Chapter   Knowledge and Action

Advancing Sustainable Production and Consumption through Practice-Research Engagement

Vanessa Timmer[i], Emmanuel Prinet[ii], Dagmar Timmer[ii] and William E. Rees[ii]

[i]*Associate, Sustainability Science Program, Kennedy School of Government, Harvard University;*
Executive Director, One Earth Initiative Society – vanessa@oneearthweb.org
[ii]*One Earth Initiative Society*

Abstract:
Advancing sustainable consumption and production patterns is a complex challenge that benefits greatly from strong ties between knowledge and innovations in practice. This paper explores the role of practice-research engagement (PRE) in the complex social problem-solving required in the transition to sustainability. We analyze the existing literature on the role of PRE in the context of sustainable consumption and production (SCP) efforts, particularly in providing a more systemic understanding of SCP, supporting societal transformation and democratizing the process of knowledge creation. What are the identified challenges in working across practice-research differences, such as dealing with power relations? What are the specific challenges and opportunities in knowledge-action engagement in the field of sustainable production and consumption? We outline the effective approaches for bridging research and practice, and illustrate the concept and challenges with SCP projects and three examples – the UN Marrakech Task Force on Education on Sustainable Consumption, SPREAD Sustainable Lifestyles 2050 in Europe, SWITCH ASIA, and the North American Sustainable Consumption Alliance and related North American initiatives. The resulting analysis contributes to an advancement of both PRE and SCP literatures and action for social change towards sustainability.

1   Introduction

There are a growing number of initiatives aimed at transforming the materials economy, with some involving stakeholders active in the trenches of consumption and production systems alongside those who analyze these systems. The Sustainable Apparel Coalition, for example, is a coalition of policy-makers, companies, and workers who are collaborating with academics to understand and to transform the apparel industry.[1] This project depends on the active collaboration among those engaged in knowledge production and those engaged in innovating through practice. There are multiple stakeholders involved in any value chain (Akenji and Bengtsson 2010) and advancing sustainable supply chains is just one aspect of transforming how and what we consume and produce. The unprecedented scale and scope of

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[1] Sustainable Apparel Coalition - http://www.apparelcoalition.org/

the transformation of our economic systems, communities and lifestyles and the complexity of this challenge require a level of knowledge production and continuous learning from action. In other words, it requires bridging between research and practice. Those focused on advancing sustainable consumption and production would benefit from insights from the practice-research engagement literature in designing and implementing the interaction among knowledge production and action in effective ways.

This paper begins by outlining how advancing sustainable production and consumption patterns can be defined as a complex challenge that requires collaborative problem-solving among actors with diverse perspectives. The subsequent section outlines the characteristics of practice-research engagement including core methodologies and principles, and identifies various costs and benefits in bridging research and practice. Building on this foundation, the paper draws further on the work of Brown et al. (2001; 2003) to present a spectrum of four PRE approaches. These range from short-lived problem focused inquiry to long-term field development engagements, and are further defined in the paper with examples of existing sustainable production and consumption studies, projects, initiatives and on-going networks. The conclusion provides recommendations related to the intersection between sustainable consumption and production efforts and joint inquiry and action across practice and research communities.

## 2   Complexity and Sustainable Consumption and Production

The production and consumption system can be understood as the aggregate of all economic activity that guides the provision of goods and services that move through our lives and sustain us. By its very nature, sustainable consumption and production focuses on the root causes of unsustainability – how and why we consume and produce things – rather than on social and ecological symptoms, such as poverty, exclusion, climate change, pollution, and water scarcity. It emerges from our needs and values, which determine what we produce and consume, and how much, and is shaped by a variety of factors, including lifestyles, economic and market forces, social and technological innovation, belief systems, institutions and infrastructure. This system is unsustainable on both social and ecological fronts, as the way we currently extract resources, transform matter and energy into products and services, and create waste, is undermining lives and livelihoods as well as our planet's life-support systems (Wackernagel and Rees 1996; WWF 2012; UNEP 2012).

The concept of sustainable consumption and production (SCP) is a whole-systems approach through which to consider the practical means of aligning economic systems to meet the needs of current and future generations within the ecological life support systems of the Earth (Lebel and Lorek 2008). It examines our needs and values as a society, and applies a lifecycle and value-chain perspective to the production and consumption of goods and services, and includes categories such as, for example, food systems, the building sector, households, infrastructure, transportation, and consumer items.

