Unit One: The Challenge of Sustainable Development

UNIT INFORMATION

Unit Overview

Sustainable development is a popular and commonly used term, yet one that also arouses fierce debate and controversy. Why does the term provoke such different reactions? What is sustainable development about? Is sustainable development desirable? Is it even possible to achieve sustainable development, or is that a contradiction in terms? Such questions are often raised in debates about sustainable development, so it is important to understand the variety of issues and concerns associated with the term. Sustainable development is a contested and problematic concept that is hard to define adequately – and even more difficult to apply in practice. However, a central theme that runs through most debates about sustainable development is the critical relationship between environment and development.

This unit introduces the main challenge of sustainable development: the need to balance the economic, social, and environmental costs and benefits of development, both for people living now and for future generations. This is a daunting challenge. This unit focuses on the relationship between environment and development – and on the profound tensions that can exist in that relationship. Using examples covering the themes of food miles, deforestation, dam construction, and palm oil production, this unit illustrates a range of issues associated with decisions about environment and development. This unit emphasises the importance of the key problems of poverty and global environmental change, because concerns about those two issues led to the emergence of ideas about sustainable development. Above all, this unit emphasises that environmental and development challenges must be tackled together if there is to be any hope of understanding – or promoting – sustainable development.

Unit Aims

- To explain the main challenge of sustainable development.
- To introduce the idea of the relationship between environment and development.
- To introduce the linked problems of poverty and global environmental change – and to explain why those two issues are central in debates about sustainable development.
- To illustrate a range of sustainable development issues using examples.

Unit Learning Outcomes

By the end of this unit, students should:

- understand the main challenge of sustainable development
- understand the idea of the relationship between environment and development
- recognise the importance of the linked problems of poverty and global environmental change in debates about sustainable development
- be familiar with several examples of sustainable development issues

KEY READINGS

❖ Adams WM (2009) The dilemma of sustainability. In: Adams WM *Green Development: Environment and Sustainability in a Developing World*, 3rd edn. Routledge, London, pp. 1–25.

This chapter introduces the 'dilemma of sustainability'. It provides a useful introduction to debates about sustainable development, together with an overview of the key problems of poverty and global environmental change.

❖ Banerjee SB (2003) Who sustains whose development? Sustainable development and the reinvention of nature. *Organization Studies* **24**(1) 143–180.

This paper explores some of the contradictions associated with the idea of sustainable development. It argues that the meanings, practices, and policies of sustainable development continue to be influenced by colonial ideas, resulting in the disempowerment of the majority of the world's population — especially of rural people in developing countries.

❖ Luke TW (2005) Neither sustainable nor development: reconsidering sustainability in development. *Sustainable Development* **13**(4) 228–238.

This paper asks critical questions about the idea of sustainable development, suggesting that the term has become a 'label' placed over modes of existence that are 'neither sustainable nor development' — and that it is used to justify prevailing forms of mass market consumerism.

FURTHER READINGS

Lewis D, Rogers D, Woolcock M (2008) The fiction of development: literary representation as a source of authoritative knowledge. *Journal of Development Studies* **44**(2) 198–216.

This article introduces and explores questions about what constitute valid forms of development knowledge, comparing fictional writing on development with more formal academic and policy-oriented texts. Using selected works of literary fiction that touch on development issues, the authors argue that it is important to take literary perspectives on development seriously. The authors argue that not only are certain works of fiction 'better' than academic or policy research in representing central development issues but they can also reach larger audiences. In addition, the authors argue that the line between fact and fiction is a very fine one, and they provide an Appendix of relevant works of fiction that may be both useful and enjoyable. This article raises thought-provoking questions and it explains the selection of some works of literary fiction as Further Readings in this module.

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UNEP (2012b) *World Remains on Unsustainable Track Despite Hundreds of Internationally Agreed Goals and Objectives*. United Nations Environment Programme (UNEP), Nairobi.

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[Accessed 5 August 2013]

1.0 FOOD, FREIGHT AND FAIR TRADE

Section Overview

In this section, a range of sustainable development issues are introduced using a recent example: the debate about 'food miles'. This section demonstrates that an issue that at first glance seems straightforward may actually, on closer examination, raise difficult questions about economic, social, and environmental costs and benefits.

Section Learning Outcomes

By the end of this section, students should:

- recognise that the issue of food miles raises many questions about economic, social, and environmental costs and benefits
- understand that debates about sustainable development may be controversial – and may involve choosing between environmental and development goals

1.1 Questioning food miles

✍ Do you think food products should be transported by air? State a range of reasons for and against the air freight of food products.

The Soil Association consultation

In 2007, the Soil Association – the organisation responsible for certifying organic produce in the UK – launched a consultation into the environmental impact of organic produce that is air-freighted to the UK from other countries. The consultation was a response to concerns about the increasing contribution of air freight to climate change. The key issue at stake was whether air freight should be addressed in the Soil Association's organic standards. The debate raised the question of whether 'organic' certification should be removed from goods that have been air-freighted to the UK. This was the first time that the Soil Association had considered applying standards relating to transport and climate change, and the consultation proved to be a significant – and controversial – exercise.

The consultation was prompted by concerns that, whilst air freight currently accounts for a very small proportion (less than 1%) of all organic food imports to the UK, the air-freight industry – and the air-transport industry more generally – are growing rapidly in response to strong, sustained demand. Air freight allows fresh food to be carried thousands of miles around the world in a matter of hours, with the result that a wide variety of products can be stocked on supermarket shelves throughout the year. Air freight is particularly useful for transporting highly perishable organic fresh fruit and vegetables, year-round, as supermarkets attempt to ensure the continuous availability to consumers of the freshest and most exotic produce. Air freight also enables importers to respond to unexpected shortfalls in supply or surges in demand – and so to meet the UK consumer demand for year-round fresh produce.

Food miles and climate change

Yet, because air transport is dependent on the use of fossil fuels – and is responsible for an increasing share of global carbon dioxide emissions – there are concerns that the air freight of organic produce is making a growing contribution to climate change. Compared with other forms of transport, air transport has a significant impact on our climate. Furthermore, air freight is the most rapidly growing method of food transport; the air freight of food to the UK increased by 140% between 1992 and 2002 and is still increasing. Whilst air freight is currently responsible for less than 1% of total UK food miles, it produces 11% of the carbon dioxide emissions from UK food transport. A consignment transported by air has a much greater climate impact than the same consignment carried by sea.

