What Motivates Students to be Sustainability Change Agents in the Face of Adversity?

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Abstract

The world faces significant challenges which require transformative changes facilitated by Sustainability Change Agents (SCAs). Universities around the world have explicitly taken up the responsibility of developing in students the skills and knowledge (i.e. competencies) necessary to be successful SCAs. While there is clear convergence around planning competencies, intrapersonal and implementation competencies have recently emerged in the literature. These competencies will have to remain effective even in the face of adversity yet too little is known about sources of motivation for SCAs and how motivation can be maintained despite these inevitable setbacks. Since the needed transformations will be collective processes these motivations need to be understood in that social and realistic context in which they would be applied. Our study sought to gain specific insights into 1) What motivates students to be SCAs? 2) How do these SCAs maintain their motivation in the face of setbacks? 3) What can higher education institutions (e.g., universities, colleges) do to better support the motivation of SCAs?

In order to gain insights into these questions, we surveyed 83 aspiring SCAs, analyzing their responses using qualitative content analysis. For this group of SCAs, the key source of motivation evolved from more of a focus on nature, learning, and individual behavior to a more social view with a concern for structural change. Moreover, social networks and intrapersonal skills helped to restore their motivation following setbacks. Despite being university students, the SCAs surveyed had already experienced significant setbacks and (largely without institutional support) learned strategies to overcome them and maintain their motivation. Motivation and the skills, knowledge, and experience of how to maintain their drive for positive change in the face of setbacks is crucial for SCAs to be capable of supporting the critically needed transformations, and universities must play their part in fostering the SCAs' capability.

Introduction

The scale of the sustainability challenges we face will not be solved through incremental efforts but rather calls for "ambitious societal transformations (Scoones et al., 2020)." Sustainability change agents (SCAs) are needed to instigate and facilitate these ambitious, sustainability transformations. Change agents can be generically thought of as "individuals that self-identify as someone aiming to bring about change" (Brundiers, 2018, p. 9). Drawing on pertinent literature (Harre, 2018; Hesselbarth & Schaltegger, 2014; Marcus et al., 2015), we further specify SCAs as those individuals aiming for *transformative* change towards sustainability. While there is no unform understanding about exactly what a transformative agenda would imply, it is generally agreed that it means fundamental changes to virtually all aspects of our current, socio-economic technological systems (Patterson et al., 2017). Students graduating with the objective of taking on this scale of change will need to be equipped with strong motivation and be able to maintain it despite inevitable setbacks.

Characteristics of Sustainability Change Agents

The **literature on key competencies in sustainability (KCS)** (Wiek et al., 2011) refers to a set of interdependent and functionally related key competencies that work in support of collective endeavors to develop and implement solutions to sustainability problems. Specifically, scholars and practitioners have delineated **planning competencies** (i.e. systems, futures, values and strategies) combined with **interpersonal competency** into an integrated **problem-solving competency** as the core set of competencies required in SCAs to be capable of developing sustainability solutions. While consensus has increasingly emerged (Brundiers et al., 2021; Redman, 2020) around these six competencies and their interrelations, it has also been widely noted that just having the capability to create a plan for change is not enough. SCAs need to also be *motivated* to create change and able to *implement* change. Recent research has suggested a need to expand the six competencies which includes proposals for additional competencies that would support motivation and implementation capacities (Brundiers et al., 2021).

The intrinsic motivation to engage in sustainability change as a foundational part of becoming a SCA is captured in the proposed **intrapersonal competency**. The intrapersonal competency refers to the ability to consciously and pro-actively engage as a sustainability change agent drawing on competencies of emotional intelligence (Goleman & Boyatzis, 2017). This involves, on the one hand, the ability to be aware of one's own emotions, desires, thoughts, and behaviors as well as one's positionality in society and one's role in the local community and (global) society. On the other hand, it involves the ability to reflect and act on that awareness in order to regulate, motivate, and continually evaluate one's actions (in relation to self and other humans and non-humans) as well as to improve oneself (Brundiers et al., 2021). This entails "motivation" as in intrinsic motivation to live in relation to sustainability ideas and values and goal orientation towards contributing to meaningful and positive change.

