

# Sustainable innovations in enterprises



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# Introduction

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This free course, *Sustainable innovations in enterprises*, provides you with a short introduction to sustainable innovations in enterprises, clarifying some key themes and terminology and helping you to examine your own views about this subject.

The course is divided into three sections that cover the:

1. definition of sustainable innovation
2. differences in sustainable innovation within specialist areas
3. methods used to evaluate and measure the impact of sustainable innovation and its social implications.

This OpenLearn course is an adapted extract from the Open University course [B327 \*Creating futures: sustainable enterprise and innovation\*](#).

The full course teaches you how to create and manage sustainable forms of innovative and entrepreneurial ventures within a range of specialist areas. It gives the learner the opportunity to apply core theories, concepts and frameworks of innovation and entrepreneurship to understand the strategy, process and operations of enterprises at different stages of their life cycle.

The course also discusses the impact of innovation and entrepreneurship on society, both at a conceptual and a practical level, including ethics and sustainability, and the economic and social benefits to you and the economy. It provides you with intermediate and advanced conceptual and practical learning in entrepreneurship and innovation in different contexts.

# Learning Outcomes

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After studying this course, you should be able to:

- define sustainable innovation
- analyse sustainable innovations within a specialist area
- evaluate and measure the impact of sustainable innovation
- engage with the social impact of sustainable innovation with confidence
- reflect on key learning and applications to professional practice.

# 1 Initial impressions and experiences

There are many different views about the ‘meaning’, ‘categories’ or ‘types’ of enterprise, innovation and sustainability. You will learn about these key terms, and some working definitions, as you study this course.

In Activity 1, you will examine your existing ideas about sustainability, innovation and entrepreneurship and compare your views with those of existing organisations.

The terms *sustainable* and *sustainably* are used in a variety of ways. *Sustainable* means being able to be used without being destroyed. Sustainability means reducing harm on the environment and ultimately reversing the damage already caused. It also means renewing resources at a rate equal to, or greater than, the degree at which they are consumed. This means living within the resources of the planet without damaging the environment now or in the future. To do this there needs to be an economic system that provides for quality of life while renewing the environment and its resources. It is important to take the long-term view of how our actions effect future generations and make sure we don’t deplete resources or cause pollution at rates faster than the earth is able to renew them.

The original definition of *sustainable development* is usually considered to be: ‘Development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (Bruntland, 1987).

As you work through this activity be sure to keep a personal record of any issues or questions that come to mind as you complete the opening tasks. Then, as you progress through the course, you can refer back to your notes to see how your ideas have changed (or perhaps, remained the same!).

## Activity 1 Sustainability, innovation and entrepreneurship

Allow about 30 minutes

Select and watch two of the videos below. Then answer the questions that follow (Note: if you watch the Josh Littlejohn or Rachel Arthur videos you should watch the first five minutes only).

**Will Dobson – Meon Spirit Company (watch the whole video)**

Video content is not available in this format.



**Josh Littlejohn – Food for thought (watch the first five minutes only)**

View at: [youtube:WZgChfLJD8Q](https://www.youtube.com/watch?v=WZgChfLJD8Q)



**Rachel Arthur – Sustainability in fashion (watch the first five minutes only)**

View at: [youtube:FbsGRknLYg4](https://www.youtube.com/watch?v=FbsGRknLYg4)



Now answer the following questions:

1. What (if anything) is 'innovative' about each enterprise?

*Provide your answer...*

2. What types of innovation are discussed?

*Provide your answer...*

3. What are the societal challenges experienced by each organisation?

*Provide your answer...*

4. What (if anything) makes you think that the innovations are sustainable? Why?

*Provide your answer...*

5. Watch the videos a second time and revisit your answers to Questions 1 to 4, modifying them if necessary. Have your views about innovation, entrepreneurship and sustainability changed? Make notes on any changes, if any, after watching the videos again.

*Provide your answer...*



Now continue to the next section, which discusses the meaning of innovation.

## 1.1 Definitions and types of innovation?

When considering innovation there are three definitions to think about:

1. 'Innovation refers to the process of bringing any new, problem-solving idea into use.' (Kanter, 1983, p. 20)
2. 'Innovation is the process of translating ideas into useful – and used – new products, processes or services.' (Bessant and Tidd, 2011, p. 40)
3. 'Innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.' (OECD, Statistical Office of the European Communities, 2005, p. 46)

Innovation contains elements of novelty and creativity, and generates value. The value created by the innovation can be commercial in terms of increased surplus for the company, the entrepreneur and the shareholders, or it can be commercial and social in terms of the added value created for the users.

Innovation is also seen as referring to the whole process of interconnected actions that bring a novel idea into practical use. This understanding of innovation is very comprehensive and includes all activities from discovery or invention through to the development of its practical applications.

This task involves distinguishing different *types* of innovation. There are a number of ways of categorising types of innovation. To begin with, you can think of innovation in terms of different types of *output*. In other words, the types of novelty being brought into use.

## 1.2 Six types of innovation

There are six types of innovation.

- **Product innovation:** a novel, tangible artefact, sometimes (but not always) based on new technologies, which may be marketed to organisations or to individual consumers. For example, LED lights were introduced in the early 21st century and are rapidly replacing other types of lighting.
- **Service innovation:** a novel, intangible activity, sometimes (but not always) based on new technologies, which may be marketed to organisations or to individual consumers. For example, there has been a recent growth in 'de-cluttering' services and 'self-storage' providers.
- **Process innovation:** a novel way of creating and/or delivering a product or service. For example, a wider range of business services, such as text translation, are now provided more quickly and cheaply through online providers.
- **Organisational innovation:** a novel way of arranging the internal structures, procedures or practices of an organisation. This type of innovation is usually intended to improve the performance of organisations (e.g. to reduce costs or to increase efficiency).

Organisational innovations are instances of organisational change that:

- result from a shift in underlying organisational assumptions

- are discontinuous from previous practice
- provide new pathways to creating public value.
- **Positional innovation:** alters the way people perceive an established organisation, product or process in a specific context. For example, a low-cost supermarket might seek to re-position itself as a more up-market retailer, such as Tesco introducing its 'Finest' range, which has resulted in increased profits.
- **Paradigm innovation:** difficult to distinguish from positional innovation, but refers to a more general change in the way people think about an institution, organisation or a whole category of products and services. For example, public perceptions of tobacco smoking have changed radically since the late 20th century.

## Activity 2 Identifying different types of innovation

Allow about 30 minutes

Before moving on, check your current level of knowledge and understanding of innovation by completing this short quiz. Try to complete all of the questions before referring to the discussion.

What types of innovation would you identify for each of the following examples? Select as many boxes as appropriate.