In response to such concerns, the Soil Association considered a range of options for addressing the environmental impact of air-freighted organic food. Those options including taking no action; introducing new procedures for labelling air-freighted organic produce so that consumers can make more informed choices about the issue; using carbon offsetting schemes; and imposing a partial or general ban of air-freighted organic produce. Of those options, the introduction of a general ban received the greatest support from members of the general public, from some environmentalist groups (including Greenpeace), and from some organic producers. Some people argued that imposing a general ban on the air freight of organic produce would also bring other benefits for people in the UK, including a general reduction in air-traffic levels and in road congestion (because air freight tends to drive airport expansion).

1.2 A complex issue

Many considerations

Therefore, at first glance, the idea of banning air-freighted organic produce seemed to be an attractive one as it could potentially reduce the greenhouse gas emissions and other environmental impacts associated with food transport. Yet, on closer examination, the situation is not so straightforward. One consideration is that many air-freighted products are carried as cargo aboard passenger aircraft flying scheduled routes. If a ban on air-freighted organic products were imposed, the aircraft would still fly those routes and the cargo space would instead be used to carry other goods. Another consideration is that, if the same products were grown in the UK or elsewhere in Europe, rather than in tropical countries where the climate is well-suited to their cultivation, they would have to be grown in 'hothouses' – and the production of food in hothouses results in the emission of much more greenhouse gas than air freight does.

Most important, however, is the fact that many producers in developing countries depend heavily on the income they earn from the sale of organic produce destined for markets in the UK (and elsewhere). Around 80% of air-freighted organic produce is grown in developing countries, and many thousands of people depend on the revenue from organic produce for their livelihoods. Research has shown that the trade in high-value, organic fresh fruit and vegetables has important social and economic benefits in developing countries – as a means both of alleviating poverty and of preventing environmental degradation. Imposing a ban on air-freighted

organic produce would disadvantage farmers in developing countries who have already invested in the production of crops using organic methods. Those farmers might then be forced to resort to non-organic agriculture – or they might lose their livelihoods altogether. In addition, in some developing countries, building capacity for organic production through export horticulture is important in stimulating more sustainable local markets for organic food. Consequently, a ban on air-freighted organic produce could have the unintended effect of destroying many farmers' livelihoods and blighting development.

1.3 A sustainable development dilemma

What is the priority?

This issue highlights a sustainable development dilemma: should we protect the livelihoods of small-scale farmers in developing countries – even if those livelihoods depend on (carbon-intensive) air freight – or should we adopt a more urgent approach towards reducing carbon dioxide emissions, despite the adverse effects on those farmers' livelihoods, economies, and societies? To a large extent, the answer to that question depends on human attitudes, values, and beliefs – which are often highly subjective and contested. If they were asked, the small-scale farmers in developing countries would probably argue that the air freight of organic produce is an important part of their development strategy; that dealing with the immediate effects of poverty is a more urgent task than addressing the long-term effects of climate change; and that, in any case, much of the responsibility for reducing carbon dioxide emissions rests with the developed countries that have largely created the problem. In contrast, an environmental activist in a developed country might argue that dealing with climate change is the more urgent priority because, unless carbon dioxide emissions are dramatically reduced, the livelihoods of people worldwide could be threatened by extreme climate events.

This example also illustrates the fact that debates about sustainable development may involve a wide range of complex economic, social, and environmental issues. An issue that initially seems straightforward – in this case, a suggestion to reduce the greenhouse gas emissions due to food transport – may in fact prompt fierce controversy and debate. The Soil Association's proposal to impose a general ban of air-freighted organic produce would undoubtedly have benefited farmers in the UK at the expense of farmers in developing countries, so it could be viewed as a (thinly disguised) form of protectionism. From another point of view, the high dependence of producers in developing countries on the revenue from exported products could be viewed as evidence of neo-colonialism, since small-scale producers in developing countries are consigned to live in vulnerable, marginal conditions and are denied opportunities for greater self-determination and freedom, whilst affluent consumers in developed countries enjoy a year-round supply of exotic products sourced from around the world.

A political issue

Questions about governance and participation are also raised by this example. Some people would suggest that, in this situation, strong regulation is required to ensure that greenhouse gas emissions are reduced. Others would argue that free market

forces should influence which products are bought and sold; that economic considerations should determine which transport mode is most appropriate; and that consumers should be allowed to decide which products they wish to buy – a decision that could be assisted by clearer food labelling. Advocates of fair trade would argue that small-scale producers should have a greater role in determining the terms of trade for their products – as well as a greater share of the profit – and that, if they did so, they would then have a greater incentive to ensure that production occurs on a sustainable basis. From yet another perspective, some people would argue that the real issue is not the (false) choice between farmers' livelihoods and climate change but rather the endless demands of affluent consumers in developed countries. Underlying all of these considerations is a fundamental, political question: who has the power to decide which economic, social or environmental considerations are the most important ones?

The relationship between environment and development is central in debates about sustainable development. Often, in those debates, conflicts may emerge between those who prioritise environmental goals and those who prioritise development ones. Sometimes a situation may require that difficult choices are made between environmental and development goals – choices that ideally should be made in a transparent, accountable manner.

Section 1 Self Assessment Questions

Question 1

List three ways in which the production of organic food for export contributes to climate change.

Question 2

List three ways in which organic farming methods may create environmental benefits.

Question 3

Besides the issue of food miles, state another sustainable development issue in which environmental and development considerations may come into conflict.

2.0 ENVIRONMENT AND DEVELOPMENT

Section Overview

This section focuses on the relationship between environment and development – a relationship that is central in debates about sustainable development. Some basic ideas about development are considered first. Next, the example of Easter Island is used to illustrate the important point that development is unsustainable if it exceeds the capacity of the natural resource base. This section shows that the relationship between environment and development may be used to indicate whether or not development is 'sustainable'.

Section Learning Outcomes

By the end of this section, students should:

- understand the idea of the relationship between environment and development
- understand that the relationship between environment and development is central in debates about sustainable development

2.1 What is development?

✍ What do you understand by the term 'development'? List the words or phrases that you associate with the term.

You might have listed some of the following words: change, consumption, economic development, economic growth, education, entitlements, equality, equity, freedom, gender equity, goals, good governance, Gross Domestic Product (GDP), health, human development, human rights, income, justice, livelihoods, Millennium Development Goals (MDGs), participation, peace, positive change, poverty reduction, process of change, production, progress, reducing vulnerability, responsibilities, self-determination, social development, social inclusion, sustainability, targets, wealth.

✍ Write a definition of 'development'.

