Thinking and Acting Sustainably: Profile of a 21st Century Professional

Additional information for workshop leader

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Professional Practice for Sustainable Development

Professional Practice for Sustainable Development, or PP4SD as it is usually called, originated out a seminar held by the Council for Environmental Education and the Environment Agency in 1998. The purpose of the day was to find out if there was support for training for professionals, which would enable them to be more confident and competent in integrating sustainable development principles into their working practice.

There was unanimous support for the idea and a working group comprising CEE, the Environment Agency, the Institution of Environmental Sciences (IES) and the Natural Step developed a proposal for inter-professional learning. The proposal was submitted to the Environmental Action Fund for grant aid and was successful. The IES has hosted and supported the management of PP4SD since it began.

When the project began in 1999, the first task was to agree expectations, outcomes and outputs for the first three years. The idea of producing a Foundation Course in sustainable development emerged as the path the group wished to follow. The concept of systems thinking would underpin the training. Developing the Foundation Course was a real inter-professional learning process. The process started with the group producing a Framework that would be used to guide activities. The process also generated two documents, one on the business case for CPD in sustainable development and a second on guidance in developing cross professional learning opportunities and tools. These are both available on the Downloads Page of the PP4SD website (www.pp4sd.org.uk).

For phase two, the original group changed and expanded, but the goal remained the same: the integration of sustainable development principles into professional training. The project worked with the financial sector and the land based sector to prepare CPD materials that are now on the web.

Now in phase three, PP4SD continues to extend the professional sectors in which it works and continues to organise cross-professional events. Recent projects include a “Skills for Sustainability” workshop organised with the Science Council and developing sustainability workbooks for small and medium sized enterprises in Wales.

The current partners on the project management group are:

- The Institution of Environmental Sciences (IES)
- Society for the Environment (SocEnv)
- Swansea University
- Professional Associations Research Network (PARN)
- The Environment Agency

Further information from www.pp4sd.org.uk.

What is Sustainable Development all about?

Most of us have an intuitive understanding of what is meant by sustainable development. Trying to put that into words in the form of a definition is much more difficult. Most people accept the definition stated in *Our Common Future*[1], development that "*meets the needs of the present without compromising the ability of future generations to meet their own needs*". The passage continues "*the concept does imply limits, not absolute limits but ones imposed by the present state of technology and social organisation on environmental resources and by the ability of the biosphere to absorb the effects of human activities*". Because it is difficult to define does not make sustainable development any less important. Consider 'democracy'. That is another big idea that is similarly hard to define, but it is still recognised as a goal that is worth achieving universally.

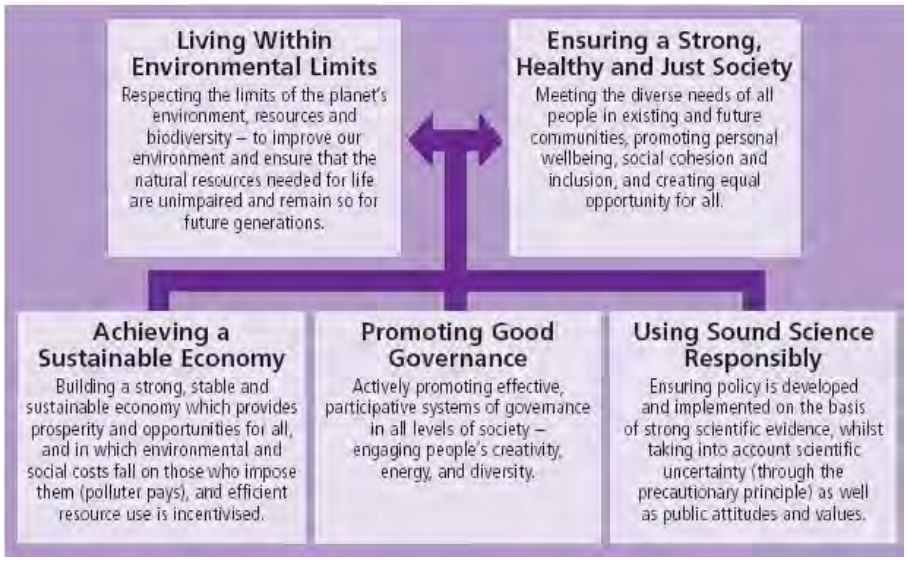
You will come across two terms related to the idea, 'sustainable development' and 'sustainability'. Sustainability is the goal to be achieved, sustainable development is what is done to get there. Then there are different terms applied to education about the topic including 'education for sustainability', 'education for sustainable development' and 'sustainable development education'. These all refer to what schools do to prepare students for a world in which working towards sustainability will be increasingly important.

Other discussions about sustainable development and sustainability provide helpful insights into what constitutes sustainable development. They all recognise that for development to be sustainable in the long term it must take account of its impact on the environment, people and the economy.

The slides include some diagrammatic ways of trying to describe the relationship between the three aspects of sustainable development.

Securing the Future

The British Government produced this diagrammatic set of principles in its document *Securing the Future*[2]. Once principles are agreed, then indicators are set up to allow progress to monitored. The Government has also published a set of indicators and publicises the progress being made[3].