Implementation competency refers to the ability to realize a planned solution on the ground and in collaboration with others. The planned solution results from demonstrating integrated problem-solving competency, a predominantly cognitive process, whereas implementing and realizing that 'thought-product' requires hands-on action to realize a planned solution on the ground (Brundiers et al., 2021; Redman, 2020). Implementation competency requires motivation and its maintenance as successful implementation requires overcoming challenges and setbacks.

Sustainability Transformations as a Collective Process

The literature on key competencies in sustainability provides one theory of change involving the role of SCAs, arguing that change towards sustainability is brought about, in part, through the application of KCS Applying these KCS to solve a sustainability problem is not done by one SCA alone. Performing any of the competencies requires collective action and thus depends on an individual's ability to engage with others. Therefore, this theory of change builds on the idea that individual and collective processes are interdependent: Although the individual, the self-identified change agent, endeavors to execute key competencies in sustainability, effective performance implies the ability to successfully activate and maintain collective action throughout the analysis, assessment, deliberation, and design of systems, futures, and strategies around sustainability values. Moreover, using a participatory approach to addressing complex sustainability problems implies an iterative process. Sustainability issues and their solutions are complex adaptive systems that evolve in step with deliberation, implementation, and learning, so iteration is inherent in collective efforts.

These collaborative processes will involve various types of change agents and their 'ecosystem' in terms of the change agents expertise and positionality in society has been characterized in various ways in the literature. Atkisson (2012) uses the concept of an amoeba organism as an analogy. The amoeba, sensing a molecule of food (i.e., a transformative solution), stretches and elongates out to embrace it. Eventually the entire amoeba organism follows in that direction. According to the amoeba analogy, the ecosystem of actors would entail the SCA as well as other change agents acting in supportive or challenging roles. Poyourow (2010) succinctly summarized these as follows: **Transformers**: influential and respected leaders of existing groups within the community as a whole. They hear the SCA's explanation and are able to translate the message to appeal to broader groups while beginning to get large numbers of mainstream people on board. **Laggards**: prefer to sit back and watch new developments unfold before they will join the process. **Reactionaries**: people who have a vested interest in having the status quo stay firmly in place. **Iconoclasts**: latch onto an idea and cling to it for reasons entirely their own. They may be helpful to the movement or quite a hindrance — it all depends on whether their unique take dovetails with the movements' core purpose.

Similarly, sustainability transition theory builds on the concept of a "societal network of innovation", which it also calls a "transition arena," arguing that sustainability transitions are advanced by a small network of frontrunners, each bringing to the network different and complementary backgrounds in terms of competencies, interests, and positions within society. Frontrunners elect to participate in this network on a personal basis, not because of their professional position or affiliation. They are willing to invest their time and energy and act in roles including being a subject matter expert, networker or opinion leader (Loorbach, 2010). The transition arena, like the amoeba, comprises of promoters and opponents of sustainability transitions and uses this tension to progress towards sustainability. As the transition evolves over time, so does the network and the composition of frontrunners participating in it.

We emphasize this ecosystem of change or the 'societal network of innovation' and its diverse participants to clearly distinguish the roles that graduates can play within this spectrum of change agents, specifically the roles in support of sustainability transformations. Engaging in sustainability change does not require everyone to step immediately into the role of the sustainability change agent; it involves a process of learning about oneself, the key competencies in sustainability, and the broader 'ecosystem'. In this regard, we also clarify that for students electing to work as a SCA, mastering the key competencies in sustainability

does not mean advanced level in each competency. The key is to know about all competencies and their relationships and how they support the sustainability problem solving processes (c.f., Brundiers et al. 2021, Figure 2). This has been characterized elsewhere in the literature as T-Shaped (Conley et al., 2017; Uhlenbrook & de Jong, 2012), with knowledge of all the KCS and intense expertise on one or two dimensions. On this basis, SCAs are able to identify and engage others with the specific knowledge, skills and attitudes to support the different phases of the process. In addition to knowing about to framework of key competencies, it behooves SCAs to specialize in some key competencies, including in the intra- and interpersonal competencies in order to maintain one's own motivation to engage others and to recognize the role others play in the process of culture change.