Development – a political term

A multitude of meanings is attached to the idea of development; the term is complex, contested, ambiguous, and elusive. However, in the simplest terms, development can be defined as bringing about social change that allows people to achieve their human potential. An important point to emphasise is that development is a political term: it has a range of meanings that depend on the context in which the term is used, and it may also be used to reflect and to justify a variety of different agendas held by different people or organisations. The idea of development articulated by the World Bank, for instance, is very different from that promoted by Greenpeace activists. This point has important implications for the task of

understanding sustainable development, because much of the confusion about the meaning of the term 'sustainable development' arises because people hold very different ideas about the meaning of 'development' (Adams 2009). Another important point is that development is a process rather than an outcome: it is dynamic in that it involves a change from one state or condition to another. Ideally, such a change is a positive one – an improvement of some sort (for instance, an improvement in maternal health). Furthermore, development is often regarded as something that is done by one group (such as a development agency) to another (such as rural farmers in a developing country). Again, this demonstrates that development is a political process, because it raises questions about who has the power to do what to whom.

Development transforms the environment

But development is not simply about the interactions between human groups; it also involves the natural environment. So, from another point of view, development is about the conversion of natural resources into cultural resources. This conversion has taken place throughout the history of human societies, although the process has generally increased in pace and complexity with time. If we use a system diagram to illustrate – in very general terms – what an economy does, we see that the basic function of an economy is to convert natural resources (in the forms of raw materials and energy) into products and services that are useful to humans (see 2.1.1). Inevitably, because conversion processes are never totally efficient, some waste is produced which is usually discarded into the environment as various forms of pollution. Therefore, the environment is both a source and a sink in relation to economic processes: it is a source of raw materials and energy and a sink for pollution.

2.1.1 A representation of a generalised economy

Source: unit author

Resources, energy, and waste

An example of this type of conversion would be the extraction of crude oil from the North Sea, its fractionation and distillation in oil refineries, and its conversion to petroleum or diesel. In turn, those products (petrol and diesel) are converted – through combustion processes – into useful work (such as transportation) whilst the waste products are released into the atmosphere as greenhouse gases (such as carbon dioxide). If we add together all of the conversion processes that occur, for instance, in a given country, we would have a sense of the total input and output of that national economy. This could be expressed in terms of the total natural resources and energy consumed, the total products and services created and the total pollution generated. (In fact, the total value of the finished products and services created in a given country is expressed using a widely-used measure, the

Gross Domestic Product, or GDP.) If we wanted to increase the creation of products and services, in a given economy, we would require more natural resources and energy, and we would also generate more pollution as a by-product.

Economic growth

From this point of view, development means an increase in the size or pace of the economy such that more products and services are produced. Conventionally, a common assumption has been that, if an economy generates more products and services, then humans will enjoy a higher standard of living. The aim of many conventional approaches to development has been to increase the size of the economy (economic growth) in order to increase the output of products and services. Of course, without any change in the fundamental economic processes involved, the production of more products and services will inevitably require more raw materials and energy, and will generate more waste. In a system diagram (see 2.1.2), this would simply be represented by greater flows of materials and energy through the central box, the economy.

2.1.2 A representation of economic growth

Source: unit author

2.2 Unsustainable development

The effects of greater throughput

The fact that economic growth means an increase in the throughput of an economy raises several issues.

- Whilst some raw materials (such as air) are ubiquitous and others are readily available, many raw materials are scarce and their availability cannot be guaranteed indefinitely.
- Similarly, some sources of energy (such as the wind) are renewable and freely available, whilst others (such as fossil fuels) are non-renewable and finite.
- Most pollution sinks have a limited capacity to absorb the waste by-products of economic processes.
- In affluent societies, problems of overconsumption have emerged and questions are now being raised about the extent to which the acquisition of additional products and services actually improves well-being in those societies.

These considerations hint at an important idea: that development can be 'unsustainable' insofar as it cannot continue indefinitely if economic growth exhausts the available supplies of raw materials, the sources of energy or the pollution sinks. But suppose economic growth does reach the limits of raw material supplies, energy supplies or waste assimilation capacity: what happens then? The following example in 2.2.1 illustrates what can happen in such a situation.

2.2.1 The tragedy of Easter Island

The Easter Island mystery

Easter Island is one of the remotest inhabited places on Earth. It is a small island (around 400 square kilometres) in the Pacific Ocean, approximately 2000 kilometres from the nearest habitable land (Pitcairn Island). Despite the small size and remote location of the island, at the peak of its society, it had a human population of 7000 people. Yet even that small population was to place demands upon the natural environment that could not be sustained. At the time of first contact with Europeans in 1722, around 3000 people were found on the island in desperate conditions. Subsequently, the population continued to decline and their living conditions worsened. In 1877, Peruvians removed and enslaved the remaining population, with the exception of 110 elderly people and children. Eventually the island was annexed by Chile and was leased to a British company for sheep grazing, with the few remaining inhabitants being confined to a single small village.

The mystery that faced the first European visitors was that, despite the appalling conditions they found on the island, there was also evidence of a once-flourishing and advanced society. Over 600 huge stone statues (averaging over 6 metres in height) were found on the island. The task of carving, transporting and erecting the statues was a complex one and was undeniably beyond the capacity of the poverty-stricken inhabitants of Easter Island in 1722. Indeed, given the limited resources of Easter Island, the society that constructed the statues must have been one of the most advanced in the world for the technology they had available. So what had happened to the statue-makers? Modern archaeological techniques revealed that the advanced society that constructed the statues collapsed because the development that occurred on the island placed immense demands – that could not be sustained — on the natural environment of the island. This makes the history of Easter Island a powerful example of the dependence of human societies on their natural environment — and of the consequences of irreversibly damaging that environment.

The collapse of a society

The colonisation of Easter Island began in the fifth century by Polynesians during a major phase of exploration and settlement across the Pacific Ocean. The first settlers would have found a volcanic landscape with adequate soils but poor drainage and few fresh water supplies. Due to its remote location, the island had few plant and animal species and the surrounding waters contained few fish. Hence the settlers relied on a very limited range of plants and animals for their subsistence: their diet would have consisted mainly of chicken and sweet potatoes. As the population of Easter Island grew, familiar forms of Polynesian social organisation were introduced. Ceremonial activities — including elaborate rituals and monument construction — became a major part of the social life of the islanders. The growth of the population was accompanied by increased competition between clan groups. In turn, the outcome of that competition was the creation of one of the most complex Polynesian societies, the construction of hundreds of ceremonial centres with large stone platforms, and the carving of the stone statues. It was at this point that the society suddenly collapsed, leaving more than half of the statues partially completed. Why did this collapse occur?