### 1. A new treatment for malaria

- Product
- Service
- Process
- Organisational
- Positional
- Paradigm

### 2. A flexible manufacturing system

- Product
- Service
- Process
- Organisational
- Positional
- Paradigm

### 3. A virtual team working

- Product
- Service
- Process
- Organisational
- Positional
- Paradigm

### 4. An online custom-made clothing business

- Product
- Service
- Process

- Organisational
- Positional
- Paradigm

#### 5. The first low cost airline

- Product
- Service
- Process
- Organisational
- Positional
- Paradigm

#### Discussion

It could be considered that all the answers to Question 5 are acceptable, but the first low cost airlines started a paradigm shift. They cut all the exciting features to give customers what they need most at a reasonable price.

## 1.3 Personal development planning

Whether working as an entrepreneur and owner–manager of an enterprise, or as an employee, understanding your personality and those of others around you is useful because it helps you to become self-aware, to know the situations when you need to be creative and/or productive working alone or as part of a team undertaking sustainable innovations in an organisation.

These considerations will in turn enhance your career development in sustainable enterprise and innovation.

Throughout this course you are encouraged to assess your knowledge and skills in relation to your career aspirations. This is called Personal Development Planning (PDP). Activity 3 introduces the idea of diagnostic self-assessment to help you to understand your own personality as well as the personalities of others, and to evaluate your personal strengths, knowledge, skills gaps, behaviour and performance.

### Activity 3: Part 1 What does personal development planning mean to you?

Allow about 20 minutes

Watch this video interview in which Brian Tracy answers some interesting questions on personal development planning for entrepreneurs. Brian Tracy is an entrepreneur himself, specialising in the development and training of individuals and organisations.

While watching the video, consider the approach to personal development planning adopted by Brian Tracy. Think about whether there are any similarities or differences in your own approach to personal development planning (especially if you have experience of development planning).

Note your responses in the box below for your own future reference.

Video content is not available in this format.



*Provide your answer...*

Future leaders and enterprise managers need to be aware, and make the most of, their natural personality traits, in order to develop in their careers and to successfully manage their enterprises.

Admirable personality traits are the result of hard work, not just a gift of nature. The example of Estée Lauder, who built a cosmetics empire and became the wealthiest self-made woman in America in the process, is an example of a strong personality, an open creative mind and a self-disciplined, achievement-oriented entrepreneur.



**Figure 1** Estée Lauder, a successful entrepreneur

Next you will look at the Big Five Model.

## The Big Five Model

The match between personality traits and successful career development is unique and context-specific, which means that the traits that serve an enterprise manager well in one setting may not be the most appropriate for another enterprise manager in a different setting. Academic research in the area of organisational psychology has provided a rich

understanding of the depth and variety of personality traits that can help us to understand and possibly manage behaviour in the workplace.

One of the most popular models of personality traits that appears to be validated empirically across time, contexts and cultures is the Big Five Model, also known as the Five Factor model. The model comprises five broad personality dimensions: Openness to experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism, and so the acronyms OCEAN or CANOE are often used. Understanding the impact of these dimensions on organisational and individual behaviour and performance is important for people management in organisations. Numerous authors (for example, Costa and McCrae, 1988; Specht et al., 2011; Toegel and Barsoux, 2012) have discussed these five broad dimensions.

- **Openness to experience:** this dimension includes people's tendency to appreciate art; to be intellectually curious, creative or imaginative; to pursue novelty; or to prefer change over stability. High openness to experience can also be an indicator of a lack of focus and consistency. Low openness to experience can be perceived as being overly cautious or dogmatic.
- **Conscientiousness:** this dimension refers to people's tendency to be organised; to be perfectionists; to focus on details and achievement; and to be self-disciplined. High levels of conscientiousness may also result in focusing too much on details and losing the bigger picture. Low levels of conscientiousness can be perceived as being flexible or possessing a lack of control.
- **Extraversion:** this dimension refers to people's tendency to be energetic; to be sociable or talkative; to pursue excitement; and to exude warmth. High extraversion may reflect assertiveness and a desire to experience positive emotions or attention seeking. Low extraversion may be perceived as being reserved, self-reflective or having a tendency for being self-absorbed and aloof.
- **Agreeableness:** this dimension refers to people's tendency to get along with others, avoid conflict and be friendly, helpful, compassionate and cooperative. High agreeableness may result in being perceived as naïve or submissive. Low agreeableness involves voicing criticism, but it may also be perceived as being competitive and untrustworthy.
- **Neuroticism:** this dimension refers to people's tendency to be sensitive, nervous, anxious and vulnerable, or to generally experience a variety of unpleasant emotions. Low neuroticism may reflect emotional stability, a calm personality or one with low concern. High neuroticism may be perceived as anger or impatience, but it can also convey confidence.

These five dimensions provide a strong theoretical foundation in personality psychology and suggest a possibility for explaining potential behaviour and performance in the workplace. Actual behaviour and performance are also dependent on, and impacted by, situational variables, such as the characteristics of the job, the culture of the organisation, relationships with co-workers and the resources provided. You will use the Big Five Model in the next part of Activity 3 to reflect on your understanding of your personality traits, and identify a number of distinctive strengths and competencies, as well as weaknesses and areas for development.

### Activity 3: Part 2 Understanding your personality traits: the Big Five Model

Allow about 30 minutes

**Note:** we recommend you complete this activity in Chrome or FireFox.

1. Assess your personality traits by completing the following questionnaire, which is based on the Big Five model.

Interactive content is not available in this format.

2. Now write a paragraph of about 100 words in which you reflect on your results from the self-assessment quiz. Your reflection should compare your self-assessed scores with what you thought about yourself before you completed the questionnaire. It should also include your thoughts on whether your personality traits can be seen as an appropriate predictor of your performance.

*Provide your answer...*

#### Feedback

You will find that by studying the Big Five Model, assessing your personality traits and reflecting on the results, you will have a good background about how personality traits can affect your behaviour and performance. When you analyse yourself on each dimension, note that it shows only a possibility for explaining potential behaviour and performance, which are also dependent on, and impacted by, situational variables, such as job characteristics, organisational culture and co-workers.

You could use your notes from this activity to produce a short narrative on what personal development planning means for you and how you can work with others in undertaking sustainable innovation and enterprise development in your future work context.

## 2 Sustainable innovation in different specialisms

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In this section, you will look at the concept of sustainable innovation based on three example case studies of discovery, invention and design. However, before doing so, you will review some of the key societal problems or challenges that make sustainable innovations so important. You will then move on to explore how existing innovations can help address societal challenges.

### 2.1 What are societal challenges?

On 25 September 2015, the United Nations published a document titled *Transforming Our World: the 2030 Agenda for Sustainable Development*, which contained 17 sustainable development goals (SDGs) (UN, 2015).

The 17 SDGs reflect the problems that every society faces. For this reason, the goals are recognised globally and will be around for at least the next 15 years. The United Nations' SDGs are all encompassing global targets to end poverty and hunger completely and ensure clean water for all.

Another example that can be used to illustrate societal problems is the European Union's Horizon 2020 (EU, 2013), a research and innovation programme. The aims of Horizon 2020 reflect the policy priorities of the Europe 2020 strategy and address major concerns and societal challenges shared by citizens in Europe and elsewhere.

Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.

Seen as a means to drive economic growth and create jobs, Horizon 2020 has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in our future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs.

By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

(EU, 2013)

This approach brings together resources and knowledge across different fields, technologies and disciplines, including social sciences and the humanities. Societal issues can include the following challenges:

- health, demographic change and wellbeing
- food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy



- secure, clean and efficient energy
- smart, green and integrated transport
- climate action, environment, resource efficiency and raw materials
- Europe in a changing world – inclusive, innovative and reflective societies
- secure societies – protecting freedom and security of Europe and its citizens.

It is important for entrepreneurs and innovators to understand the industry, market sector or specialist area which they wish to enter or in which they operate. A good understanding of the specialist area includes an understanding of aspects such as technological changes, social pressures, government regulations and competitors.

#### Activity 4 Addressing societal challenges

Allow about 30 minutes

Listen to the audio recording in which practitioners from three different specialist areas – engineering, science and information technology; creative, leisure and cultural industries; and health and social care – share their experiences of how to identify and address societal challenges using entrepreneurship and innovation. You will then start thinking about your own specialist area.

Audio content is not available in this format.

1. For each specialist area, make a list of the societal challenges that the speaker identified and the ways these are being addressed.

a. Societal challenges and innovative solutions in engineering, science and information technology

*Provide your answer...*

b. Societal challenges and innovative solutions in creative, leisure and cultural industries

*Provide your answer...*

c. Societal challenges and innovative solutions in health and social care

*Provide your answer...*

#### Discussion

Entrepreneurs and innovators must have a good understanding of the current state of the area they are working in, including issues such as expected growth rates, trends and competitors. Market research reports are one source of such information and so you should become familiar with the type of information in such reports and where you can find them.



2. Now decide on the specialist area you want to focus on and make notes about why you have selected this area. You should then use this chosen specialist area to complete the rest of the course so that you can gain the knowledge and skills that work for you when you become involved in sustainable innovation projects in the future.

*Provide your answer...*

## 2.2 Connecting societal challenges with sustainable innovation

Sustainable development offers an organising framework based on opportunity and respect for human values. Innovation is about using change in ways that better meet human needs and values. The connection between the two seems obvious although, in the absence of clear market pressures and a common language, can be hard to realise, especially since innovation can come unexpectedly 'out of left field' and have such uncertain consequences.

Innovation has often been the result of presenting (or being presented with) a credible strategic dilemma: a shock that can only be resolved by developing wholly new approaches. Innovation based on better design and new technologies gives us the means to act smarter and more sustainably. Using these tools well depends upon understanding the public's expectations and concerns, and being able to meet needs cost effectively without raising further alarms over the scale or novelty of technology.

The leadership task is to harness these economic and social trends, capture the tremendous amount of knowledge and experience that exists in networks worldwide and combine these in ways that create value. Traction is likely to be greatest when the management approach is positioned appropriately for the organisation in its network and seen by staff to be relevant and self-evident (if not simple) in purpose and content.

The need for sustainability is already starting to transform the competitive landscape, which will force companies to change the way they think about products, technologies, processes and business models. The key to progress, particularly in times of economic crisis, is innovation. By treating sustainability as a goal, it allows enterprises to develop competencies that will give them competitive advantage.

### Incorporating sustainability into an organisation

The world has evolved through what can be described as cycles of change and waves of innovation, partly driven by **incremental** and **disruptive innovations** (Utterback and Acee, 2005). Silva and Di Serioa (2016) argue that every organisation is under pressure to embrace sustainability because of the depletion of resources and the competitive performance that can be realised by developing and sustaining innovative solutions to societal problems.

Incorporating sustainability into an organisation's goals and operational strategies can generate economic, social and environmental benefits both for the organisation and society as a whole. The societal problems described so far in this course 'provide

opportunity for action and highlight the need for sustainable innovation systems, incentive policies and support for sustainability, as well as the development of technologies that enable organisations to combine economic, environmental and social objectives' (Silva and Di Serioa, 2016, p. 129).

To illustrate, consider two types of sustainability.

- **Financial sustainability:** the capacity of an organisation to secure the necessary financial resources to continue operating over an extended period, as seen in cash-flow management.
- **Environmental sustainability:** a term that has a range of definitions, but is concerned primarily with the impact of organisations on the natural world. These impacts can range from local air and water pollution problems to much broader ones, such as the depletion of scarce natural resources, biodiversity loss and global warming arising from greenhouse gas emissions.

Later in this course you will also consider organisational sustainability and social sustainability.

### Activity 5 Sustainable innovation through compliance

Allow about 30 minutes

Watch the video below exploring how enterprises can connect societal challenges to sustainable innovation. Then answer the questions that follow.

Video content is not available in this format.



## Societal challenges and sustainable innovation

1. Can you think of another example of compliance as opportunity? For instance, a new technology, a product, or a less tangible sustainable innovation such as a process or service. Describe your example in the box below.

*Provide your answer...*

### Discussion

Compliance can be seen as opportunity by examining the component parts. In the video some component parts were internal to the enterprise (internal processes and policies) and others were external (laws and regulations). The management team of an enterprise can be upfront and create products and services that exceed the legal requirements, rather than focusing on the costs involved. Such an enterprise is well placed to achieve sustainability. For example, an enterprise that sets a target of 4 per cent carbon emissions in its production process even though the regulatory limit is 6 per cent. Compliance helps companies to be more aware of how the enterprise can be innovative in its production and marketing processes, taking into account societal challenges (e.g. environmental damage) that need to be addressed to achieve sustainability.

2. How has the value chain been used in the three specialist area examples given to obtain sustainable innovation? You could select a new technology, a product, or a less tangible invention such as a process or service. Describe your example in the box below.

*Provide your answer...*

### Discussion

A sustainable supply chain is beneficial to an enterprise where it helps the enterprise to be successful (e.g. in generating profits or other rewards) while contributing to protect the environment. This can be achieved by focusing on the value added and/or waste reduction across the supply chain rather than simply viewing the supply chain as a linear process from raw materials to point of sales. In the video this is described as value chain. For example, a value chain can be used to create a sustainable innovation by rethinking how a product is produced and delivered to end users – how the enterprise maximises material and energy efficiency, creates value from waste or substitutes with renewables and natural processes. Examples can include energy-efficient vehicles and alternative power sources.

3. Can you think of another example of sustainable products and services? For instance, you could select a new technology, a product, or a less tangible invention such as a process or service. Describe your example in the box below.

*Provide your answer...*

### Discussion

The example of an energy-efficient vehicle can be an illustration of a sustainable product depending on whether the organisation that produces it addresses the compliance, and supply and value chain issues discussed in the answers to the first two questions above.

## 2.3 Developing next-practice sustainability strategy

Next practices, those practices that only exist in our imagination, can change existing paradigms. To develop innovations that lead to next practices, entrepreneurs and innovators must question the implicit assumptions behind current practices. This is exactly what led to today's industrial and services economy.

