustainable practices and one that works to reduce its carbon footprint. The second consistency is found in that efficiency came in at the end of the voting list after the reduction as well, but with only 2 votes.

When given elements and asked to determine which elements most successfully described a sustainable event, 68 respondents said Material use consciousness, 64 said Recycling bins being present, 58 said Reduced paper printing and increased online materials, 55 said Water usage consciousness, 54 said Local food purchasing and 54 also said Energy consciousness.

With this information, we see that there are many similar elements, but these are still a variety of elements that are not consistent even when compared with respondents own definitions.

Conclusions

Holmes et.al, suggests that delivering a holistically sustainable event means "Applying holistic thinking to planned events means understanding the connection between the elements that make the event happen and how this relates to the broader context in which the event is taking place. It also needs an understanding of the interdependencies, interactions, and feedback loops between the various aspects of the event and a recognition that these may change over time.

While there are several elements that are similar in the responses that were received, the responses also show confusion among the terminology. This shows that while event practitioners can identify elements that go into sustainable events, less than a quarter of respondents were able to identify main elements that the literature identifies as being unique to sustainable events as opposed to other event types.

Recommendations

- Complete further studies and determine if understanding depends on region of the world events are being produced.

- Continue to develop a way to determine the key differences between the event types that are made available to the event planning community.
- Develop a methodology for assessing the sustainability of an event that is low cost and developed with practitioners.

References

Alexander, R., Hope, M., & Degg, M. (2007). Mainstreaming sustainable development–a case study: Ashton Hayes is going carbon neutral. *Local Economy*, *22*(1), 62-74.

Andersson, T. D., & Lundberg, E. (2013). Commensurability and sustainability: Triple impact assessments of a tourism event. *Tourism Management*, *37*, 99-109.

Baade, R. A., & Matheson, V. A. (2004). The quest for the cup: assessing the economic impact of the world cup. Regional studies, 38(4), 343-354.

Bell, S., & Morse, S. (2008). *Sustainability indicators: Measuring the immeasurable?*. London: Earthscan.

Bell, S., & Morse, S. (2013). *Measuring sustainability: Learning from doing*. Routledge.

Berke, P. R., & Conroy, M. M. (2000). Are we planning for sustainable development? An evaluation of 30 comprehensive plans. *Journal of the American planning association*, *66*(1), 21-33.

Black, D., & Van Der Westhuizen, J. (2004). The allure of global games for 'semi-peripheral' polities and spaces: a research agenda. Third world quarterly, 25(7), 1195-1214.

Blackburn, W. R. (2007). *The sustainability handbook: The complete management guide to achieving social, economic, and environmental responsibility*. Sterling, VA: Earthscan.

Cammack, P. (2004). What the World Bank means by poverty reduction, and why it matters. *New Political Economy*, *9*(2), 189-211.

Carbon Neutral Pty. Ltd. (2015). *Become Carbon Neutral*. Carbon Neutral Australia.

Cavendish Venues. (2017). *Event Carbon Calculator*. Cavendish Venues UK.

Climatepath. (2009). Carbon Neutral and Green Events. Green Events. Climatepath.

Cornwall, A., & Brock, K. (2005). What do buzzwords do for development policy? A critical look at 'participation', 'empowerment'and 'poverty reduction'. *Third world quarterly*, *26*(7), 1043-1060.

Cornelissen, S. (2007). China and the 2008 Beijing Olympics: the dynamics and implications of sport mega-events in the semi-periphery. The China Monitor, 18, 4–5.

Couch, R. (2014). These Architects Have Ingenious Plans For Brazil's World Cup Stadiums. Impact. *Huffington Post*.

Couch, R. (2014). These Architects Have Ingenious Plans For Brazil's World Cup Stadiums. Impact. Huffington Post.

Courvisanos, J., & Jain, A. (2006). A framework for sustainable ecotourism: Application to Costa Rica. *Tourism and Hospitality Planning & Development*, *3*(2), 131-142.

DEFRA. (2007). Sustainable Events Guide. Department for Environment, Food and Rural Affairs.

DEFRA. (2007). Sustainable Development Action Plan (SDAP). Department for Environment, Food and Rural Affairs.

Dickson, C., & Arcodia, C. (2010). Promoting sustainable event practice: The role of professional associations. *International Journal of Hospitality Management*, *29*(2), 236-244.

Dickson, C., & Arcodia, C. (2010, July). Environmentally sustainable events: a critical review of the literature. In *Global Events Congress IV: Festivals & Events Research: State of the Art, Leeds Metropolitan University* (Vol. 14, p. 16).

Dimeo, P., & Kay, J. (2004). Major sports events, image projection and the problems of'semi-periphery': a case study of the 1996 South Asia Cricket World Cup. *Third World Quarterly*, *25*(7), 1263-1276.

Dredge, D., & Whitford, M. (2010). Policy for sustainable and responsible festivals and events: Institutionalisation of a new paradigm–A response. *Journal of Policy Research in Tourism, Leisure & Events*, *2*(1), 1-13.

February 13, 2017.

East, A. J. (2008).What is a carbon footprint? An overview of definitions and methodologies. In Vegetable industry carbon footprint scoping study—Discussion papers and workshop, 26 September 2008. Sydney: Horticulture Australia Limited.

EFC. (2015). Festival Report, Gradnonna Mountain Resort. European Festival Conference.

Elliott, J. (2012). *An introduction to sustainable development*. Routledge.

Eee. (2017). About eee. Evelina's Eco Events.

Event Research International, (2012). Responsible Events.

Every Action Counts. (2009). Every Action Counts…for Our Events: A guide to running smart and sustainable events. Every Action Counts Programme.

Finkbeiner, M. (2009). Carbon footprinting—Opportunities and threats. International journal of Life Cycle Assessment, 14, 91–94.

Getz, D. (2008). Event tourism: Definition, evolution, and research. *Tourism management*, *29*(3), 403-428.

Getz, D. (2009). Policy for sustainable and responsible festivals and events: Institutionalization of a new paradigm. *Journal of Policy Research in Tourism, Leisure and Events*, *1*(1), 61-78.

Getz, D., & Andersson, T. D. (2008). Sustainable festivals: On becoming an institution. Event management, 12(1), 1-17.

Getz, D., & Page, S. J. (2016). *Event studies: Theory, research and policy for planned events*. Routledge.

Gogreen.ae. (2017). Eco Friendly Events. February 13, 2017.

Gössling, S. (2009). Carbon neutral destinations: A conceptual analysis. *Journal of Sustainable Tourism*, *17*(1), 17-37.

Green Hotelier. (2011). What is a Green Meeting. International Tourism Partnership.

Green Meeting Ninjas. (2016). Sustainable Event Tips. Green Meeting Ninjas.

Griffin, K. A. (2009). Indicators and tools for sustainable event management. *Event management and sustainability*, 43-55.

Hall, C. M. (2012). Sustainable mega-events: Beyond the myth of balanced approaches to mega-event sustainability. *Event Management*, *16*(2), 119-131.

Heitman S. and 2010, Lóránt, D. (2010). Sustainability and Events Management, Wallingford: CABI, pp. 181-200.

Henderson, S. (2011). The development of competitive advantage through sustainable event management. *Worldwide Hospitality and Tourism Themes*, *3*(3), 245-257.

Holmes, K., Carlsen, J., Mair, J., & Hughes, M. (2015). Events and Sustainability. Abingdon, Oxon: Routledge.

Horne, J., & Manzenreiter, W. (2006). An introduction to the sociology of sports mega-events. In J. Horne, & W. Manzenreiter (Eds.), Sports mega-events: social scientific analyses of a global phenomenon (pp. 1–24). Blackwell/The Sociological Review: Malden, USA.

Humphreys, B. R., & Prokopowicz, S. (2007). Assessing the impact of sports mega-events in transition economies: EURO 2012 in Poland and Ukraine. *International Journal of Sport Management and Marketing*, *2*(5-6), 496-509.

ICLEI (2010-2017). Sustainable Events. ICLEI.

Jones, M. (2014). *Sustainable event management: A practical guide*. Routledge.

Jones, M., Fullerton-Smith, J. (2016). ISO20121 Events Sustainability Management Systems: A Guide to Understanding the International Standard. GreenShoot Pacific.

Kendall, M. (2014). The World's Most Eco-Friendly Events. Event Academy.

Koh, K., & Greene, H. Green Event Marketing: The Sustainable Community Event Portfolio.

Laing, J., & Frost, W. (2010). How green was my festival: Exploring challenges and opportunities associated with staging green events. *International Journal of Hospitality Management*, *29*(2), 261-267.

Maguire, K., Hanrahan, J. (2013). 9th Annual Tourism and Hospitality Research in Ireland Conference (THRIC), Galway, 6-7th June. Galway: Galway-Mayo Institute of Technology.

Mair, Judith, and Leo Jago. "The development of a conceptual model of greening in the business events tourism sector." *Journal of Sustainable Tourism* 18.1 (2010): 77-94.

Mason, P. (2015). *Tourism impacts, planning and management*. Routledge.

Mason, P., & Beaumont-Kerridge, J. (2012). Attitudes of visitors and residents to the impacts of the 2001 Sidmouth International Festival. *Festival and Events Management: An International Arts and Culture Perspective, Elsevier, London*, 311-328.

Matheson, V. A. (2002). Upon further review: an examination of sporting event economic impact studies. The Sport Journal, 5(1), 1–4.

Matheson, V. A., & Baade, R. A. (2004). Mega-sporting events in developing nations: playing the way to prosperity? The South African Journal of Economics, 72(5), 1085–1096.

Maxwell, T. J. & Cannell, M. G. R. (2000) The environment and land use of the

future, in: G. Holmes & R. Crofts (Eds) Scotland's Environment: the Future, pp. 30–51 (East Linton: Tuckwell Press).

McWilliams, A., & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *Academy of management journal*, *40*(3), 626-657.

Mowforth, M., & Munt, I. (2015). *Tourism and sustainability: Development, globalisation and new tourism in the third world*. Routledge.

Musgrave, J. (2011). Moving towards responsible events management. *Worldwide Hospitality and Tourism Themes*, *3*(3), 258-274.

New Oxford American Dictonary (2006). Word of the year: Carbon Neutral. Definition.

Nunes Dias, M.L. (2013). Contribution to Event Management Sustainability. Instituto Superior Técnico, Lisboa.

O'Riordan, T. (Ed) (2000) Environmental Science for Environmental Management, 2nd edn, p. xii (Harlow: Pearson).

Pandey, D., Agrawal, M., & Pandey, J. S. (2011). Carbon footprint: current methods of estimation. Environmental monitoring and assessment, 178(1), 135-160.

Pernecky, T., & Lück, M. (Eds.). (2013). *Events, society and sustainability: Critical and contemporary approaches*. Routledge.

Peters, G. P. (2010). Carbon footprints and embodied carbon at multiple scales. Current Opinion in Environmental Sustainability.

Pillay, U., & Bass, O. (2008). Mega-events as a response to poverty reduction: The 2010 FIFA World Cup and its urban development implications. In *Urban Forum* (Vol. 19, No. 3, p. 329). Springer Netherlands.

Powell, R. B., & Ham, S. H. (2008). Can ecotourism interpretation really lead to pro-conservation knowledge, attitudes and behaviour? Evidence from the Galapagos Islands. Journal of sustainable tourism, 16(4), 467-489.

Presbury, R., & Edwards, D. C. (2005). Incorporating sustainability in meetings and event management education. *International Journal of Event Management Research*, 2005, 1(1), pp.30-45

Preston, C., Hoyle, L.H. (2012). *Event marketing: how to successfully promote events, festivals, conventions, and expositions*. 2nd Ed. Wiley.

Recycle Runway, (2017). Creative Eco-events. Recycle Runway.

Raj, R., & Musgrave, J. (Eds.). (2009). Event management and sustainability. CABI.

Roe, D. (2008). The origins and evolution of the conservation-poverty debate: a review of key literature, events and policy processes. *Oryx*, *42*(04), 491-503.

Schäfer, M., Jaeger-Erben, M., & Bamberg, S. (2012). Life events as windows of opportunity for changing towards sustainable consumption patterns? *Journal of Consumer Policy*, *35*(1), 65-84.

Schlenker, K. (2010). *ENCORE festival and event evaluation kit: Review and redevelopment* (Vol. 1, p. 10).

Smith, A. (2007). Large-scale events and sustainable urban regeneration: key principles for host cities. *Journal of Urban Regeneration & Renewal*, *1*(2), 178-190.

Smith, A. (2012). *Events and urban regeneration: the strategic use of events to revitalise cities*. Routledge.

Sorrells, M. (2015). *9 Tips for Hosting a Carbon-Neutral Event*. Event Intelligence. Bizbash.

Stem, C. J., Lassoie, J. P., Lee, D. R., & Deshler, D. J. (2003). How 'eco' is ecotourism? A comparative case study of ecotourism in Costa Rica. *Journal of sustainable tourism*, *11*(4), 322-347.

Stiteler, R. *Leading the Way & Pushing the Edge*. The Meeting Professional. Meeting Professionals International. December, 2015. Pp. 20-22.

Stiteler, R. Leading the Way & Pushing the Edge. The Meeting Professional. Meeting Professionals International. December, 2015. Pp. 20-22.

Sustainable Event Alliance http://sustainable-event-alliance.org/is-a-carbon-neutral-event-a-sustainable-event/

Suzuki, D. (2014). *How to Host a Sustainable, Carbon Neutral Conference or other Event*. What you can do. Reduce your carbon footprint. Retrieved February 13, 2017

UNEP. (2009). Green Meeting Guide. United Nations Environmental Programme.

UNEP. (2012). Sustainable Events Guide. Paris: United Nations Environmental Programme.

United Nations Environmental Programme Sustainable Events (UNEP, 2012)

UNWTO. 2010. Tourism and Poverty Alleviation. World Tourism Organization. Step.unwto.org

UNWTO. 2010. Tourism and Poverty Alleviation. World Tourism Organization. Step.unwto.org

Vandenbergh, M. P., & Steinemann, A. C. (2007). The carbon-neutral individual. *NYUL Rev.*, *82*, 1673.

Weybrecht, G. (2010). *The sustainable MBA: The manager's guide to green business*. John Wiley & Sons.

Wiedmann, T., Lenzen, M., Turner, K., Minx, J., & Barrett, J. (2007, May). Multiregional input-output modelling opens new opportunities for the estimation of ecological footprints embedded in international trade. In International Ecological Footprint Conference, Cardiff (pp. 8-10).

Wiedmann, T., & Minx, J. (2007). A definition of carbon footprint. ISAUK Research Report 07-01, Durham, ISAUK Research & Consulting.

Zeroghg. (2007). *Carbon Neutral Conferences*. Business. Zeroghg.

ARTICLE

Striving Towards Sustainability in the City: Indicators of a Sustainable City

Christy Cooksey and D. Yeatts
Department of Sociology, University of North Texas, Denton, United States

The varied nature of city sustainability programs adopted and implemented within cities is quite large. Due to the inconsistencies in research as well as the autonomy that city governments have in their governing processes from one another, it is of no surprise that city sustainability policies look as different as the lands they represent. Although strides towards recognizing the importance of city sustainability adoption have been great over the last few decades, much work remains to ensure city leaders understand those city characteristics which remain important to initiating sustainability policies. This paper delineates reasons for focusing sustainability policy at the city level, presents a theoretical framework that classifies sustainability into three main pillars or categories, and describes the city characteristics or indicators of each.

Introduction

Sustainability has emerged as a natural byproduct of an increasing movement of goods, people, culture, and pollution across borders. As a revolutionary topic, it emerged with this simple description: activities which "meet[s] the needs of the present without compromising the ability of future generations to meet their own needs." (WCED, 1987, p. 8). This definition remains today as the defining springboard for discussions concerning the concept due to its clear description and its adaptability to the changing times. Further, it has also been said that sustainable development should allow "each individual the opportunity to develop himself in freedom, within a well-balanced

society and in harmony with its surroundings" (Kerk & Manuel, 2010, p. 1). Cities across the nation and globe have taken part in varied initiatives either through choice or constraint in efforts to move towards creating sustainable places that prove to be desirable for residents and their futures alike. This movement towards sustainable planning at the city level is varied in its acceptance among cities, with some cities lacking a sustainability plan (Atkisson, 1996) and other cities leading the way (Portney, 2002).