The overarching goal of sustainable consumption and production needs to be defined in the context of a fair and socially just economic system that meets the needs of all people while maintaining the natural systems that support life. Transforming current production and consumption patterns into sustainable ones requires fundamental changes in how investments are made, natural resources are extracted and in the way products are produced, marketed and distributed, used and disposed of. Essentially, it requires rethinking of the dominant economic system away from a focus on constant growth in material and energy throughput (Victor 2008; Jackson 2009). Action is needed at all geographical and political scales, as

well as at all levels of society, including government, business and civil society. These actors need to work together to establish the structures through which sustainable patterns of production and consumption arise.

Figure 1: Levels of SCP Action
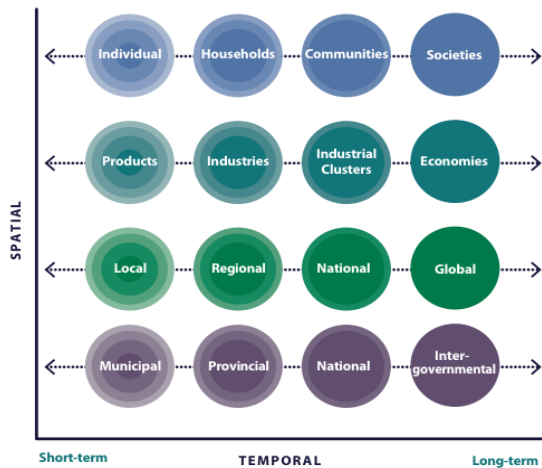
There are multiple "entry points" into the production and consumption system, all of which offer opportunities to affect the dynamics of the system by acting on leverage points at different levels (see Fig. 1). These levels all offer potential for feedback loops, tipping points, and also unintended consequences (which can be positive or negative). One needs to consider scale (quantity), pace (throughput; rate of extraction; longetivity / durability / amortization), renewable / non-renewable resources, geographical scope, time horizon and system dynamics (Prinet et al. 2010).

Advancing sustainable consumption and production is an inherently complex problem (Anarow et al. 2003). It is a systemic challenge, which means that it is composed of interacting, interrelated, and interdependent components that form a complex and unified whole. If we approach the system from the level of the household, for example, these components include the individuals within the household with all their complex behaviours, mental models and consumer choices, as well as the physical infrastructure of the household. The household system is also embedded, or nested, within many other complex systems including systems of social networks, communities, transportation systems, global supply chains, and of institutional rules, norms, and worldviews (Timmer et al. 2009; Tukker et al 2010).

Sustainable production and consumption is also complex because the parts of the systems interact in dynamic ways. How does the system change over time? How do the component parts work together, influence each other? Because of their complex interdependence, the interactions of system components often lead to patterns of behaviour and events which can be unexpected and difficult to predict. To better understand the production and consumption system, it is useful to draw from the field of systems thinking, which focuses attention on relationships, patterns and trends amongst systems parts, rather than on the individual parts themselves, and on the long-term and short-term impact of actions (Meadows 1999; Anarow et al. 2003).

The benefits of adopting a systems thinking approach to advancing sustainable consumption and production include finding effective, efficient, enduring solutions to complex problems. By creating a more accurate picture of the reality of a problem, it is possible to avoid unintended consequences, to identify a wider set of alternative solutions, and to determine priorities for action. There is also an economic benefit for adopting an integrated approach, as unintended consequences and failed or duplicate interventions can be

costly to any actor seeking to influence a system in terms of avoiding administrative and transaction costs.

Some of the complexity behind a system such as sustainable consumption and production can be clarified by talking about this system through the communities of practice that constitute it (Barber and Luskin 2012; Barber 2007; Prinet et al. 2010). "Community of practice" is a term coined by cognitive anthropologists Jean Lave and Etienne Wenger, and "describes a group of people who share an interest, a craft, and/or a profession. The group can evolve naturally because of the member's common interest in a particular domain or area, or it can be created specifically with the goal of gaining knowledge related to their field" (Lave & Wenger, 1998). These groups of communities form around a specific practice which targets one of the leverage points of the sustainable consumption and production system (see diagram).

