The Framework for Strategic Sustainable Development

The Natural Step

Our approach is collectively called the “Framework for Strategic Sustainable Development”– it is a comprehensive model for planning in complex systems.

The Framework for Strategic Sustainable Development has helped hundreds of different organisations around the world integrate sustainable development into their strategic planning and create long lasting transformative change. It is constantly being used, tested, refined and developed.

The Framework for Strategic Sustainable Development is openly published and free for all to use.
Please help accelerate change towards sustainability by sharing the Framework:
short url: http://on.fb.me/theframework

Introduction

The Framework for Strategic Sustainable Development is based on systems thinking;
recognizing that what happens in one part of a system affects every other part. Think of a soccer team.
We can’t understand why the team lost the game until we look at how each player – the goal keeper, defenders and forwards - all worked together on the field. We won’t learn much if we just study one member of the team.

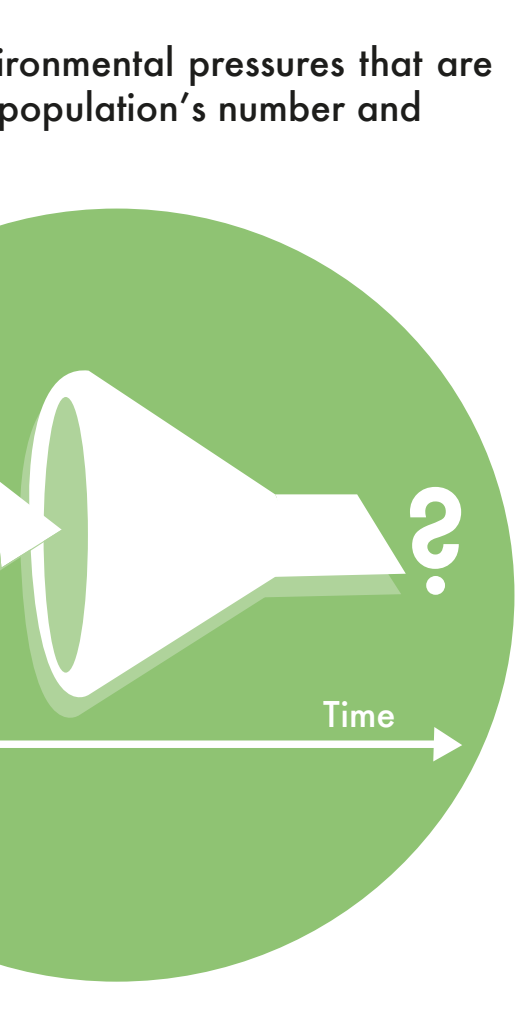
The Framework for Strategic Sustainable Development gives an organisation the tools to look at the whole team, understand the rules of the game, define success, and move towards it together.

Any successful team must have a common language and understanding in order to facilitate cooperation.
The Framework provides this shared mental model of sustainability by helping people across organisations, disciplines and cultures to communicate effectively, build consensus and ultimately move toward their vision.
We use an upstream approach that anticipates and avoids problems before they occur, rather than reacting to their downstream effects.

This scientifically rigorous Framework gives organisations the tools to perform a gap analysis using the lens of sustainability, and then work toward closing the gap. Furthermore, The Framework for Strategic Sustainable Development complements other sustainability tools and methodologies, such as life cycle analysis or environmental management systems, by providing the context and strategic vision that makes them more effective.

The Funnel

We use the funnel as a metaphor to help visualise the economic, social and environmental pressures that are growing on society as natural resources and ecosystem services diminish and the population’s number and consumption grows.



Imagine looking at a giant funnel from the side. The upper wall is the availability of resources and the ability of the ecosystem to continue to provide them. The lower wall is our demand for these resources which we need to make clothes, shelter, food, transportation and other items and the ecosystems that create them. The things we need to survive - food, clean air and water, productive topsoil and others - are in decline.
So is nature’s ability to regenerate them.

But at the same time, our demand for these resources is growing. There are more than six billion people on the planet and the population is increasing. Our level of consumption is increasing.

As our demand increases and the capacity to meet this demand declines, society moves into a narrower portion of the funnel. As the funnel narrows there are fewer options and less room to manoeuvre. Organisations that continue business-as-usual; are likely to hit the walls of the funnel, and fail.