Reasons for the varied nature of embracing a sustainability plan at the city level are largely due to the confusing nature of how best to approach sustainability itself. As cities are different from one another in many ways, a successful sustainability plan is likely not replicable by other cities. Additionally, there seems to be a confusing and inordinate number of variables to consider when designing a plan of sustainable development for any given city and as such, can prove a daunting task for city planners who must take into consideration issues that span multiple cities. For instance, CO_2 emissions impact individuals across the nation and globe and are estimated to originate within cities over 40% of the time (McLarty et al, 2014). This figure grows to closer to 80% when we consider all things necessary to support modern city life (McLarty et al., 2014). It has also been reported that upwards of 40% of greenhouse gas output originates within an urban center somewhere on the globe (Feiock, 2014; Satterthwaite, 2008). As such, decisions about how to reduce carbon footprints and ensure limitations to these emissions are complex yet important to city sustainability plans (McLarty et al., 2014). City planners have traditionally designed policies specific to their geographic area, yet now face the need to consider those outside the city as well. At a time when some cities are fully aware of how to proceed towards a sustainable future while others are completely at a loss, elucidation of key characteristics and issues pertaining to the discussion is beneficial for those desiring to create a policy for positive change.

Cities as the focus of sustainable development

Cities are an organizational power with the capability to create and make change within designated geographic boundaries (United Nations, 2016). A majority of the world's population resides within urban cities as reported by the United Nations in 2008 (Ramaswami et al., 2012) yet, the interconnected networks of trade, commerce, ideas, and knowledge adhere to no such defied boundaries. Further, the impact of consumerism that relies on carbon-based emissions cannot be contained in any one city and as such, regulation of these emissions at the city level remains limited in its scope (Ramaswami et al., 2012).

The complexity of sustainability measurement

Much discussion has taken place concerning creation of sustainability indices (Portney, 2003; Sutton, 2003; Atkisson,

1996). An index is a combined set of indicators taken together to better understand a complex concept (United Nations, 2011). A combination of indicators within an index allows researchers a broader understanding about sustainability than what is possible by looking at the individual indicators themselves (Garnasjordet et al., 2012; United Nations, 2011). For example, some indices measure sustainability on a national level as provided by the Sustainable Society Foundation (Kerk, 2015) while others are site specific to a certain city, such as the Sustainable Seattle Initiative (Atkisson, 1996). Cities prove a logical framework for application of sustainability efforts as they are geographically bounded areas that can create change due to policy supported through local governmental processes. As Portney has noted, "cities are among the more important building blocks" in the sustainable movement (2002, p. 364). Further, cities can gain local support for the necessary impetus of change because they are natural leaders in the target area (United Nations Conference on Environment and Development, 1992). When dealing with specific local sustainability needs, city government is much better equipped to handle specific issues pertaining to the city.

Sustainability indices may vary widely regarding the specific indicators used even though they are attempting to assess the same general concept. However, these differences are acceptable because it is not the individual indicators that illuminate the outlook of sustainability for a city, but the concept as measured by many indicators. (Garnasjordet et al., 2012; United Nations, 2011). If data is not available for the desired indicator, it may be "supplemented by other statistical information or indicators," (Garnasjordet et al., 2012, p. 323). For instance when creating an air quality indicator, all vehicle emissions or the amount of carbon dioxide found in the air can both prove adequate data for the desired indicator.

The sustainability framework

Sustainable community development has often been broken down into three main categories (Hemple, 2009; Schlossberg & Zimmerman, 2003), although some may argue for an additional fourth (Ekins & Dahlström, 2008) or possibly even five categories as the Global Tomorrow Initiative of Sustainable Seattle does (Portney, 2013). For the purposes of this work, the three main categories are utilized as they sufficiently encompass the fourth and fifth suggested ones of ethics and politics. The three main categories are commonly referred to as the "three E's of sustainability," or the balance of the (a) environment, (b) economy, and (c) social equity (Hemple, 2009; Opp & Kyle, 2012) and have oftentimes been reviewed individually within the literature. It is in fact more common to find literature regarding environmental, or economic, or social sustainability as opposed to literature focused upon reconciliation of all three E's (Brugmann, 1997; Holling, 2001; Jepson, 2001; Michalos, 1997).

Environmental sustainability includes any issue regarding clean land, clean air, clean water, biodiversity of natural aquatic and land wildlife, the availability of green space, and the amount of natural resources available for future use (Opp & Sunders, 2012). Issues concerning the natural environment fall within the environmental pillar of sustainability and are by far the most widely used sustainability indicators when measuring sustainability though by no means more important than the other two (Portney, 2013). The economic vitality pillar of sustainable communities includes issues such as the stability of economy where all residents of the area have adequate opportunity to live the quality of life desired (Saha & Paterson, 2008). Further, the population retains this ability to support itself economically without government assistance. Social sustainability includes topics that impact people and their quality of life. For instance, the availability of adequate healthcare for all residents living within a city increases social equity. Additionally, for individuals unable to provide for themselves, they have access to social, medical, housing, and food programs. Greater social equity is also present when residents have a variety of amenities close by that increases social cohesion and quality of life (Dempsey et al., 2011). Taken together, all three categories or pillars constitute a robust sustainability framework. Provided below is a closer examination of specific indicators used when creating indices for the three pillars of sustainability.

Review of Environmental Indicators

Environmental indicators are the most widely talked about and implemented indicators for sustainability plans because determining directionality towards a more sustainable environmental practice is much easier than determining what constitutes greater social and economic equity (Portney, 2013). The ways in which we view the environment have changed post-developmentalism as the cost of carbon-intensive lifestyles to fuel growth and expansion have been great, especially when we consider that the built structures (e.g. pipelines and road systems) to handle movement of resources (e.g. natural gas, oil, consumer goods) are substantially more imposing on the environment than the natural resources themselves (Ramaswami et al., 2012). Higher rates of air pollution, health concerns, and loss of non-renewable resources impact how people experience a healthy lifestyle (US Environmental Protection Agency, 2017; Uddin & Khorshed, 2015).

Much has been written on the importance of air and water quality of a given area to sustainability as these have large implications regarding the longevity of resources and health (US Environmental Protection Agency, 2017; Portney, 2002). Poor air quality from particulates in the air resulting from carbon-based private and public transportation systems and manufacturing processes has been linked to higher incidences of asthma and cancer (US Environmental Protection Agency Factsheet, 2009). Additionally, water

quality remains an important variable in assessment of environmental sustainability as individuals need clean and adequately supplied sources of water to sustain life. Likewise, clean and adequate supplies of water are crucial for the survival of animals and plants both on land and in water.

One way to preserve air and water quality is to have more green space within urban areas (Gomez et al., 2011). Increases in green space may decrease average temperatures as well as retain rain water by using less concrete to allow rainwater to reenter the natural water supplies of the area (Gomez et al., 2011). This is known as tempering the "environmental aggression" by employing the natural world to do what it has historically done in renewing and replenishing water and air supplies (Gomez et al., 2011, p. 312).

Population density, a city demographic measure, has also been linked with the health of the natural environment. Jabareen (2006) has argued that high population density as opposed to a geographically spread out population is a conservator of natural resources due to less land mass utilized for human habitation, leaving more area for natural environment in surrounding areas and as a plus "encourages social interaction" (p. 40). Of course, this assumes that the surrounding areas of high-density places remain largely unaltered from their natural state.

Thermal heat has been linked to the health of individuals not only physically but emotionally as well (Gomez et al., 2011). With the inclusion of more green space, urban centers decrease the intense temperatures that may be experienced in conjunction with large amounts of concrete and steel. We might expect that air and water quality would impact human health, but we might be less likely to consider temperature as impacting health of individuals. Research has been conducted on "heat zones" and the discomfort index (Kim, 1989), focusing on the correlation between human comfort and the heat of place of residence. Temperature is something that is largely out of our control, yet some argue that we can do some things to at least mitigate the intense heat of urban areas. For example, urban gardens can "reduce heat islands" in climates that are hot, making the living conditions more bearable for residents (Gomez et al., 2011, p. 312).

Average annual precipitation is another way that humans may be impacted by the environment. As rain replenishes the natural vegetation, it also may mitigate the height of temperatures in urban areas (Gomez et al., 2011). In sum, environmentally friendly urban design should be considered for measuring city sustainability.

Review of Economic Indicators

Recent trends in the literature suggest that as economic vitality increases, environmental sustainability suffers (Grossman & Krueger, 1993; Güney, 2014). One explanation for this inverse relationship is that a traditional foundation for economic vitality is an increase in individuals and businesses (Güney, 2014). These result in a byproduct of increased production that subsequently creates more

stress on the natural environment in the form of higher proportions of pollution in the air and water, as well as heavier reliance on natural resources such as water, fossil fuels, and trees.

Leigh and Li (2015, p. 635) have suggested this negative relationship may be mitigated through various techniques such as businesses striving to reduce their carbon footprint by "designing for the environment" whereby products are more environmentally friendly via reusability or being "recoverable in disposal" of the product. Lubell, Feiock, and Handy (2009) have suggested that industrialization and the businesses that manufacture products can be good for city economy but need policy regulation to ensure participation in sustainable practices. Saha and Paterson (2008) have noted that economic vitality may be achieved when residents of a given area have adequate opportunity to live the quality of life desired, while industry remains prosperous. One way to ensure that individual and business interests coincide is to develop "smart growth" whereby multi-use city plans allow for individual use and business use within the same area (Portney, 2013). This might appear as a downtown area that offers opportunity for residential living spaces alongside small businesses and parks. Oftentimes, smart growth plans will include a refocusing of efforts towards improving older or run-down areas of the city, incorporating public transit options and bike pathways, while adding amenities such as open space to attract and grow social cohesion (Newman, 2005; Portney, 2013). Thus, sometimes the idea of smart growth is to repurpose previous development space in such a way that it increases the desire of people to stay and conduct business in the city and reduces urban sprawl. Thus, smart growth allows for the maximization of space without overconsumption, meaning that more of the natural environment is preserved as the built environment is better utilized.

Another way cities can revitalize their economy is to focus on "green jobs" (Portney, 2013). For example, cities can provide incentives for engineering firms to train staff on environmentally friendly building designs that promote green development/redevelopment of built city structures. Newman (2005, p. 385) has suggested that the larger picture related to sustainable economic growth should focus not on the loss of traditional manufacturing business and industry but instead focus on a redesigning of economic growth towards incentives for smart growth and green development, or as he puts it, "managing the negative" or "promoting the positive." As such, economic prosperity should occur in conjunction with environmental protectionism, supporting the sustainability framework.

Traditionally, city revenue and employment have been used to measure economic growth of a city or neighborhood (Howley, et al., 2009). Under the sustainability framework, we do not want to ignore these traditional measures of economy, but rather to utilize them in thoughtful ways to boost our understanding of the future viability of the city economy in conjunction with sustainable practices. In particular,

employment can be significant to sustainability as employed individuals have much to offer the city in the way of reinvesting in other businesses, home ownership, as well as being a source of revenue and thereby supporting future growth of the city (Howely, et al, 2009). Research has indicated that places with high unemployment struggle economically due to reduced home ownership and business investment (Alberti, 1996). Looking more closely at the one-dimensional indicator of employment, Portney (2013) has found that it is not simply employment itself but rather the type of employment that is correlated with a successful of sustainability plan implemented at the city level. In particular, Portney (2013) found that "creative" job employment was associated with greater participation in sustainable governance while manufacturing and service industry employment were not correlated with an increase in the success of sustainability plans at the city level. These findings indicate there is a necessity to move past traditional measures of economic prosperity to differentiate between types of employment when designing economic indicators for the sustainability framework.

Home values, median income, and level of education have also been linked to sustainability and economic vitality (Portney, 2013). Portney found that with increases in home values and median income, cities tended to enact more sustainability policies at the city level (2013). It seems rational that higher levels of education will ensure more people are employed, thereby increasing economic vitality that is sustainable. Portney (2013) found that level of education did not seem to impact willingness to adopt city sustainability plans; yet, others have found that levels of education are positively correlated with life expectancies and negatively correlated with unemployment rates of a city (Steinbrueck et al., 2014). These findings indicate that level of education may be important when considering the sustainability framework as this indicator may impact the city in many ways, even if it lacks the ability to directly impact whether a city adopts a sustainability plan or not. Regarding traditional modes of measuring a city's economy, it is important to consider not only the current state of economic affairs, but also the future outlook as well. As such, when designing economic indicators for the sustainability framework we can draw upon these traditional modes of measurement as well.

Review of Social Equity Indicators

When considering where to purchase a home or build a business, individuals will consider many things, including ease of transport, city cohesiveness, health and well-being (Steinbrueck et al., 2014; Widok, 2009) access to wholesome food, and safety (Steinbrueck et al., 2014). Social equity is the ability for all residents within a city to have access to the same societal networks set in place such as "governments, judiciaries, militaries, healthcare systems, banking systems, education systems, charities, etc." (Widok, 2009, p. 43). Further, Widok (2009) has suggested that these

social systems and characteristics are so important to individuals and their well-being that they are foundational to measuring social sustainability and ensuring future generations have access to them. Measurement of equity of access to all the social networks available within a city is discussed below.

Bearing in mind the sustainability framework, the indicators that can hinder access to social networks and have a long-term impact on the city are significant. For instance, Howely (2009) found that relative safety of a city negatively impacts peoples' satisfaction with their place of residence, a finding that could lead to a loss of people willing to invest their time and money into the city. Additionally, higher crime rates have been linked with poverty, less access to higher education, and lower sustainability (Adidjaja, 2012; Alberti, 1996, Widok, 2009). To further this point, the Seattle Sustainable Neighborhoods Assessment Project found that crime steadily declined in Seattle between 1994 and 2014 (Steinbrueck et al., 2014). This is a significant finding for sustainability research since Seattle has for some time been considered a national leader in sustainability design and has worked continuously through the years to become more sustainable. The findings show that as Seattle worked towards greater sustainability, the crime rates of the city declined.

Green spaces, or places for outdoor exercise and interaction with others within urban communities have been linked to an increase in social cohesion of individuals and accessibility to social networks (Baur & Tynon, 2010; Karuppannan & Sivam, 2011). As individuals are more active within their community, they tend to interact with one another and are more directly involved within their community and each other. This social cohesion will, in turn, directly affect participation and enhancement of economic relationships of businesses within the community (Coleman, 1993). As individuals are provided a community that contains open space for interaction or smart growth areas, this can lead to increased participation in the community, thereby enhancing the connectedness to place and people, allowing for greater access to the networks necessary for a sustainable city. Because social cohesion or connectedness affects sustainability, things such as open space that will enhance community cohesion, are considered indicators in the sustainability framework.

Another way to increase social cohesion is to have a transparent policy process at the city level and involvement of individuals during the process to ensure success of initiatives (Portney, 2002). This can greatly encourage buy-in from the public and make positive change towards sustainability. In this regard, city sustainability initiatives will mirror the community values in which they are designed. These participatory opportunities by individuals in the policy process will profit the city in other ways as well. For instance, a community with much network participation, communication, and exchange will not only experience greater buy-in of sustainability initiatives but may also see higher rates of economic prosperity (Crowe, 2010). Surprisingly, the age of the

city might impact how involved the public becomes in the process to adopt sustainability initiatives. Lubell, Feiock, and Handy (2009) found that older cities may have a more difficult time creating spaces that allow for network participation, as older cities have little room for drastic changes to old land development models and industrialized systems already in place. Therefore, older cities may need to work a little harder to increase social cohesion of the city, encourage interaction of individuals, and to create more equitable access to social networks necessary for a sustainable future. In sum, social sustainability is best achieved through a coordination of public and private interests, equity of access to necessary systems, and livability of place.

Summary

City sustainability is a topic of great discussion not only among academia but city policymakers and residents as well. Since the emergence of increased environmental awareness as related to our post-industrialized societies, we have discovered a desire to preserve natural and built environments such that future generations have access to them as well. In this regard, much discussion has led to action on the front of sustainable development both at the individual and government level. We live in a world where access to information and education regarding best sustainable practices is at our fingertips, yet oftentimes difficult to understand or apply. This paper outlines reasons for the city to be considered an appropriate place to initiate policy change and has presented a theoretical foundation made up of three pillars of sustainability that cities can incorporate within their sustainability plans.

Cities are best equipped to design, implement, monitor, and adjust sustainability policy. Regarding the environment, researchers have found that air and water quality, the amount of resources available, temperature, precipitation, and open space are important to consider. Regarding the economy, researchers have found income, industry, type of employment, and smart growth to be important characteristics to consider. For social equity, researchers have pointed to social cohesion, open space, access to social programs, and crime in their study of sustainability. With access to these important city sustainability indicators, city planners can focus their efforts on improving sustainability as they strive to create a more reliable and equitable future.