Securing the Future placed the concept of environmental limits at its heart. For the first time since the landmark *Our Common Future* (1987), sustainable development is no longer about balancing the conflicting demands of the environment, economy and society. Instead, the new strategy makes clear that the economy, science and governance are the means by which we achieve our broader sustainable development goals – living within the planet's environmental limits while also creating a just and fair society.

1 Our Common future The World Commission on Environment and Development, Oxford University Press 1987

2 Securing the future: delivering the UK sustainable development strategy The Stationary Office March 2005

3 http://www.sustainable-development.gov.uk/performance/framework.htm

The Natural Step

The Natural Step[4] has developed a short set of principles to guide all development. These principles are conditions that must be met in order to have a sustainable society. The organisation maintains:

In a sustainable society nature is not subject to systematically increasing:
1. Concentrations of substances extracted from the Earth's crust.
2. Concentrations of substances produced by society.
3. Degradation by physical means.

AND in that society

4. Human needs are met world-wide.

PP4SD has agreed the following as a framework for sustainable development.

In a sustainable society:
1. Any materials extracted from the earth should not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects to humans and the environment.
2. Synthetic substances in their manufacture and use should not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects to humans or the environment.
3. The biological diversity and productivity of ecosystems should not be endangered.
4. A healthy economy should be maintained, which accurately represents the value of natural, human, social and manufactured capital.
5. Individual human skills, knowledge and health should be developed and deployed to optimum effect.
6. Social progress and justice should recognise the needs of everyone.
7. There must be equity for future generations.
8. Structures and institutions should promote stewardship of natural resources and the development of people.

Conclusion

These principles illustrate that sustainable development has moral elements as well as physical ones. These need to be raised in any teaching about sustainable development.

There is no agreed definition of sustainable development and that there may be no need for one. Sustainable development can be viewed as a process of change that is heavily reliant upon local contexts, needs and interests. Sustainable development is then seen as an 'emerging concept', first because it is relatively new and evolves as we learn to grasp its wide implications for all aspects of our lives, and, second, because its meaning emerges and evolves according to local contexts.

4 Since 1988, The Natural Step has worked to accelerate global sustainability by guiding companies, communities and governments onto an ecologically, socially and economically sustainable path.

Global Challenges and the Case for Sustainable Development

Global challenges

Climate change[5]

The Intergovernmental Panel on Climate Change (IPCC) was set up in 1988 to assess information on climate change and its impact. Its Third Assessment Report predicts global temperature rises by the end of the century of between 1.4C and 5.8C. Temperature rises are expected to affect countries throughout the World and have a knock on effect with precipitation and sea level rises. Scientists have argued about whether temperature rises are due to human activities or due to natural changes in our environment. The IPCC announced in 2001 "*most of the warming observed over the last 50 years is likely to be attributable to human activities"***.**

Projections for climate change globally:

- By the second half of the 21st century, wintertime precipitation in the northern mid to high latitudes and Antarctica will rise.
- By the same time, Australasia, Central America and southern Africa is likely to see decreases in winter precipitation.
- In the tropics, it's thought some land areas will see more rainfall and others will see less.
- It is thought the West Antarctic ice sheet is unlikely to collapse this century. If it does fall apart, sea level rises would be enormous.
- Global average temperatures are predicted to rise by between 1.4C and 5.8C by 2100.
- Maximum and minimum temperatures are expected to rise.
- More hot days over land areas and fewer cold days and frost.
- More intense precipitation events.

Biodiversity[6]

From the dawn of time, extinction has usually progressed at what scientists call a natural or background rate. Today the tempo is far faster. In 2003 the World Conservation Union's Red List said more than 12,000 species (out of 40,000 assessed) faced some extinction risk, including:

- one bird in eight;
- thirteen percent of the world's flowering plants ; and
- a quarter of all mammals.

Many species keep us alive, purifying water, fixing nitrogen, recycling nutrients and waste, and pollinating crops. Plants and bacteria carry out photosynthesis, which produces the oxygen we breathe. Trees absorb carbon dioxide, the main greenhouse gas given off by human activities. Some years ago, when the global annual gross product was about $18 trillion, US researchers calculated the value of the goods and services provided by the Earth to the world economy: was $33 trillion.

Peak oil

Peak oil is the point or timeframe at which the maximum global petroleum production rate is reached. After this timeframe, the rate of production will enter terminal decline. *Peaking is at hand, not years away... If I'm right, the unforeseen consequences are devastating* Matthew Simmons, former US government adviser.

At a rate of 3% increase in demand per year and annual finds of 10 billion barrels, a French Ministry report states 2013 as "the time of maximum production or 'peak oil'". At a rate of 3% increase in demand per year and annual finds of 10 billion barrels, the ministry report states 2013 as "the time of maximum production or 'peak oil'".[7]

[5] http://www.bbc.co.uk/climate/evidence/global_change.shtml
[6] http://news.bbc.co.uk/1/hi/sci/tech/3667300.stm
[7] http://news.bbc.co.uk/1/hi/business/4077802.stm

Population

The world's population is projected to grow from 6.86bn today to 9.26bn in 2020. This growth of 2.56bn is equivalent to the total population of the Earth in 1950.