Opening the Walls of the Funnel

Every one of us lives and works in this funnel and every one of us has the opportunity to be more strategic about our choices and long-term plans. Through innovation, creativity and the unlimited potential for change, we can shift toward sustainability and begin to open up the walls of the funnel.

Forward looking organisations can position themselves to avoid the squeeze of the funnel and invest toward opening the walls and creating a truly sustainable and rewarding future.

The Tree - For Systems Thinking

Whole systems thinking is more or less explained in the name - deals with complex systems (such as the biosphere, or a government or the weather, or a company or an ecosystem, or a farm). It reflects the idea that it's important to take into account all of the components of the system, how they interact, and cause-and-effect relationships among them - allowing you to think in terms of the whole system. This is a very daunting task. But it's important to do, otherwise you get lost in the details, specific areas of specialization (which are usually very complex and confusing on their own) and you can spend a lot of time and energy trying to solve a problem, only to realize that you've created another, and go on and on until you get confused and frustrated and give up.

We often use the metaphor of a tree where the trunk and branches represent the core principles (4 sustainability principles) and the leaves represent all of the details - specific problems and specific areas of expertise. Because the task at hand is so massive and complex (creating a sustainable society), no one is going to have all the answers - there's simply too much information. So we need all kinds of scientists, economists, policy makers, researchers, teachers, business leaders, etc etc to work together. Now, imagine all of the ideas, opinions, special interests, etc that come with this group. Any dialogue will quickly degenerate into bickering, confusion, misunderstanding. This is dealing in the "leaves," the details - and it's very frustrating, and too often the path that discourse on the environment and sustainability follow.

“Paper or Plastic?” (paper contributes to deforestation, plastic doesn’t biodegrade) “Solar, Wind or Oil?” (solar is inefficient and uses weird metals, wind can kill birds and makes noise, oil causes global warming... but global warming doesn’t even exist as far as we know) etc... These are the details – obviously not insignificant - but we can’t approach these complex, confusing, politically charged issues without a shared framework, some facts that everyone can agree on. Then we can tackle the details with all kinds of specialists working together.

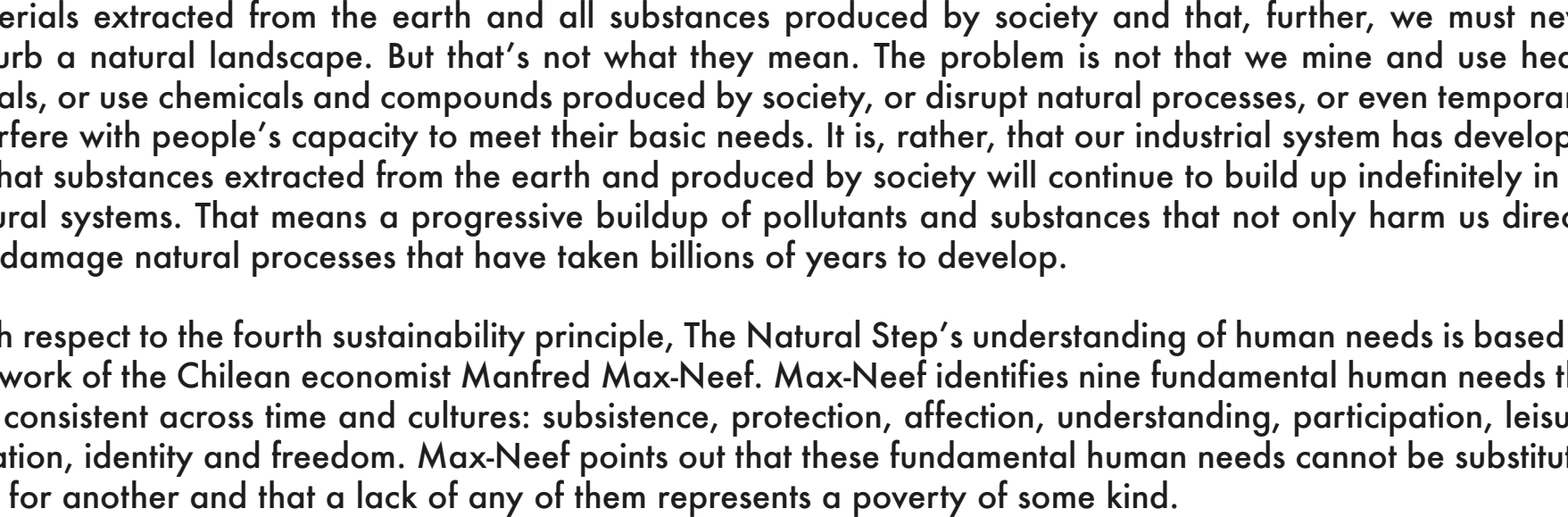
So by establishing a common framework - and starting with the trunk and branches - we can all get on the same page, understand the rules of the game, and proceed further out on the branches, into the details of the leaves with a shared mental model. True dialogue can commence, eliminating the usual confusion. Again, the details will need to be dealt with in time in order to act - but with a common framework action can be cohesive, moving toward a common goal.