REFERENCES

Adidjaja, E. (2012). The demographics of the largest 25 U.S. cities in relation to their online sustainability reporting and sustainability performance. *The International Journal of Interdisciplinary Social Sciences, 6*(8), 191-200.

Atkisson, A. (1996). Developing indicators of a sustainable community: lessons from Sustainable Seattle, in: D. Satterthwaite (Ed.) *The*

Earthscan Reader in Sustainable Cities (London, Earthscan).

Alam, K., Gow, J., & Uddin, G.A. (2015). Estimating the relationship between grain crop consumption in Australia and environmental sustainability. *Journal of Developing Areas*, *49*(6), 49-60.

Barbour, E & Teitz, M. (2009). Blueprint planning in California: An experiement in regional planning for sustainable development. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed.* (pp. 171-200). Cambridge, Massachusetts: The MIT Press.

Batton, J. J. (2015). Our world is changing at a faster pace than ever before. *Sustainable Cities Index.* Retrieved from https://s3.amazonaws.com/arcadis-whitepaper/arcadis-sustainable-cities-index-report.pdf.

Baur, J. W. R. & Tynon, J. F. (2010). Small-scale urban nature parks: why should we care? *Leisure Sciences*, *32*, 195–200.

Bell, M. M. (2012). *An Invitation to Environmental Sociology*. (4th edition) New York: Pine Forge.

Bithas, K. P., & Christofakis, M. (2006). Environmentally sustainable cities. Critical review and operational conditions. *Sustainable Development*, *14*(3), 177-189.

Borsa, S. & Marchettini, N. (2008). Ecological footprint analysis applied to the production of two Italian wines. *Agriculture, Ecosystems and Environment,* Vol. 128, 162-166.

Bowler, Bryan, & Cocklin. (2002). *The Sustainability of Rural Systems: Geographical Interpretations.*

Coleman, J. S. (1993). The rational reconstruction of society. *American Sociological Review*, *58*(1), 1-15.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16(3)*, 297-334.

Crowe, J. (2010). Community attachment and satisfaction: The role of a community's social network structure. *Journal of Community Psychology, 38*(5), 622-644.

Daniels, T. L. (2009). A Trail Across Time: American Environmental Planning from City Beautiful to Sustainability. *Journal of The American Planning Association*, *75*(2), 178-192.

Dassen, T., Kunseler, E., & Kessenich, L. M. (2013). The Sustainable City: An Analytical-Deliberative Approach to Assess Policy in the Context of Sustainable Urban Development. *Sustainable Development*, *21*(3), 193-205.

Dave, S. (2011). Neighbourhood density and social sustainability in cities of developing countries. *Sustainable Development*, *19*(3), 189-205.

Dempsey, N.; Bramley, G.; Power, S.; & Brown, C. (2011). The social dimension of sustainable development: Defining urban social sustainability. *Sustainable Development 19,* 289-300.

Deniz, D., & Ozcan, A. C. (2014). Crime Prevention in Residential

Settlements or New Sustainable Communities-cities. *International Journal for Housing Science & Its Applications*, *38*(3), 173-181.

Drexhage, J. & Murphy, D. (2010). *Sustainable Development: From Brundtland to Rio 2012.* Retrieved from http://www.un.org/wcm/webdav/site/climatechange/shared/gsp/docs/GSP1-6_Background%20on%20Sustainable%20Devt.pdf.

Fiorino, Daniel J. (2009). Regulating for the future: A new approach for environmental governance. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward Sustainable Communities: Transition and Transformations in Environmental Policy, 2nd Ed.* (pp. 63-86). Cambridge, Massachusetts: The MIT Press.

Friedman, Thomas L. (2008). *Hot, flat, and Crowded Release 2.0*. New York: Farrar, Straus and Giroux.

Garnåsjordet, P. A., Aslaksen, I., Giampietro, M., Funtowicz, S., & Ericson, T. (2012). Sustainable Development Indicators: From Statistics to Policy. *Environmental Policy & Governance*, *22*(5), 322-336.

Global Footprint Network. (2012). *Advancing the Science of Sustainability*. Retrieved from http://www.footprintnetwork.org

Gómez, F., Jabaloyes, J., Montero, L., De Vicente, V., & Valcuende, M. (2011). Green Areas, the Most Significant Indicator of the Sustainability of Cities: Research on Their Utility for Urban Planning. *Journal of Urban Planning & Development*, *137*(3), 311-328.

Gonzalez, A., Donnelly, A., Jones, M., Klostermann, J., Groot, A., & Breil, M. (2011). Community of Practice Approach to Developing Urban Sustainability Indicators. *Journal of Environmental Assessment Policy & Management*, *13*(4), 591-617.

Goodland, R. (1995). The concept of environmental sustainability. *Annual Review of Ecology and Systematics.* Vol. 26, 1-24.

Grossman, G.M., Krueger, A.B. (1993). *Environmental Impacts of a North American Free Trade Agreement. The Mexico-U.S. Free Trade Agreement*. MIT Press, Cambridge, 13-56.

Guimarães, L. M. (2012). Sustainability and cities: a proposal for implementation of a sustainable town. *Work*, *41*2160-2168.

Güney, T. (2015). Environmental sustainability and pressure groups. *Quality & Quantity*, *49*(6), 2331-2344.

Hempel, Lamont C. (2009). Conceptual and analytical challenges in building sustainable communities. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed.* (pp. 33-62). Cambridge, Massachusetts: The MIT Press.

Howley, P., Scott, M., & Redmond, D. (2009). Sustainability versus liveability: an investigation of neighbourhood satisfaction. *Journal*

of Environmental Planning & Management, *52*(6), 847-864.

Jabareen, Y.R. (2006). Sustainable urban forms: Their typologies, models, and concepts. *Journal of Planning Education and Research, 26(*38).

Kamieniecki, S. (2009). Forward. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed.* (pp. vii-viii). Cambridge, Massachusetts: The MIT Press.

Karuppannan, S., & Sivam, A. (2011). Social sustainability and neighbourhood design: an investigation of residents' satisfaction in Delhi. *Local Environment*, *16*(9), 849-870.

Kraft, Michael E. (2009). Cleaning Wisconsin's waters: From command and control to collaborative decision making. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed.* (pp. 115-140). Cambridge, Massachusetts: The MIT Press.

Krank, S., Wallbaum, H., & Grêt-Regamey, A. (2010). Constraints to implementation of sustainability indicator systems in five Asian cities. *Local Environment*, *15*(8), 731-742.

Leigh, M. & Li, X. (2015). Industrial ecology, industrial symbiosis and supply chain environmental sustainability: A case study of a large UK distributor. *Journal of Cleaner Production.* Vol. 106, 632-643.

Lenzen, M. & Murray, S.A. (2003). The ecological footprint- Issues and trends, the University of Sydney, ISA Research Paper. 1-3. Retrieved from http://www.isa.org.usyd.edu.au

Lewis, J. (1988). Looking backward: A historical perspective on environmental regulations. *Environmental Protection Agency*. Retrieved from http://www2.epa.gov/aboutepa/looking-backward-historical-perspective-environmental-regulations

Li, T., Zhang, H., Yuan, C., Liu, Z., & Fan, C. (2012). A PCA-based method for construction of composite sustainability indicators. *International Journal of Life Cycle Assessment*, *17*(5), 593-603.

Lubell, M., Feiock, R., & Handy, S. (2009). City Adoption of Environmentally Sustainable Policies in California's Central Valley. *Journal of The American Planning Association*, *75*(3), 293-308.

Magee, L., & Scerri, A. (2012). From issues to indicators: developing robust community sustainability measures. *Local Environment*, *17*(8), 915-933.

Massey, D. (2007). *World City.* Cambridge, UK: Polity Press.

Mayer, H. & Provo, J. (2004). The Portland edge in context. In C. P. Ozawa (Eds), *The Portland edge: Challenges and successes in growing communities,* (pp. 9-34). Washington: The Island Press.

Mazmanian, D. A. (2009). Los Angeles' clean air saga-Spanning the three epochs. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed.* (pp. 89-114). Cambridge, Massachusetts: The MIT Press.

Mazmanian, D. A., & Kraft, M. E. (2009). The three Epochs of the environmental movement. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed*. (pp. 3-62). Cambridge, Massachusetts: The MIT Press.

McCarthy, G. (2015). *History of the clean water act.* Retrieved from http://www2.epa.gov/laws-regulations/history-clean-water-act.

McLarty, D., Davis, N., Gellers, J., Nasrollahi, N., & Altenbernd, E. (2014). Sisters in sustainability: municipal partnerships for social, environmental, and economic growth. *Sustainability Science*, *9*(3), 277-292.

McKinsey & Company. (2012). Sustainable Urban Infrastructure, London edition- a view to 2025. *Seimens AG. Retrieved from* http://www.siemens.com/entry/cc/features/urbanization_development/all/en/pdf/study_london_en.pdf

Accessed on January 1, 2013.

McManus, P. (2012). Measuring Urban Sustainability: the potential and pitfalls of city rankings. *Australian Geographer*, *43*(4), 411-424.

Moore, D. (2011). Ecological footprint analysis: San Francisco-Oakland-Fremont, CA metropolitan statistical area. Retrieved from http://www.footprintnetwork.org

Morse, S. (2015). Developing Sustainability Indicators and Indices. *Sustainable Development*, *23*(2), 84-95.

Mukherjee, R., Sengupta, D., & Sikdar, S. (2013). Parsimonious use of indicators for evaluating sustainability systems with multivariate statistical analyses. *Clean Technologies & Environmental Policy*, *15*(4), 699-706.

Müller, Daniel. (2012). Sustainable Urban Infrastructure, Munich Edition – paths toward a carbon-free future. *Seimens AG*. Retrieved from http://www.siemens.com/entry/cc/features/urbanization_development/all/en/pdf/study_munich_en.pdf. Accessed on January 1, 2012.

Muñoz-Erickson, T. A. (2014). Multiple pathways to sustainability in the city: the case of San Juan, Puerto Rico. *Ecology & Society*, *19*(3), 8-16.

Newman, P. (2005). Sustainability Assessment and Cities. *International Review for Environmental Strategies*, *5*(2), 383-398.

Niccolucci, V., Galli, A. K., & Pulselli, R.M. (2008). Ecological footprint analysis applied to the production of two Itaian wines. *Agriculture, Ecosystems and Environment,* Vol. 128, 162-166.

Nunnally, J. C. (1978). Psychometric theory (2nd ed.), New York: McGraw-Hill.

Opp, Susan M. & Saunders, Kyle L. (2012). Pillar talk: Local sustainability initiatives and policies in the United States- Finding evidence of the "Three E's": Economic development, environmental protection, and social equity. *Urban Affairs Review 49(*5): 678-717.

Portney, K. E. (2002). Taking Sustainable Cities Seriously: a comparative analysis of twenty-four US cities. *Local Environment*, *7*(4), 363-380.

Portney, K. E. (2009). Sustainability in American Cities: A comprehensive look at what cities are doing and why. In D. A. Mazmanian & M. E. Kraft (Eds.), *Toward sustainable communities: Transition and transformations in environmental policy, 2nd Ed.* (pp. 227-254). Cambridge, Massachusetts: The MIT Press.

Portney, K.E. (2013). *Taking Sustainable Cities Seriously: Economic development, the environment, and quality of life in American cities, 2nd Ed*. Cambridge, Massachusetts: The MIT Press.

Portney, K. E., & Cuttler, Z. (2010). The local nonprofit sector and the pursuit of sustainability in American cities: a preliminary exploration. *Local Environment*, *15*(4), 323-339.

Print, M., & Coleman, D. (2003). Towards understanding of social capital and citizenship education. *Cambridge Journal of Education*, *33*(1), 123.

Ramaswami, A., Weible, C., Main, D., Heikkila, T., Siddiki, S., Duvall, A., & ... Bernard, M. (2012). A Social-Ecological-Infrastructural Systems Framework for Interdisciplinary Study of Sustainable City Systems. *Journal of Industrial Ecology*, *16*(6), 801-813.

Rifkin, Jeremy. (2011). *The Third Industrial Revolution: How Lateral Power is Transforming Energy, the Economy, and the World*. Palgrave Macmillan.

Sassen, S. (2005). The global city: Introducing a concept. *Brown Journal of World Affairs, 11*(2), 27-43.

Satterthwaite, D. 2008. "Cities' Contribution to Global Warming: Notes on the Allocation of Greenhouse Gas Emissions." Environment & Urbanization 20:539–49.

Schenone, C., Delponte, I., & Pittaluga, I. (2015). The preparation of the Sustainable Energy Action Plan as a city-level tool for sustainability: The case of Genoa. *Journal of Renewable & Sustainable Energy*, *7*(3), 1-22.

Schlossberg, M., & Zimmerman, A. (2003). Developing Statewide Indices of Environmental, Economic, and Social Sustainability: a look at Oregon and the Oregon Benchmarks. *Local Environment*,*8*(6), 641-660.

Simmel, G. Conflict. Translated by Kurt H. Wolff. The Free Press New York. 1955.

Steinbrueck, P., Winter, M., Williamson, S., Patterson, M. S., Barbe, D., & Greaney, Y. (2014). Seattle Sustainable Neighborhoods Assessment Project Report 2014. https://www.seattle.gov. Retrieved on December 1, 2017.

Sulkowski, A. J. (2016). City Sustainability Reporting: An Emerging & Desirable Legal Necessity. *Pace Environmental Law Review*, *33*(2), 278-299.

Sustainable Society Foundation. (2015). http://www.ssfindex.com/. Retrieved on July 15, 2015.

Tanguay, G.A., Rajaonson, J., Lefebvre, J., & Lanoie, P. (2010). Measuring the sustainability of cities: An analysis of the use of local indicators. *Ecological Indicators.* Vol. 10, 407-418.

Tilt, Bryan. (2010). *The struggle for sustainability in rural China*. Columbia University Press.

Turner, B., Henryks, J., & Pearson, D. (2011). Community gardens: sustainability, health and inclusion in the city. *Local Environment*, *16*(6), 489-492.

United Nations. (2012). *Millennium Development Goals Report 2012.* New York: United Nations.

United States Census Bureau. (2015). *2010 Census Urban and Rural Classification and Urban Area Criteria*. Retrieved from https://www.census.gov/geo/reference/ua/urban-rural-2010.html

United States Environmental Protection Agency. (2017). About Urban Air Toxics. Retrieved December 21, 2017, from https://www.epa.gov/urban-air-toxics/about-urban-air-toxics.

U.S. Department of Energy. Funding & Financing. (n.d.). Retrieved March 20, 2017, from https://energy.gov/public-services/funding-financing

USGCRP, 2016: *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 312 pp. http://dx.doi.org/10.7930/J0R49NQX

Van de Kerk, G., & Manuel, A. (2010). *Sustainable Society Index*. Netherlands: Sustainable Society Foundation. Retrieved from http://www.ssfindex.com/cms/wp-content/uploads/Publication_SSI2010.pdf.

Wackernagel, M., Monfreda, C., & Deumling, D. (2002). Ecological footprint of nations update: How much nature do they have? *Refining Sustainability Issue Brief, (November).* Retrieved from http://rprogress.org/ecological_footprint/about_ecological_footprint.htm

Widok, A. (2009). Social sustainability: Theories, concepts, practicability. *Environmental Informatics and Industrial Environmental Protection:*

Concepts, Methods and Tools. ISBN: 978-3-8322-8397-1.

World Commission on Environment and Development (WCED) (Brundtland Commission). (1987). *Our Common Future*. New York: Oxford University Press.

Yli-Viikari, A., Risku-Norja, H., & Aakkula, J. (2012). Sustainability Indicators: Providing Policy Indications or Just Adding Informative Chaos? *Journal of Sustainable Agriculture*, *36*(1), 127-150.

Yli-Viikari, A. (2009). Confusing messages of sustainability indicators. *Local Environment*, *14*(10), 891-903.

Zeemering, E. (2012). Recognising interdependence and defining multi-level governance in city sustainability plans. *Local Environment*, *17*(4), 409-424.

Christy Cooksey is a PhD candidate in the Sociology Department at the University of North Texas with a focus on globalization and sustainable community development. christycooksey@my.unt.edu

Dale Yeatts, PhD is a professor of Sociology at the University of North Texas with research interests in sustainable community development, social gerontology, and self-managed work teams.