The business case

Businesses are responsible for a major part of economic activity and for employing people from all professions. Without business on board, sustainable development is unlikely. Most businesses now recognise their responsibility. The following section shows that there is a good business case for integrating sustainable development principles into business strategies.

Sustainable development in various guises

The key concepts of sustainability are found in a number of areas of business management. One of the commonest places to find these principles is in the Corporate Social Responsibility programme. It is important not to get so hung up on the names that managers fail to recognise the opportunities provided by other programmes. The following is taken from the BSDGlobal website:

Corporate social responsibility (CSR) promotes a vision of business accountability to a wide range of stakeholders, besides shareholders and investors. Key areas of concern are environmental protection and the wellbeing of employees, the community and civil society in general, both now and in the future. Bringing these factors together under this heading seems very much what sustainable development is all about. The article continues:

"The concept of CSR is underpinned by the idea that corporations can no longer act as isolated economic entities operating in detachment from broader society. Traditional views about competitiveness, survival and profitability are being swept away".

Some of the drivers pushing business towards CSR include:

1. The shrinking role of government
In the past, governments have relied on legislation and regulation to deliver social and environmental objectives in the business sector. Shrinking government resources, coupled with a distrust of regulations, has led to the exploration of voluntary and non-regulatory initiatives instead.

2. Demands for greater disclosure
There is a growing demand for corporate disclosure from stakeholders, including customers, suppliers, employees, communities, investors, and activist organisations.

3. Increased customer interest
There is evidence that the ethical conduct of companies exerts a growing influence on the purchasing decisions of customers. In a recent survey by Environics International, more than one in five consumers reported having either rewarded or punished companies based on their perceived social performance.

4. Growing investor pressure
Investors are changing the way they assess companies' performance, and are making decisions based on criteria that include ethical concerns. The Social Investment Forum reports that in the US in 1999, there was more than $2 trillion worth of assets invested in portfolios that used screens linked to the environment and social responsibility. A separate survey by Environics International revealed that more than a quarter of share-owning Americans took into account ethical considerations when buying and selling stocks.

5. Competitive labour markets
Employees are increasingly looking beyond paycheques and benefits, and seeking out employers whose philosophies and operating practices match their own principles. In order to hire and retain skilled employees, companies are being forced to improve working conditions.

6. Supplier relations
As stakeholders are becoming increasingly interested in business affairs, many companies are taking steps to ensure that their partners conduct themselves in a socially responsible manner. Some are introducing codes of conduct for their suppliers, to ensure that other companies' policies or practices do not tarnish their reputation.

Benefits of CSR

Some of the positive outcomes that can arise when businesses adopt a policy of social responsibility include:

1. Company benefits:
- Improved financial performance;
- Lower operating costs;
- Enhanced brand image and reputation;
- Increased sales and customer loyalty;
- Greater productivity and quality;
- More ability to attract and retain employees;
- Reduced regulatory oversight;
- Access to capital;
- Workforce diversity; and
- Product safety and decreased liability.

2. Benefits to the community and the general public:
- Charitable contributions;
- Employee volunteer programmes;
- Corporate involvement in community education, employment and homelessness programmes; and
- Product safety and quality.

3. Environmental benefits:
- Greater material recyclability;
- Better product durability and functionality;
- Greater use of renewable resources; and
- Integration of environmental management tools into business plans, including life-cycle assessment and costing, environmental management standards, and eco-labelling.

The Sigma Project

The UK Sigma Project[8] has also explored the business benefits of implementing sustainable development and it echoes much of what is said above. Their website lists the following business benefits:
- Improved operational efficiency;
- Enhanced brand value and reputation;
- Customer attraction and retention;
- Enhanced human and intellectual capital;
- Improved management of risk;
- Preservation of licence to operate;
- Promoting and increasing innovation;
- Improved access to capital;
- Building and sustaining shareholder value;
- Generating increased revenues; and
- Identification of new opportunities.

Sustainable businesses are often well-run businesses and will deliver traditional business benefits. However, adopting sustainable development principles to business practice often goes further. Sustainable development is used to help businesses become architects of a better future. Sustainable development is therefore becoming established as a business ethic as well. This opens the way to progress in sustainable development in ways that may not be, at least in the short term, economically beneficial to the company.

The journey to sustainability

Commercial and other organisations can be said to be at one of the stages on a 3-stage journey from environmental compliance, through environmental risk management, to long-term sustainable development strategies.

8 SIGMA is a partnership of three organisations: British Standards Institution, AccountAbility and Forum for the Future.

In the initial phase of the journey, the need to comply with environmental regulations drives improvements in environmental performance. Businesses adopt a more proactive approach in the next phase. Environmental risk management is introduced, to reduce environmental liabilities and to minimise the costs of regulatory compliance. A substantial number of companies recognise that the implementation of sustainable business strategies can lead to new opportunities and improved results - the business and sustainable development phase

References and contacts

BSDglobal.com is maintained by the International Institute for Sustainable Development, in alliance with Global Responsibility International AB (an independent subsidiary of Skandia, a Swedish financial services and insurance group).

Guidelines on the business case for sustainable development from the **Sigma Project** can be downloaded from www.projectsigma.co.uk.