You can think of the 4 principles as the rules of the game - like in chess or football/soccer. It's the easy part, but if everyone doesn't understand them, no one's going to get very far, and it’s very often the step that is skipped when we set out to create strategies to reach sustainability.

4 Sustainability Principles

At first reading, the system conditions and basic principles might seem to imply that we must rid society of all materials extracted from the earth and all substances produced by society and that, further, we must never disturb a natural landscape. But that’s not what they mean. The problem is not that we mine and use heavy metals, or use chemicals and compounds produced by society, or disrupt natural processes, or even temporarily interfere with people’s capacity to meet their basic needs. It is, rather, that our industrial system has developed so that substances extracted from the earth and produced by society will continue to build up indefinitely in natural systems. That means a progressive buildup of pollutants and substances that not only harm us directly but damage natural processes that have taken billions of years to develop.

With respect to the fourth sustainability principle, The Natural Step’s understanding of human needs is based on the work of the Chilean economist Manfred Max-Neef. Max-Neef identifies nine fundamental human needs that are consistent across time and cultures: subsistence, protection, affection, understanding, participation, leisure, creation, identity and freedom. Max-Neef points out that these fundamental human needs cannot be substituted one for another and that a lack of any of them represents a poverty of some kind.



Sustainability Principle 1	Sustainability Principle 2	Sustainability Principle 3	Sustainability Principle 4
... we cannot dig stuff up from the Earth at a rate faster than it naturally returns and replenishes.	... we cannot make chemical stuff at a rate faster than it takes nature to break it down.	... we cannot cause destruction to the planet at a rate faster than it takes to regrow.	... we cannot do things that cause others to not be able to fulfill their basic needs.