ARTICLE

Creating Livable Communities for All Ages: How Local Governments Perceive Their Role in Age Friendly Planning

Laura M. Keyes, Ph.D., AICP

Department of Public Administration, University of North Texas, Denton, Texas, USA

Creating sustainable communities that support individuals throughout their lifespan requires intentional consideration of public policies and community planning. The municipalities and local jurisdictions that serve as home to almost 77 million individuals over the age of 65 are beginning to initiate government responses relative to their statutory and legal obligations to provide supports for vulnerable populations. Through the literature, this article provides evidence that a practical place for government response is associated with the functional areas of mobility, housing, the built environment and public services. Findings suggest that local governments are achieving goals to enhance the quality of life for their older residents through comprehensive and strategic planning efforts. Further, local governments are finding that engagement of older adults in the planning process yields community-wide benefits.

Introduction

As the baby boomers age, this population of individuals aged 65 years and older is forecasted to make up approximately 20 percent of the population in the United States by 2030 (West et al., 2014). The oldest age group, those individuals aged 85 years and older, will account for almost 2.5 percent of the population by 2030 and 4.5 percent of the population by 2050 (Ortman et al., 2014). For many communities in the U.S. this may be the first time they have had to plan programs and services for this many older adults. Preparing our communities for this substantial growth requires attention by local governments to the public policies, programs, and services necessary to support older adults as their needs change. Given the role of local governments and essentially their obligation and responsibilities for community planning, design, and infrastructure, this paper aims

to explore the question, what are local government perceptions of age friendly policy action and planning?

Older adults express a desire to remain in their communities (Fitzgerald & Caro, 2013; Wiles et al., 2012). Communities can create stressors that make it difficult for older adults to remain in a certain place or attractors, such as housing choice and mobility options, supporting their needs as they change (Boldy et al., 2011). Sustainable communities are those that consciously support individuals throughout their lifespan (Winick & Jaffe 2015). The older adult's ability to age in their home and community may depend on the community's ability to offer certain age friendly features both in the physical and social realm (Lui et al., 2009; Benavides & Keyes, 2015). This paper examines the concept of age friendly as defined by the literature, deconstructs the concept of age friendly identifying the specific domains that align with the daily responsibilities and legal obligations of local governments, and associates the concept of age friendly with an attitude or culture of responsiveness held by local governments to the needs of their older adult residents.

Conceptualizing age friendly policy

The international and national age friendly initiatives include the following as critical policy domains as built environment, mobility, housing, programs and services, access to information, civic participation, security, value, and leadership as shown in the first column in Table 1 (Benavides & Keyes, 2015; Fitzgerald & Caro, 2013; Lui et al., 2009). According to the World Health Organization (2007), age friendly places are defined as those that promote active aging, health and security and are both inclusive and accessible to older adults. Specifically, community programs, services, and public policies should assure enhanced quality of life of older adults. Perspectives of community planning and development are moving away from considering aging and elderly needs in isolation from shared environments such as hospitalization and institutionalized care. Along these lines, Winick and Jaffe (2015) argue that a paradigmatic shift is occurring with respect to the conceptualization of age friendly policies and planning needs at the community level. They go on to suggest the policies captured in the domains (first column, shown in Table 1) cut across fields of aging, transportation, housing, and community design supporting comprehensive solutions to livability for persons of all ages. The authors suggest that the aging paradigm is moving from viewing aging as a health-related condition to a view of whole person and lifestyle issue.

As illustrated as local government initiatives in Table 1, communities are developing multi-modal transportation solutions that accommodate walking, biking, and transit options. Research finds overall health benefits to older adults when pedestrian facilities create viable options for travel (Kerr et al., 2012).

Table 1. Domains of Age Friendly Policy and Bureaucratic Responsiveness

Domains of Age Friendly Policy	Example Local Government Initiatives	Comprehensive Government Responsiveness
Mobility	Pedestrian and bicycle facilities; Transportation options including transit and older driver safety design	Comprehensive transportation plan; Improvements to transportation safety and access including sidewalks
Housing	Housing options across price range and type	Community Housing Needs Assessment Plan; Housing Affordability plan
	Subsidized housing; Home services for elderly - home repair and maintenance	Updates to zoning and regulations to facilitate housing options
Built Environment	Community design and features that support open space and recreation	Integrated strategic plan
	Planning and Zoning	Comprehensive land use plan
	Land use policies	Allocation of resources toward community features/design to attract older adults to the community
	Library	Adopted programs and services plan
	Recreation	Adopted parks and recreation plan
Programs and Services	Health; Senior Center	Senior oriented programming
Access to Information	Communication and Information	Website and Community newsletter
Participation	Social engagement opportunities and involvement in activities	Participation plan
Security	Public safety and emergency management provisions	Public Security plan
Value	Civic participation and employment	Program and service plan; Partnership beyond city
	Lifelong learning and education opportunities	
Leadership	Participation on advisory councils or committees	Public participation plan

Source: Adapted From Fitzgerald and Caro, 2014; Lui et al., 2009; and Benavides and Keyes, 2015

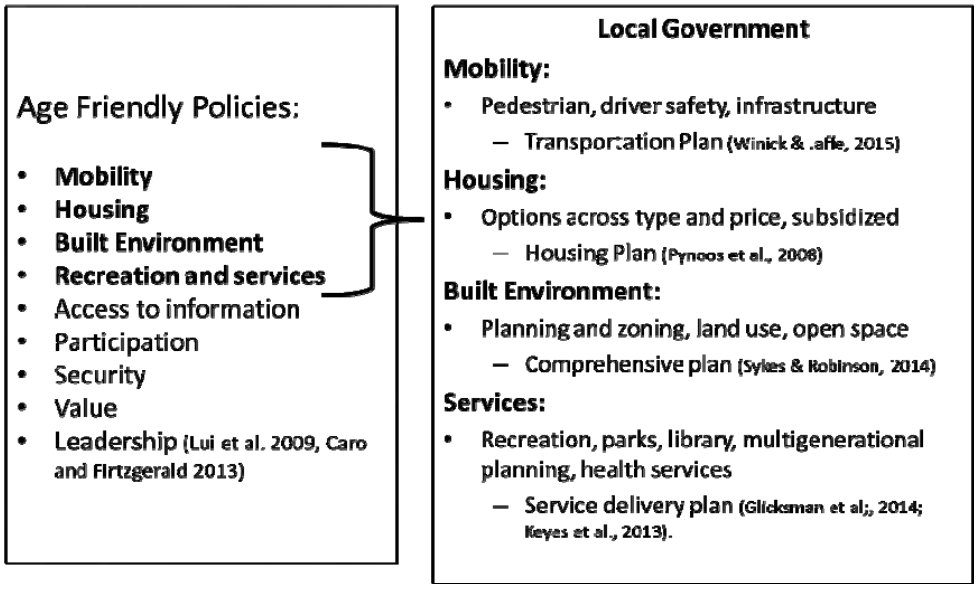
Further, as reflected as a local government initiative in Table 1, sustainable initiatives nest housing into mixed-use environments and integrate walkable and accessible design elements in community development. A contribution of this paper is the addition of a third column to Table 1, organizing what we know about a cultural awareness by local governments to be responsiveness to an aging population and

to plan sustainable communities across all ages.

Age friendly and local government responsiveness

Evidence suggests that local governments actively pursuing age friendly policies in general tend to focus on the relationship of older adults to their physical environment (Warner et al., 2016) over the social environment (Greenfield et al., 2015; Lui et al., 2009). The physical environment relates to the interaction between the person and the environment in which they reside, while the social environment is expressed more broadly as an individual's participation in their broader community (Lui et al., 2009). Based on the definitions and evidence of physical and social interactions with community, the opportunity space for local governments to advance age friendly policy making, as depicted in Figure 1, are primarily limited to mobility, housing, built environment, and public services.

Figure 1. Age friendly policy domains of local government



Local governments, through their statutory obligations, may assess the needs of its citizens and lead changes through age friendly policies ensuring residents may remain in the community and access things they need for maximum independence (Lui et al, 2009). A lack of attention to age friendly policies by local governments may create difficulties for older adults to achieve goals for independence because their communities lack access to transportation, housing, and basic health and supportive services (Keyes et al., 2013; Keyes & Benavides, 2017). The relationship of local government and age friendly design is whether the community infrastructure including: transportation, housing, built environment and service promotes or creates barriers to successful and independent aging.

Local government adoption of transportation policies

The current lack of public policies advancing the implementation of viable mobility options in communities may create challenges for older adults to remain independent when they are no longer able to drive (Fitzgerald & Caro, 2013). Carr and Ott (2010) find an association between the loss of driving and an older adult's physical well-being. They go on to suggest that the loss of mobility and reduced access to the community may lead to the decline of an older adult's social network diminishing their access to basic and health and supportive services. Kerr, Rosenberg, and Frank (2012) provide evidence that drivers over the age of 65 are driving more miles annually when compared to younger drivers. The authors suggest that when older drivers are forced to give up the keys they turn to family and friends. This solution is complicated by reduced or obsolete social networks. Ultimately, a lack of mobility options results in older adults driving their own automobile for longer.

Communities, in many cases by design, exacerbate the decline of older adult independence and health offering few transportation options such as safe pedestrian facilities and walkable places. Physical barriers in the built environment and Euclidean zoning isolate housing from daily basic needs. Local governments and partner nonprofits are organizations to overcome these barriers. First, intentional integration of age friendly policies into planning and community design furthers opportunities for the creation of walkable and connected communities. Better community design that integrates housing near shopping, restaurants, and stores reduces the need for automobiles and increases the opportunity for social interaction. Second, the community supports offered through nonprofits and government services fill in the transportation gaps ensuring older adults remain connected with their community and increasing opportunities for social interaction (Dumbaugh, 2008). The implementation of nonprofit taxis, and volunteer driver programs, for instance, put low cost solutions for mobility within reach of older adults.

Conceptualizing a local government response toward planning for older drivers includes support for volunteer driver programs, better roadway design, improved lighting, and integrated transit services (Winick & Jaffe, 2015). With regards to the domain of Mobility listed Table 1, the City of Casper, Wyoming, demonstrates the concept of responsiveness through their government's transportation plan adoption and allocation of resources relative to their emphasis on new sidewalks, trail development, and pathway construction throughout the city (Sykes & Robinson, 2014).

Local government adoption of housing policies

Housing policy to support older adults has devolved at the local government level through federal regulations such as the Fair Housing Act Amendments which require multi-family units constructed after 1988 to be accessible, for instance, with wider doorways. The concept of accessibility further relates to

design features of the space and its surrounding environment allowing for equal opportunities for individuals that may experience functional limitations (Demirkin, 2007). The Americans with Disabilities Act of 1990 places responsibility on local governments to ensure public spaces and public buildings are accessible but has had limited effect on housing (Smith et al., 2012). In 2009, the Supreme Court ruling in *Olmstead v. L.C.* basically called for community integration for all individuals, allowing anyone the option to reside independently in their community instead of residing in institutionalized nursing care (Pynoos et al., 2008). These federal regulations in addition to the anticipation for community based long-term care supports are factors in supporting an individual's desire to age in place (Tang & Pickard, 2008). Local governments may create barriers through the use of exclusionary zoning practices, lack of training of building code officials to ensure compliance with federal regulations, lack of mobility options, and lack of connectivity, especially in communities with suburban land use patterns (Pynoos et al., 2009).

The reality of any individual, regardless of age, being able to live in one community versus another comes down to having access to housing matched with ability to pay and choice. Myers and Pitkin (2009) suggest that American cities are going to feel the pressure from the growing number of older adults and their changing demand for housing products. They contend that cities will feel the impact as baby boomers sell off their current homes. In some cities, the authors suggest, the impact will be much greater where there is an imbalance of potential new younger buyers leaving a pool of houses on the market without the prospect of purchase. Conversely, cities with higher density and compact design, where residential and shopping areas are connected for ease of pedestrian access, are gaining momentum among older buyers in search of different housing options including rentals. A motivating question for further research is whether the available affordable housing stock is proportional to the needs of the older adult population.

City planners are beginning to examine the long-term impacts on housing given the ratio of older adults to younger adults has increased roughly 30 percent in the last two decades (Giuliano, 2004). The mismatch between older sellers and available younger buyers will ultimately result in a strain on municipal budgets as the situation could reduce overall home values. Myers and Ryu (2008) provide evidence that more individuals aged 65-year and older will sell homes than there are buyers available to purchase them in this forecasted sell off. The authors suggest that the rental properties are top options for replacement by older buyers especially in central cities with density where the built environment supports a pedestrian friendly lifestyle. They argue that cities should examine their stock of affordable units and adjust policy to support development of more affordable units. Municipalities need to consider how to balance the ratio between selloff of housing by older adults and the potential access to a pool of younger buyers. The issue of aging is

important to local governments due to potential impacts to the local housing markets and the ripple effects on municipal budgets.

The baby boomer housing demand is trending toward areas with density, variety in housing options, and access to services (Pynoos et al., 2008). Establishing a universal response to housing may be challenging due to specific place based needs of older resident such as proximity to family, employment, health care, etc. Government responsiveness, in the form of a community needs assessment, allows for an evaluation of available housing relative to residential income levels and identifies gaps between population groups and available housing options (Winick & Jaffe, 2015) (see column 3, Table 1). With regards to the domain of housing shown in Table 1, for example, in the town of Scarborough, Maine, government responsiveness is illustrated by the leadership of the Community Services Department in the development and adoption of a comprehensive housing plan resulting in the approval of several new senior housing projects (Sykes & Robinson, 2014).

Local government policies on the built environment

Barriers exist between geographic location and access to basic community services. Evidence suggests that the design of the community has a relationship to health and quality of life (Glass & Balfour, 2003). The authors' findings suggest that as perceptions of community design deteriorates, older adult perceptions of their health and well-being deteriorate. Additional research evidence suggests that physically disabled seniors are more vulnerable if the environment creates barriers to accessibility or is restricted for someone with functional limitations (Elreedy et al., 1999; Krause, 1993). In other words, increasing vulnerability with age is related to one's ability to navigate the built environment.

Senior centers, typically run by city or county governments and recognized as an important community based support, provide non-institutionalized older adults with opportunities for socialization, congregate meals, and recreation (Benavides, 2007). Johnson, Gorr, and Roehrig (2005) provide evidence that the location of senior centers may create barriers for older adults in their ability to access them and utilize their services. The authors suggest that a government response relates the location of public services relative to population concentrations and economic characteristics of the community to ensure maximum use of public facilities.

A democratic response to community needs through the planning of public infrastructure and services raises issues surrounding equity and social sustainability. Garrido (2013) focuses on a geographic measurement of access between public infrastructure investments and spatial justice. Spatial justice is defined as the supply, quantity, and access to services based on the needs of people in the area (Harvey, 2010). Communities with suburbanization patterns tend illustrate a dispersion of inequities due to a lack of access to public infrastructure and services (Garrido, 2013).

Responding to challenges in accessibility created by the built environment requires attention to community connectivity and accessibility between housing, the public realm, recreation, shopping, and basic needs of daily living. With regards to the domain of built environment shown in the last column in Table 1, bureaucratic responsiveness is reflected, for instance, as the City of Portland's Comprehensive Plan as an age friendly policy instrument integrating the connections between housing, transportation, and land use planning (Neal et al., 2014).

Local government policies on service delivery

The provision of services to older adults is complex and ranges from needing access to health and supportive services to basic every day needs such as shopping, social interaction, and recreation. King and Farmer (2009) provide evidence through a survey of older adults that there was reluctance by older adults to rely on volunteer services and apprehension from statutory services offered by their government. The authors found evidence that older adults wanted access to services that supported their independence and only considered institutionalized housing with existing supportive services as a means of last resort. In general, they found that older adults had expectations for localized services by their government but only those that supported active and independent lifestyles.

Stenberg and Austin (2007) argue that local governments need to factor in older adults relative to public services planning and programming (e.g. see domain of Services in Table 1). This consideration, they argue, is especially important if demographic forecasts for a jurisdiction trend toward increasing numbers of older adults and decreasing numbers of youth which opens the door for repurposing public spaces. For instance, they suggest reusing a vacant school for senior services. Consideration of citizen interest in services is also important given the inclination for those identified in the baby boomer generation to be less interested in using a traditional senior center and more likely to use health and recreation opportunities in multigenerational facilities (Winick & Jaffe, 2015). Intergenerational facilities may rely on joint use strategies and have fiscal benefits for some jurisdictions (Israel & Warner, 2008). With regards to age friendly policies, a local government in Ohio utilized Community Development Block Grant Funding to construct a recreational and fitness park designed specifically for older adults in partnership with the existing community center (Winick & Jaffe, 2015).