The cause of the collapse of the society was the extensive environmental degradation resulting from the deforestation of the entire island. The Europeans who visited Easter Island in 1722 found the island completely denuded of trees (with the exception of some isolated trees at the bottom of a deep volcanic crater). Yet scientific analysis indicates that, at the time of initial settlement, the island would have been densely vegetated

with large areas of woodland. Those trees were cleared by the growing islander population to provide clearings for agriculture, fuel for cooking and warmth, and a source of material for the construction of housing and canoes. Above all, vast quantities of wood were needed to transport the enormous statues to the ceremonial sites around the island; that task was accomplished using an elaborate system of wooden tracks. As a result of the excessive demand for wood, the island was almost entirely deforested by 1600 and the construction of statues halted. By that time, other effects of deforestation would have been apparent. House-building became impossible and people resorted to living in caves, stone shelters or reed huts. Fishing – that previously used nets made from bark — became more difficult. The construction of canoes became impossible and the population was then unable to escape the island. The removal of trees caused soil erosion, the leaching of nutrients and the decline of crop yields. The combined effect of those changes meant that the population could no longer be supported on a shrinking resource base, and a rapid decline in numbers occurred. After 1600, the remnant society regressed to very primitive living conditions and continued to decline until its eventual disappearance.

An avoidable tragedy

The tragedy of Easter Island is that — in a remote and unlikely location — the original inhabitants had flourished and created one of the most advanced societies in the world for the technology available. Their achievements could have been celebrated as a triumph of human ingenuity and capacity to adapt and survive. Ultimately, however, competition between clan groups and the intensity of human demands on the natural resource base exceeded the capacity of the environment. Following abrupt environmental decline, the society collapsed and a substantially reduced population reverted to very poor living conditions. The Easter Islanders must have been aware that they were entirely dependent upon their extremely limited resource base. Environmental changes on the island — especially deforestation — must also have been readily apparent. Nevertheless, the islanders were unable to prevent the destruction of their resource base; instead, key resources were depleted until they were totally exhausted. Archaeological evidence suggests that, instead of prompting careful management of the remaining resources, competition between clans (and the use of timber) intensified as the environmental crisis became more acute. The history of Easter Island suggests that the response of the islanders to their deepening environmental crisis was not one of re-evaluation and restraint, but was desperate and chaotic, and it resulted in the fatal destruction of their life support system.

Source: adapted from Ponting (2007) pp. 1—7.

2.3 The lessons of Easter Island

Development depends on the environment

The example of Easter Island, whilst tragic, is useful for illustrating several key points about the relationship between environment and development. There is an intimate relationship between environment and development. Development – understood, in this example, as the increasing use of natural resources by humans for their economic, social, and cultural activities – cannot occur independently of the environment that provides resources and assimilates pollution. (It is worth pointing out that this relationship is certainly not reciprocal; whilst development depends heavily on the environment, the environment does not require development – or human existence – at all.) In this example, as in many other cases, the nature of the relationship between environment and development is central to interpretations of whether or not development is sustainable.

In the example of Easter Island, we can conclude that the expansion of human activities on the island was unsustainable because the relationship between environment and development was characterised by the over-exploitation of natural resources, even in a situation where subsistence was already marginal, together with a complete disregard for the warning signs and consequences of environmental degradation.

A critical trade-off

On Easter Island, the relationship between humans and their environment was such that a trade-off between environment and development occurred. In other words, natural resources (trees and soil) were progressively exchanged, by the islanders, for a range of economic, social, and cultural benefits (ceremonial activities, stone platforms, statues, dominance, power, and wealth). Such a trade-off becomes inevitable if development conflicts with the need for environmental protection. As a result of the trade-off between environment and development, the Easter Islanders did not leave a sufficient resource base for future generations. In the language of sustainable development, there was no intergenerational equity. Each current generation failed to protect the resources that would be needed by its descendents. Once the deforestation of the island had reached a critical point, future generations were left without the resources they needed to maintain an equivalent way of life. That failure to maintain the resource base for future generations inevitably set up conflict between islanders and made the challenge faced by each successive generation more difficult to surmount.

Above all, the example of Easter Island illustrates the imperative for human societies to live within the capacity of their natural resource base. If excessive demands are placed upon the natural resource base (through deliberate or inadvertent exploitation or mismanagement of the environment), then both natural processes and human activities are bound to decline – perhaps with catastrophic consequences.

A metaphor for global development

The Easter Island example can be regarded as a metaphor for global development. Like Easter Island at the time of its first inhabitants, the Earth has limited resources to support human societies and their myriad demands. Like the stranded islanders, the inhabitants of Earth have no realistic means of escape. Human existence depends, ultimately, upon the continued availability of the Earth's natural resources that support life. In general, over the period of human existence (around 2 million years), human societies have been successful in obtaining food and in extracting natural resources, with the result that growing populations – and increasingly complex, advanced societies – have been sustained. But what about the critical relationship that indicates whether or not development is sustainable: the relationship between environment and development? Have modern societies been more successful than the Easter Islanders in living in a way that does not exhaust the available natural resources? Have we fallen – or are we falling – into the same trap as the Easter Islanders: that of fatally damaging our life support system?

Section 2 Self Assessment Questions

Question 4

Which of the following are the inputs and outputs of a generalised economy?

(a) energy, capital, products and services, pollution

(b) raw materials, energy, products and services, waste

(c) raw materials, energy, capital, infrastructure

(d) raw materials, energy, waste, recycling

Question 5

List three ways in which the activities of the Easter Islanders were unsustainable.

Question 6

Which of the following is the clearest example of a trade-off between environment and development?

(a) A population of wild animals is culled to prevent ecological degradation.

(b) Funding is diverted from health care services to support military activities.

(c) Contaminated land is rehabilitated and designated as a wildlife reserve.

(d) In a rural area, topsoil is quarried to supply the construction industry.

3.0 THE PROBLEM OF POVERTY

Section Overview

This section introduces the problem of poverty as a key element in debates about sustainable development. It emphasises the fact that poverty has persisted – or in some cases has worsened – for many people, in many parts of the world, despite substantial efforts to bring about development. This so-called 'failure of development' was one of the factors that prompted the emergence of the concept of sustainable development.

Section Learning Outcomes

By the end of this section, students should:

- understand that poverty has persisted in many parts of the world despite decades of efforts to bring about development
- understand that the problem of poverty is a crucial issue in relation to sustainable development

3.1 The persistence of poverty

Poverty – a multidimensional concept

The term 'development' has a broad range of meanings, not all of which are mutually compatible. Those meanings range from 'economic growth' and 'business as usual' to notions of poverty reduction and redistributive justice. Whilst development theory, policy, and practice have sometimes become entangled in debates about the morality and methods of development, there is no doubt about the urgent necessity to tackle the problem of human poverty. The idea of 'poverty' itself is nuanced and contested, and a wide range of definitions have been suggested. However, one important insight is that poverty is complex and multidimensional: poverty includes a range of human experiences such as thirst, hunger, malnutrition, illness, lack of shelter, lack of education, illiteracy, unemployment, insecurity, vulnerability, violence, powerlessness, servitude, and despair. The understanding that poverty is complex and multidimensional leads to the further insight that the task of development is the enhancement of multiple individual freedoms: political, economic, and social.