Figure 2: Sustainable Consumption and Production Actors and Networks
(Source: Prinet et al. 2011)

What is interesting to note is that the diverse and seemingly unrelated groups, networks, individuals, associations and organizations working at all scales on these issues are united by the fact that they target a particular component of the production/consumption system—even though they may not self-identify as being part of such a movement. In his book *Blessed Unrest,* Paul Hawken (2007) documents some of the thousands of groups and initiatives organized for progressive change that exist and are emerging in North America, as in the rest of the world. However, this movement—and in particular the one addressing consumption and production—is still very much invisible to itself. Barber (2007) suggests that "only a small part of the population sees themselves as part of this movement, including many of those actively involved in creating it" (p. 5), and informal consultations with sustainable consumption and production experts and practitioners would confirm this view. In the context of sustainable consumption and production, analyzing communities of practice is an effective way to find commonality in a movement that is otherwise very diverse in terms of the actors undertaking the activities, the scales at which initiatives and projects are taking place, the variety of tools that organizations use to achieve their respective goals, the underlying assumptions under which each group operates, the jargon and vocabulary that is distinct to each community, and the themes and particular focus areas that drive the members' activities.

Building bridges across these different communities is critical not only for improving each communities' capacities to achieve its own goals, but also for collectively advancing the broader goal of transforming consumption and production patterns towards sustainability. Complex challenges benefit from diverse communities bringing their resources to bear on the problem. In fact, difficult problems, such as shifting how we produce and consume, can often not be addressed by individual communities acting on their own. They require collaborative problem-solving to co-develop an understanding of the whole system and effectively act to shift the problem. Each community only perceives one fragment of the whole picture, but together through dialogue and facilitated interaction a big picture reveals itself and informs strategic intervention points. There are many boundaries among actors within the consumption and production communities of practice that need to be spanned, including across sectors, geography, culture, gender, age, issue area, guiding assumptions, and across research and practice. Valuable insights can emerge from joint inquiry and action between researchers, with their deep knowledge and conceptual frameworks, and practitioners, with their expertise and experience in innovation in practice. In order to support this research-practice boundary spanning, the sustainable production and consumption movement can be usefully informed by the emerging literature on 'practice-research engagement' (PRE). The next two sections of this paper review the emerging PRE literature in order to shed light on how these collaborations can be effectively arranged.

3 Practice-Research Engagement (PRE)

Researchers and practitioners both commit their efforts towards solving difficult problems and often share concerns and values; however, they frequently approach these problems in very different ways. Stereotypically, researchers engage in long-term, systematic efforts to develop new knowledge and theoretical frameworks. Practitioners, on the other hand, are focused on more short-term, immediate and concrete action and results, and spend less time developing concepts and more on ensuring impact. The reality is less black and white as this suggests. Some researchers are also engaged in solving practical problems, and some practitioners are interested in reflective knowledge building. However, the institutional contexts within which researchers and practitioners operate often reward their traditional focus and approaches. When these two communities come together to address a problem, there can be misunderstanding and conflicts of interest and perspective; however, there is also

the possibility for breakthrough solutions that neither community could arrive at separately. The term 'practice-research engagement' refers to collaborative endeavours of joint inquiry by practitioners and researchers aimed at difficult problems. If done well, the result can be both new knowledge frames informed and grounded in practical expertise, and new innovations in practice informed by academic understanding.

There are examples of <u>successful PRE initiatives</u> that bring practitioners and researchers together in effective ways. For example, micro-credit schemes developed by the Grameen Bank, the Self-Employed Women's Association in India, grassroots capacity building and adult education in Brazil, and transnational coalitions influencing the World Bank are all examples of relatively successful PREs (Brown et al. 2001). These initiatives draw on a range of <u>methodologies</u> that support joint activities between researchers and practitioners. For example, participatory rural appraisal engages local community and grassroots groups in data collection and knowledge generation in collaboration with more formalized knowledge based institutes. With participatory action research methods, local and community groups are also empowered and mobilized through their engagement in these initiatives. Other methods that bridge research and practice include action research, collaborative inquiry, action science, and appreciative inquiry (Brown et al. 2001: 35-36). Effective methods for evaluating PREs take into account the complexity and dynamic nature of these initiatives. For example, developmental evaluation techniques allow for adjustments to initial objectives and activities based on experience and iterative learning among the parties involved (Westley et al. 2006).