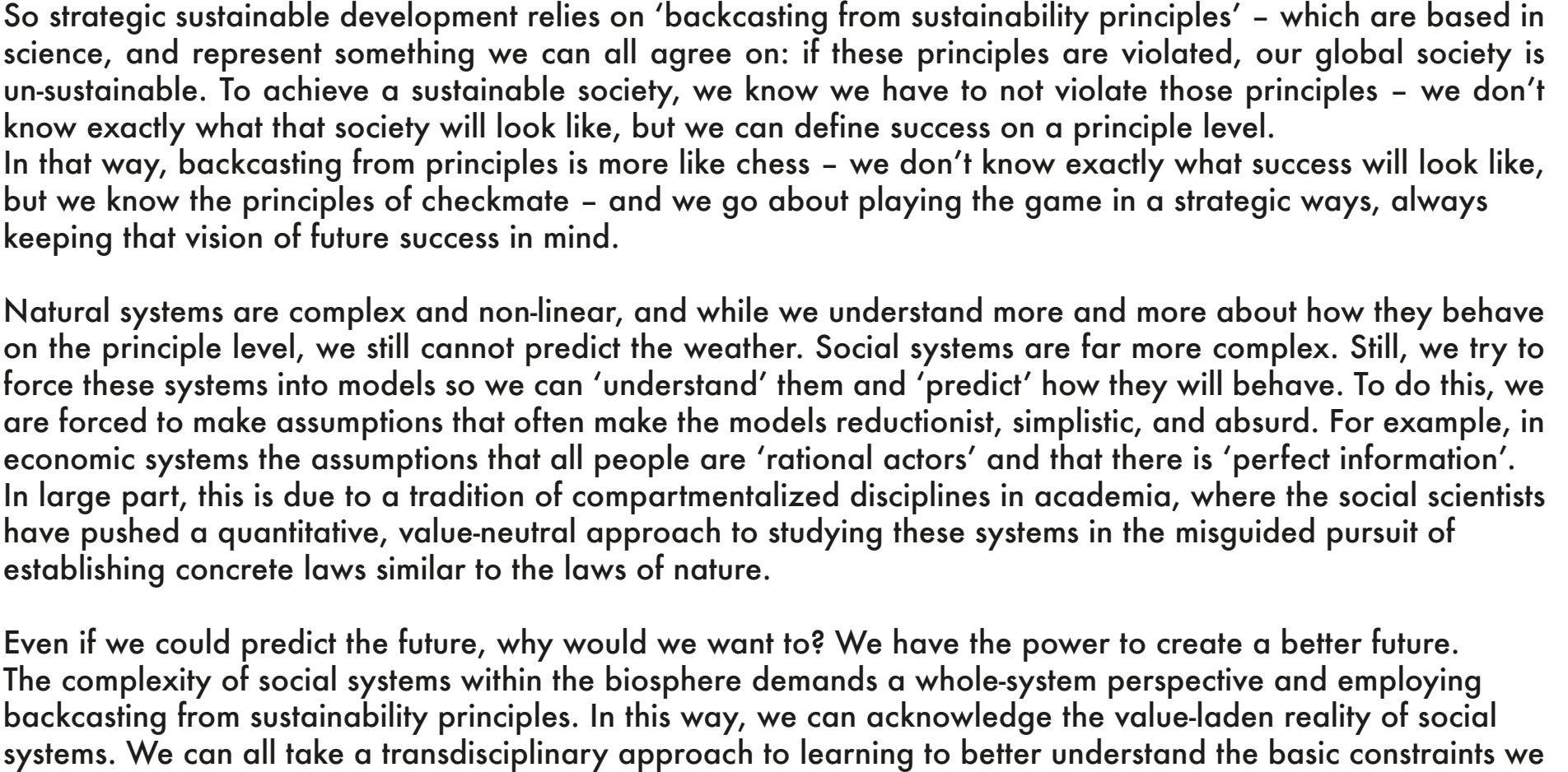
Left to its own devices, the earth is a sustainable system. As we continue to learn, however, the accumulated impacts of human activity over the past two centuries are now threatening our continued well-being.
An international network of scientists have unanimously and publically concluded that human society is damaging nature and altering life-supporting natural structures and functions in three fundamental ways.
Consequently, they were able to define three basic conditions that must be met if we want to maintain the essential natural resources, structures and functions that sustain human society. Further, acknowledging that human action is the primary cause of the rapid change we see in nature today, they included a fourth system condition that focuses on the social and economic considerations that drive those actions and the capacity of human beings to meet their basic needs.

While written to be clear scientifically, the specific wording of the four system conditions can be confusing to non-scientists who try to put them to work. Fortunately, the system conditions can be reworded as basic sustainability principles that provide explicit guidance for any individual or any organization interested in moving towards sustainability. The table below contains the four system conditions on the left and the reworded the basic sustainability principles on the right. In most instances, we refer to the basic sustainability principles.

Backcasting from Sustainability Principles

The concept of “backcasting” is central to a strategic approach for sustainable development. It is a way of planning in which a successful outcome is imagined in the future, followed by the question: “what do we need to do today to reach that successful outcome?” This is more effective than relying too much on forecasting, which tends to have the effect of presenting a more limited range of options, hence stifling creativity, and more important, it projects the problems of today into the future.

In the context of sustainability, we can imagine an infinite number of scenarios for a sustainable society – and ‘backcasting from scenarios’ can be thought of as a jigsaw puzzle, in which we have a shared picture of where we want to go, and we put the pieces together to get there. However, getting large groups of people to agree on a desired future scenario is often all but impossible. Further, scenarios that are too specific may limit innovation, and distract our minds from the innovative, creative solutions necessary for sustainable development.