The importance of poverty reduction

Despite decades of efforts aimed at bringing about development, the problem of poverty persists. The Report of the United Nations Conference on Sustainable Development, held in Rio de Janerio in June 2012 ('Rio+20'), highlighted the stark contrasts that persist at the global scale between the rich and the poor. This Report stated: 'Eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development. In this regard we are committed to freeing humanity from poverty and hunger as a matter of urgency' (UN 2012 p. 1). It also acknowledged that this requires poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production,

and protecting and managing the natural resource base of economic and social development (UN 2012 p. 2). The Report highlighted 'the need to achieve sustainable development by promoting sustained, inclusive and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of living, fostering equitable social development and inclusion, and promoting integrated and sustainable management of natural resources and ecosystems that supports, *inter alia*, economic, social and human development while facilitating ecosystem conservation, regeneration and restoration and resilience in the face of new and emerging challenge' (UN 2012 p. 2). A wide range of other important, related goals – such as the need to promote and protect freedom, peace, security and human rights – were also acknowledged.

A challenge to development thought

The fact that poverty remains a reality presents a profound challenge to development agencies and professionals, as well as to development theorists and analysts. Why have so many people in the world remained trapped in experiences of poverty when substantial resources have been devoted to the task of poverty reduction – and when rapid economic transformation and growth has occurred in some places and has benefited some people? The fact of the ongoing problem of poverty has prompted criticism of conventional development policies and practices; some commentators have argued that those policies and practices must be deficient since they have so obviously failed billions of people worldwide. Added to this are the conceptual challenges and critiques that have emerged from post-modern critical theory which have eroded the certainties that were formerly associated with development efforts. It is no longer clear that there is a 'right' way to go about development or poverty reduction – or indeed that any one state or agency has the right to impose 'development' upon people or states elsewhere. Such considerations have emerged, since the 1980s, in the context of ascendant neo-liberal approaches to development which emphasise the aggressive opening of markets, the promotion of globalisation, and the reduction of state expenditure on public welfare. All of these factors have prompted a crisis in conventional development thinking and have caused the re-evaluation of state-led development efforts. In turn, this has prompted the emergence of ideas about sustainable development which, some commentators have argued, could offer a way out of the impasse.

3.2 The need for poverty reduction

Poverty cannot be ignored

The important point here is to acknowledge that, from the outset, ideas about sustainable development have focused explicitly on the problem of poverty. At the global scale, we cannot talk about meaningful sustainable development if that does not involve introducing effective measures to ensure that people worldwide no longer endure experiences of poverty. At any scale – whether that of an individual development project or of a national development plan – no form of development can claim to be 'sustainable' if it does nothing to reduce the extent or severity of poverty. Tragically, in the past, many development initiatives have done very little to reduce poverty – and in many cases may actually have increased poverty. The example in 3.2.1 illustrates such a case.

3.2.1 The impacts of the Akosombo Dam

An ambitious development plan

The Volta River flows southwards through Ghana and drains into the Gulf of Guinea. In 1957, when Ghana gained its independence from colonial rule, the national economy was largely supported by cocoa production. Following independence, the new government sought ways to promote rapid economic growth through industrial development. Such development required large supplies of energy — which could be obtained by using the Volta River as a source of hydroelectric power. Consequently, plans to develop the Volta River Basin were drawn up (based on earlier proposals that dated from the 1940s). The first Prime Minister of Ghana, Dr Kwame Nkrumah, initiated the Akosombo Hydroelectric Project: a major project that was intended to mark the beginning of a new era of economic development in Ghana based on the manufacture of aluminium. In 1961, the Ghanaian Government established the Volta River Authority to manage the development of the Volta River Basin.

The project involved the construction of an aluminium smelter (to process bauxite) at Tema, a major dam in the Akosombo gorge (to generate electricity) and a network of power cables across southern Ghana (to distribute electricity). The project was expected to stimulate local bauxite mining and refining, which would in turn allow local aluminium production without the need to import foreign bauxite for smelting. Thus the Akosombo Dam was a central part of the project and of the overall Ghanaian development plan. In addition to supplying electricity within Ghana, the dam was also intended to supply electricity to neighbouring West African countries, such as Togo and Benin. The Akosombo Dam was constructed between 1961 and 1965 using funds provided by the Ghanaian government, the International Bank for Reconstruction and Development of the World Bank, the USA and the UK. The smelter was funded by a US-based company, the Volta Aluminium Company (VALCO), and by the Export-Import Bank of the United States.

The creation of Lake Volta

The construction of the dam resulted in the flooding of the Volta River Basin and the formation of Lake Volta, one of the largest artificial lakes in the world. Lake Volta extends from the dam to Yapei, around 400 kilometres to the north, covering an area of around 8500 square kilometres (approximately 3.6% of the total land area of Ghana). The creation of Lake Volta and the hydroelectric power scheme have brought economic and social benefits: the dam generates electricity which in turn supports aluminium manufacture and generates income, whilst the lake allows easier inland transport and is a potentially valuable resource for irrigation, fishing and aquaculture. Some new agricultural activities have been undertaken near the shoreline, and tourism has also developed. In some respects, therefore, the Akosombo Hydroelectric Project has been a success story. However, a range of social and environmental impacts have also been associated with the project, especially with the construction of the Akosombo Dam and the formation of Lake Volta.

Displacement and dispossession

The impacts of the Akosombo Dam include large-scale human migration as people were displaced from their land. The formation of Lake Volta by the flooding of land behind the dam necessitated the forced relocation of 80 000 people (around 1% of the population) from 700 former villages to 52 new, resettlement villages. Most of those people were riparian fishers or subsistence farmers whose fisheries and lands were submerged. Indigenous people were also displaced by the formation of the lake. Overall, the displacement of those people meant the loss of their primary economic activities (fishing and agriculture), their homes, their significant cultural places (including burial places), their community stability and — eventually — their social values. Mortality rates were reported to have increased amongst elderly community members following their resettlement. Inadequate planning resulted in the relocation of people into areas that were not capable of sustaining their former livelihoods and traditions. Fertile soils were submerged beneath the rising waters of Lake Volta and, with their loss, traditional farming practices disappeared. The resettlement villages were characterised by poverty; the poor living conditions in the settlements prompted the departure of those who were

able to leave. The displaced communities also placed new demands on natural environments that had not previously supported such populations.