The World Business Council for Sustainable Development provides information on the business case for sustainable development. The Globescan Survey of Sustainability experts stated, “By far the best website for information on sustainable development”. See http://www.wbcsd.org/

Joining up the thinking and planning

At the core of sustainability is the quest for finding life styles that are sustainable. While debate about what we mean by sustainability continues, there is substantial evidence that most current life styles are creating problems for many societies, individuals and ecosystems. We recognise that decisions need to be made about a whole host of our wants needs and that these are all interconnected. Addressing one issue at a time might solve one issue but can create a whole host of other problems.

Failure to consider all the consequences of an action is responsible for many of the unsustainable activities we recognise today. For example, allowing air traffic to expand at the rate it is by providing for the predicted demand with new runways undermines other efforts to curb emissions of greenhouse gases. Simple cause and effect answers are no longer adequate to find solutions to sustainable development issues. All things we do have consequences on the many physical, biological and social systems that have evolved. We need methods of being able to think about issues in a much wider context than we have been accustomed to. This is what is known as systems thinking.

Systems thinking[9]

The essence of systems thinking and practice is in 'seeing' the world in a particular way, because how you 'see' things affects the way you approach a situation or undertake specific tasks. And how you 'see' things is influenced heavily by the culture of the society in which you live and work and by your education and training.

This simple story illustrates the different ways people 'see' the world. Each of the professionals in this story were given a barometer and asked to find the height of a church tower.

The physicist took the difference in air pressures at the top and bottom of the tower to calculate the height. The engineer dropped the barometer and timed its descent to calculate height. The architect lowered the barometer on a piece of string till it touched the ground and measured the string. The surveyor ignored the barometer. He/she measured the shadow cast by the tower and used the angle of the sun to calculate the tower's height. The accountant went to the sexton and offered the barometer as a tax-deductible expense if the sexton told him the height of the tower!

The story illustrates two important points. First that people and their viewpoints are part of the situations we normally deal with and second there is more than one way to handle any situation.

When thinking in terms of systems, we have to move away from trying to:

- identify a single cause for an observed effect,
- find a single action to resolve a particular problem.

We are generally very happy to accept simple answers to those issues that concern us. So in an attempt to reduce my carbon footprint and living in England, I might choose to buy a pack of butter from a local farm. However, it is quite likely that its carbon footprint is greater than one produced in New Zealand and transported half way around the world! Different climatic conditions and farming methods require a much greater use of feed, fertilisers and energy in England than New Zealand. I need to look at the wider picture. Politicians, the media, environmental pressure groups and developers recognise the power of offering simple solutions, especially in response to a crisis or lobby. Identify cards are being introduced to help prevent terrorism, closed circuit television is installed to prevent crime, new roads are built to reduce traffic congestion, catalytic converters are required to be fitted on all fossil fuel powered vehicles to reduce air pollution and so on. These are all single factor solutions that have addressed a symptom rather than the multiple causes of the issue.

Systems thinking can help resolve complex situations involving people and things, where it is important to focus on the relationships between people and things as well as the structure of a particular situation. By setting the sustainability agenda in an 'earth as a system' context, it is much easier to engage with what needs to be done, rather than merely focusing on measuring, managing and mitigating environmental impacts down stream.

9 Based on an article by Professor Stephen Martin for Professional Practice for Sustainable Development. The article can be downloaded from www.pp4sd.org.uk

The Five Capitals model described below is one way of helping people to think about issues from different points of view and find solutions that are truly sustainable.

The Five Capitals model[10]

Capital is traditionally understood as accumulated wealth in the form of investments, factories and equipment. In reality, our economy and every company need five types of capital to function properly:

Natural capital (also referred to as environmental or ecological capital) is any stock or flow of energy and matter that yields valuable goods and services. It includes *resources*, some of which are renewable (timber, grain, fish and water), whilst others are not (fossil fuels); *sinks* which absorb, neutralise or recycle wastes; and *processes*, such as climate regulation. Natural capital is the basis not only of production but also of life itself.

Human capital consists of our health, knowledge, skills and motivation, all of which are required for productive work. Enhancing human capital - for instance, through investing in education and training - is vital for a flourishing economy. Poverty is both morally indefensible and socially inefficient in that it prevents millions of people from fulfilling their potential and becoming engaged in the creation of wealth.

Social capital is the value added to any activity or economic process by human relationships and co-operation. Social capital takes the form of structures or institutions which enable individuals to maintain and develop their human capital in partnership with others and includes families, communities, businesses, trade unions, schools, and voluntary organisations.

Manufactured capital comprises material goods - tools, machines, buildings and other forms of infrastructure - which contribute to the production process, but are not used up in it.

Financial capital plays an important role in our economy by reflecting the productive power of the other types of capital, and enables them to be owned and traded. However, unlike the other types, it has no *intrinsic* value; whether in share, bonds or banknotes, its value is purely representative of natural, human, social or manufactured capital.

Our wealth depends on maintaining an adequate stock of each of these types of capital. If we consume more than we invest, then our opportunities to generate wealth in the future will inevitably be reduced. Sustainability can only be achieved if the stocks of capital are kept intact or increased over time.