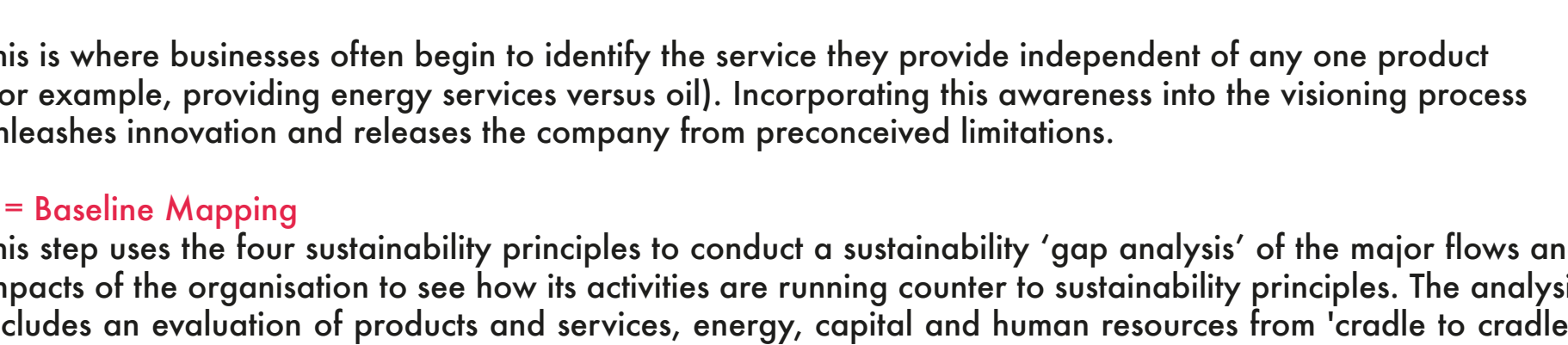
So strategic sustainable development relies on ‘backcasting from sustainability principles’ – which are based in science, and represent something we can all agree on: if these principles are violated, our global society is un-sustainable. To achieve a sustainable society, we know we have to not violate those principles – we don’t know exactly what that society will look like, but we can define success on a principle level.
In that way, backcasting from principles is more like chess – we don’t know exactly what success will look like, but we know the principles of checkmate – and we go about playing the game in a strategic ways, always keeping that vision of future success in mind.

Natural systems are complex and non-linear, and while we understand more and more about how they behave on the principle level, we still cannot predict the weather. Social systems are far more complex. Still, we try to force these systems into models so we can ‘understand’ them and ‘predict’ how they will behave. To do this, we are forced to make assumptions that often make the models reductionist, simplistic, and absurd. For example, in economic systems the assumptions that all people are ‘rational actors’ and that there is ‘perfect information’. In large part, this is due to a tradition of compartmentalized disciplines in academia, where the social scientists have pushed a quantitative, value-neutral approach to studying these systems in the misguided pursuit of establishing concrete laws similar to the laws of nature.

Even if we could predict the future, why would we want to? We have the power to create a better future.
The complexity of social systems within the biosphere demands a whole-system perspective and employing backcasting from sustainability principles. In this way, we can acknowledge the value-laden reality of social systems. We can all take a transdisciplinary approach to learning to better understand the basic constraints we must operate in. And together, we can implement the dramatic change in societal design necessary to create a sustainable society.

ABCD Approach

The A-B-C-D method to applying the the Framework for Strategic Sustainable Development consists of four steps which are repeated as an organisation progresses toward sustainability. This method as others used by TNS practitioners is based on backcasting from sustainability principles.



Awarness | Baseline assessment | Creative solutions | Devise a plan

A = Awareness and Visioning

This first step aligns the organisation around a common understanding of sustainability and identifies a 'whole-systems' context for that organisation; building a common language around sustainability as well as creating a vision of what that organisation would look like in a sustainable future.

The Natural Step principles of sustainability, basic science and whole-systems approach are presented to develop strategies for living in balance with nature and our global community. Participants review details of the state of the earth's systems, including the ecological, social and economic trends that are undermining our ability to create and manage healthy and prosperous ecosystems, businesses and communities. During the visioning process, people are encouraged to set ambitious goals which may require radical changes in how the organization operates. Some goals may take many years to achieve.

This is where businesses often begin to identify the service they provide independent of any one product (for example, providing energy services versus oil). Incorporating this awareness into the visioning process unleashes innovation and releases the company from preconceived limitations.

B = Baseline Mapping

This step uses the four sustainability principles to conduct a sustainability ‘gap analysis’ of the major flows and impacts of the organisation to see how its activities are running counter to sustainability principles. The analysis includes an evaluation of products and services, energy, capital and human resources from ‘cradle to cradle’. The assessment also looks at the social context and organisational culture in order to understand how to positively introduce change. This allows the organisation to identify critical sustainability issues, their business implications, any assets they may have and opportunities for change.