Environmental impacts

In addition to the displacement of people, a range of environmental impacts have resulted from the construction of the Akosombo Dam and the formation of Lake Volta. Those impacts include the decline of agricultural productivity in the area surrounding the lake and its tributaries. Compared to the land submerged beneath Lake Volta, the soil surrounding the lake was less fertile and was further depleted of nutrients by intensive commercial agriculture. The loss of soil fertility was exacerbated by the absence of periodic floods (which occurred prior to the construction of the dam and which previously supplied nutrients to the land). At the same time, nutrients were washed into the lake and surrounding rivers as a result of fertiliser runoff from intensive commercial agriculture, runoff from cattle grazing lands, and the discharge of sewage. The runoff of nutrients into the lake led to eutrophication which, in combination with low water velocities, led to the growth of aquatic weeds (such as *Ceratophyllum*) which impede navigation and transportation on the watercourses. Other impacts of the Akosombo Dam and the creation of Lake Volta include the increased occurrence of earthquakes due to readjustments of the Earth's crust in response to the enormous weight of additional water in the lake. Below the dam, changes in the river flow have led to the migration of the river mouth and changes in the morphology of the delta, with the result that coastal erosion has occurred. In addition, changes in the hydrology of the river have altered local microclimates, causing reduced rainfall and higher mean monthly temperatures — changes that may be compounded by the effects of climate change.

Disease

The construction of the dam and the creation of Lake Volta have had severe impacts on human health. The flooded land created ideal conditions for the vectors of water-borne illnesses such as bilharzia and malaria. In particular, the incidence of bilharzia in children aged less than ten years old increased to 90% following construction of the Akosombo Dam; the disease is transmitted as people bath, fish, wash clothes or collect water in areas affected by the parasitic larvae. Furthermore, the degradation of the natural aquatic habitats led to the decline of shrimp and clam populations, with the result that a vital source of dietary protein for local communities was lost. Increased levels of poverty and migration, following the construction of the dam, led to higher rates of HIV infection within Volta Basin communities; HIV also spread more rapidly as a result of the increased demand for the services of sex workers during the construction of the dam when a workforce of thousands of males was present in the area.

Winners and losers

Finally, various concerns have been expressed about the politics of the distribution of the costs and benefits of the hydroelectric project and the aluminium smelter. The infrastructure was constructed using funds provided by the Ghanaian Government, loans from the World Bank and investment by the USA and the UK. Questions have been raised about the extent to which the loans were repaid using taxes collected from cocoa farmers elsewhere in Ghana; about the extent to which Western companies, rather than Ghanaians, have profited from the project; and about the extent to which the commercial supply of electricity to neighbouring countries takes precedence over the needs of local residents. Furthermore, the project was originally intended to use local supplies of bauxite and to reduce the dependence of the country upon imported bauxite. However, imports of raw materials have continued, raising doubts that the project has reduced the reliance of Ghanaian industry on foreign suppliers. Thus, whilst power supplies have increased, critics argue that the Akosombo Dam has also increased Ghanaian debt and dependency, and has promoted neo-colonialism, whilst also exacerbating poverty amongst those who were displaced from their land.

Source: adapted from Gyau-Boakye (2001) pp. 17—29; Smithson *et al* (2008) p. 672; Suave *et al* (2002) pp. 402—408.

3.3 The lessons of the Akosombo Dam

Development may create poverty

The example of the Akosombo Dam illustrates various important points about sustainable development. Attempts to bring about development may be successful in raising industrial output and GDP. Those successes are important; across national economies as a whole, they may bring very valuable benefits. However, such successes are also based on a relatively narrow definition of 'development', one that focuses on economic growth rather than on improving well-being. In this example, as in many other similar cases, development led to some highly undesirable social and environmental outcomes. In particular, the creation of Lake Volta, the dispossession of around 80 000 people and their forced resettlement, the increase in levels of poverty and disease, the loss of fertile soils and a range of other environmental impacts all resulted from the construction of the Akosombo Dam. In the language of sustainable development, the scheme failed to promote intra-generational equity, since it actually increased the poverty of the people who were displaced.

On balance, the severity of the social and environmental impacts of the Akosombo Dam suggests that the project did not promote sustainable development. This is not to say that development should never have any social or environmental impacts whatsoever: that would be an unrealistic expectation. But the balance between the economic, social, and environmental costs and benefits of development should be favourable, both for present and for future generations. In this case, we would be justified in arguing that the economic, social, and environmental costs outweighed the economic, social, and environmental benefits of the dam.

Another trade-off

As in many other cases, the construction of the Akosombo Dam involved a trade-off between environment and development. In this case, however, that trade-off also involved a social dimension, since the well-being of the displaced people was exchanged – together with the fertile soils and the other natural resources of the region – for the wealth associated with the generation of electricity and the manufacture of aluminium. The trade-off involving the well-being of the displaced people, the natural resources of the flooded area, and the economic benefits of the project raises questions about the timescale over which development is judged. In the short term, a single generation (or perhaps several) were affected by the displacement and the poverty associated with the project. In the long term, many generations of people – who would have no memory of the displacement – stand to benefit from the electricity supplies, the industry, and the employment provided by the project. Indeed, the needs of future generations seem to have been well-served by this project. Does this mean that the project is actually an example of sustainable development? No, it does not, because those benefits were achieved at the expense of the present generation. In this example, there was no intragenerational equity. The project created, rather than reduced, poverty for many people. Those who were displaced paid a terrible price for this development.

Who decides about development?

The example of the Akosombo Dam – and the trade-off it involved – raises vital questions about who has the power to make decisions about development (sustainable or otherwise). In this case, powerful actors (the Prime Minister of Ghana, the Ghanaian Government, the World Bank, the USA, the UK, the Export-Import Bank of America, and several companies) made decisions that affected the lives of rural fishers and farmers who had scarce power, representation or resources. Ideally, those people would have been enabled to participate in a decision-making process that was to have such profound implications for their lives. This example also raises uncomfortable questions about the role of international organisations – such as the World Bank and transnational corporations – in development. It is not clear that the power exerted by such organisations can ever truly operate in favour of the poorest people in society. The actions of international organisations should be carefully monitored in relation to the promotion of sustainable development.

Multiple criteria

We have now considered two examples of development (the transformation of Easter Island and the construction of the Akosombo Dam) that may be regarded as unsustainable. In the first example, the activities of the Easter Islanders led to the complete destruction of the natural resources on which their society depended – a situation that was clearly impossible to sustain. Therefore, we can characterise the transformations wrought by the Easter Islanders as unsustainable development because they brought about the total destruction of their natural resource base, and also because they did not provide for the needs of future generations. But the second example describes a situation that is more difficult to evaluate. At first glance, as a result of development plans that stimulated industrial development and economic growth, many economic benefits (in the forms of electricity, industry, employment, income, and wealth) have been provided for future generations. The environmental impacts associated with this project were significant, over an area of many thousands of square kilometres, but they did not amount to the wholesale destruction of the natural resource base. The claim that the Akosombo Dam promoted sustainable development can be rejected on different grounds; in this case, we could argue that the development was unsustainable because it created, rather than reduced, poverty for many people (those who were displaced by the creation of Lake Volta).