Can we create a carriage that moves without horses pulling it? Can we fly like birds? Can we dive like whales? These questions will once have been asked. By questioning the status quo, people and companies have changed it. In like vein, questions must be asked about scarce resources: can we develop waterless detergents? Can we breed rice that grows without water? Can biodegradable packaging help seed the earth with plants and trees? Sustainability can lead to interesting next-practice platforms.

Successful business models include novel ways of capturing revenues and delivering services in tandem with other companies. Developing a new business model requires exploring alternatives to current ways of doing business as well as understanding how companies can meet customers' needs differently. Entrepreneurs and managers are learning to question existing models and to act to develop new delivery mechanisms.

As companies become more adept at this, the experience will lead them to the final stage of sustainable innovation, where the impact of a new product or process extends beyond a single market. You will now consider how to develop your next-practice sustainability strategy in Activity 6



**Figure 2** Sustainable strategy

### Activity 6 Creating a next-practice platform

Allow about 20 minutes

Listen to the following audio in which Richard Goodhead explains how Rolls Royce connect societal challenges to sustainable innovation. You will notice that it is an extended version of part of the audio which you first listened to in Activity 4. Then answer the following questions on next-practice.

Audio content is not available in this format.

1. Create a next-practice platform for using the sustainable strategy diagram in Figure 2. For this, draw a blank diagram that has a shape similar to Figure 2 with clearly marked sections for economic, market, social and environmental sustainability. Next identify information from the audio about Rolls Royce which reflects each of these four components of sustainability to complete your figure. While this does not give you a definitive sustainable strategy of Rolls Royce, it provides an illustration of the types of information that constitute the sustainable strategy of an enterprise.

*Provide your answer...*

2. Select an organisation of your choice and repeat the task in Question 1. This could be your own organisation (if you own one), the organisation you work for or one that you may have studied in other contexts.

*Provide your answer...*

### Feedback

You will have written about your own specific example but one constant to bear in mind is that sustainability can lead to interesting next-practice platforms. One example written about in [hbr.org](http://hbr.org) as far back as 2009, but which is only recently emerging, is at the intersection of the internet and energy management. It is called the smart grid – it uses digital technology to manage power generation, transmission and distribution from all types of sources along with consumer demand, with the aim of lowering costs as well as more efficient energy usage.

The concept has been around for years and the huge investments so far have recently made it a reality. The grid allows companies to optimise the energy use of computers, network devices, machinery, telephones and building equipment, through meters, sensors and applications. It also enables the development of cross-industry platforms to manage the energy needs of cities, companies, buildings and households.

Technology vendors such as Cisco, HP, Dell and IBM have invested to develop these platforms, as have utilities like Duke Energy, SoCal Edison and Florida Power & Light.

Now complete Activity 7.

### Activity 7 Societal impacts of sustainable innovations

Allow about 15 minutes

1. In what areas can entrepreneurial initiative and innovation help people who are marginalised?

- access to job opportunities
- access to a community-based energy enterprise
- access to care and health services
- access to safe housing
- all of the above

2. In what ways might entrepreneurship have an impact on societal challenges?

- by improving access to safe and healthy food in areas with high rates of malnutrition
- by improving access to finance for otherwise marginalised entrepreneurs
- by increasing the share of profits distributed to shareholders overseas
- by influencing consumer behaviour to increase profits
- by improving stakeholder inclusion in the governance of the enterprise

3. Which of the following could be seen as a practical example of societal challenge?

- decreasing income inequality
- young people criminality
- ageing of population and care
- environmental degradation
- more public parks

4. Which of the following are key perspectives that are considered when developing a sustainable strategy?

- economic perspective
- market perspective
- social perspective
- legal perspective
- environment perspective

5. Which of the following could be seen as a practical example of an innovation that was developed to have little impact on the environment?

- hydrogen-powered vehicle
- wood burner
- a community-owned hydroelectric scheme
- a biodegradable plastic

You will now look at how you can measure and evaluate the impact of sustainable innovation.

# 3 Measuring the impact of sustainable innovation

In this section, you will examine methods for evaluating and measuring different types of sustainability management tools.

Social impact tells the story of the change you can bring to society and people's lives. Enterprises can and should measure their social impact. One reason for this is because an enterprise's funder may want to know that their investment will make a real difference. However, this is not the only reason why it is good to measure social impact, and the real benefits derived from the process happen within the organisation.

If you have a way to tell the whole story of the enterprise's impact – not just sales and profit – then you have a powerful tool that will improve credibility and encourage people to believe what the enterprise says. It will inspire staff and volunteers, and the enterprise will be encouraged to continuously improve services, communicate to stakeholders, form the basis of powerful publicity materials and funding applications, and help to make an even greater difference.

Every organisation – no matter how small or new – can measure its social impact. That being said, it is often better for small organisations to start by measuring just one indicator, perhaps related to just one activity. Once used to this, more indicators can then be added.

## 3.1 What is social impact?

What does the term *social impact* really mean? The word *impact* means there are consequences to the actions you take. You therefore create change in something else.

What about the *social* element? This is the reason for being, the purpose of the organisation you work in. It addresses a social need identified in your community. If the impact you have consists of the consequences of your actions, then your social impact is simply the consequences of the actions you take to address the social needs you have identified. Put even more simply, *social impact* is the change you bring to the lives of the people and organisations you work with.

Rather than asking about the social impact your organisation achieves, you can think about it by giving an example of how your organisation has changed someone's life. Your 'social impact' is how the lives of your clients are being changed. 'Social impact measurement' is just a new approach to doing something that has always been done.

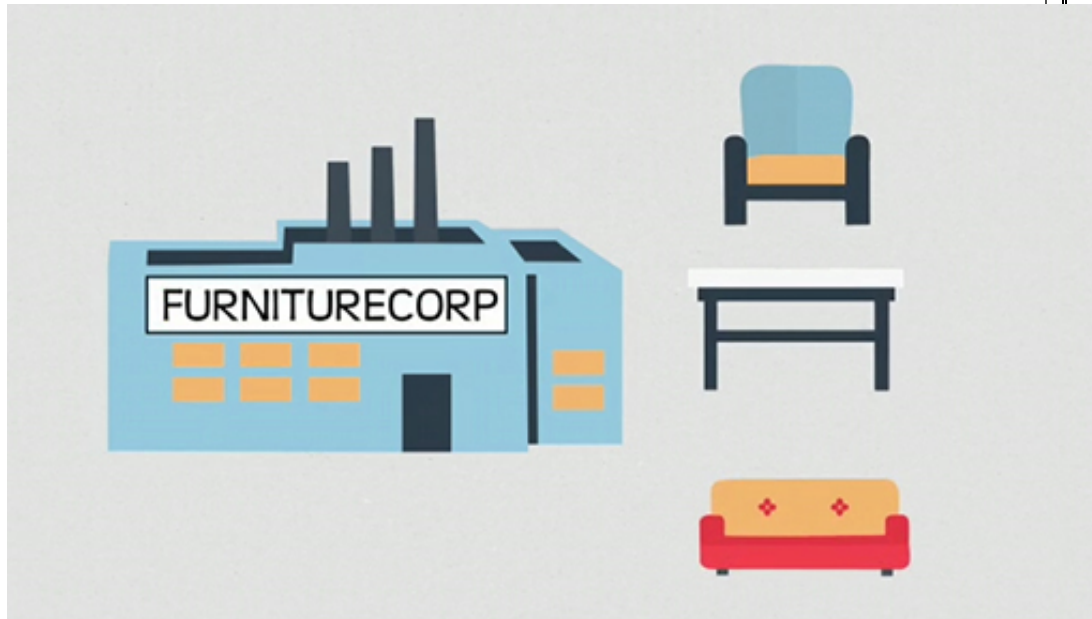
### Activity 8 Key Performance Indicators (KPIs)