C = Creative Solutions

In this step, people are asked to brainstorm potential solutions to the issues highlighted in the baseline analysis without any constraints. Armed with their vision of success and potential actions, organisations look backwards from the vision to develop strategies toward sustainability. This is called backcasting and it prevents people from developing strategies that just solve the problems of today. Instead, they begin with the end in mind, moving towards a shared vision of sustainability, with each action providing a platform for further improvement.

D = Decide on Priorities

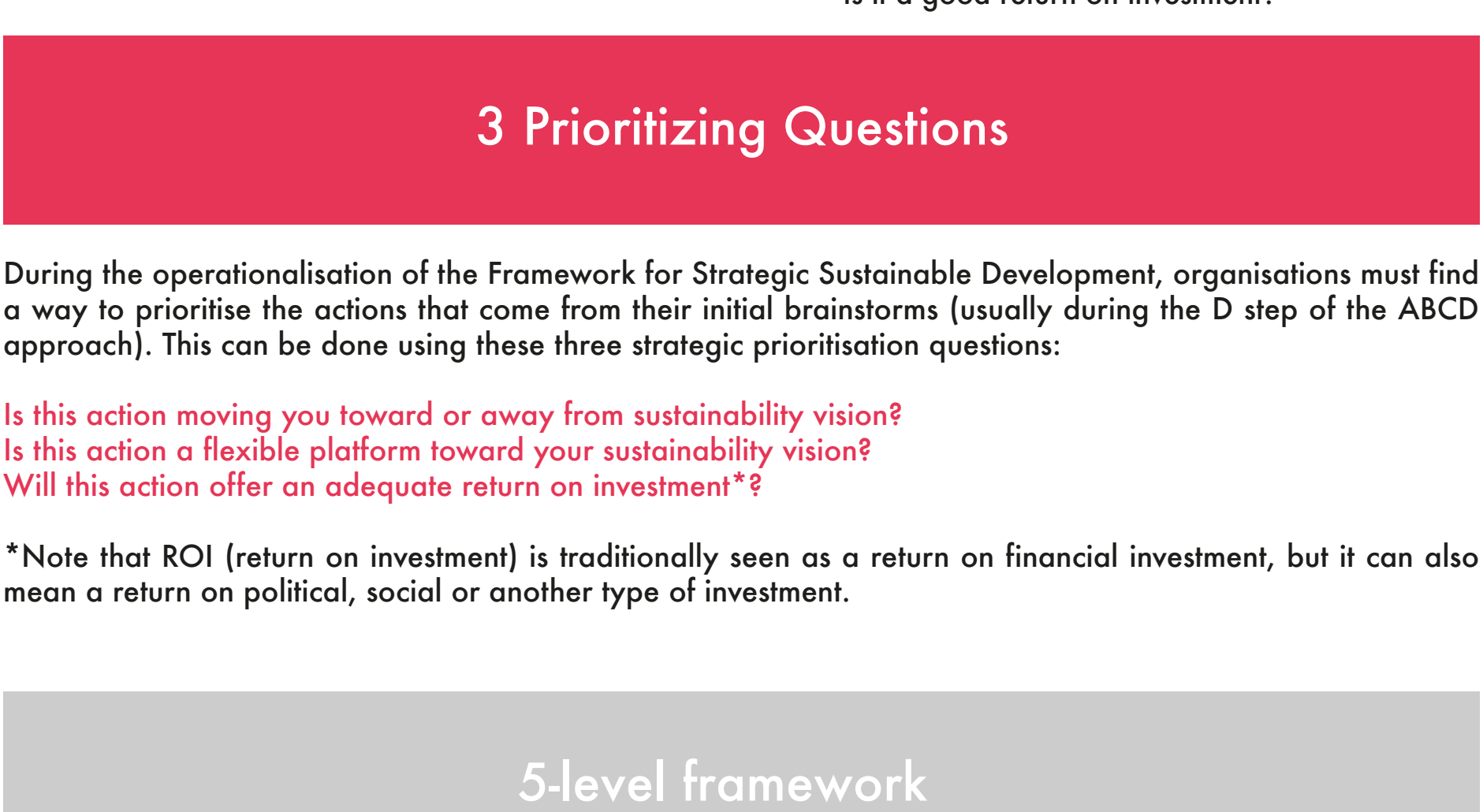
After identifying the opportunities and potential solutions in the ‘C’ step, the group prioritises the measures that move the organisation toward sustainability fastest, while optimising flexibility as well as maximising social, ecological and economic returns. This step supports effective, step-by-step implementation and action planning. At this stage, organisations can pick the ‘low-hanging fruit’ - actions that are fairly easy to implement and offer a rapid return on investment in order to build internal support and excitement for the planning process.

