

Background Paper #1

Sustainable Consumption & Production

This paper was prepared as an independent third party contribution to the North American Workshop on Sustainable Consumption and Production and Green Building (31 January – 1 February 2011, Ottawa, Canada) by the One Earth Initiative Society. The analysis and synthesis presented in this paper have been developed by One Earth and do not necessarily reflect the perspectives of the participants of the workshop.

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Summary of key points

The goal of the North American Workshop on Sustainable Consumption and Production and Green Building (31 January - 1 February, Ottawa, Canada) is to have a multi-stakeholder dialogue promoting bi-national collaboration on green building as an important application of international sustainable consumption and production efforts. A number of studies show that three consumption clusters – housing, food and drink, and mobility/transportation -- drive 70 - 80% of the ecological impacts in developed economies, and promoting green building is a high-leverage option to help transform production and consumption patterns for sustainability.

What is sustainable consumption and production?

The production and consumption system is the aggregate of all economic activity that guides the provision of goods and services that move through our lives and sustain us. It emerges from our needs and values, which determine what we produce and consume, and how much. 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 and our planet's ability to sustain life.

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 carrying capacity of the Earth. 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 food systems, the building sector, households, infrastructure, transportation, consumer items, large infrastructure (e.g. waste operations), etc. Shaping and transforming the production and consumption system requires the participation and collaboration of all key actors in society, notably government, business and industry as well as communities, civil society and NGOs, who need to work together to establish the structures through which sustainable patterns of production and consumption arise.

The international community calls for sustainable production and consumption (see section 1.)

- The 1992 UN Conference on Environment and Development identifies unsustainable patterns of consumption and production as the major cause for the deterioration of the global environment
- The 2002 UN Summit on Sustainable Development declares that changing unsustainable patterns of consumption and production is one of the three overarching objectives of sustainable development, along with poverty eradication and protecting natural resources
- The Marrakech Process was established as an informal global multi-stakeholder platform to support the implementation of sustainable consumption and production and the development of the 10-Year Framework of Programmes on Sustainable Consumption and Production (the 10 YFP)

The world's ecological and social trends are worsening (see section 2.)

- Humanity's unsustainable use of the planet's finite renewable and non-renewable resources and destruction of "sinks" has created a state of ecological overshoot at the global scale
- In 2010, it was estimated that the human population used 150% of the resources generated by the Earth in one year. In other words, it takes the Earth one-and-a-half years to regenerate what we use in a year – we are drawing down our natural capital and depleting the resources (fisheries, stable climate, drinkable water) on which human life and biodiversity depend

- If the entire world population were to adopt current North American lifestyles, some five Earth-like planets would be necessary to support these lifestyles
- And recent research and psychological evidence show that additional material wealth above a livelihood threshold adds little to happiness, and is in fact undermining wellbeing
- Nearly a third of humanity still lives in poverty and has yet to benefit from the promises of development and economic growth

Sustainable consumption and production as a solution (see sections 3., 4. and 5.)

- The value of talking about production and consumption is the ability to focus on, and address, the root causes of unsustainability
- Sustainable consumption and production takes a holistic, lifecycle approach to the systems of production and consumption, and seeks ways to reduce, and ultimately reverse, their negative social and ecological impacts
- It offers the means for both the affluent and low-income countries to achieve sustainable development: better and more fulfilling lives and livelihoods within planetary limits
- Changing unsustainable patterns of consumption and production promotes whole-systems thinking along the supply chain and the lifecycle of products, and 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

The importance of whole-systems thinking to identify leverage points and develop effective policies, approaches, tools and instruments for sustainable consumption and production (see section 6.)

- One Earth follows the approach of whole-systems thinking based on the work of systems theorists when exploring the concept of sustainable consumption and production
- Because the conventional, incremental-change approach to sustainability is failing to make sufficient progress in reversing the worsening social and ecological trends, new models, mindsets and metrics are required for systemic and transformative change
- The ‘iceberg model’ is useful in understanding the different levels of intervention, and the associated leverage by acting at any particular level of the system
- High leverage refers to actions taken in a system where a small amount of effort causes large amounts of favourable response
- System levels of intervention include: ‘events’ (specific social & ecological impacts); ‘patterns of behaviour’ (consumption & production patterns); ‘systemic structures’ (production & consumption systems; culture; institutions; policies; rules of the game); and ‘mindsets’ (assumptions; worldviews; perceptions)
- Leverage increases as one moves from ‘events’ (lowest leverage potential) to ‘systemic structures’ and ‘mindsets’ (highest leverage potential)
- Understanding system dynamics can provide guidance as to where to most effectively intervene in the production and consumption system, and offer useful insights into priority action areas where small shifts lead to cascading effects to transform the system to advance sustainable development
- Systems thinking also encourages us to consider the interconnectedness and interdependence of systems, and both short-term and long-term effects, and local and global consequences of individual and collective behaviour

- The systemic and transformative change that sustainability requires compels us to prioritize our efforts at the level of systemic structures and mindsets

Revealing the production and consumption system (see section 7.)

- Sustainable consumption and production is more than just ‘consumption’ and ‘production; it includes intermediary stages that drive and give shape to the overall system, such as ‘needs and values’, ‘investment’, ‘extraction’, ‘distribution and marketing’, and ‘waste and emissions’
- The production - consumption cycle moves through various stages: from needs and values, to investment, to extraction and production, to distribution and marketing, to consumption, to waste and emissions
- A model/illustration of the production and consumption system provides a good starting point to discuss interrelationships among component parts of the system

Communities of practice as a useful way of understanding consumption and production (see section 8.)

- One useful way to talk about and understand sustainable consumption and production is through the communities of practice (a group of people who share an interest, a craft, and/or a profession) that constitute it
- Examples of communities of practice engaged in the production and consumption system include groups of people focused on:
 - (Under ‘needs and values’) Happiness research; local self-reliance; defining and measuring sustainability
 - (Under ‘investment’) Socially responsible investment; subsidy reform; environmental pricing
 - (Under ‘extraction’) Social licensing
 - (Under ‘production’) Industrial ecology; extended producer responsibility; eco-efficiency; corporate social responsibility; cradle-to-cradle; dematerialization
 - (Under ‘distribution and marketing’) Eco-labelling; transport; fair trade; transport
 - (Under ‘consumption’) Voluntary simplicity; downshifting; ethical consumerism; consumer rights and protection
 - (Under ‘waste and emissions’) End-of-life management; zero waste; integrated waste management
- A whole network of actors has emerged around sustainable consumption and production, whether this work is undertaken by government and its agencies, the business sector and industry associations, not-for-profit organizations and grassroots community groups – individually or through various forms of collaboration
- There is strength in the ‘community of practice’ approach: 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 and consumption system – even though they may not self-identify as being part of a movement for sustainable consumption and production

Sustainable consumption and production as a lens (see section 9.)