Already, we can conclude that there are multiple criteria for evaluating whether or not development is sustainable. In fact, as we examine the concept of sustainable development from different angles, we will be forced to acknowledge that it is multifaceted: there are many aspects of sustainable development, and there are many factors that could be taken into account in deciding whether or not development is sustainable. Yet not all of those factors are equal, just as not all considerations are equal in any area of human decision-making. So far, the most important criteria we have explored are the protection of the natural resource base and the reduction of poverty. In other words, if a development project conserves its natural resource base, and if it brings about poverty reduction, then it already meets two of the most important criteria for being judged 'sustainable'. In the next section, we will add another important criterion, one that is related to the problem of environmental change.

Section 3 Self Assessment Questions

Question 7

What does it mean to say that poverty is multidimensional?

Question 8

List the main negative impacts of the Akosombo Dam.

Question 9

Which of the following is the strongest reason to regard the construction of a major dam as an example of unsustainable development?

(a) Displacement of people from their land often creates poverty.

(b) Employment for construction workers tends to be short term.

(c) Dam construction permits greater control of a river's flood regime.

(d) The availability of electricity may stimulate industrial development.

4.0 THE PROBLEM OF ENVIRONMENTAL CHANGE

Section Overview

This section introduces the problem of environmental change as a key element in debates about sustainable development. Scientific assessments of environmental change – especially of global environmental change – demonstrate that current development trajectories are clearly unsustainable. Concerns about global environmental change were another of the factors that prompted the emergence of the concept of sustainable development.

Section Learning Outcomes

By the end of this section, students should:

- understand that recent assessments of environmental change – especially of global environmental change – indicate that current development trajectories are clearly unsustainable
- understand that the problem of environmental change is a crucial issue in relation to sustainable development

4.1 Global environmental issues

Environmentalist concerns

> ✍ List what you consider to be the most important global environmental issues.

Together with the widening realisation of the problem of poverty, there has been an increasing awareness of the existence of a second global crisis: that of environmental degradation. Concerns about the state of the environment have deep historical roots, but those concerns came to prominence during the 1960s following the publication (in 1962) of a seminal book by Rachel Carson, *Silent Spring*, and the emergence of the modern environmentalist movement in some countries (Carson 1962). Since then, and particularly since the 1980s, considerable scientific efforts have been made to investigate and to document the state of the global environment and the nature of global environmental change. Those efforts have been prompted by widespread concerns that the pace and extent of development in many parts of the world have far outstripped the capacity of natural ecosystems to absorb the impacts of human activities.

Global environmental change

Numerous environmental changes have been identified as issues of global concern: desertification; the depletion of fuelwood; the destruction of tropical rainforest and rapid declines in forest cover; the modification of coastal ecosystems; the reduced availability and quality of drinking water; the depletion of soil resources; the over-

exploitation of fisheries; food shortages; species extinction and the loss of biodiversity; stratospheric ozone depletion; rapidly rising levels of fossil fuel and demand for energy supplies; and climate change. The sheer number, magnitude and complexity of these issues can seem overwhelming and some commentators have argued that they amount to a cumulative, sustained human impact on the environment that has profoundly transformed the surface of the Earth.

The Millennium Ecosystem Assessment

Many assessments of global environmental change have been produced since the 1980s. Those assessments have painted a consistently negative picture of the state of the global environment and of the impacts of human activities. The *Millennium Ecosystem Assessment*, published in 2005, reported that, over the previous 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time. This rapid environmental change has been wrought primarily to meet rapidly growing human demands for food, fresh water, timber, construction materials and fuel. The pace and magnitude of human impacts have resulted in a substantial and largely irreversible loss in the diversity of life on Earth. In addition, the *Millennium Ecosystem Assessment* found that approximately 60% of the ecosystem services it examined were being degraded or used unsustainably – including fresh water, capture fisheries, air and water purification, and the regulation of regional and local climate, natural hazards and pests.

The Global Environment Outlook

An authoritative series of reports on the state of the global environment, entitled the *Global Environment Outlook* (*GEO*), has been published by the United Nations Environment Programme (UNEP). The Fifth Global Environmental (*GEO-5*) Assessment report (UNEP 2012a), published in 2012, highlighted a now-familiar set of environmental concerns that were broadly categorised as climate change, environmental degradation, loss of biodiversity and the degradation of stocks of key natural resources (especially fish stocks). The *GEO-5* report argued that 'the world continues to speed down an unsustainable path despite over 500 internationally agreed goals and objectives to support the sustainable management of the environment and improve human wellbeing' (UNEP 2012b p. 1). Despite some progress in certain areas, the report showed that little or no progress had been made in many others, including in relation to climate change, fish stocks, desertification, and drought. Significant deterioration had occurred in some areas, including the state of the world's coral reefs, and a lack of data hindered the assessment of other key goals. Overall, the *GEO-5* report stated, 'if humanity does not urgently change its ways, several critical thresholds may be exceeded, beyond which abrupt and generally irreversible changes to the life-support functions of the planet could occur. […] "If current trends continue, if current patterns of production and consumption of natural resources prevail and cannot be reversed and "decoupled", then governments will preside over unprecedented levels of damage and degradation". Consequently, the *GEO-5* report called for policy changes to ensure that an ambitious set of sustainability targets is achieved by the middle of the century (UNEP 2012b p. 1).

The *GEO-5* report identified a very wide range of issues of serious concern, as well as limited evidence of progress in addressing them. In particular, climate change is a critical global challenge; its impacts are already evident, and changes in water availability, food security and sea-level rise are projected to dramatically affect many millions of people. 'Under current models, greenhouse gas emissions could double over the next 50 years, leading to rise in global temperature of 3°C or more by the end of the century' (UNEP 2012b p. 3). Biodiversity loss is another critical issue: current losses of biodiversity are dramatic and alarming. Ecosystems are being transformed, and, in some cases, irreversibly degraded. Many species have become extinct in recent history or are now threatened with extinction. Changes in biodiversity are more rapid than at any time in human history. Coral reefs are a particular cause for concern due to their very rapid degradation and the increasing risk of extinction of corals. Biodiversity loss continues because of inadequate and unresponsive current policies and economic systems, and many current policies are not fully implemented, although some progress has been made in areas such as the coverage of protected areas (UNEP 2012b pp. 3–4).