Motivation to Facilitate Sustainability Transformations

So far we have discussed the what (key competencies in sustainability) and the how (collective processes) of an individuals' participation in sustainability transformations but no the why or motivation to engage. Motivation has been widely explored across academic disciplines (Bowman, 2011). But much of this has focused on academic motivation more broadly even if the subject matter is sustainability (Vázquez et al., 2018) or even sustainability leaders (Halliwell et al., 2020). Rather our interest is the motivation for taking action in the world i.e. facilitate sustainability transformations.

The need for sustainability education to include motivation as a learning objective has been commonly mentioned in the academic literature for at least a decade. A systematic literature review of learning objectives in sustainability comprising 235 articles (Redman, 2020) found that motivation was explicitly included well over twenty times. Examples of sustainability learning objectives related to motivation include "the ability to motivate oneself and act autonomously" (de Haan, 2010), to build "the mental strength and endurance to bring an action to completion (Tamura & Uegaki, 2012)", as well as to develop the "courage to challenge the status quo" (Hesselbarth & Schaltegger, 2014)" and "a strong interest to drive the sustainability agenda forward" (Sarpin et al., 2018). These motivation-related learning objectives indicate that motivation is seen as needed to enact the content knowledge using the key competencies in sustainability.

Motivation related to personal sustainability behavior (Kollmuss & Agyeman, 2002) has been the focus of significant research, including in education (Redman & Redman, 2017). This literature has framed what drives individual sustainable behavior in various ways such as using domains of knowledge (Redman & Redman, 2017) or other approaches such as the theory of planned behavior (Swaim et al., 2013). Despite this diversity, the results largely agree that factual knowledge does little to change sustainable behavior while attitudes, values, and social factors are critical.

Additionally, insights from environmental psychology inform how to foster motivation to take prosocial action to address the sustainability crises. Personal norms, i.e., individuals personally wanting and feeling the need to undertake prosocial actions, reflect intrinsic motivation, which supports self-concepts of SCAs. Bouman, Steg & Dietz (2021) identify the interrelated factors that build personal norms, which in turn support individuals in their motivation to take prosocial action. These antecedents include **personal values**, specifically "strong altruistic values" (caring for others and social justice) as well as biospheric values (caring for nature and the environment)", **awareness** of consequences and worries, feeling **responsible** for some of the consequences, believing in one's **self-efficacy** to take meaningful actions, and **social factors** including perceiving what others value, approve on, and do.

However, little has been done in *sustainability education* exploring the motivation to be a Sustainability Change Agent driving transformations and, importantly, the motivation to remain a SCA in the face of setbacks. Exploring these would further inform the characteristics and definition of sustainability change agents. Furthermore, it would help address another and related gap. With regards to motivation for sustainability transformations and maintaining motivation in the face of setbacks, we don't know about the kinds of supports that higher education can leverage to help grow students' initial sparks of interest and increase motivations to engage in sustainability change processes.

Addressing these gaps is even more important, considering the continuing growth of sustainability programs (Weiss & Barth, 2019) suggesting that faculty and staff will need to help much larger numbers of students to develop and grow their identity with regards to their various roles in society (e.g., as community member, worker, consumer, investor, and engaged citizen/community member and so forth) as well as with regards to their roles in the transition arena/ecosystem of culture change.

What Motivates Sustainability Change Agents?

Considering the research gaps identified above in the context of the existing literature, we began an initial exploration of the motivation of SCAs and how this can be strengthened via higher educational institutions, specifically by identifying the types of support helpful to already motivated and self-identified SCAs. Specifically, we asked three research questions:

- What motivates students to be SCAs?
- How do these SCAs maintain their motivation in the face of setbacks?
- What can higher education institutions (e.g., universities, colleges) do to better support the motivation of SCAs?