- The strength of the sustainable consumption and production approach is the systemic lens it provides to examine any particular theme or issue linked to sustainability

- It allows us to see the system as a whole and helps to reveal relationships and connections by exploring each sustainable consumption and production category ('needs and values', 'investment', 'extraction', 'distribution and marketing', and 'waste and emissions') of a sector, for example the building sector

Policy instruments for sustainable consumption and production (see section 10.)

- There are many policy instruments and tools to choose from to affect change and shift consumption and production patterns
- They can be categorized as:
 - **Regulatory instruments** – Norms and standards, bans, caps and emission limits, building codes, etc.
 - **Economic instruments** – Fiscal, or market-based instruments (subsidies, taxes, user fees, green public procurement, bonus systems, emissions trading, etc.), investments in infrastructure that support sustainable consumption and production
 - **Participatory instruments** – Urban planning, public dialogues, policy discussions, participatory budgets, etc.
 - **Voluntary instruments** – Unilateral commitments, negotiated agreements, voluntary setting of targets, voluntary certification schemes, etc.
 - **Informational instruments** – Ecolabels, information centres, websites, demonstration projects, etc.
 - **Educational instruments** – Training, integration of whole-systems thinking in formal and informal education, research, etc.
 - **Organizational/institutional arrangements** – Cooperation schemes, public-private partnerships, agreements between different levels of government, etc.
- The above list is roughly classified in order of decreasing coerciveness, moving from the 'hard' policy instruments that include laws and regulations as well as 'carrots and sticks' (reward/penalize), to 'soft' policy instruments, which include voluntary, non-binding recommendations and guidelines, education (formal and informal), information sharing, and organizational structure
- Often, the most powerful way to use policy instruments, particularly for complex issues, is by combining them – complementing laws and fiscal tools with informational instruments, for example.
- Embracing the inherent uncertainty and complexity of the consumption and production system requires an approach to problem solving and decision-making which is focused on learning and adaptation
- Ideas and solutions need to be developed and "framed" according to their target audiences – emphasizing, for instance, that sustainable consumption and production is an opportunity for better lives and livelihoods, and a healthy and resilient economy

Barriers to sustainable consumption (see section 11.)

- Key underlying factors that have prevented consumption and production patterns to change include:
 - Fragmentation of sustainability initiatives at all scales
 - Inertia in the system (including of habits as well as social and cultural norms; in infrastructure and technologies; etc.)
 - Paralysis in front of tremendous complexity
 - Need for political leadership

- Skewed markets resulting from misplaced subsidies, the externalization of costs , short-term profit seeking, a non-level playing field and entrenched interests
- Misunderstandings around the seriousness of issues
- Unpopularity of proposed measures and policy solutions
- Influence of powerful interest lobbies
- Inability to effectively apply a systems perspective to problem solving
- Too much emphasis on efficiency as a means to reduce material and energy throughput when historically, lower prices brought about by gains in technology and efficiency have led to overall increases and bigger footprints when an overall cap on resource use is not established

Roles of different sectors of society in transforming production and consumption patterns (see section 12.)

- No single actor has the capacity to achieve the scale of change required without the support of others
- A diversity of actors have a role to play in shaping the production and consumption system through their decisions and actions, including governments, businesses, investors, industry, retailers, civil society and non-governmental organizations as well as consumers
- As a group, they can develop a holistic view that allows them to identify the strategic leverage points for change, and work together to develop and apply the right mix of policies that transform structures and mindsets while avoiding a number of paradoxes, constraints and unintended consequences of particular interventions

Sustainable consumption and production in relation to the green economy (see section 13.)

- One of the emerging concepts in political spheres at national and international levels is the idea of a green economy, which appeared as a result of the 2008 financial crisis
- The idea of how to avoid this state of affairs in the future, as well as how to leverage the current situation as an opportunity to simultaneously address a number of other issues like climate change, the food crisis and employment, paved the way for the green economy
- Because the green economy has not yet been defined in terms of what it looks like, how it relates to production and consumption, and how it is different from the conventional economy, it has been interpreted and used in different ways by various stakeholder group
- For some, the strategy to develop a green economy revolves primarily around jobs, technology, innovation and leveraging investment as a means to reduce our impact on the natural world and fight climate change
- Others recognize the fundamental flaws and weaknesses of our current expansionist economic paradigm, and have a bolder and broader vision for the green economy, seeing it as a unifying and overarching concept that calls for the development of a new economic system based on a strong set of sustainability values and which places living within the planet's ecological limits at its core
- One of the key questions that remain to be answered is whether the green economy serves sustainable consumption and production, or if sustainable consumption and production is only one part of the green economy; however, both concepts are stimulating international dialogue on how to advance sustainability and support ecological, social and economic wellbeing

1. World leaders call for sustainable patterns of production and consumption

At the 1992 UN Conference on Environment and Development, Heads of State agreed that the “major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries, which is a matter of grave concern, aggravating poverty and imbalances” (Agenda 21, 4.3), and “to achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.” (Principle 8, Rio Declaration). Commitments were renewed by the world’s political leaders in 2002 at the UN’s World Summit on Sustainable Development, where it was decided that “changing unsustainable patterns of consumption and production” should be one of the three overarching objectives of sustainable development (Johannesburg Plan of Implementation), and the Marrakech Process was established as an informal global multi-stakeholder platform to support the development of a 10-Year Framework of Programmes on Sustainable Consumption and Production (10YFP).

2. Context: A world in crisis

Unfortunately, progress on transforming production and consumption patterns has been very slow, and few governments have delivered on their promises for meaningful change. The alarm bells have been ringing for quite some time: some 1,700 of the world's leading scientists – including the majority of Noble laureates in the sciences – came together in 1992 and issued a “Warning to Humanity”. The introduction states that:

Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about (UCS, 1992).

Today, the world faces unprecedented challenges as ecological and social trends have become significantly worse over the last 20 years, with resulting impacts that include climate change, the collapse of fisheries and the extinction of species, growing economic insecurity, increasing migration, and geopolitical tensions over access to increasingly scarce and expensive natural resources like oil, fresh water and key minerals. Humanity’s unsustainable use of the planet’s finite renewable and non-renewable resources and destruction of “sinks” has created a state of ecological overshoot at the global scale, in a context where nearly a third of humanity still lives in poverty and has yet to benefit from the promises of development and economic growth, and where the affluent aspire to ever-increasing rates of material consumption.