Focusing specifically on the provision of elder services at the local government level, Warner et al. (2016) find evidence of a positive and significant relationship between local governments that plan for seniors and the provision of government funded or provided elder services. Authors suggest that local governments appear to make tradeoffs between the provision of services to the elderly and children when their population of younger residents is larger. The list of

services covered in Warner et al.'s (2016) research covers additional domains listed in Table 1 including health care, workforce development, and community and civic engagement which are arguably not specifically isolated to the role of local government.

Conclusion

The literature is rich in descriptive definitions of age friendly policies and normative arguments of why local governments have a role in policy adoption. Foundational empirical research identifies factors of population, government expenditure and advocacy as positively associated with age friendly innovation (Lehning, 2012; Warner et al., 2016). This paper contributes to the literature illustrating the alignment of government responsiveness with specific age friendly policies commensurate with local governments including: transportation, housing, the built environment and public services.

From a social perspective, cities that make necessary changes to accommodate the needs of their older citizens contribute to a positive living experience. Normative arguments suggest local governments adopt age friendly policies to support older adult independence and their goals toward meaningful participation in their community (Greenfield et al., 2015; Pynoos et al., 2008; Scharlach & Lehning, 2013; Thomas & Blanchard, 2009). Some example accommodations include continued access to transportation, parks and recreation, socialization, health care, and basic elements of everyday living (Dickerson et al., 2007; Fitzgerald & Caro, 2013; Kerr, Rosenberg, & Frank, 2012; Rosenberg & Everitt, 2001). The International City County Management Association's (ICMA) Knowledge Network suggests that local governments become actively involved in learning about and promoting age friendly policy adoption in order to help them strategically plan for the forecasted growth of the population 65 years and above.

From an economic perspective, lawmakers are beginning to focus attention relative to the high costs of institutionalized care and need for housing options (Wiles et al., 2012). Notwithstanding, the benefit to local economies from the rising demands for housing options (Nelson, 2009) are the opportunities communities have from this existing workforce. For example, the slow growth of the nation's workforce will place increased demand for the baby boomer skillset to remain active in the workforce longer (Klinger & Nalbandian, 2003).

Finally, from a civic perspective, older adults comprise an active segment in American civic engagement. Participation ranges from community, political, and government sponsored programs. For example, federally funded volunteer opportunities for retired individuals increase the capacity of older adults actively participating in communities across the nation (Achenbaum, 2006). Individual groups such as these provide opportunities to connect citizens with the public administrative process (Vigoda, 2002). In other words, the engagement of older adults has both individual and community-wide benefits (Keyes et al., 2013).

Theoretically, it is difficult to support an argument as to why communities would be at a disadvantage socially by accommodating any group within their community. As a representative bureaucracy, public managers have a responsibility to serve the public interest of the citizens they serve and maintain a democratic process in decision-making (Denhardt & Denhardt, 2001). Public values of political responsiveness suggest that public administrators are morally obligated to address needs of the underserved (Frederickson, 1980). Considering any class or group of citizens a social burden puts public administrators in conflict with ethical and democratic obligations.

The findings surfaced through this review of literature inform on the important policy role of local governments in supporting the desire of individuals to remain in their community across the lifespan. They are limited in understanding the specific policy actions implemented by local governments and the role older adults played in informing local governments on the necessary programs and services needed to age in place. Future research should explore objective actions by local governments and their association with successful health outcomes and positive living experiences for older adults.

References

Achenbaum, W. A. (2006). A history of civic engagement of older people. *Generations, 30*(4), 18-23.

Benavides, A. D. (2007). Health and human services In Stenberg, Carl, *Managing Local Government Services: A Practical Guide* (pp. 368-388). International City Management Association (ICMA).

Benavides, A. D., & Keyes, L. (2015). A local government response to the adoption of age friendly policies. *Journal of Ageing in Emerging Economies, 5*(1).

Boldy, D., Grenade, L., Lewin, G., Karol, E., & Burton, E. (2011). Older people's decisions regarding ageing in place: A western Australian case study. *Australasian Journal on Ageing, 30*(3), 136-142.

Carr, D., & Ott, B. (2010). The older adult driver with cognitive impairment: "It's a very frustrating life". *Journal of the American Medical Association, 303*(16), 1632-1641.

Denhardt, R. B., & Denhardt, J. V. (2001). The new public service: Putting democracy first. *National Civic Review, 90*(4), 391-400.

Demirkan, H. (2007). Housing for the aging population. *European review of aging and physical activity, 4*(1), 33.

Dickerson, A. E., Molnar, L. J., Eby, D. W., Adler, G., Bédard, M., Berg-Weger, M., . . . Trujillo, L. (2007). Transportation and aging: A research agenda for advancing safe mobility. *The Gerontologist, 47*(5), 578-590.

Dumbaugh, E. (2008). Designing communities to enhance the safety and mobility of older adults: A universal approach. *Journal of Planning Literature, 23*(1), 17-36.

Elreedy, S., Krieger, N., Ryan, P. B., Sparrow, D., Weiss, S. T., & Hu, H.

(1999). Relations between individual and neighborhood-based measures of socioeconomic position and bone lead concentrations among community-exposed men: The normative aging study. *American Journal of Epidemiology, 150*(2), 129-141.

Fitzgerald, K. G., & Caro, F. G. (2013). An overview of age-friendly cities and communities around the world. *Journal of Aging & Social Policy, 26*(1-2), 1-18.

Frederickson, G. H. (1980). *New public administration*. University of Alabama: The University of Alabama Press. Birmingham, AL.

Garrido, M. P. (2013). Measuring equity and social sustainability through accessibility to public services by public transport: The case of the metropolitan area of Valencia (Spain). *European Journal of Geography, 4*(1), 64-85.

Giuliano, G. (2004). Land use and travel patterns among the elderly. *Transportation in an Aging Society, 27*, 192-210.

Glass, T. A., & Balfour, J. L. (2003). Neighborhoods, aging, and functional limitations. *Neighborhoods and Health,* 303-334.

Greenfield, E. A., Oberlink, M., Scharlach, A. E., Neal, M. B., & Stafford, P. B. (2015). Age-friendly community initiatives: Conceptual issues and key questions. *The Gerontologist, 55*(2), 191-198.

Harvey, D. (2010). *Social justice and the city*. University of Georgia Press. Athens, GA.

Israel, E., & Warner, M. (2008). Planning for family friendly communities. *PAS Memo.*

Johnson, M. P., Gorr, W. L., & Roehrig, S. (2005). Location of service facilities for the elderly. *Annals of Operations Research, 136*(1), 329-349.

Kerr, J., Rosenberg, D., & Frank, L. (2012). The role of the built environment in healthy aging: Community design, physical activity, and health among older adults. *Journal of Planning Literature, 27*, 43-60.

Keyes, L., & Benavides, A. (2017). Local government adoption of age friendly policies: An integrated model of responsiveness, multi-level governance and public entrepreneurship theories. *Public Administration Quarterly, 41*(1), 149.

Keyes, L., Phillips, D. R., Sterling, E., Manegdeg, T., Kelly, M., Trimble, G., & Mayerik, C. (2013). Transforming the way we live Together—A model to move communities from policy to implementation. *Journal of Aging & Social Policy, 26*(1-2), 117-130.

King, G., & Farmer, J. (2009). What older people want: Evidence from a study of remote Scottish communities. *Rural and Remote Health, 9*(2), 1166.

Klinger Donald, E., & Nalbandian, J. (2003). Public Personnel Management: Contexts and Strategies. *New Jersey*.

Krause, N. (1993). Neighborhood deterioration and social isolation in later life. *The International Journal of Aging & Human Development, 36*(1), 9-38.

Lehning, A. J. (2012). City governments and aging in place: Community design, transportation and housing innovation adoption. *The Gerontologist, 52*(3), 345-356.

Lui, C., Everingham, J., Warburton, J., Cuthill, M., & Bartlett, H. (2009). What makes a community age-friendly: A review of international literature. *Australasian Journal on Ageing, 28*(3), 116-121.

Myers, D., & Pitkin, J. (2009). Demographic forces and turning points in the American city, 1950-2040. *The Annals of the American Academy of Political and Social Science, 626*(1), 91-111.

Myers, D., & Ryu, S. (2008). Aging baby boomers and the generational housing bubble: Foresight and mitigation of an epic transition. *Journal of the American Planning Association, 74*(1), 17-33.

Neal, M. B., DeLaTorre, A. K., & Carder, P. C. (2014). Age-friendly Portland: A university-city-community partnership. *Journal of Aging & Social Policy, 26*(1-2), 88-101.

Nelson, A. C. (2009). The new urbanity: The rise of a new America. *The Annals of the American Academy of Political and Social Science, 626*(1), 192-208.

Ortman, J. M., Velkoff, V. A., & Hogan, H. (2014). *An aging nation: the older population in the United States* (pp. 25-1140). United States Census Bureau, Economics and Statistics Administration, US Department of Commerce.

Pynoos, J., Nishita, C., Cicero, C., & Caraviello, R. (2008). Aging in place, housing, and the law. *Elder LJ, 16*, 77.

Pynoos, J., Caraviello, R., & Cicero, C. (2009). Lifelong housing: The anchor in aging-friendly communities. *Generations, 33*(2), 26-32.

Rosenberg, M., & Everitt, J. (2001). Planning for aging populations: Inside or outside the walls. *Progress in Planning, 56*(3), 119-168.

Scharlach, A. E., & Lehning, A. J. (2013). Ageing-friendly communities and social inclusion in the United States of America. *Ageing and Society, 33*(01), 110-136.

Smith, S. K., Rayer, S., Smith, E., Wang, Z., & Zeng, Y. (2012). Population aging, disability and housing accessibility: Implications for sub-national areas in the United States. *Housing Studies, 27*(2), 252-266.

Stenberg, C. W., & Austin, S. L. (2007). *Managing local government services: A practical guide* ICMA Press.

Sykes, K. E., & Robinson, K. N. (2014). Making the right moves: Promoting smart growth and active aging in communities. *Journal of Aging & Social Policy, 26*(1-2), 166-180.

Tang, F., & Pickard, J. G. (2008). Aging in place or relocation: Perceived awareness of community-based long-term care and services. *Journal of Housing for the Elderly, 22*(4), 404-422.

Thomas, W., & Blanchard, J. (2009). Moving beyond place: Aging in community. *Generations, 33*(2), 12-17.

Vigoda, E. (2002). From responsiveness to collaboration: Governance, citizens, and the next generation of public administration. *Public Administration Review, 62*(5), 527-540.

Warner, M. E., Homsy, G. C., & Morken, L. J. (2016). Planning for aging in place stimulating a market and government response. *Journal of Planning Education and Research,* 0739456X16642824.

West, Loraine A., Samantha Cole, Daniel Goodkind, and Wan He. (2014). *65 Plus in the United States: 2010*. Washington, DC: U.S. Census Bureau.

Wiles, J. L., Leibing, A., Guberman, N., Reeve, J., & Allen, R. E. S. (2012). The meaning of "Aging in place" to older people. *The Gerontologist, 52*(3), 357-366.

Winick, B., & Jaffe, M. (2015). *Planning aging-supportive communities.* (No. PAS 579). Chicago, IL: American Planning Association.

World Health Organization. (2007). *Global age-friendly cities: A guide*. World Health Organization. World Health Organization. (2007). Retrieved on April 20, 2018 from http://www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf

Corresponding author: **Laura Keyes**, Ph.D., Lecturer & Undergraduate Program Coordinator, Department of Public Administration, University of North Texas, Ph: 940-891-6790; Laura.Keyes@unt.edu. Dr. Keyes is an ACIP certified planner. Her doctoral dissertation examined Age Friendly Cities: the Bureaucratic Responsiveness Effects on Age Friendly Policy Adoption. Dr. Keyes has served over 6 years as an active committee member of the American Society on Aging. Her research specific to aging policy has appeared in *Public Administration Quarterly* (2017), the *Journal of Administrative Theory and Praxis* (2016), *Journal of Ageing in Emerging Economies* (2015), and *Journal of Aging & Social Policy* (2014).

Article

Smart Is the New Big Umbrella Over Sustainability-Green-Clean, Etc.

Phillip Andrews

On March 20, 2015 Forbes published an excellent article called **"Smart is the New Green"** (https://www.forbes.com/ sites/ sarwantsingh/2015/03/20/smart-is-the-new-green/ #30a52bb433ee). In the article the author, **Sarwant Singh**, made the following opening remarks:

"As an electrical engineer, I feel I spent the first half of my career working on green and renewable energy solutions. However, now my career's focus is on smart solutions. I feel that a lot of my time spent working on green solutions was more for corporate social responsibility and image, and there wasn't really a strong return-on-investment (ROI) business case. Organizations and governments that invested in solar and wind power have seen limited or delayed returns. In contrast, "Smart" products—like smart grids, smart meters, and smart buildings—have a ROI of three to five years and provide higher-efficiency returns than green products. Therefore, I predict that the Mega Trend of the past decade—green products—will be replaced in this decade by Smart products and services.

There are several Smart concepts already in the market today, like Smart cities, intelligent buildings, Smart homes, Smart energy, Smart cloud computing, Smart citizens, Smart governance, Smart businesses, Smart cars, Smart materials…the list is long."

He goes on to explain the different levels of Smart and the value they will provide in our personal and professional lives. Unfortunately, the article is short, and the author did not have the opportunity to explain the full impact[i] of SMART on the Clean, Green and Sustainable solutions (including the enabling technologies). The main point that the author missed is that Smart is not only the new Green, but also the main trigger for a new civilization. Yes, **we are at the cusp of a new Civilization** because practically everything all around us is being reinvented in a dramatic way[ii]. Here is a high-level synopsis of what is happening in every sector and every industry:

- Smart **Manufacturing** (Smart Factories, Smart Machines, Machine Learning, Digital Transformation, Integrated Business & Innovation Ecosystems, AI …)
- Smart **Retailing** (Online Retailing, Holistic Customer Experience …)

- Smart **Architecture** (Ecofriendly and Disaster-Proof Buildings, new materials for construction, compostable towers …)
- Smart **Agriculture** (Vertical Farms & Gardens, Autonomous Tractors..)
- Smart **Health Care** (Telehealth, Telemedicine, Genetics, Nanotech..)
- Smart **Government** (e-Gov, Gov 3.0)
- Smart **Education** (Tailored for Industry 4.0, e-Education, …)
- Smart **Transportation** (Driverless Vehicles, Drones …)
- Smart **Energy** (Alternative fuel options, Green Energy, Smart Grid..)
- **Etc.**

Behind all those reinvented, revived and reinvigorated sectors and industries there are hundreds of new technologies that will not only revolutionize everything, but also produce new professions, new jobs and new opportunities. **Big Data** and **Artificial Intelligence** are behind most of all that because the numbers that are propelling them to the front are so massive that most people today have hard time grasping their impact. Here are just a few of the numbers and statements that tell the story:

- 20 billion connected devices today. It is expected that by 2020 we will have over 100 billion connected devices. They call that the **Trillion Sensor Economy.**
- The billions of sensors (including humans as sensors (per The Wisdom of The Crowd, TV series) will create an unbelievable number of data that only super computers will be able to process, decipher and use in productive ways. This is the **Petabyte Era** --- growing and organizing data is "the ticket to dance" in the new truly global economy
- **Data** is rapidly becoming the most valuable resource, and its value is exponentially increasing with the new technologies, such as AI, Advanced Analytics and Machine Learning.
- People can process 60 bits/sec and recall 65% of the information stored in their brains. **AI** can process 1 trillion bits/sec and recall 100%
- AI is radically altering the effectiveness of people, cities, institutions and businesses. Becoming Smart now is not only nice-to-be or have, but also a necessity for survival, sustainability and prosperity
- AI is the apex technology (behind all new innovations, creative disruptions and "revolutions"), empowered by data.
- 47% of jobs will be lost to AI-based technologies, but an equal or higher number of jobs will be created in the next 30 years. Here is a small sample of the new jobs that experts are projecting that will be created in the years ahead:
  - Quantum Machine Learning Analyst
  - Man-Machine Teaming Manager
  - Data Detectives
  - Augmented Reality Journey Builder
  - Genomic Portfolio Specialist

Here are some examples:

Sustainability Concepts / Tenets	Integrated Sustainability and Smart Concepts / Tenets
• Public Transportation	• Smart and Integrated Transportation (incl. driverless/ autonomous vehicles)
• Green Buildings	• Green and Smart Buildings (well beyond LEED Certification)
• Renewable Energy	• Renewable Energy w/Smart Grid and Smart Meters
• Water Conservation	• Water Conservation coupled with Smart Water, Smart Sprinkling, and Smart Waste Management
• Public Green Spaces	• Public Green & Smart Spaces

- Personal Data Broker
- Cyber City Analyst
- Virtual Store Sherpa

We are living in an unprecedented era … and the best is yet to come (assuming that humans will not get in the way of their own progress). So, what do all these things have to do with Sustainability? Everything! When Smart is added on top of the Sustainability principles, tenets, practices and applications, then everything looks even better and more attractive.