It is important to note that practice-research engagement is not simple or straightforward. Some confusion and conflict arises from differences of culture and approach of researchers and practitioners. For example, practitioners may be operating with a greater sense of urgency and a greater need to move from concept to action; whereas, researchers may find their 'neutral, non-biased' analysis challenged by the activism of practice. Some issues emerge because there are real <u>costs</u> associated with engaging in PREs. The levels and intensity of involvement required is often more significant than initiatives undertaken by researchers or practitioners separately, particularly as these investments in PREs are essential to build the necessary trust among participants. The institutions in which the participants are embedded can establish barriers through their rules and existing incentive systems. The PRE can also be subject to closer public scrutiny if a PRE attracts attention with their more inclusive approach. At the same time, the <u>benefits</u> of PREs are significant as well. Practitioners who are grappling with critical questions that arise from their practice are connected with those who investigate these issues and provide new and rich conceptual frames and knowledge. Practitioners can make use of this research in establishing credible arguments for their work. In fact, a PRE can help ensure a level of public accountability and support for an approach to problem-solving. Researchers can benefit from their PRE interaction by identifying salient windows of opportunity to intervene and influence real-world decision-makers, policy and innovations. Researchers also benefit from the expertise that practitioners bring to bear on the issue based on their experience. They can ground-truth their analysis by testing their ideas in the field. If successful, both practitioners and researchers benefit from their interactions by learning from experience in different settings, setting broader goals for social change, and contributing collectively to solving problems of mutual concern.

Effective practice-research engagements are supported by a set of clear <u>principles</u> that guide interaction. Brown et al. (2001: 38-44) identify six principles based on their assessment of effective PREs which are summarized in Table 1. First, prior to engaging in a

practice-research joint inquiry, it is important to pose the question as to whether the problem at hand requires the time and resources invested. As noted above, complex challenges such as advancing sustainable consumption and production patterns benefit from the diverse resources these two communities offer. New solutions to this type of wicked problem require an integrated approach as neither researchers nor practitioners are able to find effective solutions on their own; however, this benefit needs to be weighted against the dedication of time and resources which these communities contribute. Not all issues necessarily require joint inquiry and action. Second, once an issue is identified as being suitable for a PRE, it is important to bring the right participants into the engagement. These are participants who have the skills and expertise to be able to develop better knowledge and illuminate new aspects of a problem and to define, and even implement, more effective action. It is also valuable to recruit participants who are effective boundary-spanners, and can facilitate collaboration, mediate conflicts and build common understanding.

Third, once the participants are assembled, it is critical to define the objectives of the project and shared values. Whereas practitioners may be predominately concerned with real-world impact, researchers may be focused on the rigor of the knowledge produced. By establishing expectations and purpose from the outset, participants are clear as to which of their personal goals are going to be met through the joint effort, and recognize the validity of the other participants' objectives. Identifying the resources of other participants and developing a common language and terms also supports balancing power differences. Fourth, participants assess the institutional contexts to determine whether they encourage or hinder the PRE through their existing objectives, rules, policies, practices, knowledge flow, and learning systems. The key is to be responsive and adaptive to this context so that bottlenecks and barriers can be overcome.

Fifth, the PRE should value the time and resources of participants effectively through all the phases of a joint inquiry including exploring new ideas and drawing on relevant information, creatively generating solutions, implementing and experimenting with these new approaches, and learning. Ensuring that all participants can fairly engage in this learning and action cycle requires confronting power differences, including control over financial resources and other scarce resources. Democratic dialogue processes have proven to be an effective approach to shifting collaboration towards joint learning as opposed to exacerbating power differences (Gaventa and Cornwall 2001). Sixth, each practice-research engagement can engage in different aspects of a learning cycle from issue identification, through data collection and analysis, through data interpretation and theory building, through practice implementation, through disseminating and monitoring results. It is important to clarify the focus of a PRE and also identifying whether participants will be engaged in multiple iterative cycles of exploration and analysis. Ultimately, these experiments in PRE can also inform future PRE experiments and serve to build knowledge on developing effective PRE processes.

Table 1: Principles for Practice-Research Engagement
(Source: Brown et al. 2001: 44)

1. Choose problems that require the resources of both practitioners and researchers.
   Does understanding the problem require both research and practice perspectives?
   Will PRE foster solutions that involve both researchers and practitioners?
   Do researchers and practitioners recognize the value of PRE enough to accept its costs?

2. Recruit participants appropriate to the problem and the PRE process.
   Do the practitioners and researchers have the knowledge, perspective and position required for this topic? Do they include all the most important views?