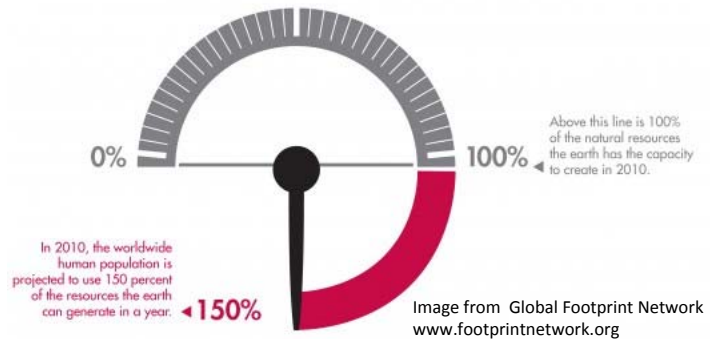
2.1 The ecological state of the world: Footprints and overshoot

Human activity is putting such strain on the natural functions of Earth that the ability of the planet’s ecosystems to sustain future generations can no longer be taken for granted.

- The 2005 Millennium Ecosystem Assessment

The Ecological Footprint is a metric that was developed in the mid-1990s that allows us to calculate human pressure on the natural world. Footprint data shows, for example, that if the entire world population were to adopt current North American lifestyles, some five Earth-like planets would be necessary to support these lifestyles.

But all of humanity is now at risk: at the global level, human economic activity has created a state of ecological overshoot – the gap between the human demand for ecological services and nature’s ability to provide them. In 2010, it was estimated that the human

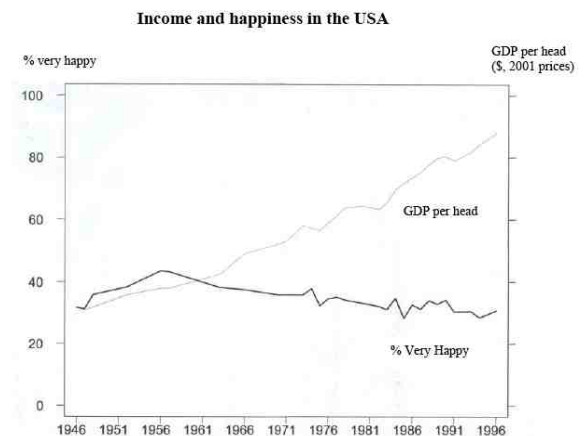


population used 150% of the resources generated by the Earth in one year. This has grave consequences for all sectors of society, undermining the resilience of socio-political systems and economies, and our very ability to meet basic needs in the future by increasing the risk of irreversibly degrading the regenerative capacity of the planet’s ecosystems. As Wolfgang Sachs from the Wuppertal Institute remarked: “The world will no longer be divided by the ideologies of 'left' and 'right,' but by those who accept ecological limits and those who don't.”

2.2 The social consequences of both underconsumption and overconsumption

Inequalities, social injustices and the health impacts of an overstressed natural world plague a vast majority of the planet’s population, and hinder the prospects of a happy, fulfilling and prosperous life for all of humanity as we further delay producing and consuming sustainably. Although ecological overshoot affects everyone in the long term, regrettably, the consequences of eco-degradation are being borne disproportionately by the poor and pose a significant barrier to achieving the UN Millennium Development Goals. Yet underconsumption is only part of the story. While roughly a billion people suffer the consequences of underconsumption,

overconsumption fuelled by consumerism is not only having devastating effects on the biosphere, but recent research and psychological evidence show that additional material wealth above a livelihood threshold adds little to happiness, and is in fact undermining wellbeing. Observations since the Second World War (see Common and Stagl, 2005) indicate that in richer countries like the United States, happiness has declined these past decades as average per capita incomes have continued to rise (see figure on right), to the detriment of the factors that influence subjective wellbeing such as partner/spouse and family relationships, health, friends and the feelings associated with being part of a community.



3. Why sustainable consumption and production?

Moving towards sustainability is a complex and “sticky” problem, and the value of talking about production and consumption is the ability to focus on, and address, the root causes of

unsustainability. As recognized in Agenda 21, the social, economic and ecological problems that humanity faces are in fact symptoms of unsustainable production and consumption patterns; they are the unintended ecological and social consequences of human economic activity and enterprise. Sustainable consumption and production takes a holistic, lifecycle approach to the systems of production and consumption, and seeks ways to reduce, and ultimately reverse, their negative social and ecological impacts. It offers the means for both the affluent and low-income countries to achieve sustainable development: better and more fulfilling lives and livelihoods within planetary limits.

4. Some prominent definitions of sustainable consumption and production

Much like sustainability, sustainable consumption and production – also known by its acronym SCP¹ – is a complex notion, one that is understood and explained in various ways by different groups, depending on their perspectives, knowledge, experiences, culture, areas of interest and what they believe are the appropriate levers to create social change. Below is a sample of definitions that have been developed by individuals, groups and institutions to describe what sustainable consumption and production is and what it tries to achieve.

4.1 1994 Oslo Roundtable on Sustainable Production and Consumption

Perhaps the most cited definition is the one coined at the 1994 Oslo Roundtable on Sustainable Production and Consumption: “The use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations².”

4.2 International Institute for Environment and Development (IIED), 1997

The IIED’s definition explores sustainable production and consumption in the context of supply and demand for goods and services: “The emphasis of sustainable production is on the supply side of the equation, focusing on improving environmental performance in key economic sectors, such as agriculture, energy, industry, tourism and transport. Sustainable consumption addresses the demand side, looking at how the goods and services required to meet basic needs and improve quality of life - such as food and health, shelter, clothing, leisure and mobility - can be delivered in ways that reduce the burden on the Earth’s carrying capacity” (IIED, *Changing Consumption and Production Patterns: Unlocking Trade Opportunities*, 1997).

4.3 Integrative Strategies Forum (ISF), 2008

In *Mapping the Movement towards Sustainable Production and Consumption in North America*, Jeffrey Barber of the Washington DC-based think tank Integrative Strategies Forum, defines sustainable consumption and production as “a system providing for human needs, improving social and economic security and quality of life for all people, including future generations, while protecting the ecosystems upon which human life depends” (Barber, 2008, p. 3). His definition

¹ Although Agenda 21 and many groups have historically put the word ‘production’ before ‘consumption’ when talking about ‘sustainable production and consumption’ (SPAC), UNEP-DTIE, which has taken a lead on this file at the international level since the Johannesburg World Summit on Sustainable Development, has shifted the term to ‘consumption and production’, putting ‘consumption’ before ‘production’ (SCP). It is unclear why this change took place.

