TITLE Getting it: understanding the science and principles behind sustainability

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AVAILABLE IN *Teaching Business Sustainability Vol. 2: Cases, Simulations and Experiential Approaches* (ed. Galea)

FORMAT Hardback

DATE March 2007

ISBN 978-1-874719-73-1

PAGES 56-65

MORE DETAILS http://www.greenleaf-publishing.com/productdetail.kmod?productid=2483

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Getting it

UNDERSTANDING THE SCIENCE AND PRINCIPLES BEHIND SUSTAINABILITY

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Learners new to the concept of sustainability need a grounding in its definition and the underlying scientific principles. Teaching the science, even to non-scientists, is not that difficult. Overcoming misconceptions, prejudice, disinformation and guilt are the real challenges. This section will address these specific obstacles to learning.

Challenges

Unmuddling the term 'sustainability'

'Sustainability' as a label has some significant drawbacks. First, people often misconstrue it to mean sustaining their own organisation. It's a complex concept, fuzzy over specifics, and to some seems too intellectual and abstract to have much value. Also, 'sustaining' something rarely has the same emotional appeal as creating something; sustainability has a feel of levelling out the carnage instead of inspiring a 'renewal economy' or some other term. But, for better or worse, in most situations it's the best label we have to describe the concept.

In some situations, you're better off using another term altogether, a bridging concept that gets you most of what you want. For example, in manufacturing, 'zero waste' might resonate well. Companies that have had a strong total quality programme may

find it easiest to frame this as 'enlarging the definition of quality to include the environment (and perhaps also society)'. See Box 4.1 for other options.

In describing sustainability, we often use the 'three Es': Economy, Environment, and social Equity. We talk about how these are often traded off in our society instead of designing a way for them to be collectively optimised. We use a systems diagram to make this point. The heat island effect is the tendency for urban areas to be significantly warmer than the surrounding countryside due to their heat-absorbing surfaces. This leads to a downward cycle in all three 'Es'.

We explain that sustainability is about turning these gears in the opposite direction, coming up

- Zero waste
- Green building
- Green chemistry
- Community health
- Social responsibility
- Triple bottom line
- Resource efficiency
- Product certification
- Enlarged definition of quality

Box 4.1 Alternatives to 'sustainability'

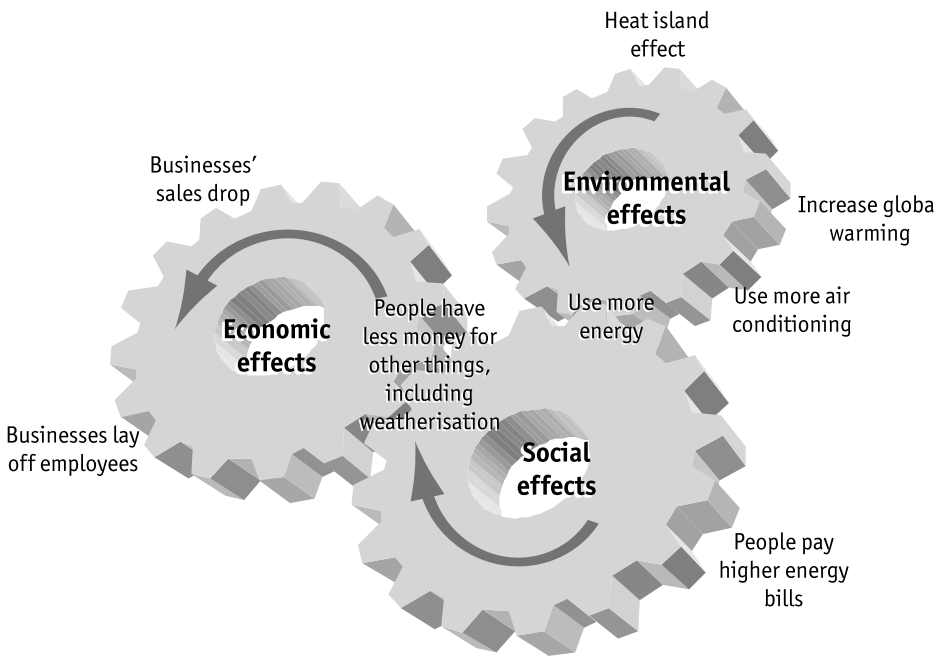

FIGURE 4.1 The downward cycle of the three 'Es'

with solutions that simultaneously improve the economy, the environment, and the health of our society (see Fig. 4.1).