Methods

To answer these questions, we conducted a survey with attendees at the Student Leader Summit of the Association for the Advancement of Sustainability in Higher Education's Conference in fall 2018. This population was selected because we anticipated that the attendees would be active or aspiring SCAs, and thus whose sources of motivation would be relevant to our research (question #1). Additionally, anecdotal evidence from the authors' past interactions with students indicated that this population of young SCAs had already experienced setbacks and de-motivations, yet had overcome them enough to continue their commitment, including attending the conference (research question #2). We recognized that, as students, the survey participants' experiences were likely to be limited. Yet, this in turn, would enable them to offer better insights for improvements in the context of their education and higher education institutions more broadly (research question #3)

The survey instrument itself (included in full as Appendix A) was developed to operationalize the research questions. The survey was piloted with undergraduate sustainability majors at a US university during the fall 2018 semester and refined based on their feedback and an evaluation of whether the student responses helped to inform answers to the research questions. Ultimately 100 copies of this four page survey of short answer and demographic questions were distributed at a session led by one of us. A total of 83 responses were collected, transcribed, and analyzed qualitatively. For the coding we used a combination of deductive and inductive approaches (Ryan & Bernard, 2000). The deductive approach entailed creating codes derived from the major concepts and themes guiding our research. For example

codes for types of setbacks included *family and friends, project failures,* and *issues at work* among others. As mentioned above, these concepts and themes also guided the design of the survey structure and questions. The deductive coding process and discussions of emerging results introduced a second phase of inductive coding, as some in vivo codes emerged and helped modify the coding process.

Ethical approval was received from Arizona State University's Institutional Review Board.

Results

The survey had a total of 10 questions plus a few demographic questions. Herein we will summarize the results from all the survey questions.

Overview of Demographics: In total 83 SCAs participated in the survey (out of 100 paper surveys distributed) with 68% of the respondents being female and 75% being between the ages of 18 and 22. Respondents were mostly undergraduate students (84%) with nearly half (48%) majoring in sustainability. The respondents typically had significant experience with their educational institutions as 46% of them intended to graduate later that school year (i.e. 2019). Most importantly, as anticipated, this population of respondents self-identified as SCAs, all of them agreeing (to varying degrees) with the statement "I see myself as a sustainability change agent". We analyzed these demographic results and did not find strong enough patterns in the data to warrant analysis beyond being a description of the overall population.

Themes Identified: The rest of the results sections therefore gives an overall picture of the themes identified for each of the questions, clustered as they align with the research questions.

Original and Current Sources of Motivation Respondents were asked both "what originally motivated you to want to take actions for a more sustainable future?" and what "currently" motivated them (Tab. 1). General concern about the Earth was very common for both questions (coded *Biosphere/Natural Resources*). But there were several sources of motivations that changed in their prevalence. Nature experiences, learning, school, and sustainable lifestyles played important roles in providing initial motivation but were less important for current motivation. In comparison, motivation based on a concern for the well-being of other people (now and in the future) grew substantially. One example of this shift came from a respondent who stated they

Table 1 Factors which motivated students to "take actions for a more sustainable future"

Motivational Factors (Response Codes)	Originally	Currently
In School	21%	13%
Learning	34%	10%
Experience in Nature	17%	4%
Family and/or Friends	8%	11%
For People	22%	37%
Climate	21%	19%
Biosphere/Natural Resources	40%	35%
Lifestyle	22%	7%

were initially motivated by "my love of outdoor pursuits and natural environment." They continued to explain that their motivation has since evolved to "making sure there is a stable environment for generations to come and the preservation of life and quality of life." Similarly motivation evolved from a focus on personal behaviors (coded *Lifestyle*) to a focus on concerns with social justice and other societal level concerns (coded *For People*).