² Source: <http://www.iisd.ca/consume/oslo004.html>

emphasizes the systemic nature of production and consumption, and the social and ecological goals it seeks to achieve.

4.4 World Business Council for Sustainable Development (WBCSD), 2008

In its *Sustainable Consumption: Facts and Trends from a Business Perspective* report, the WBCSD indicates that “sustainable consumption and production involves business, government, communities and households contributing to environmental quality through the efficient production and use of natural resources, the minimization of wastes, and the optimization of products and services” (WBCSD, 2008, p.7).

4.4 1st North American Workshop on Sustainable Consumption and Production, 2008

The holistic nature of sustainable consumption and production, and the necessary systemic approach, is acknowledged in the Background Paper #1 that was prepared for the first North American Workshop on SCP held in Washington DC in November 2008. The paper presents sustainable consumption and production in the following way:

At its most expansive, SCP encompasses a broad spectrum of activities such as efforts to: increase the consumption rates of those struggling to fulfill their life-essential needs; improve social equality; develop economic measures that capture societal well-being in addition to gross domestic product; modify consumer behavior and material aspirations; reduce the environmental footprint of products and services; improve urban planning; and rethink the design, production, distribution, and utilization of entire systems (p. 4).

5. The sustainable consumption and production agenda

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 within the ecological carrying capacity of the planet. Changing unsustainable patterns of consumption and production promotes whole-systems thinking along the supply chain and the lifecycle of products, and 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. This requires rethinking the economic system as a whole, and action is needed at all geographical and political scales, as well as at all levels of society, including government, business and civil society. In its *Blueprint for European Sustainable Consumption and Production* (2008, p. 3) report, the European Environmental Bureau summarizes the types of changes that will help transform unsustainable patterns of consumption and production:

Where in the past, we focused more on wealth, growth and efficiency, the future will need to be about well-being, quality and sufficiency. The [sustainable consumption and production] agenda is hence about nothing more, and nothing less, than an intelligent and controlled transition to living better and more equally, within planetary limits, which requires fundamental changes to our historical approach including:

- Living within limits
- Shaping a sustainable *society*, not a sustainable *consumer*
- Addressing the public as citizens in society, not simply as consumers

- Addressing production *and* consumption
- Creating the systems that lead to sustainable behaviour

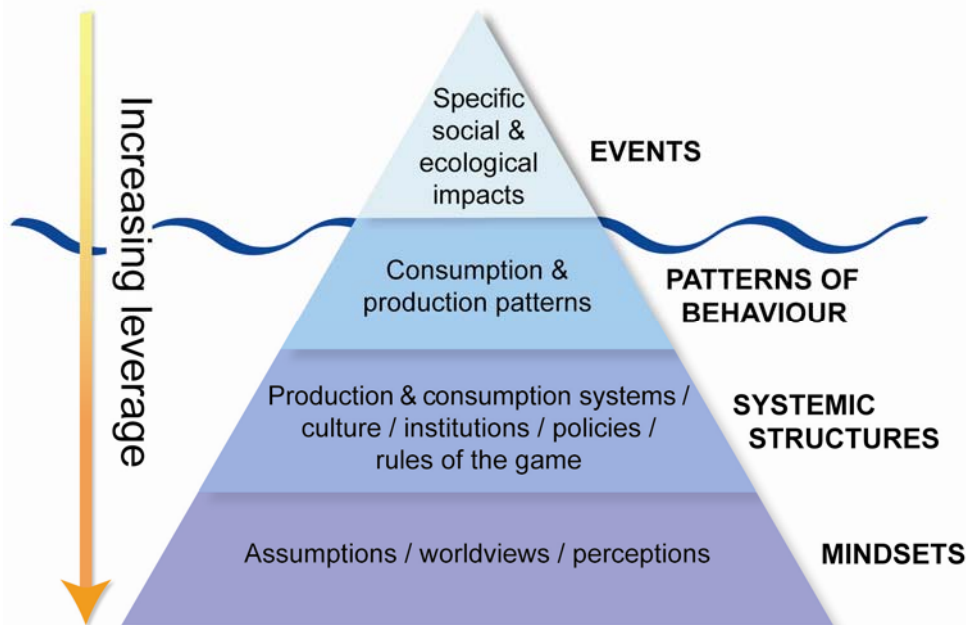
6. Systems thinking and leverage points

We cannot solve our problems with the same thinking we used when we created them.

- Albert Einstein

One Earth follows the approach of whole-systems thinking based on the work of systems theorists when exploring the concept of sustainable consumption and production. The late systems analyst Donella Meadows inspires many with her articulation of systems thinking, particularly as it pertains to sustainability. Her insights are invaluable in understanding how change happens, and importantly, how to advance systemic change by identifying and acting upon specific leverage points, which she defines as “places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything” (Meadows, 1999). Because the conventional, incremental-change approach to sustainability is failing to make sufficient progress in reversing the worsening social and ecological trends, business-as-usual is no longer an option, and new models, mindsets and metrics are required to guide action for systemic and transformative change. Setting up the conditions to achieve the scale of change that humanity needs to attain over the next decade requires a good understanding of consumption and production’s leverage points to guide the development of effective policy instruments and approaches to act on those levers.

The ‘iceberg model’, below, adapted from Meadows’ work and the work of other systems thinkers, is useful in understanding the different levels of intervention, and the associated leverage by acting at any particular level. It uses the metaphor of an iceberg to illustrate the relationships between the “visible” social and ecological impacts we wish to change – the events – and the various “invisible” sets of drivers (those that are below the water line) that are responsible for those impacts – patterns of behaviour; systemic structures; and mindsets.



6.1 Events

Events are the visible part of the iceberg; they are the specific social and ecological impacts that we see and/or experience and wish to change that occur at a particular moment in time, such as a forest fire, a homeless person at a food bank, a sudden spike in food prices, a humanitarian crisis, etc. These impacts tend to receive attention and be the focus of campaigns and actions to relieve immediate social suffering and local ecosystem degradation, for example; however, if the underlying conditions that have led to these events in the first instance are not addressed, then similar events or impacts are bound to repeat or keep emerging. Working at this level entails being reactive and responsive insofar as one addresses the problems as they appear today. It is often essential to react to the immediate problem, but it is not a long-term solution.