Allow about 20 minutes

Before going on to study what social impact to measure and what framework to use, it is important to first ask yourself: how do you know that the strategy of your sustainable enterprise is on track? In this activity, you will look at how organisations can use Key Performance Indicators (KPIs) to measure and manage key aspects of their operations. Watch this introduction to KPIs and make your own notes about what steps this organisation takes to incorporate KPIs into its business.



Video content is not available in this format.



Provide your answer...

#### Discussion

The video illustrates how Furniturecorp, a small business, goes about incorporating KPIs in its strategy in order to be sustainable. Once the business develops a strategic plan which requires a number of changes, it then has to work with its staff to ensure that everyone within the organisation understands and buys into the new strategy. The concept of KPIs is discussed in the video as one popular approach to tackling this issue. It requires the organisation to follow the steps below:

1. Identify the organisation's Critical Success Factors (CSF), that is, what the organisation must do successfully in order to achieve its goals (e.g. manufacturing and sales targets) while being aware that these may change over time.
2. Work with staff to develop and agree measures to achieve CSFs and to discuss the constraints to be overcome. Some of the measures identified include non-financial aspects, frequency of measurements, and links to individual and team goals, all of which must be clearly understandable and serve as triggers for action.
3. Identify the Key Results Indicators (KRIs), that is, summaries of past performance (e.g. sales turnover, net profits and market share) and how they differ from KPIs. KRIs can be used to measure day-to-day performance.
4. Beware of the 'bad side' of KPIs. Make sure you consider their implementation and ensure that staff are not focusing only on KPIs. KPIs should be used as a guide to ensure the attainment of organisational and individual goals.

If you want to read more about these four steps, you can consult Parmenter, D. (2015) *Key Performance Indicators: Developing, Implementing, and Using Winning KPIs*, Hoboken NJ: John Wiley & Sons.



## 3.2 Approaches to measuring and evaluating social impact

The social impact measurement process is a planning procedure that should underpin every organisation – defining its values, vision, mission, aims and objectives so that the organisation is clear on what they wish to achieve. An organisation should always be guided by its values.

There are a few approaches to measuring and evaluating social impact. In this section you will learn about three approaches. First, the life cycle assessment (LCA), a technique to assess the environmental aspects and potential impacts associated with a product, process or service. Second, the triple bottom line, a popular approach to impact measurement developed for assessing results of business activities. Third, the social performance scorecard, an approach that considers social impact in terms of measurable indicators of social performance.

Each approach will have practical examples. You should consider and compare them with other approaches you may know as the basis for developing an approach that works for you or your organisation.

### The life cycle assessment (LCA)

The life cycle assessment (LCA) is a technique to assess the environmental aspects and potential impacts associated with a product, process or service, by:

- compiling an inventory of relevant energy and material inputs and environmental releases
- evaluating the potential environmental impacts associated with identified inputs and releases
- interpreting the results to help make a more informed decision about the human health and environmental impacts of products, processes and activities.

Life cycle assessments involve cradle-to-grave analyses of production systems and provide comprehensive evaluations of all upstream and downstream energy inputs and multimedia environmental emissions. For a typical product, LCA takes into account the supply of raw materials needed to produce the product, the manufacturing of intermediates and finally the product itself, including packaging, transportation of raw materials, intermediates and the product, use of the product and disposal of the product after use.

LCAs have been done on a huge variety of products and processes, including jet engines, drinking cups, computers and waste disposal, however they can be costly and time-consuming, thus their use is often limited as analysis techniques in both the public and private sectors. Streamlined techniques for conducting LCAs are needed to lower the cost and time involved with an LCA and to encourage a broader audience to begin using the LCA.

The benefits of a LCA are:

- to focus on the most significant environmental impacts as the company develops and evaluates sustainability programs and policies.
- to inform product decisions to reduce the environmental impact from design and materials to manufacturing.
- to support engagement with external stakeholders to reduce the impact of materials and consumer care.

Ultimately, the purpose is to allow for accurate and expedient comparison of a product's environmental performance – enabling significant reductions in the environmental impact of all products.

An LCA can also be used to assess the end-to-end environmental impacts of a business decision on overall value creation. The International Standards Organization (ISO) created ISO 14040 and 14044 standards for conducting LCA studies.

Such studies involve four steps:

1. establishing the goal and scope of the study
2. taking a life cycle inventory
3. conducting a life cycle impact assessment
4. interpreting the results to make a business decision.

The first step for any life cycle study is to establish the sustainability goals. The most common goals are:

- identify cost savings
- enhance brand value for competitive differentiation
- improve design decisions
- make better procurement decisions

These will be discussed in more detail using a case study on Levi Strauss next.

## Levi Strauss case study

Levis' mission and vision describe what they are doing, how they are doing it and where they want to be in the future.

**Mission statement:** 'The Mission of Levi Strauss & Co. is to sustain responsible commercial success as a global marketing company of branded apparel. We must balance goals of superior profitability and return on investment, leadership market positions, and superior products and service.' (Strauss & Co., 2015)

**Vision:** 'We are the embodiment of the energy and events of our times, inspiring people with a pioneering spirit.' (Strauss & Co., 2015)



**Figure 3** Levi Jeans

With sustainability becoming increasingly important, it is essential that companies establish their competitive advantage while justifying the impact of sustainability. For this to happen, the enterprise must both invest in social impact initiatives that generate measurable results, and engage in marketing campaigns that inspire internal and external stakeholders to participate in the process. Levi Strauss & Co. have done this using sustainability in the apparel industry, to bring an innovative lens to environmental and social impact throughout its supply chain, materials and whilst also activating its consumer base. The company has gone beyond labour compliance standards by publicly disclosing its manufacturing supplier locations. It has also led the industry in banning sandblasting, and partnering with non-governmental organisations (NGOs) and key suppliers to support programs that improve workers' lives.