At the heart of the current environmental crisis is the way in which present patterns of consumption and production are unsustainably depleting natural capital. , The Earth's ability to support the projected levels of human population in the next century at <u>any</u> level, let alone at the standard of living we in the industrialised world enjoy, is seriously brought into question. As Paul Hawken and Amory Lovins argue in their book "Natural Capitalism" (1999):

"*What might be called 'industrial capitalism' does not fully conform to its own accounting principles. It liquidates its capital and calls it income. It neglects to assign any value to the largest stocks of capital it employs – the natural resources and living systems, as well as the social and cultural systems that are the basis of human capital."*

Many people now advocate a model of sustainable capitalism, based around maintaining and where possible increasing our stocks of these different capital assets, so that we succeed in living off the income without depleting the capital. They are the capital stocks from which we have to derive all our goods and services, and produce improvements in human welfare and quality of life. If consumption is at the expense of investments, then such consumption is not sustainable and will inevitably be reduced in the future.

However, it is worth bearing in mind that all such categorisations are more than a little arbitrary. In reality, there are only two sources of wealth in the world today. The wealth that flows from our use of the earth's resources and ecosystems, all powered by incoming solar radiation (our natural capital); and the wealth that flows from the use of our hands, brains and spirits (our human capital). All else – money, machines, institutions, etc – is derivative of these two primary sources of wealth.

10 From The Natural Step http://www.naturalstep.org.nz/index.asp

The PP4SD Framework

- Any materials extracted from the earth should not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects to humans and the environment.
- Synthetic substances in their manufacture and use should not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects to humans or the environment.
- The biological diversity and productivity of ecosystems should not be endangered.
- A healthy economy should be maintained, which accurately represents the value of natural, human, social and manufactured capital.
- Individual human skills, knowledge and health should be developed and deployed to optimum effect.
- Social progress and justice should recognise the needs of everyone.
- There must be equity for future generations.
- Structures and institutions should promote stewardship of natural resources and the development of people.

Practical tools for applying joined-up thinking to sustainability

1 - Photos and illustrations

"A picture is worth a thousand words"

Introduction

Pictures and diagrams can help communicate some of the complex interrelationships that need to be explored when thinking about sustainability and the actions recommended for its achievement. This short paper suggests how photographs, illustrations and diagramming can help trainers use these materials effectively.

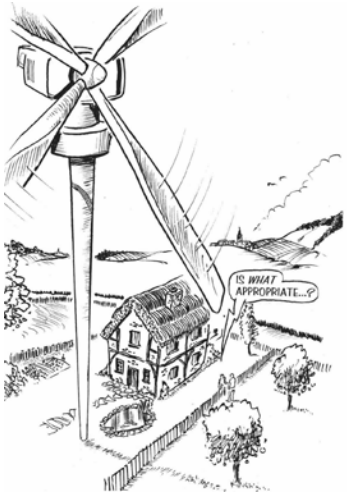
The MSP Resource Portal[11] provides practical information on how to facilitate participatory learning processes with various stakeholders. It provides theoretical foundations, methods and tools to create learning processes, facilitation tips, examples, literature and links to help build capacity for sustainable development.

Photographs/Illustrations

Eaton Centre, Toronto

The Introductory Activity is designed to get participants talking about their perceptions of sustainability and sustainable development. This is difficult and discussion is likely to be unfocussed and unproductive unless some kind of visual stimulus material is provided. The authors of the manual have recommended using a photograph of a human activity such as farming, transport, electricity generation, construction or shopping to stimulate discussion initially about the sustainability of the activity and then about sustainability and sustainable development in general. The discussion that develops enables each participant to express their own perceptions and through negotiation identify some common principles that they agree to use during the workshop.

An alternative to a photograph is a cartoon. By using humour to illustrate a serious point, the impact can be greater and the discussion more open ended as participants consider it is less formal and the perceived boundaries for a discussion therefore wider. However, you need to use them carefully. Some people think they trivialise important issues.



Ewan McLeish

Rich pictures

Drawing Rich pictures is another technique that can be used to share perceptions of sustainability and stimulate thinking systemically about a topic or issue. They are referred to as rich pictures because they capture the rich, multidimensional issues that are part of a system and which matter to the participants. Instead of putting ideas into words, each participant draws a picture of how he/she perceives sustainability. Participants can be encouraged to show links between elements in their pictures and to use a few keywords to communicate the key elements, links and issues depicted. The Open University has a web page with a description of the technique and guidelines for preparing Rich pictures[12].

2 - Diagrams

[11] http://portals.wi.wur.nl/MSP/?
[12] http://systems.open.ac.uk/materials/t552/pages/rich/richAppendix.html

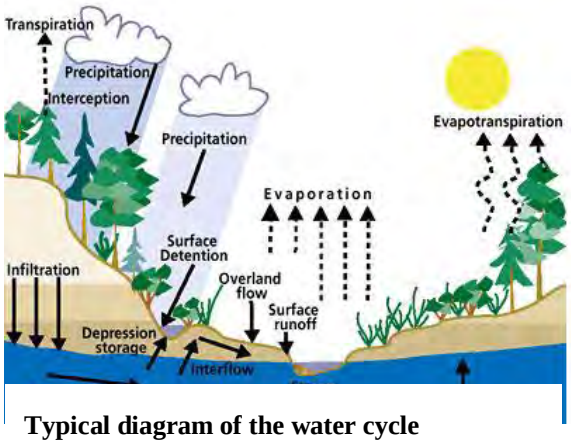
Introduction

This workshop manual emphasises the value of using systems thinking techniques for identifying and addressing complex sustainability issues. We refer to it as joined-up thinking. The ability to construct diagrams is a valuable skill because they can help:

- Organise one's own thinking
- Communicate those ideas to others more effectively than words alone

There are several types of diagrams that can be used depending on the purpose of the exercise. Diagrams can be used to identify, record and analyse:

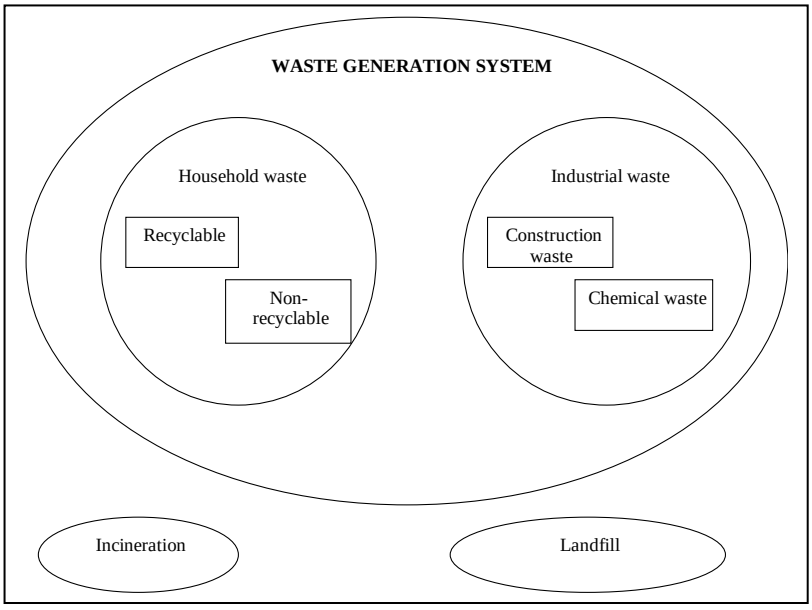
- The elements within a system
- The relationships between elements in a system
- Relationships between systems
- Causes and effects
- The impacts of proposed actions, including recognising positive and negative feed back loops



Typical diagram of the water cycle

When diagrams are being developed by groups use a large sheet of paper so everyone can see it and be involved. A sheet from a flip chart is ideas. The initial diagram is likely to be very messy as ideas develop and new items need to be added. Before presenting to other groups, a second version may need to be produced. Alternatively, ideas can be written on post-it notes and stuck onto a large sheet of paper. These can easily be rearranged as the discussion develops.

A Systems Map

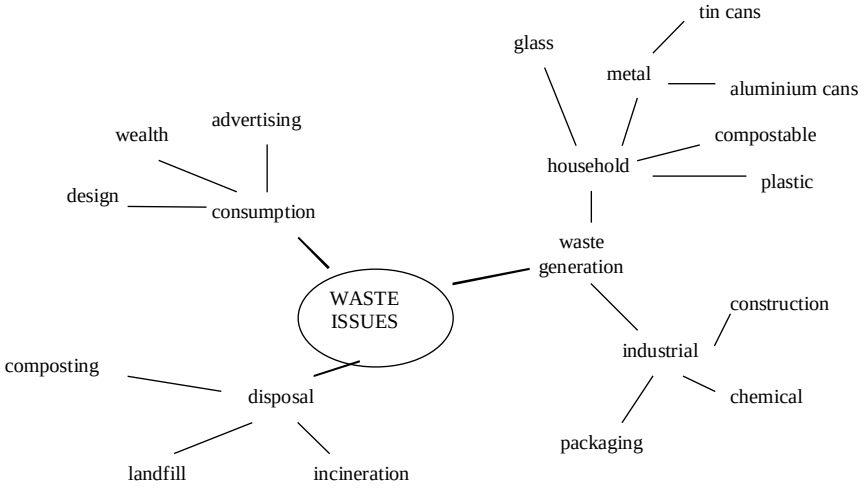


A systems map shows the structure of a system, ie its components and how they are organised. They are usually drawn in an early stage of tackling an issue or problem when you are trying to find a structure for your thoughts. First you set the boundary for the system you are considering and then within that identify the components of the system, or sub-systems. The water cycle diagram shows the elements of a cyclical system, but systems can also be linear as for example a waste disposal system where waste is disposed of without being reused or recycled. Within the waste generation system a number of sub-systems can also be identified. Outside the waste generation system other important related elements can be identified, although they are not under consideration at the moment.

Mind maps or spray diagrams

Mind mapping involves writing down a central idea and thinking up new and related ideas that radiate out from the centre. By focussing on key ideas written down in your own words, and then looking for branches out and connections between the ideas, you are mapping knowledge in a manner which will help you understand and remember new information. The benefit of this type of diagram is that you do not have to identify what kind of connection exists, just that there is a connection in your thoughts.