6.2 Patterns of behaviour

Patterns of behaviour, such as how we produce and consume things over the longer term – the repeated choices we make when shopping; our decisions regarding modes of transportation; whether we extract natural resources with or without due regard for biological thresholds; etc. – are “below the surface”: they are invisible insofar as they are often overlooked and can be less tangible as they require an assessment of patterns over time. Currently, these patterns are responsible for the larger trends such as the ecological degradation and natural resource depletions we are witnessing in the world, including significant ones like climate change, aquifer depletion, peak oil and fisheries collapse. Working at this level entails being proactive and adaptive or, in other words, building the capacity to deal with particular challenges that may arise in the future to increase societies’ resilience. It offers more leverage than working at the events level to develop a response to a longer term pattern.

6.3 Systemic structures

Systemic structures include production and consumption systems, culture, institutions, policies and rules of the game; they define a system’s goals, scope and boundaries, and give shape to patterns of behaviour. For this reason, they are much higher levers for change. Examples of systemic structures include a constitution, a cap-and-trade system, ecological tax reform, a policy of guaranteed annual income, extended producer responsibility, physical infrastructure, cradle-to-cradle design and international trade rules. Incentives (subsidies; recognition; etc.), disincentives (fines; jail terms; etc.) and constraints (limited budgets; etc.) are part of systemic structures. It is also at this level of intervention that the type of information that is conveyed (climate change research; whether a product is organic; how much electricity does your home consume), and how (through reports and the media; ecolabels on products; electric meters in a home’s front hall) will impact on behaviour and patterns. In essence, working at this creative and generative level entails thinking of the strategies that could create fundamentally different futures or transform the system’s behaviour.

6.4 Mindsets

Mindsets, which include assumptions, worldviews and perceptions – together known as paradigms – are closely linked to systemic structures, and for this reason are sometimes depicted together, as they both drive the patterns of behaviour that we wish to change, and they influence and inform each other. We have separated them here to emphasize the point that mindsets and paradigms are, ultimately, the highest leverage points for change, as they shape our understanding and interaction with systems, including the production and consumption systems

that are now in place. It is because of our paradigms that we choose, or not, to pass laws, make certain investments and implement particular policies based on our assumptions about how nature works and humans behave. As acknowledged by Meadows, paradigms are very difficult to change, although they have the potential to change much more quickly at the individual level than at the societal one:

There's nothing necessarily physical or expensive or even slow in the process of paradigm change. In a single individual it can happen in a millisecond. All it takes is a click in the mind, a falling of scales from eyes, a new way of seeing. Whole societies are another matter. They resist challenges to their paradigm harder than they resist anything else. Societal responses to paradigm challenge have included crucifixions, burnings at the stake, concentration camps, and nuclear arsenals (Meadows, 1999, p. 20).

The insight of Albert Einstein's famous quote, at the top of this section, takes on its full significance when one understands that patterns of behaviour and their ensuing impacts can best be changed when the way we look at the world and at a particular problem is different from the mindset that created the problem in the first place.

Understanding system dynamics can provide guidance as to where to most effectively intervene in the production and consumption system, and offer useful insights into priority action areas where small shifts lead to cascading effects for sustainable development. Systems thinking also encourages us to consider the long-term and local and global consequences of individual and collective behaviour. To paraphrase systems educator Linda Booth Sweeney, systems thinking can be an antidote to:

- fragmented thought;
- jumping to conclusions;
- short-sighted decision making;
- the problem-solving treadmill.

The systemic change that sustainability requires compels us to work at the level of systemic structures and mindsets. However, it is important not to downplay the need to address events and patterns of behaviour, and recognize that action at all levels is required for sustainability. Finally, the ways systems operate can be counterintuitive, as they change over time and often in unexpected ways because of dynamics such as non-linear changes (tipping points), feedback loops, synergies, and time lags between cause and effect. Thus, they teach us to be mindful of the potential paradoxes, constraints and unintended consequences of our policies and actions.

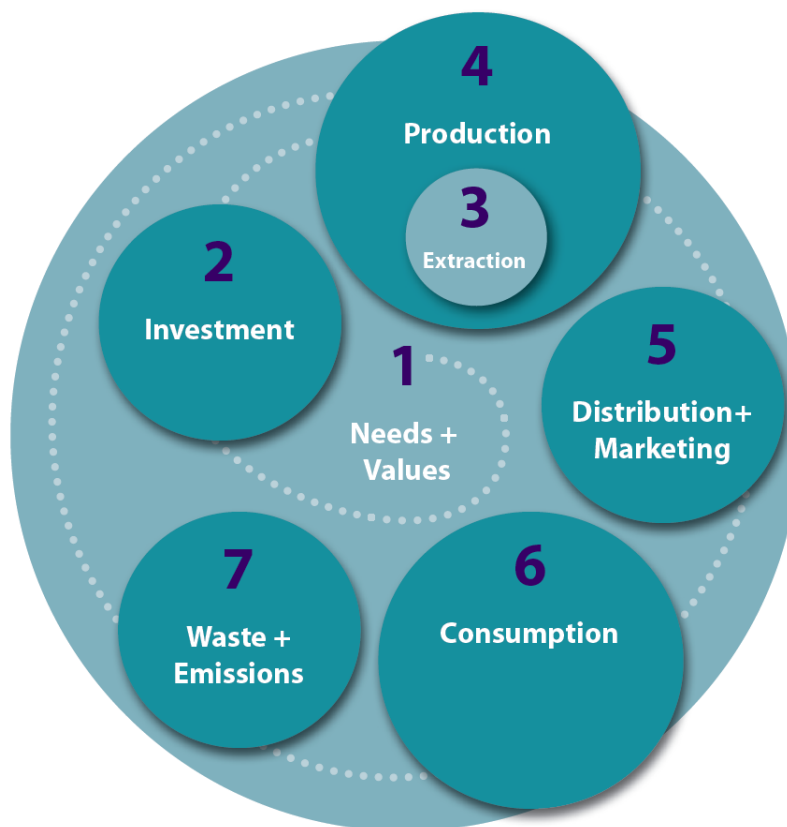
7. Revealing the consumption and production 'system'

Sustainable consumption and production emphasizes, as its name implies, both consumption and production. Although some groups may use the term 'sustainable consumption and production', they may actually be talking about sustainable consumption, emphasizing the need, for example, for sustainable lifestyles and sustainable household consumption that lead to better lives and smaller footprints, which can be achieved by changing societal values, mindsets and the socio-cultural frameworks that define our consumption habits and patterns. Others may emphasize

the production-side of the equation, through clean-production practices that include industrial ecology, design inspired by nature (biomimicry), green chemistry, extended producer responsibility and life-cycle analysis.