Are the participants willing and able to work with and learn from each other?

Can some participants convene and facilitate participant engagement?

3. Establish shared values, goals and expectations for joint work.

What values and purposes provide a shared base for this initiative?

What expectations and ethics will guide joint work?

What resources and capacities do the parties expect and need from each other?

How will parties construct shared language and terminology for the PRE?

4. Diagnose institutional arrangements that support or retard PRE.

How do institutional arrangements affect PRE participants and process?

What changes will alleviate institutional factors that undermine effective PRE?

5. Organize the engagement process to use participant resources effectively.

What arrangements foster democratic dialogue among researchers and practitioners?

How can power differences be balanced to encourage open discussion, expand existing boundaries, and distribute resources fairly?

How can responsibilities and accountabilities be defined to encourage cooperation?

How can participants be protected against foreseen and unforeseen problems?

6. Learn from the PRE process about the issue at hand and about joint learning.

What sequences of problem definition, data collection and analysis, data interpretation, and dissemination of findings are most important for this project?

What time periods and cycles of learning make most sense for the topic?

How can this process foster learning and lessons about the PRE process itself?

4   PRE Products and SCP Examples

There are a variety of different ways in which practitioners and researchers engage in joint activities and these vary in the scope and intensity of the effort. Brown et al. (2001: 32-35) provide a useful spectrum of four PRE activities that produce different results. The key characteristics are summarized in Table 1 below, in addition to the advantages and disadvantages of each activity.

Table 2: Comparison of PRE Products
(Source: Brown et al. 2001: 34)

PRE Products	Key Characteristics	Advantages	Disadvantages
Solve Puzzles	Provides answers to well-defined problems	• Makes efficient use of comparative advantages of parties • Does not require expensive ongoing relations	• Wastes resources if initial diagnoses is over-simple • Produces poor results if puzzle wrongly defined
Identify Issues	Brings multiple views for understanding complex, ill-structured problems	• Allows many voices to identify issue patterns and implications • Sets stage for wide participation in problem-solving	• Diversity can produce incoherent results • Escalates conflicts among parties over problem definitions
Assess interventions	Analyzes, improves and documents quality of interventions and best practices	• Evaluates and improves existing programs • Identifies costs and benefits of possible solutions • Clarifies best practices	• Focuses on existing activities • Overemphasizes "one best way" • Focuses on problem-solving at expense of

PRE Products	Key Characteristics	Advantages	Disadvantages
		for intervention	deeper understanding
Develop Fields	Long-term co-inquiry to build perspectives, theory and practice in new domains	• In-depth analysis over longer term of poorly-understood problems • Produces new paradigms for intractable problems • Fundamental changes in theory or practice	• Uses many resources for long-term inquiry • Possible cooptation of researchers or practitioners

At one end of the spectrum, practitioners and researchers engage in <u>puzzle-solving</u> focused on a well-defined problem for a specific, short-term period of time. Those engaged in these initiatives are not investing in building long-term relationships but are efficiently investing their time, expertise and resources. They are focusing their combined efforts on a problem this is relatively well understood and can be addressed with existing knowledge and methods. Disadvantages lie in wasting resources if the problem is simply or incorrectly defined.

One example of a puzzle-solving endeavour within the sustainable production and consumption field is the <u>UN Marrakech Task Force on Education for Sustainable Consumption</u>.[2] The Task Force engaged in a time-bound initiative to identify specific recommendations on incorporating sustainable consumption issues into formal learning processes considering appropriate links to non-formal and informal education. Both researchers from academic institutions and practitioners predominately from policy making and education communities were engaged and consulted as part of the project. The resulting report outlines key recommendations and guidelines for education on sustainable consumption and is the seed for further projects and collaboration on this issue (Thoresen, UNEP and UN Marrakech Task Force on Education for Sustainable Consumption 2011). This Task Force also builds on the work of a network of practitioners and researchers focused on education for sustainable living, PERL[3] and its predecessor the Consumer Citizenship Network. PERL is a partnership of educators, researchers and practitioners from more than 120 institutions in over 50 countries, and is coordinated at the Hedmark University College in Norway. It aims to advance education for responsible living by focusing on consumer citizenship, education for sustainable consumption, social innovation and sustainable lifestyles.