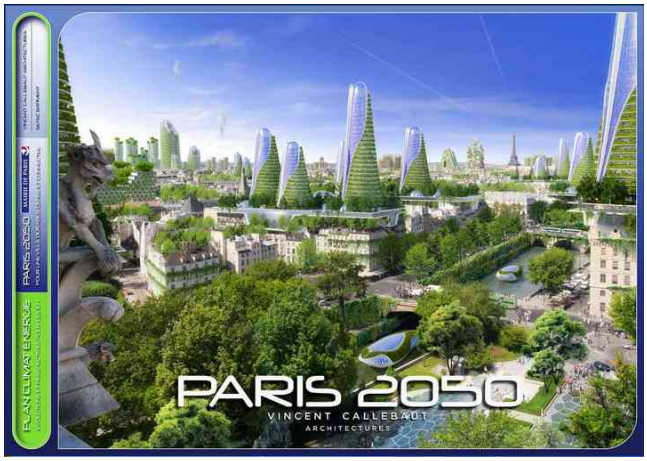
The solutions on the right-hand side are a lot more powerful, valuable and exciting than the original sustainability concepts. "Smart" offers ingenious new designs and options that improve quality of life (QoL) and introduce society to a new standard of living that will be an order of magnitude better than what we are experiencing today.

Examples

Several foreign cities have taken the lead in implementing Smart Cities the right way. Copenhagen and Paris are two shining examples of how to integrate the concepts of Sustainability and Smart.

1. **Copenhagen:** The city declared (in 2017) that by 2025 they will be Europe's first **Eco-Metropolis**, by achieving zero carbon footprint and zero waste. Their vision revolves around a Smart City that emphasizes improved QoL, accelerated Smart Growth, and Proactive Sustainability[iii]. Copenhagen is one of the few true Smart Cities in the whole world that has a vision for the future and is driving Smart and Sustainable solutions and initiatives top-down (as opposed to the bottom-up approach that most other cities are pursuing). Copenhagen is also among the very first

cities to recognize the need for an



Innovation Hub (or Solutions Lab)[iv] that helps all citizens because they understood the need to aid all citizens to move in a lockstep mode into the future. Copenhagen is an elite city that is showing the world what the real meaning of "Inclusivity" is all about. NYC is the only American city that is trying to emulate the Copenhagen model and even create a transatlantic alliance with Denmark.

2. **Paris:** This city is following Copenhagen's example by considering a plan that would make Paris a paradise of plant-embedded smart architecture by 2050. The City Hall is envisioning a healthy and sustainable future for Paris proposed by **Vincent Callebaut** that recommends eco-friendly high-rise buildings with suspended gardens of green algae bioreactors, bamboo exoskeleton structures, vertical farms and mangrove tree-shaped train stations.

This vision is aimed at supporting Paris's Climate Energy Plan that mandates a 75% reduction of greenhouse gas emissions by 2050. The proposed Master Plan for **Smart Paris** incorporates vertical farms and gardens with the help of aquaponics, hydroponics, and even aeroponics. The **benefits** include:

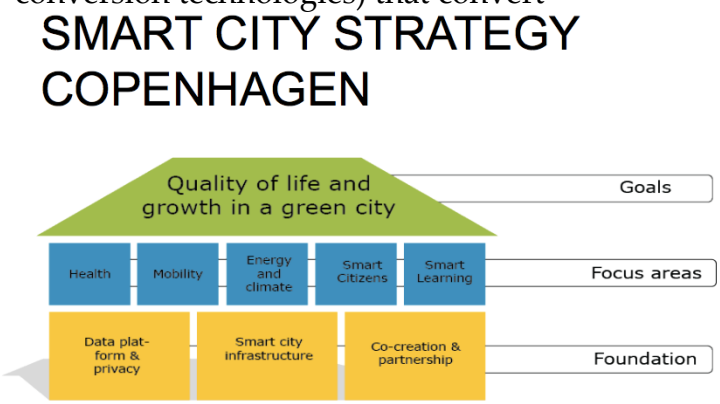
- Combining the new Ag Concepts (Vertical Farms) with new green and eco-friendly architecture principles
- Smog-eating buildings
- Drastically reducing pollution, deforestation, and land decertification
- Using 80% less water -- recycling water as many as 17 times prior to releasing it to the waste management system
- Combining Rural and Urban Environments (bringing nature back in people's daily lives)
- Improving Quality of Life (QoL)
- Improving overall health
- Improving and enabling the **Circular**

Examples

The last point brings to an American example that is worth mentioning because it fits perfectly with the sustainability and smart efforts of a great city.

3. **Houston EcoHub (Smart Recycling Facility):** Material separation and recycling technologies have been around for decades, but they were never put together in the right way to optimize mixed waste recovery and processing it so quickly as to be useful

to the community right away. The EcoHub utilizes smart technologies (including the latest sorting and conversion technologies) that convert scrap into reusable raw materials for manufacturers. EcoHub's **benefits** include:

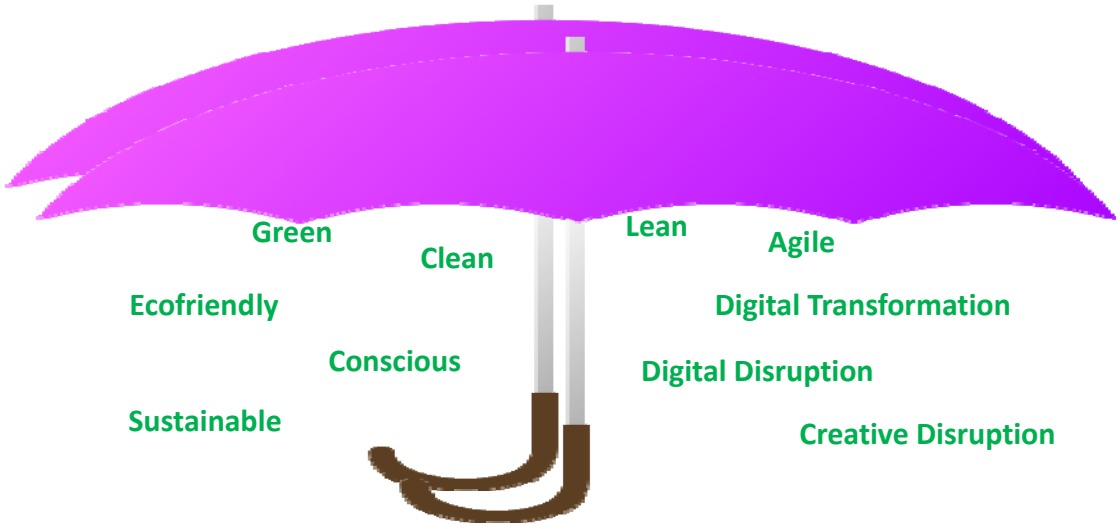


- Achieving the goal of zero waste (like Copenhagen's goal)
- Reducing Houston's greenhouse gas emissions (no incineration required)
- Eliminating 500,000 tons of emissions (equivalent to taking 200,000 cars off the road)
- Reducing fuel use and noise/air pollution from trash collection by 30% – 50%
- Avoiding incineration (all processes and facilities are green)
- Reducing municipal costs of resource recovery by 40% (savings of $60M /yr. to collect and dispose of garbage). But more importantly, the EcoHub has created 1,000 direct jobs and 2,000 indirect jobs (which is one of the principles and promises of "Smart")[v]. Houston is already considering adding additional EcoHubs in order to deal with the magnitude of waste that it has to deal with. There is some speculation that Houston may build six additional EcoHubs, despite the political wrangling that has delayed the project.

This is exaclty how the right marriage of Smart and Clean can advance our societies to the nest plateau of excellence. In other words, when clean and sustainable solutions are combined with smart technologies, Cities and/or entire States realize benefits in economic development, job creation, acceleared business growth, and overall health improvements, on top of all the other environmental benefits.

to 30 years. This is not a surprise as there is an **Omni-Corvegence** going on that affects value chains, industries, technologies, devices, channels, services, customer experiences, and so many more. So, the intelligent thing to do is to embrace "Smart" and fully leverage its potential.

In summary, "Smart" is slowly and steadily becoming the new big umbrella that encompasses all the great concepts that were introduced the last 20



[i] https://www.sciencedirect.com/science/article/pii/S1877705815021074 and http://www.kesinternational.org/sustainability.php and https://jopeninnovation.springeropen.com/articles/10.1186/s40852-017-0063-2

[ii] http://www.businessinsider.com/15-ways-tech-is-reinventing-society-2013-4 and http://thegovlab.org/reinventing-society-in-the-wake-of-big-data-edges-interview-with-mits-alex-sandy-pentland/

[iii] As reported in Urban Opus: http://urbanopus.net/smart-city-copenhagen-key-lessons-and-future-directions/

[iv] https://www.nycedc.com/press-release/nycedc-and-new-lab-announce-launch-urban-tech-hub

[v] As reported in Big Jolly Times: https://bigjolly.com/possible-bid-rigging-houstons-trash-contract/

Phillip Andrews is an author, professor, international keynote speaker, thought leader in the areas of Smart and Sustainable Cities & Businesses, executive coach, entrepreneur and business owner/executive. He started his career as a Robotics Engineer working in the automotive industry. He has a long business career with Ford Motor Company, GE, IBM and EDS (now HP). He also worked for Deloitte and Booz Allen. His consulting clients (among others) include General Motors (parent company of EDS at that time), 3M, Caterpillar, Case Corporation, Alenia, and McDonnell Douglas (now Boeing). He is currently involved in bringing a Smart Cities Conference to Denton in 2020.

ARTICLE

The Use of Social Media and Peer Networking in Tourism Microentrepreneurship

Birendra KC[1], Duarte B. Morais[2,3], George Andrew Stainback[4], Jack Thigpen[5]
[1]Department of Hospitality and Tourism Management, University of North Texas, Denton, Texas
[2]Department of Parks, Recreation and Tourism Management, NC State University, North Carolina
[3]Department of Geography, Environmental Management & Energy Studies, University of Johannesburg, Auckland Park, South Africa
[4]The Everglades Foundation, Palmetto Bay, Florida
[5]North Carolina Sea Grant, Raleigh, North Carolina

The use of social media has become ubiquitous these days. Its usage can support nature-based tourism microentrepreneurship and shape business outcomes by allowing greater visibility and connections with potential customers. Small-scale businesses often lack the time or infrastructure to collaborate with similar businesses. However, the creation of peer network is equally crucial in maximizing business outcomes through information exchange. This study explored the usage of social media platforms among wildlife tourism microentrepreneurs. It also examined local business networks through in-person structured interviews with thirty-seven wildlife tourism microentrepreneurs from the east coast of North Carolina. Findings suggest that wildlife tourism microentrepreneurs utilize various forms of social media platforms while developing a support network with similar businesses. These findings may help local tourism agencies and extension professionals to devise strategies to support rural livelihoods by understanding rural tourism microentrepreneurship.

Introduction

Nature-based tourism programs are important for strengthening and diversifying rural economies by creating employment opportunities while reinforcing connections between local communities and natural resources for conservation purposes (Borisova, Bi, Larkin, & Longanecker, 2016). Marketing an area's natural resources, such as wildlife, is a way to diversify the economic base of a rural area (Hondadle, 1990). Wildlife tourism as a form of nature-based tourism is ever expanding, making it an increasingly viable livelihood strategy in the form of tourism microentrepreneurship (KC, Morais, Peterson, Seekamp, & Smith, 2017). However, potential contributions of

wildlife tourism to the economic wellbeing of rural communities require effective marketing strategies and information sources to optimize business outcomes. There has been limited research on social media usage and peer networking as marketing strategies in tourism microentrepreneurship.

Tourism entrepreneurs often use social media platforms to meet their marketing needs, especially in rural tourism settings, as the visibility of the services they offer is critical. Social media can have a direct impact on consumer attitudes and decision-making, it helps increase the number of customers, enhance relationships with customers, and reach out to customers on a global scale (Jones, Borgman, & Ulusoy, 2015 Networking and information gathering via social media such as Facebook also enable extension professionals to promote rural tourism entrepreneurship by sharing educational information, marketing extension programs and improving their communication with target audiences. (Mains, Jenkins-Howard, & Stephenson, 2013).

Although marketing becomes easier with social media, solely depending on it as a marketing option may not be sufficient to achieve business success in a competitive entrepreneurial environment. Therefore, the creation of social networks with peer businesses can help to capitalize on existing resources. There are many advantages of collaboration. KC, Morais, Seekamp, Smith, and Peterson (2018) suggested that resources exchanged with peers are in-situ characteristics, and these resources can be different from resources received from external agencies such as chambers of commerce, destination marketing organizations, resource management agencies, or cooperative extensions. Small businesses often understand the value of collaboration with other small businesses. However, in rural areas, they can be very sparsely located and may lack the time or infrastructure to implement collaborative efforts (Jones et al., 2015). There is always some risk and uncertainty involved with wildlife tourism businesses (KC et al., 2018). Entrepreneurs often seek legitimacy to reduce unexpected risk by developing a connection with well-regarded individuals in the network (Taormina & Lao, 2007). This study examines how wildlife tourism microentrepreneurs utilize different forms of social media, as well as their local business network as they endeavor to optimize their business outcomes.

Methods

The Setting

North Carolina is known for its rich nature-based tourism opportunities, with the coastal region being a popular tourism hot-spot. Further, North Carolina promotes the localization of benefits from the tourism industry to improve rural livelihoods. The North Carolina Job Plan (2013) is a ten-year strategic plan that prioritizes the promotion of micro-enterprises and entrepreneurship in marketing rich natural resources to empower rural communities. According to the U.S. Fish and Wildlife Service (2011),

there were approximately 3.5 million people (16 years old and older) enjoying wildlife-related activities in 2011, which contributed about US$3.3 billion to the state's economy.

This study was carried out in the Pamlico Sound Region of North Carolina. The Pamlico Sound is the largest lagoon along the east coast of the United States, and it is popularly known as the fishing gem of North Carolina (Settlage, 2012). The region provides many wildlife tourism opportunities for tourists, including sightseeing tours, wildlife photography, dolphin and whale watching tours, fishing, and hunting. Wildlife tourism businesses in the region offer tourism experiences including but not limited to sunset/moonlight cruises or moonlight kayaking along the Pamlico River, and charter boat guides that offer half-day/full-day fishing and hunting trips. In this study, all the wildlife tourism businesses (i.e., recreational fishing, hunting, and wildlife viewing) were independently managed by a single owner or were family owned, with less than five full-time and part-time non-family employees (KC, 2015).

Data Collection and Analysis

Initially, multiple field trips were conducted from May through August 2014. Informal meetings were held with key informants in the region, including people working at the wildlife refuges and local museum, cooperative extension agents, and local bait and tackle shop owners. These field trips helped to create a list of study participants to start the data collection process through in-person structured interviews. Later, a chain referral process (Biernacki & Waldorf, 1981) was utilized to identify and saturate the local wildlife tourism business network. Data were collected from November 2014 to February 2015.

The survey instrument included a list of social media platforms used for marketing, along with open-ended questions (i.e., *How important are these social media tools in the marketing of your business? What type of information do you share with members of a wildlife-related business network?*). Study participants were also asked to list any forms of support they receive from the wildlife tourism business network (e.g., marketing and advertising, information sharing, product support, etc.). Additionally, demographic data were collected on job status, length of business establishment, income, gender, and education. Descriptive field notes were developed during the interviews.

Thirty-seven wildlife tourism microentrepreneurs involved in guiding trips for recreational fishing, hunting, and wildlife watching, were interviewed. Other than descriptive data on social media usage, UCINET, a social network analysis software (Borgatti, Everett, & Freeman, 2002), was used for data analysis. Descriptive field notes for open-ended questions on social media did not involve rigorous qualitative analysis except to understand participants' general perceptions of social media as a marketing tool.