Using the topic of waste again, this could go into the centre of the diagram and the diagram might develop to look like this. Shapes can be drawn around key nodes to help identify them. They can become very untidy so before using them to communicate ideas to other groups, they may need redrawing. Again, post-it notes can prove helpful.



Hints for constructing mind maps

Look for relationships

Use lines, colours, arrows, branches or some other way of showing connections between the ideas generated on your mind map.

Draw quickly on unlined paper without pausing, judging or editing

All of these things promote linear thinking and the idea of mind mapping is to think creatively and in a non-linear manner. There will be time for modifying the information later but at this stage it is important to get every possibility into the mind map.

Write down key ideas

Using capital letters can help you focus on key points. You can write explanatory notes in lower case.

Put main idea in the centre

It is useful to do a mind map in "landscape" style. With the main idea or topic in the middle of the page. This gives the maximum space for other ideas to radiate out from the centre.

Leave lots of space

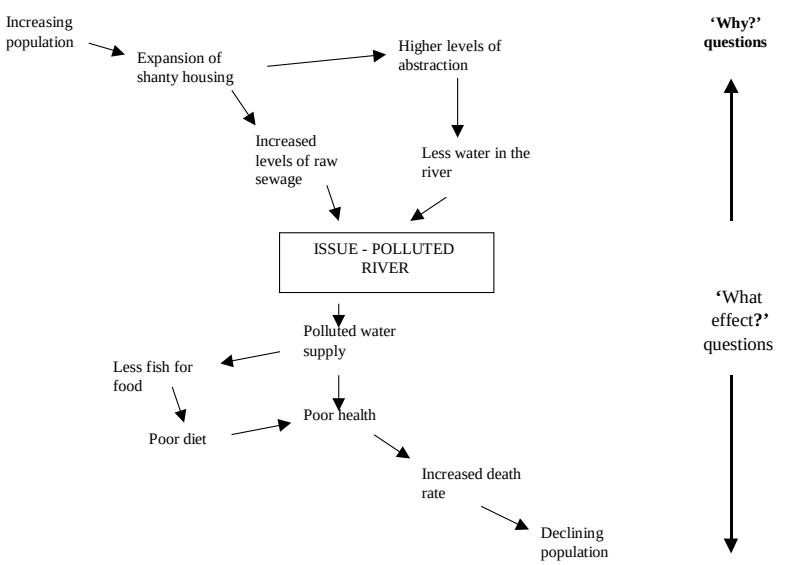
After the initial drawing of the mind map you may wish to highlight things, add information or add questions

Acknowledgement*: These hints were adapted by James Cook University from the work of Tony Buzan and others who have promoted mind mapping as a learning and thinking tool*

Cause and effect diagrams

Cause and effect diagrams are very helpful in taking a group's analysis of an issue to a higher level. The components of an issue might have been identified, but there has been no attempt to reveal the nature of the relationships between the various variables or the causes of those relationships. With sustainability we are often trying to analyse why a particular situation has arisen or how a development might be planned that allows maximum benefit to be achieved without causing harm to the environment or people's lives. With cause and effect diagrams it is also possible to identify where different groups might intervene most effectively.

There are no simple solutions to sustainability issues. The issues are very complex and a mechanism is needed to identify and analyse the complexity of the relationships between ecological, economic and social factors. Any solutions proposed must also be scrutinised in the same detail to try and ensure that in solving one problem other serious problems are not created. The diagrams created can become very complex because the issues have multiple causes. Arrows show the direction of influence, but there may be many arrows linking an effect to several causes, and one cause to several effects. The arrows may also carry a notation, such as 'prevents', 'builds' or 'enables'.



From the simple example above it is also possible to identify a negative feedback loop. The pollution leads to poorer health, a higher death rate, declining population and hence a reduction in pollution (not that I am recommending that as a solution to the polluted river problem). Positive feedback loops can create runaway situations. For example, the Arctic ice cap is shrinking as a result of global warming. In turn this means there is less reflection of the Sun's rays from the ice back into space and so warming is reinforced.

Conclusion

This short description can only introduce the methodology of how to use pictures and diagrams in the workshop. You will need to experiment with the methods yourself and then consider how they can best be used to analyse the situations relevant to the participants. An important aspect will be how to integrate the 5 Capitals model of analysing situations with these methods.

3- Backcasting

> Backcasting "*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*". The Natural Step[13]