Organisations often confuse sustainability with other 'green' or environmental programmes. In service organisations, when we try to explain the importance of sustainability, we often get a blank stare and 'But we recycle our paper . . .'. So we use the following diagram to help people distinguish sustainability from the other, necessary but lower forms of corporate programmes (see Fig. 4.2).

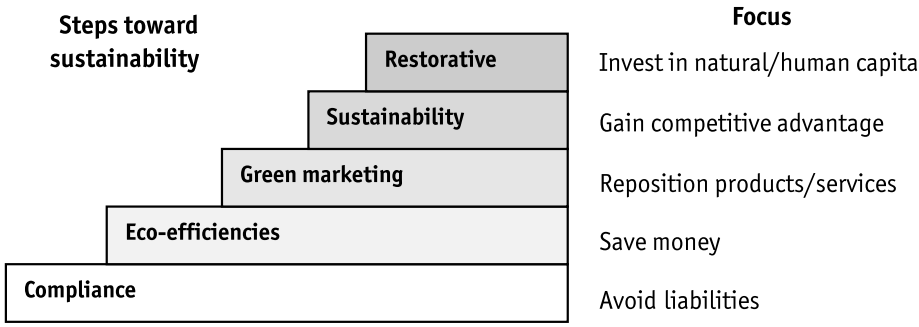

FIGURE 4.2 Steps toward sustainability

On the low end are organisations that are still focused only on regulatory compliance. Organisations at this level are primarily concerned with avoiding legal liabilities and may view environmental issues as a source of additional costs and headaches. Organisations focusing on eco-efficiencies have discovered that saving resources not only helps the environment but also their financial bottom line. So they are interested in saving water, energy, raw materials, etc. Here the focus is internal. At some point, many organisations realise that being 'green' can attract new customers or make their community more attractive. At this point they use green marketing to differentiate themselves from others.

Both green marketing and eco-efficiencies focus on 'doing better'. However, when organisations understand sustainability, they begin to wonder, 'Are we doing enough?' Just 'doing better' may not be enough to live within the limits of nature. When organisations reach the level of sustainability, they understand in their hearts the need to significantly change what they're doing and also understand in their heads the incredible business opportunity this can afford. Some businesses go beyond even sustainability (which balances our demands on nature with what it can provide) to restoration, rebuilding what we have degraded.

Last, we find it is often useful to translate sustainability into the logical responsibilities the organisation should assume. We use the following worksheet for businesses to explain their responsibilities.

Dealing with negative perceptions associated with environmentalism

While many people may view themselves as environmentalists, many others have negative associations with the environmental movement. So it can be important to distance sustainability from these negative connotations. Here are tactics we have used to avoid this problem:

- Pitch sustainability to their own interests. You can emphasise the economic benefits to business people and human interests with social service organisations
- Avoid using common environmentalist terminology: ecosystems, earth, planet, etc.
- Avoid blitzing them with doomsday statistics about the environment
- Openly acknowledge the mistakes that some in the environmental movement have made: being adversarial, appearing to care more about other species than people, etc.
- Explain how sustainability is different from past 'green' efforts: it's non-political, collaborative, doesn't place blame, acknowledges the need for a healthy economy and profitability, etc.

Getting past 'science phobia' and technical jargon

Not everyone enjoyed their science classes in high school, and certain audiences can be turned off by technical, scientific jargon. In such audiences, it's important to find terms, examples and demonstrations that connect with their experience. As an example, the following instructions explain how we present The Natural Step (TNS) System Conditions to a lay audience, including concepts of the evolution of life on earth, bioaccumulation, entropy, etc. (see Box 4.2). (A summary of the four System Conditions can be found on page 97.)

Explaining The Natural Step System Conditions

Materials

A picture of the Earth that you can write on; we use the view with Europe, Africa and Asia; props for the evolution example (ammonia, soda bottle, whoopee cushion or picture of natural gas flame, metals, oxygen mask, dinosaur, etc.), props for entropy demonstration (coffee mug and sugar cube, or fishbowl and food colouring), overheads of all System Conditions and the listing of chemicals in breast milk.