In certain cases, there are some issues that benefit from being further defined and for which existing research literature and methods may not be sufficient or appropriate. For these instances, PRE for <u>issue identification</u> is a powerful approach to bringing multiple perspectives together to further articulate the definition, structure and implications of emerging topics. Engagement on issue identification can also lead to further engagement by these actors in solving particular problems within that issue area. There are potential problems with this PRE product if the process of engagement exacerbates existing tensions or produces incoherent results that complicate the issue further; however, it can also engage a diversity of actors to collaborate in defining an issue.

[2] http://www.unep.fr/scp/marrakech/taskforces/education.htm
[3] http://www.perlprojects.org

The European Union funded <u>SPREAD Sustainable Lifestyles 2050</u> project on sustainable lifestyles is an example of a sustainable consumption and production initiative that brings researchers and practitioners together to define a particular issue.[4] In this case, SPREAD 2050 is further defining and articulating the topic of 'sustainable lifestyles' by drawing on the multiple perspectives from academia, civil society, business, and policy makers. These different societal stakeholders are collectively developing a vision for sustainable lifestyles in 2050 that addresses the challenge of maintaining and improving quality of life in Europe with reduced energy, transport and resource use while taking the ageing population into account. The participants collectively developed the vision and scenarios of sustainable lifestyles through an online social platform, dialogue and research that brings together the traditionally fragmented insights on sustainable living, moving, consuming and healthy lives (SPREAD 2050, 2012). Through methodologies including cross-cutting research, dialogue, back-casting and sharing best practices, the stakeholders build a baseline understanding on sustainable lifestyles and a shared roadmap for policy making, action and innovation. There were differences in perspective between some researcher and practitioners in terms of approaches and decisions as to which stakeholders should be invited as participants on the project. The project is benefitting from the interaction among these communities in articulating the concept of sustainable lifestyles and defining promising areas for innovation in practice.

PRE engagements can also be established in order to <u>assess interventions</u> for efficacy. Analyzing best practices and innovations for their impact and quality provides insight which can clarify and improve future innovations and programs in a field. These assessments can also lead to the development of more effective theoretical frameworks, knowledge, practices, campaigns, organizations and solutions. Challenges exist when evaluation processes overly focus on one activity or overemphasize a best practice as the 'one best way' to address a challenge. Instead, intervention assessments should aim to engage a range of actors in a deeper analysis of the issue, identify best practice and alternative strategies, and evaluate the costs and benefits and the value of innovations. This PRE is aimed at identifying change theories and assessing their effectiveness. Due to the complexity of sustainable consumption and production innovations, intervention assessment PREs benefit from evaluation approaches such as "participatory evaluation" (Estrella 2000) and "developmental evaluation" (Patton 2011) which embrace this complexity and engage multiple actors in evaluation.

A useful approach to assessing interventions is to establish a formal institutional structure within an initiative that has the mandate to facilitate evaluation and circulate findings among project participants. The Network Facility within the <u>SWITCH Asia</u> sustainable consumption and production plays this role within this SCP project.[5] SWITCH Asia is a EU funded programme which aims to promote SCP within Asia by working on the ground with projects that target producers and consumers and by formulating and implementing SCP-related policies. The Network Facility assesses the effectiveness of projects within the SWITCH Asia programme and networks and connects project, policymakers and stakeholders for communication and knowledge sharing. The Network Facility analyzes projects to distil lessons learned, identifies synergies, links projects to regional activities, and promotes effective replication and mainstreaming (e.g., de Vera, Mitin and Tunçer 2011). The reports and workshops produced by the Network Facility provide a consistent assessment of the project practices that enables learning as the program evolves.

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[4] SPREAD Sustainable Lifestyles 2050 website - http://www.sustainable-lifestyles.eu; See also Mont et. al. (2012)
[5] http://www.switch-asia.eu/switch-info/network-facility.html

There is a fourth type of practice-research engagement – <u>field development engagements</u> - which is appropriate in the case of underdeveloped issue areas that lack the knowledge and practice to assess interventions. In this instance, the entire field is open for the co-development of new knowledge and strategic direction that can have a large impact on the way researchers and practitioners understand and act within a field. This approach requires a significant contribution of resources and can sometimes lead to a blurring line between research and practice and the possibility of cooptation. The benefits of field development engagements lie in their rigorous exploration of a field. This practice-research engagement is particularly appropriate for poorly-understood and emerging issues.