Backcasting is used to continually assess decisions and actions to see whether they are moving the organisation toward the desired outcome identified in ‘A’ step (awareness and visioning).

Sustainability principles provide new design parameters that drive product and process innovation throughout the system. This step also incorporates organisational learning and change methods, essential elements to move people into new ways of thinking and working together.

The sustainability principles help people stay on course as they process the myriad of information and decisions involved in long-term planning. What’s considered realistic today never determines the direction of change, only its pace. This approach is based on systems thinking, setting ambitious goals, and developing realistic strategies to achieve them.

Organisations are not expected to achieve long-term goals immediately. They’re encouraged to move systematically by making investments that will provide benefits in the short-term, while also retaining a long-term perspective. They use the Framework for Strategic Sustainable Development to map-out a series of steps that will eventually lead to sustainability.



Does it move us in the right direction?
Is it a flexible platform?
Is it a good return on investment?

3 Prioritizing Questions

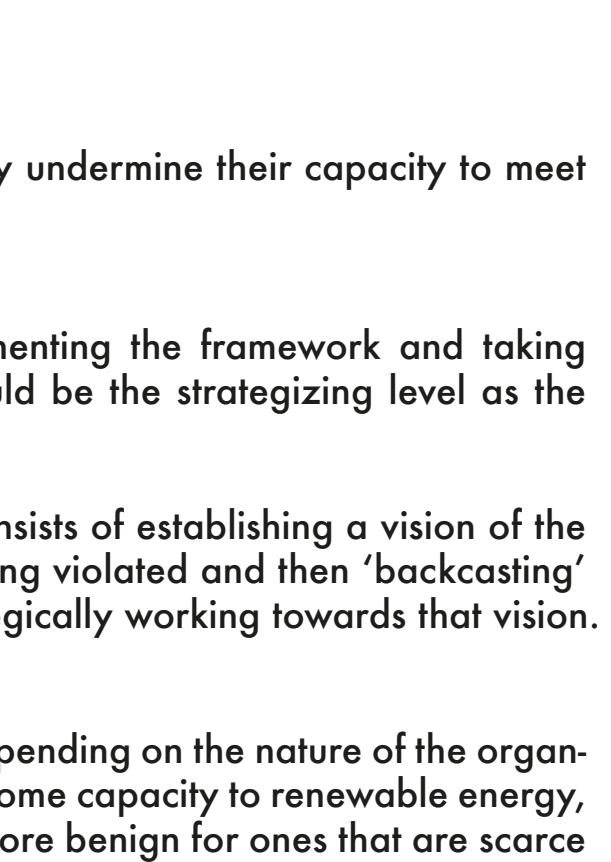
During the operationalisation of the Framework for Strategic Sustainable Development, organisations must find a way to prioritise the actions that come from their initial brainstorms (usually during the D step of the ABCD approach). This can be done using these three strategic prioritisation questions:

Is this action moving you toward or away from sustainability vision?
Is this action a flexible platform toward your sustainability vision?
Will this action offer an adequate return on investment*?

*Note that ROI (return on investment) is traditionally seen as a return on financial investment, but it can also mean a return on political, social or another type of investment.

5-level framework

The 5-level framework is a model for planning in complex systems.
It allows us to be deliberate and thoughtful in our journey toward sustainability. We will use a game analogy throughout these levels to help clarify the differences in scope and content.



1. System Level
Identification of the scope of the system we’re dealing with. In the case of a game, the system would be the playing field and all of it's components. In terms of sustainability, the system is the entire biosphere. So we need an understanding of the way our system works. This can be found on our science page.

The Funnel – a core concept at this level is the idea that we are currently operating in a “funnel”. The funnel is a metaphor that helps us visualise the economic, social and environmental pressures that are growing on society as natural resources and ecosystem services diminish and the population’s number and consumption grows.