Results and Discussion

Demographic Profile

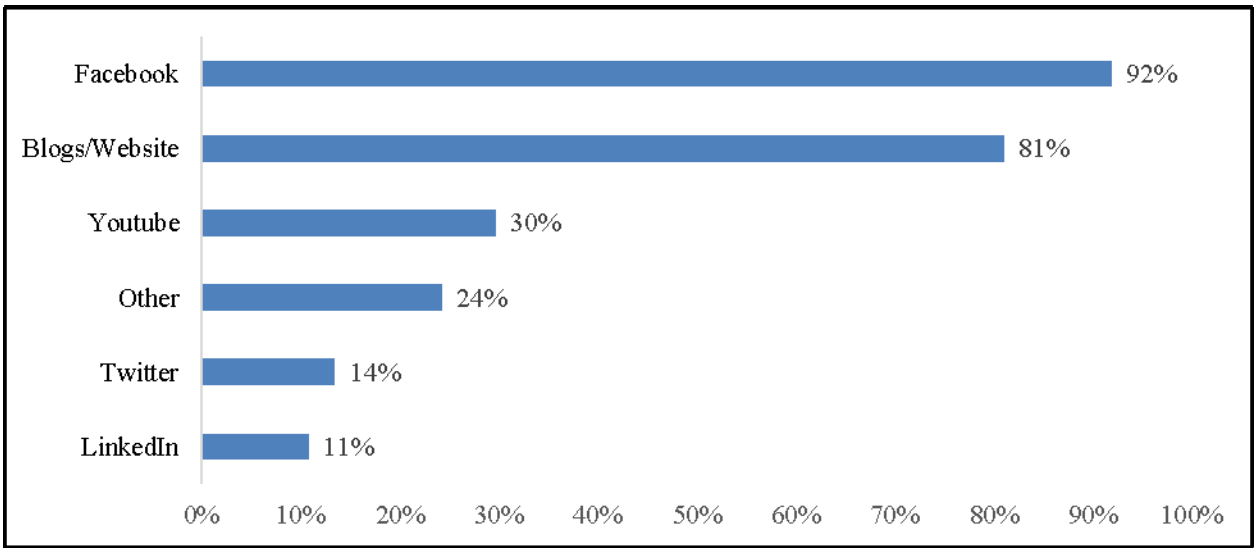
The majority (78%) of microentrepreneurs worked full-time, with only 22% working part-time. The length of business establishment ranged from 6 months to 36 years. The age of the study participants ranged from 27 to 75 years, with an average of 50 years. Only one participant was female. The educational background of the participants varied, with 8% possessing a high school degree, 33% with some college with no degree, 17% with an associate's degree, 28% with a bachelor's degree, and 14% with a graduate or professional degree. The lowest annual household income category was $15,000-$24,999 (7%), with the dominant category being $50,000-$74,999 (33%), and the highest income category being $100,000-$149,999 (13%).

Microentrepreneurs were likely to engage in more than one form of wildlife tourism (e.g., recreational fishing and hunting, recreational fishing and wildlife viewing, recreational fishing, hunting, and wildlife viewing). Microentrepreneurs were relying on wildlife tourism business partially as well as for complete livelihood dependence. They received from 5% to 100% of their income from the wildlife tourism business, with an average of 55%.

Use of Social Media Platforms

The majority of the microentrepreneurs (97%) reported using some form of social media platform. Facebook was the most used (92%) social media platform whereas Blogs/Websites (81%) and YouTube (30%) were frequently utilized social media platforms (Figure 1).

Figure 1: The use of social media platforms among wildlife tourism microentrepreneurs



**Other* includes platforms like Coastal Magazine (e.g., Fisherman Post), Instagram, Trip Advisor, Yelp, and People-First Tourism

In general, social media platforms were used as a medium to connect with existing and potential customers. Social media usage was perceived to bring visibility to their tourism services, with some wildlife tourism microentrepreneurs reporting having received clients from outside of the United States as well. For many, visibility was the major reason for using Facebook. For example, one microentrepreneur stated, "It is helpful in showing your ability and setting you apart from other business to say-hey, this is what I offer." Likewise, another microentrepreneur mentioned, "Social media helps to bring people in the network who are interested in what I do and also to follow up with the people in the network."

A significant number of customers were reported to receive through social media platforms. For instance, one microentrepreneur stated, "Social media brings visibility to what I do, people call and book trips. 80% of the trips come from social media." Likewise, Facebook was mentioned to be a tremendous help to drive the business and being a source of credibility since microentrepreneurs used to post pictures regularly to reach out to their customers and maintain a connection with them. These findings are similar to the previous study by Jones et al. (2015). The results of that study indicated that small businesses reflected the positive influence of social media through increased inquiries and bookings. Furthermore, maintaining a web presence was found to play an important role in increasing sales and creating repeat sales (Jones et al., 2015). However, microentrepreneurs also reported word of mouth advertisement as an important driving force for their businesses. Specifically, one microentrepreneur mentioned to recognize social media as helpful but acknowledged that word of mouth advertisement was more important to drive the business. He further added, "Customers are a cumulative effect of everything, i.e., social media and word of mouth advertisement." Therefore, social media seems to play an important role in their businesses by allowing microentrepreneurs to connect with new customers while maintaining relationships with old customers. However, word of mouth advertisement also seemed to help these businesses find new customers.

The findings also suggest that the extent of social media usage varies based on demographic (i.e., age) and economic variables (i.e., household and wildlife tourism-based incomes). For example, respondents were generally older adults, but relatively younger microentrepreneurs made greater use of social media platforms compared to older microentrepreneurs (Table 1). Likewise, microentrepreneurs in the lower household income category utilized fewer social media platforms compared to those in higher household income categories. Surprisingly, microentrepreneurs with 100% of their income coming from the wildlife tourism business utilized fewer social media platforms compared to those receiving up to 80% of their income from the wildlife tourism business. It is important to note that the percentage of income from the wildlife tourism business does not

correspond to household income. For example, microentrepreneurs with 100% of their income coming from the wildlife tourism business sometimes had a household income of $15,000-$24,999. Therefore, greater dependence on the wildlife tourism business does not necessarily correspond with higher incomes. Based on these findings, we can argue that microentrepreneurs with a higher level of dependence on the wildlife tourism business should be able to utilize multiple and appropriate social media platforms.

The concept of social media usage among tourism microentrepreneurs may not be unique and interesting. However, so far, the use of social media platforms among wildlife tourism businesses has not been explored. Specifically, wildlife tourism is characterized by rurality, and it is interesting as well as necessary to understand the role of social media platforms in promoting these forms of rural tourism microentrepreneurship. Furthermore, their affiliation is mostly perceived as passion-based where Ateljevic and Doorne (2000) suggested that tourism entrepreneurs may not be solely driven by economic motives but non-economic motives as well. Tourism entrepreneurs are often perceived as lifestyle entrepreneurs, nature-based and wildlife tourism entrepreneurs even more so. It is important to understand that these microentrepreneurs seem to utilize social media platforms to pursue their careers, and wildlife tourism businesses would allow them to move beyond their individual passion to a more dependable livelihood strategy. Findings also showed that about 22% of the microentrepreneurs were completely reliant on income received from the wildlife tourism business for sustaining their livelihoods. Therefore, social media can play a major role in redefining the pursuance of the entrepreneurial process in rural tourism entrepreneurship. Jones et al. (2015) suggested that the use of social media is cost effective as it overcomes limitations such as the lack of time and financial resources. Jones et al. (2015) also noted that the use of social media among small businesses is still in a primitive phase. Therefore, social media usage among small businesses needs to be explored further.

Wildlife Tourism Peer Network

The purpose of the study was also to examine the local business support network. Support could be received in any form. For example, types of support received through the peer network included information sharing, customer exchange, and product support (support received specifically from bait and tackle shops through discounted products). The peer network was established to exchange multiple forms of support. These forms of support were reported to play a critical role in reciprocating with other fishing, hunting, and eco-tour guides. Customer exchange was a common practice among fishing and hunting guides, as they

Table 1: Demographic and economic variables of the microentrepreneurs and their extent of social media platform usage

Age (Years)	Frequency	Extent of Social Media Platforms Usage
≤ 40	24.32%	3.33
41-60	64.86%	2.29
>60	10.81%	2.00
Income (Household)		
$15,000-$34,999	13.33%	2.00
$35,000-$74,999	56.67%	2.41
$75,000-$149,999	30.00%	2.89
Income (Wildlife Tourism-Based)		
≤ 40%	37.84%	2.36
41-80%	40.54%	3.07
81-100%	21.62%	1.75

frequently swapped their customers when the demand for fishing and hunting trips outnumbered their capacity. Information was reported to share regarding the location of fish, type of bait used (for fishing), or movement of waterfowl (for hunting). This information was critical to providing clients with an enriching experience and had a pronounced effect on the success of fishing and hunting guides.

Network measures for this study include degree centrality[1], eigenvector centrality[2], and density[3]. The average degree centrality is 3.57 (Table 2), with the highest degree centrality of 9 for EID1 indicating it to be a central member of the network (Figure 2). Likewise, the eigenvector centrality measure identifies the central character and considers not only the extent of connection for an

[1] ***Degree Centrality*** indicates the number of immediate connections (i.e., network ties) for an individual member, with a higher degree centrality value indicating a more central member of the network (Prell, 2011). An individual network member with high degree centrality can be identified using different terms such as popular/prominent, influential, independent, powerful, leader, etc. (Borgatti, Everett, & Johnson, 2013; Prell, 2011; Ramirez-Sanchez, 2011). However, these terms are not considered inherent properties, but depends on the type of network in which they are embedded (Borgatti, Everett, & Johnson, 2013).

[2] ***Eigenvector Centrality*** considers an individual as central if connected to those individuals with more connections. This measure is built upon degree centrality where a central actor is one who is connected to others who themselves have high-degree centralities (Prell, 2011). Borgatti, Everett, and Johnson (2013, p.168) state, "We can interpret eigenvector centrality as a measure of popularity in the sense that a node with high eigenvector centrality is connected to nodes that are themselves well connected."

[3] ***Density*** refers to the number of ties in a network expressed as a proportion of the maximum possible number of ties (i.e., number of actual direct connections divided by the number of possible direct connections) in a network (Kadushin, 2012; Scott, 2013).

individual but also the extent of connections of other members connected to that individual. For example, if we compare EID25 and EID32, they both have two connections. However, EID32 is connected to EID1 (with a degree centrality of 9) and EID6 (with a degree centrality of 6), whereas EID25 is connected to EID22 (with a degree centrality of 5) and EID33 (with a degree centrality of 3). Therefore, EID32 (with an eigenvector centrality measure of 0.174) is considered more central than EID25 (with an eigenvector centrality measure of 0.039). Both degree centrality and eigenvector centrality measures are helpful in understanding how network members communicate with each other, and who is more influential compared to others. This information is critical in devising a strategy to disseminate important information throughout the network.

The density of the network is 0.132. A value close to 1 indicates a denser network, with a higher density indicating that the network members are well-connected to each other. As Kadushin (2012, p.29) stated, "Other things being equal, the greater the density, the more likely is a network to be considered a cohesive community, a source of social support, and an effective transmitter." The density of the network depends upon the type and size of the network under study. Networks are more likely to be dense in a small community (Crowe, 2007; KC et al., 2018); therefore, density is a completely context-dependent variable. While comparing the density of different networks, it is important to consider their size (Kadushin, 2012). The density value is relatively low in this case because connections were considered only if wildlife tourism microentrepreneurs reported having received some form of support. However, a familiarity or acquaintance network would have probably been denser. Therefore, the network and its interpretation determine the density of the network. It is important to understand that well-connected members in higher density networks can be expected to reciprocate more frequently. However, various factors such as trust, reciprocity, and togetherness are expected to influence the connections and information or resources exchanged among network members (KC et al., 2017).

Table 2: Wildlife tourism microentrepreneurial network measures (Degree Centrality, Eigenvector Centrality, and Density)

Measure	Mean	Remarks
Degree Centrality	3.57	Min=1, Max=9
Eigenvector Centrality	0.153	Min=0.020, Max=0.449
Density	0.132	Total number of ties=100

*Note: The calculation of measures excludes isolated microentrepreneurs (i.e., only considers 28 wildlife tourism microentrepreneurs connected to each other).

Figure 2: Peer network among wildlife tourism microentrepreneurs. The size of the node is proportional to the number of connections.

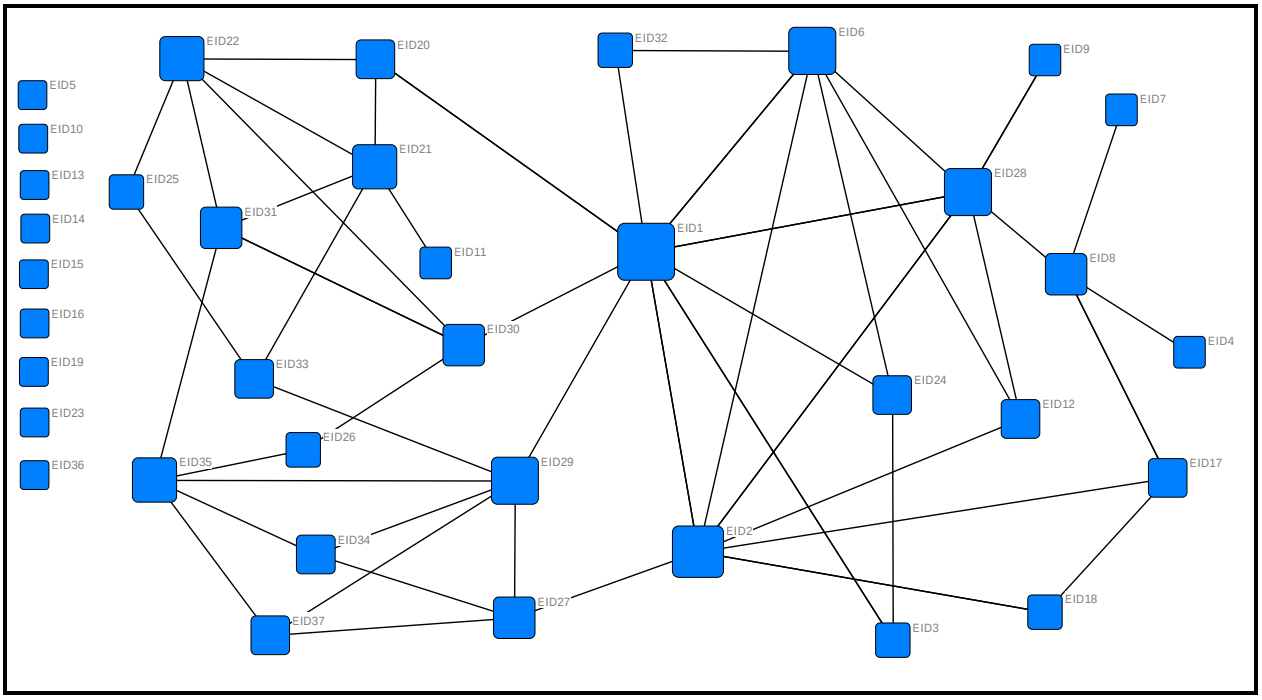


Figure 3: Peer network among wildlife tourism microentrepreneurs. The size of the node is proportional to the income coming from wildlife tourism business.