In North America, an informal coalition of academic institutions and practitioner organizations have coalesced around sustainable consumption and production under the banner of the <u>North American Sustainable Consumption Alliance</u> (NASCA). In October 2001, the Lowell Center for Sustainable Production at the University of Massachusetts Lowell hosted NASCA's inaugural meeting. In the late 1990s, the founders, along with several like-minded colleagues and organizations, recognized the potential of creating a network or forum made up of a broad spectrum of organizations from the public and non-profit sectors at every level as a mechanism to foster progress towards sustainable consumption and production in Mexico, Canada and the United States. One of NASCA's core programmes is developing a North American Sustainable Consumption and Production (NASCP[6]) database in an effort to facilitate cooperation among organizations in these three countries, and to be used as a resource by citizens to learn about projects and initiatives they can join, support or replicate in their community, funded by government, institutional, academic and not-for-profit organizations. Related initiatives include the International Coalition on Sustainable Production and Consumption launched in 2001 and the North American Roundtable on Sustainable Production and Consumption launched in 2010. ICSPAC is an international coalition that builds upon working relationships already established through the NGO Caucus on Sustainable Production and Consumption at the UN Commission on Sustainable Development as well as national and regional campaigns on sustainable production and consumption (Barber 2010). NARSPAC is an official UN Partnership as part of the UN Commission on Sustainable Development and seeks to promote dialogue, understanding, and collaboration among different stakeholder groups within North America and with other regions, with the goal of catalyzing the transformation of society to sustainable production and consumption patterns. NASCA, ICSPAC and NARSPAC are examples of long-term engagements among researchers and practitioners to define the field of sustainable production and consumption and take action collectively to advance SCP in North America and internationally.

There are varying levels of engagement and time commitments across the four products of PRE. Solving puzzles, identifying issues and assessing interventions can often be time bound and short-term endeavours, although it is more likely for puzzle solving to require the least amount of time, interaction and intensity. Issue identification and evaluation can engage actors in multiple year engagements between researchers and practitioners. Field development engagements require the longest and largest investment of resources, and can lead participants to self-identify as being central to shaping the field and to belonging to its community.

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[6] NASCP database: http://nasca.icspac.net/db/

5   Conclusion

Given the complexity of advancing sustainable consumption and production, there are benefits in fostering engagements that bridge practice and research. As the previous section outlines, there is a spectrum of approaches to practice-research engagement that vary in intensity and scope of engagement from puzzle-solving to issue identification to assessing interventions to developing a field of inquiry and action. Experiments in bridging these communities, such as the UN Marrakech Task Force on Education on Sustainable Consumption, SPREAD 2050, SWITCH Asia and NASCA, are already underway within the sustainable production and consumption field. There is value in categorizing these initiatives as experiments in PRE as the initiators can benefit from learning from past PRE efforts in other fields and employ the principles which guide them effectively. In turn, SCP experiments in bridging research and practice can support further development of the PRE literature. There is value in grounding the research in empirical examples and compelling cases of effective practice-research engagement as this enables both practitioners and researchers to break down the institutional barriers and perceptual divides between these communities. Questions remain as to which topics within the field of sustainable consumption and production benefit most from PRE. Possible topics which would benefit from exploration include analyses of the role of values and behaviour change in consumer behaviour, choice editing, collaborative consumption, sustainable design, eco-industrial networks, and sustainable procurement in advancing sustainable consumption and production, the distinction between green consumerism and sustainable consumerism, and the development of a systemic framework for sustainable production and consumption.

The newly formed Global Research Forum on Sustainable Production and Consumption can play a significant role in serving as a forum for the SCP research community and in facilitating connections from research to practice. The SCP research community's analyses can support the efforts of practitioners, and practitioners, in turn, can suggest research questions and avenues of inquiry that can benefit from rigorous academic investigation. Joint practice-research collaborative projects can also emerge which benefit from the expertise of both academics and actors in the field. The GRF on SPC can also serve as the research arm for long-term practice-research engagement on shifting consumption and production patterns. There is an emerging consensus that advancing SCP patterns requires a transformation in the dominant societal paradigm (Rees 2009; WWF 2012; UNEP 2012). Major transformations are more likely to result from long-term field development collaborations among researchers and practitioners. The relationships, trust and exchange of expertise can build over time and enable a rethinking of this complex challenge and a shift in practice in consumption and production towards sustainability. The next step is to develop a strategic approach to bridging these communities and to define the guiding principles, capacities and tools for effective engagement across research and practice.

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15