2. Success Level
In this case the success level is “sustainability.” Success in the game is winning, usually measured by the team that scored the most points. In the field of sustainable development, sustainability means that nature is not subject to systematic increases in:

- concentrations of substances from the Earth’s crust;
- concentrations of substances produced by society;
- degradation by physical means;
- and, in that society, people are not subject to conditions that systematically undermine their capacity to meet their needs.

3. Strategic Level
These are some strategic guidelines for organisations to follow in implementing the framework and taking actions towards sustainability. Following our game example, this level would be the strategizing level as the team members come together to plan a goal.

The most important strategy to focus on is backcasting from principles: it consists of establishing a vision of the organisation in the future where the four sustainability principles are not being violated and then ‘backcasting’ to the present to see what specific actions should be taken first to start strategically working towards that vision.

4. Action Level
These are the concrete actions that are taken on the path to sustainability. Depending on the nature of the organisation, they could include things like phasing out fossil fuel use by switching some capacity to renewable energy, or substituting metals that are naturally abundant in the biosphere and therefore benign for ones that are scarce and potentially harmful. In our game analogy, actions would be moving towards the net to score a goal, passing to team-mates, etc.

5. Tools Level
Here we find a variety of tools that help organizations manage their path towards sustainability. Certain tools are effective in different situations, but a lot of them work well together and create synergies when utilized within the context of the framework. They include Environmental Management Systems, ISO 14001, Life Cycle Assessment, Factor 10, Natural Capitalism, Ecological Footprinting, Zero Emission, etc. A lot of these tools have great organizations behind them and are helping organizations with various environmental and / or sustainability initiatives. In our game, tools would be the monitoring equipment that athletes use, their fitness equipment and any strategy books they can get their hands on.

The Science Behind our Approach

Back to Basics

The Natural Step principles and approach to sustainability are grounded in the scientific laws underlying the earth's systems. These are well known and accepted by scientists. While we all intuitively understand these basic scientific principles, we often overlook them in our day-to-day lives. They are as follows:

Nothing Disappears

All mass and energy in the universe is conserved. Energy may be converted into different forms, but the total amount of energy in an isolated system remains constant.

This principle of matter conservation and the First Law of Thermodynamics are helpful in understanding the earth as a system. For example, apart from the occasional meteorite or spaceship, the amount of matter on earth has stayed the same for billions of years. When matter is burned it is not destroyed, but transformed into waste, predominantly in the form of visible and invisible gases.

Everything Spreads

Energy and matter tend to spread spontaneously; everything has a tendency to disperse (the Second Law of Thermodynamics, or the Law of Entropy).

Although the total amount of energy remains constant, the quantity of energy that is available in a useful form decreases with each transformation and tends to dissipate through a system. Entropy is a measure of the amount of disorder or randomness there is in a system, and in every isolated system - such as the universe - entropy always increases. Examples of this include food decaying, coloured dye in clear water dispersing, a car rusting and ice samples taken in the Arctic Circle containing measurable amounts of man-made PCBs.

Thus, materials generated by, or introduced into, human society will eventually disperse in nature.

There is Value in Structure

We determine material quality by the concentration and structure of the matter that makes up a material. For example, food and petrol are valuable because they have a high concentration and structure. What we consume are the qualities of matter and energy - the concentration, purity, and structure of matter - and the ability of energy to perform work. We never consume energy or matter because it is neither created nor destroyed. If you drop a teacup and it breaks on the floor, much of the value from its structure is lost, but each of the original atoms is still present.

Photosynthesis Pays the Bills

Net increases in material quality on Earth are generated almost entirely by the sun-driven process of photosynthesis. Chloroplasts in plant cells capture energy from sunlight and form bonds that provide energy for other forms of life, such as animals.

According to the Second Law of Thermodynamics, disorder increases in all isolated systems. The Earth is a closed system with respect to matter, but it is an open system with respect to energy because it receives light from the sun. It is this flow of sunlight that continues to create structure and order from the disorder.

Next Steps

There are several ways you can continue to enhance your learning of the Framework for Strategic Sustainable Development including:

eLearning courses: http://www.thenaturalstep.org/elearning
Learning Program Courses: http://www.thenaturalstep.org/en/learning-programmes
FREE Sustainability Toolkits: http://www.thenaturalstep.org/en/toolkits-around-world

Please contact us to find out how we can help your business or community take steps towards sustainability.

The Natural Step New Zealand