### Levi Strauss' sustainability goals

#### **Identify cost savings**

A common goal of many sustainability projects is to reduce costs. This can be achieved by reducing consumption of costly resources, or by recycling/reusing materials that would previously have been considered waste when manufacturing the product. LCA provides a data-driven approach to identifying potential operational efficiencies through reducing energy use, material use, water consumption, waste generation and emissions. By quantifying environmental impacts through measuring the amounts of water, materials and energy consumed, and the carbon and waste generated at each stage of producing a product or delivering a service, companies can see where those impacts are greatest.

Environmental impacts have associated financial costs – whether it's a higher energy or water bill, or increasing business risk because of future expected regulation or price volatility. By reducing the impacts, the company can also reap cost savings. In this case Levi Strauss found a way of dramatically reducing costly water consumption and are also going forward by persuading consumers to do the same.

#### **Enhance brand value for competitive differentiation**

In many industries, and particularly the fashion and apparel industry, there is a competitive advantage if your product and brand is perceived as environmentally and socially beneficial. Many businesses are embracing sustainability initiatives and Levi Strauss have used their LCA results to promote their brand. The brand revolves around the fact that its products are using less water. The company has also been able to leverage sustainability decisions made primarily for other reasons – cost or regulatory compliance, for example – into positive publicity.

**Improve design decisions**

LCA is also useful when making design decisions that affect sustainability. By evaluating various possible materials and processes for manufacturing and delivering a new product at the design stage, companies can use environmental, social and economic criteria to reduce the life cycle impact. This helps to answer eternal dilemmas such as ‘which type of fabric is better to use for jeans?’ Levi Strauss have compared different materials and analysed the environmental impact to see which fabric is better when considering the main environmental issues caused by the washing of the jeans. This has informed the choice of materials for their products.

**Make better procurement decisions**

By engaging multiple suppliers on joint cost and impact reduction efforts, and by encouraging innovation among suppliers, businesses can make procurement decisions that significantly boost their sustainability efforts. LCA can lead the way here. Levi Strauss asks suppliers to assess the environmental footprints of their products and challenges them to continuously improve. In addition, developing these footprints usually results in lower costs. Although this is a sustainability initiative, procuring products from supply chain partners that are proactively and continuously reducing their water or carbon impacts can translate into lower costs for Levi Strauss as a retailer – who can pass them on to consumers and retain its reputation in the price–quality ratio. LCA can also be applied to a related procurement goal: evaluating which supplier out of a large pool of potential partners might be best positioned to contribute to your sustainability objectives. Likewise, LCA can be used to choose the most appropriate product from a supplier’s portfolio. For example, a packaging supplier might offer a range of options based on the percentage of recycled material Levi Strauss prefer.

A recent study by Levi Strauss & Co. (2015) found that 1000 gallons (3800 litres) of water are used over the lifetime of a pair of jeans, with regular care contributing 37 per cent of the roughly 74 pounds of carbon dioxide emitted during the jeans’ use. The company decided to launch a month-long campaign – World Water Day through Earth Day – to promote its campaign Water<Less™, a process to reduce the water used in ‘garment finishing’ by up to 96 per cent. The move has helped the company save millions of gallons (1 billion litres) of water since 2011.

The study concluded that:

- fibre production, which is predominantly cotton, contributes extensively to water consumption.
- consumer care and fabric production are the most significant phases for climate change impact and energy.
- by including the leading cotton-producing countries, they have realised that water consumption from cotton cultivation increases to 68 per cent of the total impact.

When they assessed their findings in consumer use, they found that if the jeans are washed every ten times the product is worn, this will reduce energy use, climate change impact and water intake by up to 80 per cent. There were also significant differences in geographic regions noted, as consumers in the UK and France use more hot water to wash their jeans than American or Chinese consumers. Consumers in China tend to use a cold water wash, air dry their jeans and wash them less.

(Strauss & Co, 2015)

### Activity 9 Applying the LCA method to the Levi Strauss case study

Allow about 20 minutes

Having read the case study on Levi Strauss, now answer the questions below.

1. How does Levi Strauss' mission statement explain what the company wants to achieve?

*Provide your answer...*

2. Which measurement issues outlined in the LCA used by Levi Strauss appear particularly relevant to your specialised area?

*Provide your answer...*

3. How does the discussion about evaluating and measuring the impact of sustainable innovation relate to your specialised area?

*Provide your answer...*

4. What additional issues (if any) are you likely to face in evaluating your specialised area?

*Provide your answer...*

#### Discussion

These are a few examples of the LCA used by Levi Strauss. LCA is fast becoming an increasingly effective way for businesses from all industries to prioritise and assess opportunities to create added value across a product's life cycle. Despite the rigour involved and potential value created, LCA can be a relatively simple and inexpensive process for larger companies that incorporate a sustainability argument into their strategy. An LCA that matches objectives to expected outcomes and involves internal and external stakeholders throughout the process can help to deliver additional value creation, including cost reduction and improved brand identity.

## The triple bottom line

The triple bottom line considers the different types of impact which can be produced, to varying extents, by business enterprises. They are:

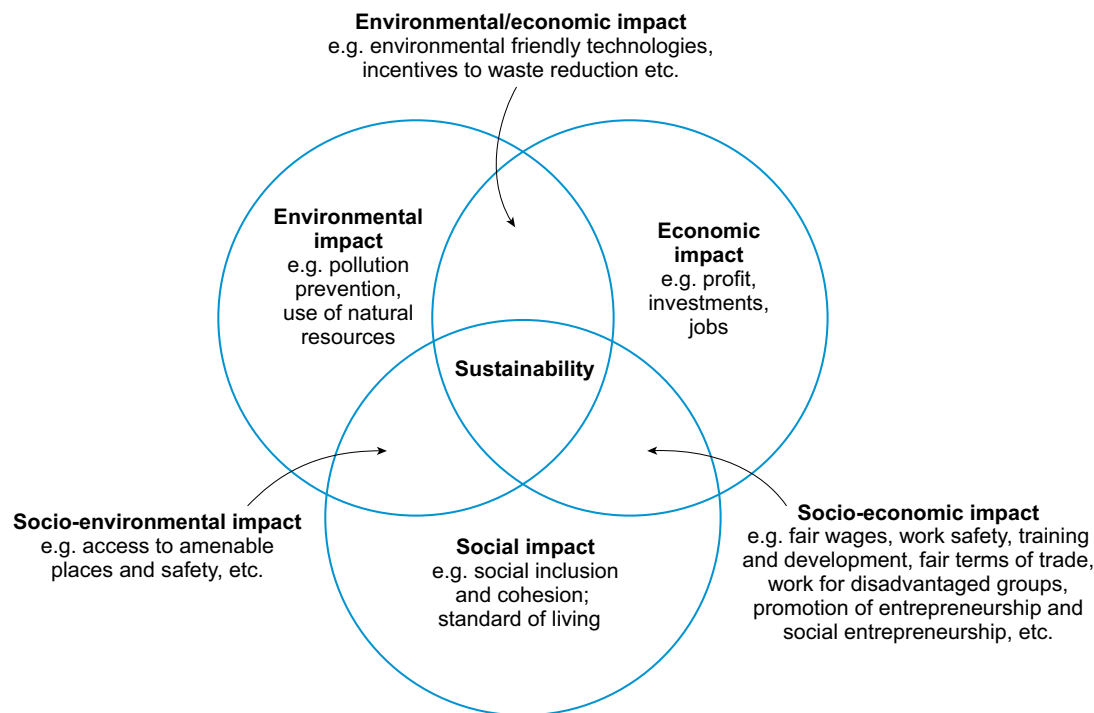
- economic or financial impact
- environmental impact
- social impact.