However, consumption and production are only two – albeit central – components of a larger system. There exist important intermediary stages of the production and consumption cycle that drive and give shape to the overall system. Investments, for example, are a strong factor in shaping the quality, scale and type of the goods and services that are produced, and are thus an important leverage point to be taken into account for change. For example, reforming subsidies and shifting taxes, promoting socially responsible investments and transforming financial institutions will most certainly influence what gets produced, distributed and ultimately consumed, disposed of or re-used. The following diagram developed by One Earth based on its research reveals the production and consumption system, and its relationships with other key components:

REVEALING THE CONSUMPTION & PRODUCTION SYSTEM



Each circle above represents the many people who are working within a wide-variety of *Communities of Practice* along the path of the Consumption and Production System.

The production - consumption cycle moves through various stages, beginning with human needs (from basic needs to socially constructed ones) and the values through which meeting those needs are expressed (i.e. fighting poverty; protecting natural resources and ecosystems; etc.). These in turn inform the type of investments (money; labour; time; natural capital) that society makes to meet those needs; we currently invest in mining and extraction activities to obtain the resources that are required to deliver our goods and services, and we also invest to varying degrees in education, social programmes, technological development, infrastructure, food production, etc., to meet those needs. The desired goods and services are then produced, and need to be marketed and distributed to be consumed or used, and then disposed of. A number of things can happen to a discarded item: it can be reused or recycled, composted, incinerated, or sent to a landfill. In any event, this waste needs to be managed appropriately if it is to contribute in its own way to sustainable consumption and production; linear material throughputs are unsustainable on a finite planet, so it is necessary for outputs to feed back into the production system in order to close the so-called “ecological loop”. This description is only an abstraction of a much larger and immensely complex system with a variety of thresholds, feedback loops, etc., and the relationships are themselves more complex than depicted here. However, having a model of the system is a good starting point to discuss these interrelationships.

8. Communities of practice

One useful way to talk about and understand sustainable consumption and production is through the communities of practice that constitute it. “Community of practice” is a term that “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). This idea of communities of practice in the realm of sustainable production and consumption builds on the work undertaken by the Americans Jeffrey Barber³ and Jack Luskin⁴. Changing unsustainable patterns of consumption and production requires intervention along one, or multiple, points in the production and consumption system, and people and organizations with relationships to each other work in a myriad of ways that go beyond simply developing and implementing policies. Indeed, a whole network of actors has built around sustainable consumption and production, whether this work is undertaken by government and its agencies, the business sector and industry associations, not-for-profit organizations and grassroots community groups – individually or through various forms of collaboration. They work on, for example, redefining progress and the measure of true wealth and prosperity, local self-reliance, socially responsible investment, green public procurement, industrial ecology, life-cycle analysis, extended producer responsibility, corporate social responsibility, cradle-to-cradle design, ecolabelling, sustainable consumption research, sustainable lifestyles and zero waste. The following illustration lists examples of communities of practice that constitute the different components of sustainable consumption and production:

³ Executive Director of Integrative Strategies Forum, a Washington DC-based not-for-profit organization.

⁴ Adjunct Professor at the University of Massachusetts Lowell and Senior Associate Director at the University's Toxics Use Reduction Institute.

SUSTAINABLE CONSUMPTION AND PRODUCTION ACTORS AND NETWORKS (COMMUNITIES OF PRACTICE*)

1

Needs + Values

Redefining progress / wellbeing
 Happiness research
 Indicators for sustainability
 Impact analysis
 Defining and measuring sustainability
 National policy frameworks
 Sustainable production and consumption as a practice
 Social justice / human rights-based approach
 Good governance and democracy
 Poverty reduction / extreme poverty eradication
 Ensuring human livelihoods and capabilities
 Community and regional planning and development / local sustainability
 Local self-reliance
 Bioregionalism
 Green communities, eco-villages and transition towns
 Community economic development
 Health and wellbeing

2

Investment

Socially / environmentally responsible investment
 Government / green public procurement / purchasing
 Ethical investment guidelines
 Financial institutional reform
 Environmental Pricing
 Subsidy reform and eco-taxes / tax shifting

3

Extraction

Social licensing
 Social and environmental impact assessment and mitigation
 Community resource management

4

Production

Industrial ecology / eco-industrial networking
Life cycle analysis / material flow analysis
Pollution prevention, clean production and sustainable manufacturing
Closed loop systems
 Extended producer responsibility
 Hazardous / toxic use reduction, waste, products and technologies
 Full cost accounting
 Eco-efficiency
 Workplace standards

5

Distribution + Marketing

Eco labelling / certification
 Packaging
 Transport
 Fair / sustainable trade
 Lifestyles of health and sustainability (LOHAS)
 Local exchange trading systems (LETS) / time banks

6

Consumption

Conscious / sustainable consumption education and information
 Lifestyles
Voluntary simplicity / sufficiency
Downshifting
Green living
Local food movement
 Sustainable consumption research and information
 Consumer rights and protection
Right to know
 Advertising reform
 Consumer action / boycotts
 Ethical consumerism

7

Waste + Emissions

Hazards management
 End-of-life management
 Waste reduction and prevention
 Zero waste
 Integrated waste management
Material reuse and recycling
Composting
Bioconversion
Landfill sustainability
Incineration / waste-to-energy

* *Communities of practice* are the groups, networks, individuals, associations and organizations working at all scales that form around a specific practice which targets one of the leverage points of the production/consumption system.

One of the intentions behind creating a list of communities of practice is to hold up a mirror to these various groups, as it is easy to underestimate the overall size of the sustainable consumption and production community by judging its expanse solely based on the actors and

networks that one is directly connected to. In essence, 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 and consumption system – even though they may not self-identify as being part of such a movement. The benefits of a systems view of the network of actors include empowering the network, avoiding ineffective duplication, and finding areas for common action to move from incremental to system-wide change. Transforming production and consumption patterns, however, requires whole-systems thinking, and although the list of communities of practice is impressive, it would seem that very few individuals or organizations focus on the consumption/production system as a whole and study the interrelationships and interactions that exist among its component parts, including its dynamics (feedback loops, tipping points, lags and inertia), synergies and driving forces. It is for this reason, and to fill this particular gap, that the One Earth Initiative Society has been created, and endeavours to be one of the catalysts of a whole-systems approach to production and consumption.

9. Sustainable consumption and production as a lens

The strength of the sustainable consumption and production approach is the systemic lens it provides to examine any particular theme or issue linked to sustainability, such as the building industry, an important economic sector in North America. Canadians spend about 90% of their time indoors, and “buildings account for 1/3 of Canada's energy production, 50% of the extracted natural resources, 25% of our landfill waste, 10% of our airborne particulates, and 35% of our greenhouse gases” (Lucuik, 2005, p. 3). The construction of residential homes can be used as an example of how such a consumption and production lens can be applied to gain a systems understanding of this particular sector of the building industry, and to seek the appropriate leverage points to help transform it.