Experiencing and Addressing Setbacks All but one of the respondents noted that they had faced at least one setback in their experience as sustainability change agents. The most common type of setback (40%)

occurred when they led sustainability projects that stalled or failed, because of "apathy from my peers", "resistance from the university officials" or a "lack of resources". The other main type of setback came from society, e.g. "a lack of people wanting to participate or hear about sustainability." These episodes unsurprisingly generated negative feelings (61%), in particular feelings of futility (22%); the respondents noted, for example, "I feel powerless to make change." But nearly all used the open-ended questions to describe how they were ultimately able to overcome these setbacks (codes in italics). The most important ways were *gaining support from others* (50%), *intrapersonal factors* (47%), *developing new knowledge or skills* (34%), *persisting regardless* (27%), and *trying new approaches* (e.g. looking for a new source of funding) (24%). The intrapersonal factors include a wide range, with the three most commonly mentioned elements comprising (in their own words) "my passion for sustainability", "maintaining a positive attitude", and a variety of self-care tactics.

Maintaining Motivation When asked to reflect more generally on what enabled them to overcome their setbacks, *support from others* played a critical role (50%). The respondents also specified having learned better how to gain that *support from others* (26%), improve their *intrapersonal skills* (41%), and when and how to try *new approaches* (27%), all in the service of staying motivated. Finally, respondents were asked "What support from college staff (e.g. advisers, professors and others) would help you stay motivated for sustainability actions?" Respondents had a wide range of ideas including, better *advising* (e.g. career paths or campus sustainability projects) (55%), *more resources* (e.g. seed grants, organization funding) (40%), and *university level commitments* (e.g. climate pledges, faculty engagement) (30%).

Discussion

This study aimed to explore what motivates students to be a change agent or a Sustainability Change and more importantly, the motivations to remain a SCA in the face of setbacks.

The sources of motivation of SCAs are at first glance not surprising overall, as they reflect similar concepts that have been found regarding sustainable behaviors, and educational motivation. However, the change between original and current motivations reveals important differences as sources of motivations evolved from more of a focus on nature, learning, and individual behavior to a more social view. This shift and evolution in motivational factors reflects students perceptions of sustainability: In their framing of sustainability and explanation of sources of motivation, students emphasize social justice and equity and add structural change to individual behavior change. Students evolving emphasis reflects similar results from a recent Delphi Study arguing that values-thinking competency, i.e., the ability to collectively map, specify, apply, reconcile, and negotiate sustainability values, principles, goals, and targets as well as trade-offs, should serve as a lead-competency in the framework of key competencies in sustainability (Brundiers et al., 2021).

Moreover, students' evolving emphasis reflects the interdependence of social and ecological systems and thus connects the literature on KCS with other significant traditions that focus on justice in coupled human-environmental systems, showing ways to reconcile related but siloed approaches. For instance, related to environmental justice and sustainability, (Agyeman & Mcentee, 2014, p. 188) found increasing numbers of experts see "linkages between environmental justice and sustainability, conceptually, movement-wise and public policy- and planning-wise", however, "many people do not". The shift in students' perception draws some hope that through their work, they might help address this last piece. Similarly, centering values-thinking competency reflects proposals to better align sustainability with

indigenous environmental justice. McGregor et al. (2020)show how including indigenous legal orders, knowledges, principles and values, centrally among them reciprocity between humans and the rest of the natural world, forms essential links. Students' reported shift and evolution in motivational factors also reflects aspects of the theoretical model proposed by Bouman et al. (2021) on pathways leading to prosocial and mitigative actions to address sustainability crises. This information is helpful for educators as they need to be aware of this shifting and evolving motivation within their students / the SCAs among them and adjust their educational offerings accordingly.