The three dimensions identify the diverse but highly interconnected components of sustainability. Businesses are challenged to produce all three types of value if they want to

be sustainable economically, environmentally and socially. For example, failure to protect natural resources creates barriers for social inclusion by destroying the conditions for accessing the life needs of people.

Failure to pay fair wages in order to accrue profits equally fosters marginalisation and social inequality. The figure below shows the intersections between areas of sustainability. This suggests that economic, environmental and social elements of business activities are not separable aspects when assessing the effects or societal impacts of entrepreneurship and innovation.

You have already read the [Levi Strauss case study](#), which addresses the impacts generated by washing jeans, both for specific stakeholders and for the wider community.



**Figure 4** The three impact components of sustainability and their interconnections

The triple bottom line became popular following a series of corporate, unethical practices which destroyed social and environmental value in order to maximise profits. The idea of the triple bottom line is that businesses should pursue economic sustainability together with environmental and social sustainability. In particular the term tripple bottom line refers to three interlinked bottom lines that a sustainable enterprise pursues:

- Environmental bottom line: is measured through the so-called 'planet account', which identifies the environmental sustainability of the business.
- Economic bottom line: is typically measured by profit.
- Social bottom line: is accounted for by human wellbeing, or to what extent a business cares about people and societal needs.

### Activity 10 The triple bottom line in entrepreneurial experiences

Allow about 15 minutes

The [Levi Strauss case study](#) that you read earlier addresses the impacts generated by washing jeans, both for specific stakeholders and for the wider community. Now apply the triple bottom line framework to the case study.

As you re-read the case study, make notes on the following questions:

1. What are the social impacts generated on specific stakeholders?
2. What are the economic impacts generated on specific stakeholders?
3. What are the impacts generated on the community as a whole?

*Provide your answer...*

### Discussion

The case study identifies several examples of indicators that can be used to answer these questions and you will no doubt have identified many of them. Some examples under each of the three components of triple bottom line include:

- **Economic bottom line:** develop and implement sustainable strategies that allows the company to make profit. For example, the case study reveals how the company reduced their water or carbon impacts as a way of reducing costs and thereby retaining its reputation in the price–quality ratio. The positive publicity that comes with this also helps to increase sales and profit.
- **Social bottom line:** working with non-governmental organisations (NGOs) and key suppliers to support programs that improve workers' lives; gone beyond labour compliance standards by publicly disclosing its manufacturing supplier locations.
- **Environmental bottom line:** set and achieve above the industry benchmark for waste as well as banning sandblasting. For example, a packaging supplier might offer a range of options based on the percentage of recycled material Levi Strauss prefer.

## Social performance scorecard

The social performance scorecard is another approach to measuring and evaluating the social impact of a sustainable and innovative enterprise. You will now study the social performance scorecard of Social Bite and adapt it for use in evaluating the social impact of an enterprise within your specialist area. Specifically, you are required to complete two steps. First read the Social Bite case study. You will learn that the social performance scorecard and balance scorecard can mean the same thing in terms of both requiring some form of measurements. The Balanced Scorecard is a performance measurement and the aim here is to add the social dimension to this measurement.

Second, complete Activity 11 by applying what you have read in the first step to create your own social performance scorecard.



## Social Bite



**Figure 5** Social Bite

Social Bite have five cafés in Scotland. All their profit goes towards solving social problems. Social Bite offer 'suspended coffee and food'. Customers of the cafés can pay in advance for any item of food from the menu and a homeless person can come into the shop to claim it. Each shop currently provides food and hot drinks to over 30 homeless people who visit on a daily basis and get a filling sandwich, hot bowl of soup or a cup of coffee as a direct consequence of these donations. Social Bite also provide employment and try to help people to get off the street and back into society.

The Balanced Scorecard (Kaplan and Norton, 1996) is a performance measurement tool that uses a strategy map to connect an organisation's day-to-day processes to its organisational goals. Rather than capture how an organisation currently operates, the Balanced Scorecard is concerned with creating a strategy to drive future direction, building in cause and effect linkages while simultaneously taking into account both financial and intangible resources that can determine success or failure. Kaplan and Norton introduced the Balanced Scorecard (BSC) in the early 1990s as a means to provide a more holistic diagnosis of a business' performance. They argue that lagging financial indicators are not sufficient enough to tell senior management whether work taking place on the ground accurately corresponds to the business' corporate strategy. Overemphasis on reducing costs in the short run to boost financial indicators underestimates the value of large investments in research and development to the detriment of the company's long-term survival strategy.