We can begin by looking at one of the industry's early life-cycle stages – extraction – in which resources like wood are harvested, minerals mined to produce steel and aluminium, and aggregates collected to manufacture glass and cement. Extraction and the transformation of materials requires energy and leads to the creation of waste (emissions; tailings; toxic effluents), the destruction of habitat, the drawing down of natural capital (forests; water), the erosion of land and loss of agriculturally productive soil, and may impact communities in various ways.

The production of homes has social and ecological impacts. Positive impacts include employment and the purchasing of goods and services, as well as the provision of homes for people. The process also creates numerous negative impacts, from ecological degradation and habitat fragmentation and displacement if the building is built on undeveloped land and contributes to urban sprawl, to the production of waste materials. Some materials can be recycled and used as inputs, but recycling inevitably requires energy to transport, transform and refine materials. Houses and condominiums are then marketed by private firms through various channels (TV ads, billboards, radio, newspaper, etc.). After purchase, occupants' consumption of resources will not only depend on personal choices and particular lifestyles, but also on many factors directly linked to the building, including: whether it is close to, or in, an urban centre; it is near public transportation options; it is designed to maximize natural light, good ventilation and energy savings; it is well built, on net-zero or PassivHaus standards; it includes devices like smart meters; etc.

The end of a building's life adds further pollution to the environment, but can be significantly reduced depending on the demolition process and whether collecting materials for reuse is maximized. Underpinning this lifecycle are the investment decisions of the developers and investors in terms of what type of housing to build (small homes, condos, McMansions, single-family or multi-unit residential, etc.). Overall, the residential homes industry operates within the framework of society's needs and values as expressed through the types, models, sizes and number of homes created, and is guided by our purchasing decisions, laws and regulations, fiscal instruments and public investments/expenditures.

Finally, in order for the housing sector to make a meaningful contribution to changing unsustainable patterns of consumption, system-wide questions need to be asked that link housing to the greater context, including whether or not in aggregate, the housing sector is contributing to per capita Ecological Footprint reductions or not, to what extent the large pool of existing buildings that are not "green" need be refurbished, how land-use planning can influence and shape consumption habits and lifestyles, and how to avoid growth in overall material and energy consumption as a result of financial savings which stem from gains in energy efficiency (the 'rebound effect').

Annex 1 provides a template with 12 'habits of mind', developed by Linda Booth Sweeney, that effective systems thinkers apply to navigate complex systems like production and consumption.

10. Policy instruments for sustainable consumption and production

There are many policy instruments and tools to choose from to affect change and shift consumption and production patterns. The following list of instrument categorizations was drawn from the work of, among others, two prominent think tanks that work on sustainable consumption and production, the European Topic Centre on Sustainable Consumption and Production (ETC/SCP), and the UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP):

- **Regulatory instruments** – Norms and standards, bans, caps and emission limits, building codes, etc.
- **Economic instruments** – Fiscal, or market-based instruments (subsidies, taxes, user fees, green public procurement, bonus systems, emissions trading, etc.), investments in infrastructure that support sustainable consumption and production
- **Participatory instruments** – Urban planning, public dialogues, policy discussions, participatory budgets, etc.
- **Voluntary instruments** – Unilateral commitments, negotiated agreements, voluntary setting of targets, voluntary certification schemes, etc.
- **Informational instruments** – Ecolabels, information centres, websites, demonstration projects, etc.
- **Educational instruments** – Training, integration of whole-systems thinking in formal and informal education, research, etc.

- **Organizational/institutional arrangements** – Cooperation schemes, public-private partnerships, agreements between different levels of government, etc.

The above list is roughly classified in order of decreasing coerciveness, moving from the ‘hard’ policy instruments that include laws and regulations as well as ‘carrots and sticks’ (reward/penalize), to ‘soft’ policy instruments, which include voluntary, non-binding recommendations and guidelines, education (formal and informal), information sharing, and organizational structure. Often, the most powerful way to use policy instruments, particularly for complex issues, is by combining them – complementing laws and fiscal tools with monitoring, peer pressure and mutual learning, for example.

Drawing on whole-systems thinking and keeping the ‘iceberg model’ in mind, it is important to understand the level of the system at which particular policy mixes are being applied. Education and awareness-raising through clear communication, for example, have a role to play at all levels of intervention, from the level of specific events to systemic structures and mindsets; they can shape how we react to events, how we build capacity to be more adaptive and resilient, how we choose to transform the larger systemic structures that guide our behaviour as individuals and institutions, and how we see and understand how the world works. Education on its own, however, will not suffice to transform society, but does play an important role in combination with the necessary hard policies that force behaviour change, such as instituting a socially fair carbon tax, putting a stop to urban sprawl through land-use planning laws, investing in infrastructure that supports sustainable household consumption, and implementing choice editing to remove unsustainable product options from the marketplace. This is particularly important in light of the latest research in behavioural science, which reveals that regulation and other policy instruments that force behaviour change have been shown to change peoples’ values and paradigms, rather than the other way around.

Embracing the inherent uncertainty and complexity of the consumption and production system also requires an approach to problem solving and decision-making which is focused on learning and adaptation. This approach requires the identification of a clear vision, principles, goals, objectives, targets and indicators to measure progress and provide the basis for adaptive management. These different strategy components together provide the feedback and are the monitoring systems that provide critical information needed to learn and make adjustments over time. Finally, ideas and solutions need to be developed and “framed” according to their target audiences – emphasizing, for instance, that sustainable consumption and production is an opportunity for better lives and livelihoods, and a healthy and resilient economy.

11. Barriers to sustainable consumption and production

Progress to adopt sustainable patterns of consumption and production has been slow, as the evidence of worsening ecological and social trends clearly suggest. Some of the barriers to change are well known, while others are less intuitive. Below are some of the key underlying factors that have prevented consumption and production patterns to change:

- Fragmentation of sustainability initiatives at all scales
- Inertia in the system (including of habits as well as social and cultural norms; in infrastructure and technologies; etc.)

- Paralysis in front of tremendous complexity
- Need for political leadership
- Skewed markets resulting from misplaced subsidies, the externalization of costs , short-term profit seeking, a non-level playing field and entrenched interests
- Misunderstandings around the seriousness of issues
- Unpopularity of proposed measures and policy solutions
- Influence of powerful interest lobbies
- Inability to effectively apply a systems perspective to problem solving
- Too much emphasis on efficiency as a means to reduce material and energy throughput when historically, lower prices brought about by gains in technology and efficiency have led to overall increases and bigger footprints when an overall cap on resource use is not established

12. The role of different sectors of society

Business as usual, government as usual, and perhaps even protest as usual are not giving us the progress needed to achieve sustainable development. Let's see if we can't work together to find better paths forward.