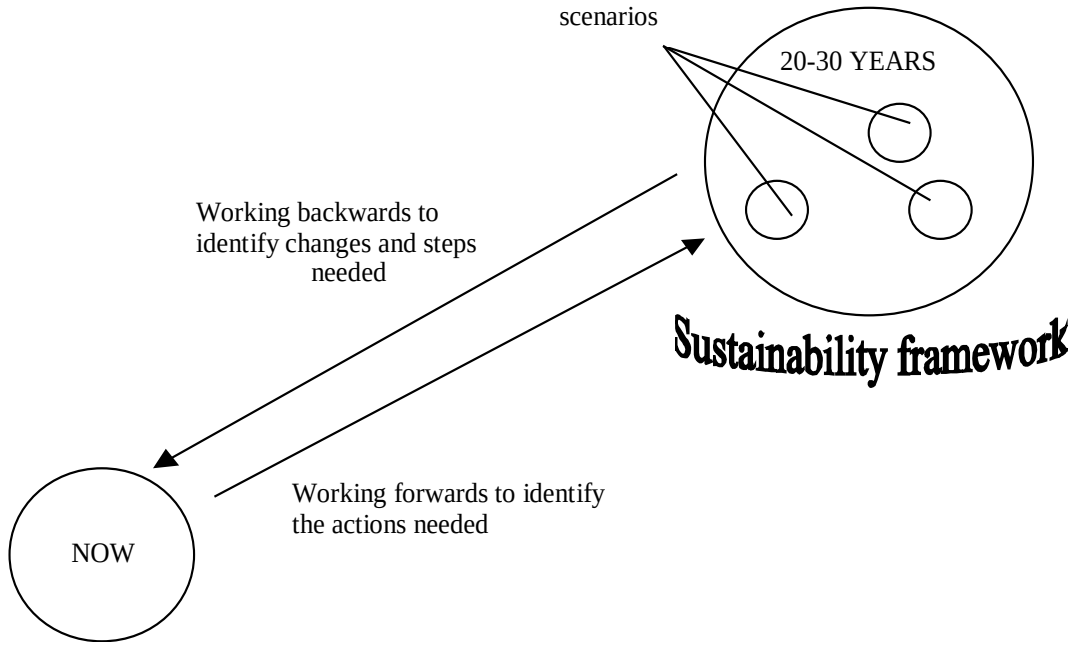
The workshop also applies a number of techniques to help participants to think in a futurist perspective because one of the challenges of sustainable development is developing resilient and adaptive decision-making tools that can cope with risk and uncertainty. These techniques include simple scenarios that exemplify the two different approaches we can take to the future and, importantly, how these approaches influence the way we act.

[13] http://www.thenaturalstep.org//backcasting

The usual way of approaching the future is through forecasting by starting from where we are and projecting trends over relatively short time intervals, eg one to three years. Planning based on such trends tends to lead to short-term and incremental changes. A major limitation of forecasting is that many present trends are clearly unsustainable.

The alternative approach is 'backcasting' which starts by taking a 20 to 30 year perspective. The idea is to think imaginatively about the business or organisation to which you belong and seek to explore a range of future scenarios that will make it more closely fit a sustainability framework, eg The Natural Step framework or the one presented earlier in these notes. From each alternative future created, you then work your way backwards from the future towards the present in stages, asking such questions as: What barriers did we overcome? Who helped us? Who did we need to persuade?

The differences between forecasting and backcasting are critical to how we act in response to the issues of sustainability. Forecasting at best offers a short-term future, but if these trends fail us, then prediction fails us. History teaches us that sooner or later trends fail because change creates deeper, more fundamental issues. In contrast, backcasting starts from your anticipated destination (most sensible climbers start planning from the summit that they wish to conquer and work backwards!) and seek to plot a course of action towards it.



Sources of further information

This is a select list only. Most sites will provide links to other useful sites.

Institution of Environmental Sciences
Website: http://www.ies-uk.org.uk/
The Institution is a charitable organisation that promotes and raises public awareness of environmental science by supporting professional scientists and academics working in this crucial arena. Visitors to the website can download copies of its journal and newsletter.

IES hosts the PP4SD project.

Professional Practice for Sustainable Development (PP4SD)
Website: www.pp4sd.org.uk
Information about the organisation and downloadable materials including many for use in training events including c ase studies, manuals, booklets and reports.

HM government
Website: www.defra.gov.uk/sustainable/government

A good starting point for finding out more about sustainable development and government policies, plans and actions. Provides links to many other useful websites.

European Union
Website: http://ec.europa.eu/sustainable/
The opening page for finding out everything about the European Union and sustainable development.

Forum for the Future and the Natural Step
Website: www.forumforthefuture.org/our-approach/tools-and-methodologies/TNS

- Forum for the Future is a charity working for sustainable development by:
  - Showing organisations what a sustainable future could look like and challenging them to make a difference
  - Delivering practical solutions to help organisations change
  - Training leaders to bring about change, and educating the leaders of tomorrow
  - Communicating success stories

It also holds the licence for The Natural Step, a simple science based tool for analysing the complex issues associated with sustainable development. It works with many businesses and organisations.

The site provides much valuable information on topical issues, sustainability aspirations and ways of becoming more sustainable.

The World Business Council for Sustainable Development
Website: www.wbcsd.org/
The Council provides information on the business case for sustainable development. The Globescan Survey of Sustainability experts stated, “By far the best website for information on sustainable development”.

BSDglobal.com
Website: www.bsdglobal.com
BSDGlobal is maintained by the International Institute for Sustainable Development, in alliance with Global Responsibility International AB (an independent subsidiary of Skandia, a Swedish financial services and insurance group). The site's six sections cover:

- Current issues: briefings on specific sustainable development topics from a business perspective
- Strategies and tools: how to incorporate the principle of sustainability into everyday business activities, illustrated by real-life examples
- Markets: business opportunities arising from sustainable development
- Banking and investment: spotlight on how sustainable development is being approached by the financial services industry
- Working with NGOs: how businesses are forging working partnerships with lobby groups
- Training opportunities: how universities and professional training providers can help industry leaders incorporate sustainability into their business strategies