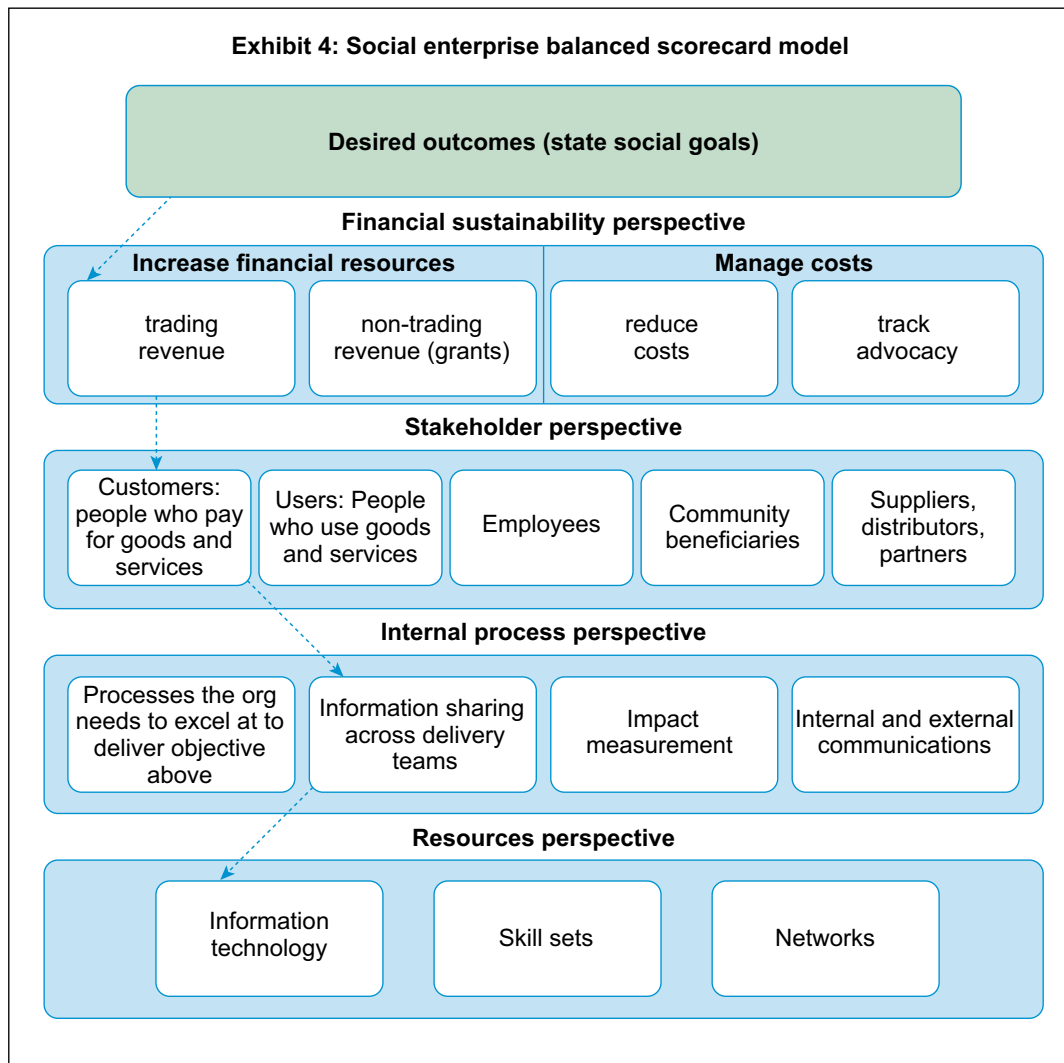
The Balanced Scorecard might add value by making transparent this decision-making framework, capturing both the benefits and consequences to ensure that social enterprise managers make decisions that are strategy-led rather than reactions to short-term conditions in the marketplace. The Balanced Scorecard can be amended for social enterprises. An example of this is the social enterprise (sEL) model.

To amend the original Kaplan and Norton Balanced Scorecard to a sEL model, three changes were introduced: an additional layer was added in which social goals are articulated above the financial perspective; the financial perspective was broadened to



focus on sustainability; and the customer perspective was widened to capture a larger number of stakeholder groups.

In the model shown in Figure 6, social enterprises begin by stating their social goals as desired outcomes, and then move into the perspectives. In the financial sustainability perspective, each 'bubble' represents an objective. The Social Enterprises Balance Scorecard model appears more complex, and this reflects the hybrid nature of social enterprises that demand more complex management systems. This is best demonstrated through the stakeholder perspective, which has been widened from customers in the original model to distinguishing between those who pay for a service and those who consume it (donors, grant funders, employees and the wider community).



**Figure 6** Social enterprise Balanced Scorecard model

In Figure 6, the arrows illustrate one cause and effect chain from the strategy. For example, Social Bite is a social café. Their goal is to empower the homeless (social goal) through providing quality meals (financial perspective – trading activity). The paying customer (stakeholder perspective) requires that Social Bite demonstrate 'value for money'. The organisation makes the assumption that the best way to demonstrate this is by reporting impact delivered to the client group (homeless people) across the organisation's activities (internal process perspective). The best way to resource this is through publicity and organising events and talks (resources perspective).

### Activity 11 Creating your own Social Balanced Scorecard

Allow 45 minutes

Using a notepad or Excel, create a table in which you propose a social performance scorecard that can be used by an enterprise you are interested in studying. You can use the structure suggested in Figure 6 or you can adapt it as necessary.

#### Discussion

This activity involved thinking about each of the boxes in the Figure 6. For example, the first box is about desired outcomes and here you can state what type of social goal (s) you are looking to pursue. In the case of the Social Bite case study the goal is 'to empower the homeless (social goal) through providing quality meals (financial perspective – trading activity)'. You then move to financial sustainability where you can identify what can be done to increase financial resources and manage costs, and so on. Once you have done this for all the components in Figure 6, you will have created your own Social Enterprise Balanced Scorecard model. You can trial this if you own your own enterprise or you can simply select an enterprise of your choice to apply the model.

## 3.3 Your approach to sustainable innovation

In this final activity you will review your understanding of sustainable innovations in enterprises. You will do so by completing an interactive quiz and reflecting on how the knowledge you have gained from the course can be applied to your future practice.

### Activity 12 Testing your understanding of sustainable innovations in enterprises

Allow about 30 minutes

1. A sustainable enterprise must develop and adhere to a compliance standard on its road to achieving sustainability. Which of the following are key elements of a typical compliance programme?

- managing risk
- reducing the public image of the business
- preventing corporate loss
- ensuring systems are in place that would reduce any penalties incurred in civil or criminal judgements

#### Discussion

The correct answers are managing risk, preventing corporate loss and ensuring systems are in place that would reduce any penalties incurred in civil or criminal judgements.

2. Openness to experience is the personality trait that refers to the tendency to be:

- organised
- intellectually curious
- sensitive
- energetic

### Discussion

The correct answer is intellectually curious. Refer to Section 1.4 for a discussion on different types of personality traits.

3. Conscientiousness is the personality trait that refers to the tendency to be:

- organised
- intellectually curious
- sensitive
- energetic

### Discussion

The correct answer is organised. Refer to Section 1.4 for a discussion on different types of personality traits.

4. Which of the following is a dimension of sustainability that is not studied in this course?

- organisational sustainability
- financial sustainability
- environmental sustainability
- occupational sustainability

### Discussion

The correct answer is occupational sustainability.

5. Which of the following frameworks provide the most comprehensive measure of the societal impacts of a sustainable enterprise?

- Triple bottom line
- Social performance scorecard
- Cash flow statement
- Life cycle assessment

### Discussion

The correct answer is triple bottom line. During this course, you have studied societal impacts as including a range of effects that an activity can have on society (illustrated in Section 2.1 through the sustainable development goals). Triple bottom line appears to be the most comprehensive as it incorporates all the other measures (economic or financial impact, environmental impact and social impact). A life cycle assessment focuses on environmental impacts, and typically does not consider social or economic impacts. Social performance scorecard focuses on social impacts while cash flow statement focuses on financial performance.

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## Conclusion

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We hope you have enjoyed this free course, *Sustainable innovations in enterprises*. You should now have a clearer view of your pre-existing ideas and assumptions about sustainability and innovation within enterprises and be able to see how they compare to those of others. You should also be able to identify some of the core terms and measurements used in sustainable innovation and be able to apply them to practical examples. Lastly, you should have started to recognise how the topics of sustainability, innovation and entrepreneurship are connected and feel more confident about taking your studies to the next stage.

If you are interested in innovation and entrepreneurship, take a look at our undergraduate specialism in this area, BA (Honours) Business Management (Innovation and Enterprise). This OpenLearn course is an adapted extract from the Open University course [B327 Creating futures: sustainable enterprise and innovation](#).

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