Process

Put up the picture of the Earth. Explain that there are three ways we humans have changed the Earth.

Box 4.2 Explaining The Natural Step System Conditions (continued opposite)

Explain that one way is that we take things out of the Earth's crust. Draw an up-arrow or shovel near the North Sea. Explain that the atmosphere was not always like it was, and to put things into historical perspective you need a volunteer to hold out their left arm.

Do the evolution demonstration where the shoulder is the beginning of life on Earth and the tip of the fingernail is today. What was the atmosphere like for the first half? (Heavy metals precipitated out; first life-forms could 'eat' ammonia, carbon dioxide and methane and released oxygen so, by the elbow, the ozone layer was forming. More carbon was sequestered even up to the middle of the palm when dinosaurs reigned. Humans showed up somewhere along the fingernail and the dust on the tip of the nail is the entire Industrial Revolution.) Ask: 'So what did we do in the Industrial Revolution to change this picture?' Answer: 'We dug all this stuff back up again!'

Show and discuss SC#1.

Go back to diagram of the Earth and explain that another way we have changed this picture is to make things. Draw a factory over Eastern Europe.

Show the overhead of chemicals. Ask: 'What do you think this list represents?' Explain that it's in the breast milk of women and polar bears. Ask: 'How did it get there?'

Explain bioaccumulation: Imagine a farmer sprays a pesticide onto a field so that every leaf of grass has the tiniest drop on it. As the cow eats the grass it ingests this chemical and, because the chemical is persistent (stays around a long time) and the cow's body doesn't know what to do about it and can't use it or excrete it, it stuffs it into fat cells. Over the lifetime of the cow, it eats a lot of the chemical and so has a much higher concentration than the grass. Now you come along and eat a bunch of burgers, and, like the cow, your body doesn't know what to do about this stuff so it stores it in your cells. Over 30 years, you eat a lot of cows. Now you have a higher concentration than the cow. Now you decide to have a baby and you nurse the baby. Who is at the top of the food chain, getting the highest concentration of pesticide? The baby. And this is particularly troublesome because the baby is so small and is growing rapidly.

Show SC#2.

Go back to the diagram of the Earth and explain that the third way we change this picture is to delete portions of nature. Draw a delete sign or cross over Malaysia or Indonesia. Ask: 'How do we delete nature?' Pollution, over-harvesting, development, etc.

Ask why it matters that we delete nature. Discuss the services nature provides. If desired, talk about the lessons from Biosphere 2.

Show SC#3.

Go back to the picture of the Earth and explain that, if we didn't do these things, we would have a sustainable society and these principles are derived from scientific principles around which there is no disagreement. But the scientists recognised a need for a social condition. Draw a sad face over Africa. Show SC#4 and discuss fairness and efficiency. (If in your presentation you did not go over the funnel, this is a good time to do the population demonstration. You can also talk about the Ecological Footprint.)

Box 4.2 (from previous page)

Motivating reluctant learners

It's possible that some participants in your presentations or classes may not be there willingly. So it's important to find ways to engage them. We have found the following strategies helpful:

- When people introduce themselves, ask them to mention a problem in their community that worries them. These will almost always fit into one or more of the three Es of sustainability: Economy, Environment, and social Equity (or livability). Make the connection for them so they can see sustainability as a way of solving a problem that they care about
- Plan lots of activities and group interaction to keep it interesting
- Introduce humour where possible
- Use lots of stories and examples. These draw people in

Managing guilt and defensive behaviours

One of the biggest psychological barriers is despair and helplessness. Many people feel guilty about their lifestyles and choices; they know about the environmental problems. But they don't know how to fix it so they push it all away. They may also be overwhelmed with the plethora of environmental/social issues—global warming, ozone hole, pesticides, cancer rates, species extinction, drought, etc., etc. Missing the overall relationship between these problems, it may feel like too many plates to keep spinning in the air, especially when kids need to go to soccer practice, the cupboards are bare, and they have an upcoming business trip out of town. Here are some ways to handle some of these challenges:

- Declare a guilt-free zone at the beginning of your presentation. Explain that none of us is sustainable. Explain that sustainability shouldn't be about not having what you want; it should be about getting what you want sustainably
- At the beginning of your presentation, ask people to list environmental problems that worry them. Write these on a flipchart. Make a long, messy list. Add your own if they stall out or need prompting. Now say that all these problems can be tied back to a handful of mistakes we made in designing our society. I then go on to explain The Natural Step (TNS) System Conditions. You can go back to their list afterward and show how all theses disparate problems can be tied back to these four principles
- Include an activity that shows them how to apply the System Conditions to everyday decisions. (See the activity in Box 4.3. I often include a worksheet that forces them to compare each option to each System Condition.)

Avoiding arguments about the data

Closely associated with guilt and defensive reactions, we have, on occasion, had people who refuted the basic data (e.g. the pace of species/topsoil/rainforest decline,

Everyday actions

Make up a set of cards, cutting out pictures from magazines to represent each of the options. Then ask the students to discuss each option in light of each System Condition and select the best and worst option based on The Natural Step framework.

- You are at the grocery store to buy juice
  - Buy frozen juice (–)
  - Buy fruit and make your own juice (+)
  - Buy fruit juice (not from concentrate)
- You are landscaping part of your yard
  - Plant a western red cedar tree (+)
  - Plant grass (–)
  - Plant a tulip tree
- You are choosing a sport for exercise
  - Play golf (–)
  - Play baseball
  - Do snow shoeing (+)
- Your family is deciding on a vacation
  - Go on a canoe trip in the Cascades (+)
  - Fly to Hawaii
  - Take a cruise (–)
- You are buying cleaning products
  - Buy Orange Plus (+)
  - Buy Lysol in an aerosol can (–)
  - Buy 409 in a spray bottle
  - Buy Simple Green
- You are thirsty
  - Drink bottled water
  - Grab a soft drink (–)
  - Get water from tap (+)
- You are choosing personal care products
  - Buy Tom's of Maine
  - Buy Dry Idea (–)
  - Buy deodorant stone (+)
- You are picking what to eat at a restaurant
  - Order beef: a steak or hamburger (–)
  - Order chicken
  - Order spaghetti with marinara sauce (+)

Box 4.3 Everyday actions (continued over)

- You are choosing a hobby
  - Get into photography
  - Hike/backpack (+)
  - Go fishing in motorised boats (–)
- You're at the checkout counter at the grocery store
  - Ask for paper bags
  - Ask for plastic bags (–)
  - Bring your own canvas bag (+)
- You want breakfast
  - Eat oatmeal (+)
  - Eat cold cereal
  - Eat a frozen waffle (–)

Box 4.3 (from previous page)

whether global climate change is actually happening, etc.). In these situations, it's important not to get into a my-data-is-better-than-your-data argument or to embarrass the individuals raising the issues. We have found the following strategies can help you get out of these quagmires:

- Agree with as much as you can with what the person said (e.g. acknowledge that there is still a lot of uncertainty about the rate of species decline, etc.)
- Explain the sources for your data. Ideally, you are using widely accepted sources for your data (e.g. the UN Intergovernmental Panel on Climate Change). In these situations, I will mention that the media, in their attempt to tell 'both sides of a story', often don't do a good job of explaining that one perspective is backed up by, for example, 2,500 of the world's leading climatologists, and the other represents a handful of scientists paid by industry
- If there is any reason to suspect the data you are referencing are not entirely objective, acknowledge that. For example, non-profits can benefit by making things look worse than they are just as industry groups may have an interest in making things look better. In these situations, you can often go on to say, 'Let's assume for a minute that their estimates are overstated by a factor of two. That still doesn't eliminate the basic problem. We're still not sustainable; the rate of degradation is just slower.'
- Express interest in reviewing their sources. Tell them once you've had a chance to look it over, you'd be glad to comment. In some cases, I pass these by experts in the field and forward their comments

What follows in the first two chapters of Part II are two activities that flow from the above discussion. The first activity is the Sustainability Card Game, which aims to anchor the science behind the four System Conditions of TNS. The second activity out-

lines the challenges that learners face in taking the message back to their organisations. It helps them learn how to effectively sell sustainability in their organisations by addressing these challenges.