Much of sustainability/environmental education emphasizes nature experiences, facts about the many sustainability challenges, and a focus on adjusting personal behaviors (Redman & Redman, 2017)—these were indeed very relevant for motivating SCAs initially. As active SCAs, however, these factors became less important sources of motivation. Instead, the need to support people and influence society to operate justly within the Earth's boundaries became more predominant. While nature-based experiences are a powerful tool for sparking initial motivation in students, those who already self-identify as sustainability change agents need broader sources of motivation and desire the skills to maintain motivation. In supporting students seeking to deepen their connection to nature, instructors might for example raise awareness that access to nature and deep nature experiences remains mediated by racism. Discussing how to address this issue connects with students evolving shift in motivational factors and allows to delve deeper into the planning, implementation, and intra and interpersonal competencies required to co-create jut and workable solutions. Facilitating an increased understanding of the complex cause effect chains and students roles in taking responsibility supports one of the antecedents of personal norms, which in turn can promote prosocial action and thus further cultivate motivation (Bouman et al., 2021).

Motivation is of such core interest for the development of Sustainability Change Agents because they will need to maintain it in the face of regular set-backs and opposition (both implicit and explicit). And indeed our data found that among self-identified SCAs, all but one were able to identify at least one setback, with 64% citing multiple ones (despite 75% of them being between only 18 and 22 years of age). The feelings generated by these setbacks and the solutions ultimately deployed to overcome the challenges suggests that a focus on developing inter- and intra-personal competencies is critical. Real world and applied problem-solving and project-based courses (Konrad et al., 2020), which involve collaboration with decision-makers, professionals, or community members on actual sustainability change and the conflicts these situations engender, could be particularly potent for developing these skills. Reflective and contemplative activities—in classes and during advising meetings—can contribute to learning about transformative and emancipatory practices on the one hand and how to cultivate hope, resilience, and emergence on the other hand as both are necessary to foster the dual abilities of 'motivating oneself and maintaining that motivation' needed for being a successful SCA (Movahed, 2020; Neff, 2021; Papenfuss et al., 2019). Giving students a chance to experience setbacks in a supportive setting may be crucial to their learning as studies have shown that experiencing and resolving conflict can play a major role in fostering competencies (Konrad et al., 2020). Additionally, educators can try to highlight examples of shared prosocial motivation by discussing case studies that detail how many individuals deeply care about the lives and things that are affected by global environmental crises and that these individuals, including representatives of government and private sector, strongly support mitigative actions. Such case studies nourish motivation helping students believe in their outcome efficacy (Bouman et al., 2021). These examples also illustrate the link between individual behavior change and structural change.

By more closely aligning educational offerings with students' shifting sources of motivation, educators have an opportunity to both re-enforce students' motivations to be SCAs and improve their engagement with the course's material.

Even beyond the formal educational program and courses, higher education institutions have clear opportunities to help build the motivation of SCAs. Indeed, empowering students to be leaders in sustainability on campus has been successful as a university level strategy in numerous cases (Barlett & Chase, 2013) but it is also crucial for preparing successful, future SCAs. As students, in relatively safe settings, SCAs face real headwinds, which can be even more discouraging for the SCAs when it feels "like you're alone in a fight." The social setting of supportive peers has been shown to be instrumental in fostering behavior change (Redman & Redman, 2017), and our results suggest it is also vital for supporting the continued motivation of SCAs over time. Finding groups of like-minded people with whom to connect was the most important way in which the SCAs were able to maintain their motivation to make change.

Considering the cross-cutting role of intra-personal and inter-personal competencies for collaborative sustainability problem solving efforts it will be important for educators and staff alike to remind ourselves to differentiate among the various roles for change agents involved with transformative culture change for sustainability and support students in finding a role that they are ready to take on at this point in time. Additionally, to honor how students identity as a SCA intersects with other aspects of their identities, as articulated in the concept of intersectionality (Crenshaw, 2017), and how students unique experiences with discrimination, privilege, and unsustainability informs their approaches towards transformative change for sustainability.