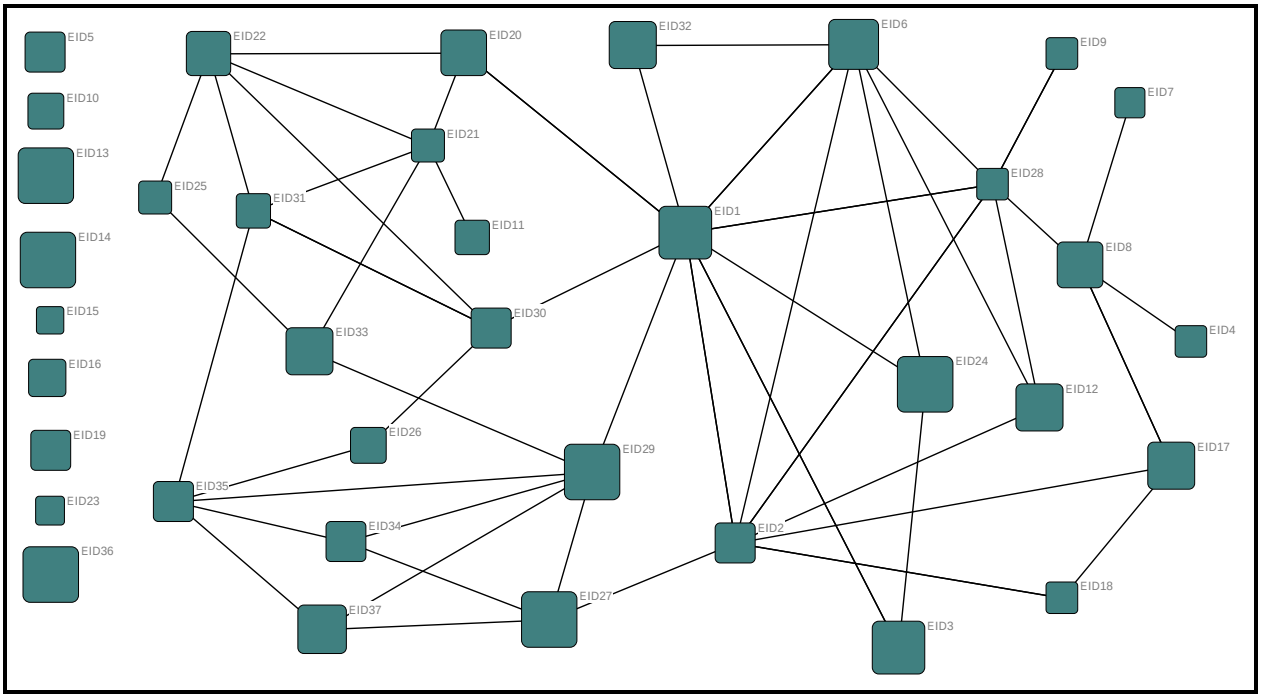


Figure 3 represents the wildlife tourism business network where the size of the node is proportional to the income received exclusively from the wildlife tourism business. Within the network of 28 microentrepreneurs connected to each other, microentrepreneurs receiving a higher proportion of income from wildlife tourism are generally possessing high degree centrality (i.e., more connections). However, it is interesting to see how some isolated microentrepreneurs in the network are completely dependent on the wildlife tourism business for their livelihoods regardless of any support from local peer network. Considering the importance of information sharing and exchange of resources among these microentrepreneurs, it is important to promote peer networking and the use of social media platforms to capture the niche market of wildlife tourism.

Conclusions, Implications, & Future Research

Social media usage among microentrepreneurs indicates their ability to use social media to market their businesses. However, the extent of social media usage varied based on age and income category. Microentrepreneurs receiving highest proportion of income from wildlife tourism were not necessarily using multiple social media platforms. Findings from the study can be useful for extension professionals to promote the use of social media platforms while using different social media platforms to obtain information about the extent of entrepreneurial engagement and as a tool for communication. Selective social media platforms can be utilized to disseminate information related to extension activities. A microentrepreneurial network indicates their ability to connect with similar businesses to meet their entrepreneurial goals. However, these microentrepreneurs can exchange information through these connections related to policy issues on wildlife rules and regulations as well. Microentrepreneurs receiving more than 80% of their income from wildlife tourism were also disconnected from the local peer network. Understanding network patterns can enhance a related organization's ability to promote connections and information dissemination throughout the network. The purpose of the study was to understand the use of social media platforms and their perceived importance in wildlife tourism businesses. However, in future research, it may be fruitful to try to understand the potential role of social media in the perceived success of wildlife tourism microentrepreneurship or other forms of tourism entrepreneurship. Also, future research should assess if there are any challenges regarding the use of social media platforms as a marketing tool or potential ways to promote the effective use of social media platforms to foster rural tourism entrepreneurship.

The network approach can be used in various contexts, including both large-scale and small-scale entrepreneurial networks. Specifically, tourism planners and extension professionals can promote these forms of rural entrepreneurship by understanding their network patterns. Extension professionals can use a similar

approach to identify networks for agritourism entrepreneurs. Potential influencers such as microentrepreneurs with a high degree centrality or with higher eigenvector centrality can be identified to promote outreach programs and reach out to those microentrepreneurs who are struggling to connect with information sources. Likewise, similar network patterns can be examined to assess affiliation with different public agencies, as these agencies can provide resources different than those offered by similar business networks (KC et al., 2018). Extension professionals and related organizations can utilize the network approach to examine network functions in diverse entrepreneurial contexts to improve communication channels/patterns.

There are alternative ways of understanding and promoting these forms of tourism entrepreneurship. For example, one potential approach to further investigate is to identify SWOT (Strengths, Weaknesses, Opportunities, and Threats) factors to address the needs of these microentrepreneurs more effectively. There are only a few such studies related to tourism entrepreneurship (e.g., Helms, Rodríguez, Lisandro de, & Hargrave, 2011; Lordkipanidze, Brezet, & Backman, 2005). Furthermore, the identification of SWOT factors can be combined with the Analytical Hierarchy Process (AHP) or the Analytic Network Process (ANP). Both SWOT-AHP (KC, Stainback, & Chhetri, 2014; Stainback, Masozera, Mukuralinda, & Dwivedi, 2012) and SWOT-ANP (Catron, Stainback, Dwivedi, & Lhotka, 2013) are common methods of quantitative assessment of SWOT factors through comparison of factors within each category and across the categories. In particular, a SWOT-ANP allows for the evaluation of dependence among categories (Catron et al., 2013). A SWOT-AHP/ANP is still an under-explored methodological tool in tourism entrepreneurship. Besides identification of SWOT factors and quantitative assessment through AHP or ANP, it would be interesting to examine the effectiveness of the peer network in addressing SWOT factors (i.e., whether a peer network helps to eliminate weaknesses and threats or capitalize on strengths and opportunities). However, simply understanding the development of a peer network and its characteristics can assist local tourism agencies, extension professionals, and other related agencies to promote rural tourism entrepreneurship.

References

Ateljevic, I., & Doorne, S. (2000). 'Staying within the fence': Lifestyle entrepreneurship in tourism. *Journal of Sustainable Tourism, 8*(5), 378-392.

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods and Research, 10*(2), 141-163

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). UCINET 6 for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.

Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2013). *Analyzing Social Networks*. Thousand Oaks, CA: Sage Publications.

Borisova, T., Bi, X., Larkin, S., & Longanecker, J. (2016). Assessing nature-based recreation to support economic development and environmental sustainability extension programs. *Journal of Extension, 54*(5), 5RIB1. Retrieved from https://joe.org/joe/2016october/rb1.php

Catron, J., Stainback, G. A., Dwivedi, P., & Lhotka, J. M. (2013). Bioenergy development in Kentucky: A SWOT-ANP analysis. *Forest Policy and Economics, 28*, 38-43.

Crowe, J. A. (2007). In search of a happy medium: How the structure of interorganizational networks influence community economic development strategies. *Social Networks, 29*(4), 469-488.

Helms, M. M., Rodríguez, M. A., Lisandro de, L. R., & Hargrave, W. (2011). Entrepreneurial potential in Argentina: A SWOT analysis. *Competitiveness Review, 21*(3), 269-287.

Hondadle, B. W. (1990). Extension and Tourism Development. *Journal of Extension, 28*(2), 2FEA1. Retrieved from https://www.joe.org/joe/1990summer/a1.php

Jones, N., Borgman, R., & Ulusoy, E. (2015). Impact of social media on small businesses. *Journal of Small Business and Enterprise Development, 22*(4), 611-632.

Kadushin, C. (2012). *Understanding Social Networks: Theories, Concepts, and Findings*. New York, NY: Oxford University Press.

KC, B. (2015). Examining networks, social capital, and social influence among wildlife tourism microentrepreneurs in coastal North Carolina. Doctoral Dissertation, North Carolina State University, USA.

KC, B., Morais, D. B., Peterson, M. N., Seekamp, E., & Smith, J. W. (2017). Social network analysis of wildlife tourism microentrepreneurial network. *Tourism and Hospitality Research, 0*(0), 1-12.

KC, B., Morais, D. B., Seekamp, E., Smith, J. W., & Peterson, M. N. (2018). Bonding and bridging forms of social capital in wildlife tourism microentrepreneurship: An application of social network analysis. *Sustainability, 10*(2), 315.

KC, B., Stainback, G. A., & Chhetri, B. B. K. (2014). Community users' and experts' perspective on community forestry in Nepal: A SWOT-AHP analysis. *Forests, Trees and Livelihoods, 23*(4), 217-231.

Lordkipanidze, M., Brezet, H., & Backman, M. (2005). The entrepreneurship factor in sustainable tourism development. *Journal of Cleaner Production, 13*(8), 787-798.

Mains, M., Jenkins-Howard, B., & Stephenson, L. (2013). Effective use of Facebook for extension professionals. *Journal of Extension, 51*(5), 5TOT6. Retrieved from https://www.joe.org/joe/2013october/tt6.php

Morais, D. B., KC, B., Mao, Y., & Mosimane, A. (2015). Wildlife

conservation through tourism microentrepreneurship among Namibian communities. *Tourism Review International, 19*(1-2), 43-61.

North Carolina Jobs Plan. (2013). *North Carolina Economic Board: Recommended Strategies for Economic Growth 2014–2015*. Retrieved from https://www.nccommerce.com/Portals/0/Documents/AboutOurDepartment/BoardsCommissions/NC%20Jobs%20Plan%20Report_Final.pdf

Prell, C. (2011). Some basic structural characteristics of networks. In Ö. Bodin & C. Prell (Eds.), *Social networks and natural resource management: Uncovering the social fabric of environmental governance* (pp. 29-43). Cambridge, UK: Cambridge University Press.

Ramirez-Sanchez, S. (2011). Who and how: Engaging well-connected fishers in social networks to improve fisheries management and conservation. In Ö. Bodin & C. Prell (Eds.), *Social networks and natural resource management: Uncovering the social fabric of environmental governance* (pp. 119-146). Cambridge, UK: Cambridge University Press.

Scott, J. (2013). *Social network analysis*. London: Sage Publications.

Settlage, S. (2012). The Pamlico Sound: Fishing gem of North Carolina. Retrieved from http://ncseagrant.ncsu.edu/coastwatch/previous-issues/2012-2/summer-2012/the-pamlico-sound-fishing-gem-of-north-carolina/

Stainback, G. A., Masozera, M., Mukuralinda, A., & Dwivedi, P. (2012). Smallholder agroforestry in Rwanda: A SWOT-AHP analysis. *Small-scale Forestry, 11*(3), 285-300.

Taormina, R. J., & Lao, S. K. (2007). Measuring Chinese entrepreneurial motivation: personality and environmental influences. *International Journal of Entrepreneurial Behavior & Research, 13*(4), 200-221.

U.S. Fish & Wildlife Service. (2011). *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Retrieved from https://www.census.gov/prod/2012pubs/fhw11-nat.pdf

Zander, K. K., Austin, B. J., & Garnett, S. T. (2014). Indigenous peoples' interest in wildlife-based enterprises in the northern territory, Australia. *Human Ecology, 42*(1), 115-126.

Youth Corner

We Can Run, but We Can Not Hide

Rachel Wilder[1]

The basic scientific principle known as *Law of Conservation of Mass* states that *"matter cannot be created or destroyed."* In this modern age of trash cans and landfills, it is easy to forget this sometimes. We throw something away because we don't want it anymore, yet, it never truly goes away. It simply goes to waste which means it breaks down in a variety of ways, some of which are not very pretty. By working towards a sustainable future, we are trying to make this once trash go to good use through recycling or upcycling. We are trying to utilize it instead of ignoring common laws and hoping we don't have to deal with it anymore. Even if we don't see it or use it anymore, doesn't mean it's ever truly gone. It never leaves. We have a limited amount of mass on this planet; we need to find a way to use it because we'll never truly lose it which is why recycling and upcycling practices are important for the future of our world.

Imagine a beautiful sunset. It's vivacious with oranges and pinks and purples and reds. Imagine some mountains in front of the sunset. Huge mountains, waving at you, beckoning you to come explore their depths. And then, right in front of it all, right in front of you, is a giant pile of literal trash. Lots of flies and roaches. Last week's paper covered in spoiled milk and a rotten banana peel. The half-finished lunch from the sandwich shop in a Styrofoam container which the homeless person outside would have gladly engulfed. Stinky. Very stinky. Miles of it, too. This is where all the stuff we don't want goes. That paper bag from your trip to the grocery store? Plop. The Styrofoam container with the leftover sandwich? Plop, eventually to become petrified and permanently left behind on the earth. This Styrofoam is made of expanded polystyrene and is found in abundance in landfills due to the difficulty in recycling it; most places do not accept it to be recycled locally. The garbage truck just dropped all this off, along with everybody else's waste. These paper bags

[1] Rachel Wilder is a 10th grader at Nacogdoches High School, Nacogdoches, TX.

were once trees emitting oxygen which we use to breath. Without them, we would not be able to breathe; now it's contributing to carbon emissions which are directly expediting the end of our existence. This is an impending doom which looms over our heads that we try to deny. We try to deny it with our reusable bags we put in our carbon emitting cars, with our "organic" labels made in a carbon emitting factory, with our talks of sustainability in the comfort of our air conditioned buildings. We acknowledge it and yet it seems as a society we do not fully comprehend the consequences of our actions. There never will be a tangible way for us to see the scope of the harm we have caused until there is nothing we can do, until we are all gone, until the consequences are so severe our attention has to be focused on survival.

It is time to face the reality that, whether we like it or not, nothing ever goes away. It doesn't disappear. There is nowhere for it to go except back to haunt us. Our attempts at sustainability are in place to prolong our existence on a planet we are actively ruining- though these attempts may seem futile, we do them in hopes of improving the quality of life for our families and the next generation to come. There might not be anything we can do, at this point, to stop that process. All we can do is try to make use of what we have and make better choices for the future to come. The same amount of mass and matter will always be in existence; hence, we must seek to understand how we can conserve what we have, recycle what can be broken down and upcycle what can be re-used in order to sustain a good quality of life here on our planet earth. In closing, I think of the words of Pete Seeger… *"If it can't be reduced, reused, repaired, rebuilt, refurbished, refinished, resold, recycled or composted, then it should be restricted, redesigned or removed from production."*

Youth Corner

Bee Friendly at UNT

Emma Reams

"Save the bees" is a common phrase, but it doesn't show the whole picture of what "save the bees" means. In this modern era, bees face many problems such as colony collapse disorder and neurologically inhibiting pesticides farmers use on their crops. These factors have caused a major decline in the overall bee population, even though some of these factors can be prevented. Bees play a major role in our agricultural system by pollinating almost 80% of the crops we grow in the United States and are estimated to contribute $29 billion to American farmers income, according to the Cornell Chronicle.

In 2016, the University of North Texas became a Certified Bee Campus, becoming the first certified university in Texas and 12th in the United States, and was this a turning point for UNT and its students for being a leader in sustainability. A certified U.S.A. bee campus affiliate is a campus that commits to a variety of actions that includes but is not limited to developing a campus habitat plan, educating the campus and surrounding area, and sponsoring service learning projects. UNT has fulfilled many of its Bee Campus Certification commitments such as native landscaping, the seedball event at EarthFest 2017, adopting an integrative pest management system and preferred plant list. This certification offers various potential benefits to the campus and surrounding area by engaging the community, improving local food production, and increasing local business opportunities.

In UNT's efforts to create a bee-friendly environment, the university created a 'Pollinative Prairie' that serves as a pollinator paradise and contains native Texas grasses and wildflowers. This prairie is a big hit with bees and students alike, allowing students at the University of North Texas to put in more than 500 hours of community service into this bee paradise. In addition to the Pollinative Prairie, UNT created a community garden to encourage community engagement and education. Community gardens not only a great way to attract bees for pollination, but to grow fresh food. There is now a gardening club and gardening lessons twice a month.

Although UNT is making great leaps and bounds in helping the bees, you can help save the bees too. Supporting organic small business like Seven Mile Cafe or

buying organic foods from local health food stores are easy and tasty ways to help the bees. If you like gardening, planting the native-Texan flower Pink Evening Primrose would be a beautiful and bee-friendly way to spruce up your patio or backyard. Nonprofits such as the Honeybee Conservancy offers a program to sponsor a hive, allowing anyone who donates to directly help save the bees. Which ever way you like to help, big or small, it makes a difference in the lives of bees, our agricultural system, and UNT.