- Paul Hohnen, Royal Institute of International Affairs

One of the underlying reasons that changing unsustainable patterns of consumption and production is so challenging is that no single actor has the capacity to achieve the scale of change required without the support of others. Indeed, a diversity of actors have a role to play in shaping the production and consumption system through their decisions and actions, including governments, businesses, industry, investors, retailers, civil society and non-governmental organizations as well as consumers. As a group, they can develop a holistic view that allows them to identify the strategic leverage points for change, and work together to develop and apply the right mix of policies that transform structures and mindsets while avoiding a number of paradoxes, constraints and unintended consequences of particular interventions.

Diverse actors have specific roles, tools and approaches that they bring to bear on addressing the consumption and production system. The World Business Council, in its *Sustainable Consumption: Facts and Trends from a Business Perspective* report, developed a useful characterization of these different roles:

12.1 Role of governments and regulators

- International agreements
- National policies, laws and regulations
- Fiscal structures and incentives
- Guidance for businesses and consumers
- Monitoring
- Enforcement

12.2 Role of businesses

- Economic development
- Legal compliance
- Ethical practices
- Sustainable sourcing, production and distribution
- Eco-efficiency and waste reduction
- Consumer choice editing
- Consumer choice influencing
- Recycling
- Innovation
- Example-setting

12.3 Role of civil society (NGOs)

- Independent assessment
- High profile public campaigns
- Critique or endorsement
- Thought leadership
- Choice influencing

12.4 Role of consumers

- Purchasing decisions
- Lifestyle choices
- Political support
- Peer-to-peer influencing

13. Sustainable production and consumption and the green economy

One of the emerging concepts in political spheres at national and international levels is the idea of a green economy. The term “green economy” made its apparition largely as a result of the 2008 global financial crisis, which represented the biggest systemic failure in recent memory with global implications and has led to a questioning of the economic orthodoxy and of the accountability of major institutions. As countries scrambled to save their economies and protect themselves from the system-wide negative impacts that such a crisis brings about, ideas about how to avoid this state of affairs in the future, as well as how to leverage the current situation as an opportunity to simultaneously address a number of other issues like climate change, the food crisis and unemployment, paved the way for the green economy.

Because the green economy has not yet been defined in terms of what it looks like, how it relates to production and consumption, and how it is different from the conventional economy, it has been interpreted and used in different ways by various stakeholder groups. For some, like the United Nations Environment Programme (UNEP)⁵, the strategy to develop a green economy revolves primarily around jobs, technology, innovation and leveraging investment⁶ as a means to reduce our impact on the natural world and fight climate change. Linkages between the green economy and sustainable consumption and production were explored during an informal

⁵ UNEP's Green Economy: <http://www.unep.org/greeneconomy/>

⁶ GRIST article on Clinton's push for a green economy: <http://www.grist.org/article/2010-09-22-bill-clinton-save-america-economy-with-clean-energy/>

workshop hosted by UNEP in Paris in March 2010, and participants suggested that the green economy is both a process and an end point. Others recognize the fundamental flaws and weaknesses of our current expansionist economic paradigm, and have a bolder and broader vision for the green economy, seeing it as a unifying and overarching concept that calls for the development of a “new economy”⁷, based on a strong set of sustainability values and which places living within the planet’s ecological limits at its core.

One of the key questions that remain to be answered is whether the green economy serves sustainable consumption and production, or if sustainable consumption and production is only one part of the green economy. The debate is still out, and the answer depends largely on one’s basic assumptions regarding, and definition of, each concept. The clarity of the ‘green economy’ and its strong imagery does make it an attractive term compared to ‘sustainable consumption and production’, which is much more abstract due to its inherent complexity. Indeed, it may be thanks to its metaphorical qualities that interest has grown in the green economy – however it is defined – and that the concept has been chosen as one of the two overarching topics of the upcoming the Rio+20 UN Conference on Sustainable Development in 2012. In fine, both concepts are stimulating international dialogue on how to advance sustainability and support ecological, social and economic wellbeing.

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⁷ New Economy Network: <http://neweconomynewnetwork.org/about/>; New Economics Institute: <http://neweconomicsinstitute.org/>; New Economics Foundation: <http://www.neweconomics.org/>; Institute for New Economic Thinking: <http://ineteconomics.org/>; UN “Rio+20” workshop joint statement – “Premises for a new economy: An agenda for Rio+20”: http://www.un.org/esa/dsd/dsd_aofw_sdkp/sdkp_pdf/sdkp_workshop_0510/joint_statement.pdf

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Annex 1: 12 Habits of Mind for systems thinking

Source: **Linda Booth Sweeney** – <http://www.lindaboothsweeney.net/thinking/habits>

Linda Booth Sweeney developed the 12 Habits of Mind to help people become better systems thinkers in order to navigate complexity and design for the future.

12 Habits of Mind – a systems thinker...

Sees the Whole: sees the world in terms of interrelated “wholes” or systems, rather than as single events, or snapshots;

Looks for Connections: assumes that nothing stands in isolation; and so tends to look for connections among nature, ourselves, people, problems, and events;

Pays Attention to Boundaries: “goes wide” (uses peripheral vision) to check the boundaries drawn around problems, knowing that systems are nested and how you define the system is critical to what you consider and don’t consider;

Changes Perspective: changes perspective to increase understanding, knowing that what we see depends on where we are in the system;

Looks for Stocks: knows that hidden accumulations (of knowledge, carbon dioxide, debt, and so on) can create delays and inertia;

Challenges Mental Models: challenges one’s own assumptions about how the world works (our mental models) — and looks for how they may limit thinking;

Anticipates Unintended Consequences: anticipates unintended consequences by tracing loops of cause and effect and always asking “what happens next?”

Looks for Change over Time: sees today’s events as a result of past trends and a harbinger of future ones;

Sees Self as Part of the System: looks for influences from within the system, focusing less on blame and more on how the structure (or set of interrelationships) may be influencing behavior;

Embraces Ambiguity: holds the tension of paradox and ambiguity, without trying to resolve it quickly;

Finds Leverage: knows that solutions may be far away from problems and looks for areas of leverage, where a small change can have a large impact on the whole system;

Watches for Win/Lose Attitudes: is wary of “win/lose” mindsets, knowing they usually makes matters worse in situations of high interdependence.