Conclusion

Motivation and the ability to maintain that motivation in the face of adversity is a crucial skill that sustainability change agents require in order to facilitate the needed sustainability transformations. This research offered some initial explorations on this topic but much remains to be done. For starters with this understanding, universities can direct greater resources towards building social support networks between students and staff/faculty alongside the pathway of a student through their degree program and beyond. We suggest the following as a starting point. **Academic advisors** provide admissions materials that go beyond including statements regarding the institution's commitment to sustainability/the Sustainable Development Goals and sustainable development as the process leading towards it to include their efforts at promoting justice, diversity, and other intersectional commitments. At Orientation, they share information on how to get involved in campus sustainability projects and introduce the **Sustainability Office staff**. Throughout the four year program, **academic and career advisors** connect students to SCA role models and possible career pathways, including network contacts. Similarly **student life/housing/dining staff** provide focus on building social support in residential settings. Most importantly, **Human Resources** needs to include sustainability knowledge and practices into the job descriptions and performance appraisals of each of the areas to institutionalize these changes[1]. **Alumni and sustainability organizations** off campus (UNMGCY, IISP, NWF Ecoleaders) can create connections with career advisors and student groups to help to connect them to sustainability employers for

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[1] "Call to Action on Integrating Sustainability into Job Descriptions and Performance Reviews"
https://www.aashe.org/wp-content/uploads/2019/07/Updated-HEASC-Call-to-Action-Sustainability-in-Job-Descriptions-and-Performance-Reviews.pdf

recruitment and to outside sustainability organizations and networks for ongoing support and skills development.

Second, additional research is need to generate more knowledge on: Sustainability change agents in relation to other change agents involved in the ecosystem surrounding transformative change for sustainability. SCAs are often called for and referred to, but specifically, the empirical basis remains vague, and many of the proposed theoretical frameworks lack empirical support. Research questions could explore for example whether the proposed KCS of SCAs are utilized and it what ways to drive actual transformations. Additionally, research on motivation specifically as it relates to SCAs as they move into the workforce. Anecdotal evidence suggests a high burn-out rate by many young professionals in the field, stories of which sparked this current research. This points to the essential nature of intrapersonal competence for success in sustainability; no matter how great your systems thinking or amazing the strategies you develop if an individual does not have a strong sense of personal identity, the skills to support their own well-being, and the motivation to make change, they will not be able to facilitate the sustainability transformations they once dreamed of leading.

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Appendix A

Survey Instrument

Name: _____

I see myself as a sustainability change agent.

Choose one of the following answers
Please choose **only one** of the following:

- ☐ Very Strongly Agree
- ☐ Strongly Agree
- ☐ Agree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Very Strongly Disagree

Please explain your answer here:

What originally motivated you to want to take actions for a more sustainable future?

What motivates you right NOW to take actions for a more sustainable future?

Reflect on set-backs you have experienced regarding your sustainability actions:
(Please fill in a row for each experience. You do not need to fill in all the rows.)

Describe the set-backs you have experienced in your sustainability actions.	How did these set-backs affect your motivation?	What enabled you to overcome these setbacks (e.g. your own knowledge/skills/attitudes, other people, circumstances, etc.)?
1.		
2.		
3.		

Reflect on your experiences with setbacks and any learning you did or support you got that helped you to deal with them.

    a)   In dealing with setbacks, what have you learned which helped you stay motivated?

    b)   What would you still like to learn about how to stay motivated for sustainability actions?

    c)   What support from college staff (e.g. advisers, professors and others) would help you stay motivated for sustainability actions?

Which do you identify with?

☐ Male

☐ Female

☐ Other

Age: _____

What best describes your current degree program?

☐ Bachelors

☐ Masters

☐ PhD

☐ Other:_____

What year do you expect to graduate: _____

What is the name of your degree program?

_____

We would like to send you a scanned copy of what you wrote.

Email: _____

☐ Check if we may follow-up with you with additional questions

Do you consent to participating in the research?

By turning in this reflection you agree to participate in this research study. Your name will be replaced with an ID code in your results and will be kept in a separate file and not used in any part of the analysis or shared with anyone outside of the project.

If you have questions, concerns, or complaints, you are encouraged to contact Aaron Redman aaron.redman@asu.edu or the principal investigator Dr. Arnim Wiek arnim.wiek@asu.edu.

This research has been reviewed and approved by the Social Behavioral IRB. You may talk to them at (480) 965-6788 or by email at research.integrity@asu.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.