A circular relationship

The *GEO-5* report has identified a daunting list of global environmental issues. For the purposes of understanding sustainable development, however, there are two key points to make about this list of issues. First, many – if not all – of these environmental issues are caused, in one way or another, by development. For this reason, conventional efforts to promote development have attracted severe criticism from environmentalists – and they have prompted some people to call for 'green' forms of development that are more ecologically-sensitive. Second, many – if not all – of these environmental issues represent, in turn, significant obstacles to further development. Depleted natural resources and degraded ecosystems mean that it is more difficult to provide even the basic goods and services that people need to support their livelihoods and well-being. Once again, the relationship between environment and development is brought to the fore: a relationship that is now seen to be circular. Thus development can cause environmental degradation; in turn, environmental degradation can undermine development.

4.2 Environmental degradation

Poverty and environmental degradation

Development can cause environmental degradation; in turn, environmental degradation can undermine development. This can be expressed more simply by saying that poverty is both cause and an effect of environmental degradation. The example in 4.2.1 illustrates this circular relationship between development and environmental degradation.

4.2.1 The impacts of palm oil production

Palm oil and biofuels

Palm oil is currently used in many food products including margarine, chocolate, cream cheese and oven chips. It is also used in cosmetics and, increasingly, to produce biodiesel. The use of palm oil to produce biodiesel is being driven by commitments by various governments to increase the amount of biofuels being sold — because biofuels are regarded by some people as a quick solution to the problem of greenhouse gas emissions, which are causing climate change. Currently, more than 70% of the palm oil produced is used in food items. However, because the biofuels industry is expanding rapidly, the demand for palm oil is also growing dramatically. Compared to levels in 2000, demand for palm oil is expected to more than double by 2030 and to triple by 2050. In Indonesia, 6 million hectares are already used for palm oil plantations; by 2015, another 4 million hectares will be dedicated to biofuel production alone. In the EU, by 2020, 10% of the fuel sold is expected to be biofuel. China is aiming for 15% of its fuel to be biofuel, and India is planning for biodiesel to make up 20% of diesel sales by 2012.

Impacts of palm oil production

At first glance, palm oil production seems to have several benefits: it generates economic growth and it creates employment in a rapidly expanding industry. The use of biofuels could be useful in climate change mitigation, as it avoids the carbon dioxide emissions that are released when fossil fuels are burned. So it might seem as though palm oil production is both good for the environment (by reducing greenhouse gas emissions) and good for economic development (by generating income and employment). However, the situation is not quite so straightforward. In fact, palm oil production is associated with devastating environmental impacts — including impacts on global climate. To meet the growing demand for palm oil, tropical rainforests and peatlands in Southeast Asia are being destroyed to create land for palm oil plantations. Ironically, the clearance of rainforests and the draining and burning of peatlands make climate change worse, because those activities release more carbon dioxide than simply burning fossil fuel. The problem is particularly acute in Indonesia, which was recently the country with the highest rate of deforestation in the world. Indonesia is also the third largest emitter of greenhouse gas, mainly as a result of deforestation. Similar problems are also occurring in other parts of Southeast Asia. Palm oil production also has other environmental and social impacts, including the loss of biodiversity (as rainforests are destroyed) and effects on local communities as traditional ways of life are disrupted and people are displaced from their land. Furthermore, the growth of crops for biofuels may increase food prices and reduce global food reserves, thereby reducing food security and increasing vulnerability.

An ongoing issue

The environmental impacts of palm oil production could — in principle — be prevented. A moratorium on converting forest and peatlands into oil palm plantations could be introduced until long-term solutions are found. Restoring deforested and degraded peatlands could provide a relatively cheap, cost-effective way to make dramatic reductions in greenhouse gas emissions in Indonesia. Governments around the world could provide funds to help countries with tropical forests to protect their resources, as well as reducing their own carbon dioxide emissions, so as to mitigate the impacts of climate change. Yet, in practice, curtailing the expansion of palm oil production is likely to be extremely difficult, since it requires national governments and multinational corporations to forgo economic growth, political support and substantial profits. From the perspective of local workers who are dependent upon the palm oil industry for their employment, any restrictions of the growth of the industry could jeopardise their livelihoods. In the absence of effective international agreements and legislation to prevent deforestation or greenhouse gas emissions, it is likely that palm oil production will continue to result in the destruction of rainforest and peatlands for as long as it is economically viable to do so.

Source: adapted from Greenpeace (2009)

4.3 The lessons of palm oil production

Difficult questions

This example raises many difficult questions about sustainable development. Does economic growth inevitably result in the destruction of the environment? Is it possible to have economic development without environmental damage? Is poverty reduction a justification for allowing environmentally destructive practices? Who benefits from the economic growth created by industries such as palm oil production? Who suffers the effects of the resulting environmental degradation? Which parts of the environment are most important to conserve, and why? Which environmental issues are – or should be – the priorities for action? Is employment in rapid-growth industries a good basis for development? Why do governments encourage industries that deplete natural resources and damage the environment? Why is it difficult to stop environmentally destructive practices such as the expansion of palm oil production? And how might an issue such as this be resolved?

Vicious and virtuous circles

This example shows that the production of palm oil in Southeast Asia – and in Indonesia in particular – is responsible for some devastating environmental impacts: the clearance of rainforests; the draining and burning of peatlands, the release of greenhouse gas, and the loss of biodiversity (as rainforests are destroyed). In turn, those environmental impacts are likely to hinder attempts to promote development in the future – especially because they are exacerbating climate change. It is worth pointing out that, whilst the benefits of palm oil production are enjoyed by relatively few people (palm oil producers and their communities, the multinational companies involved in the trade, and the Indonesian authorities), the environmental impacts of the industry will affect people worldwide. This is a good example of a 'vicious circle' in which development causes environmental decline, which in turn undermines further development. Ideally, rather than a vicious circle, we would prefer to have a 'virtuous circle' in which ecologically sensitive forms of development lead to environmental protection and restoration – and that, in turn, those healthier environments form a strong basis for further ecologically sensitive development.

Another criterion

We have now considered three examples of unsustainable development (the transformation of Easter Island, the construction of the Akosombo Dam, and the production of palm oil in Southeast Asia). In doing so, we have identified the main criteria by which we can judge whether or not development may be regarded as 'sustainable'. First, development should preserve the natural resource base on which human survival depends. Second, development should promote intergenerational equity by protecting the survival, livelihoods, and well-being of future generations. Third, development should promote intra-generational equity by protecting the survival, livelihoods, and well-being of people living today, especially through poverty reduction. And we can now add a fourth criterion: that development should promote environmental protection and restoration rather than degradation. We might wish to express this fourth criterion in terms of protecting the survival and well-being of a

much greater range of species and habitats than those of immediate use to humans. Some people would argue that the first and the fourth criteria (preserving the natural resource base, and promoting environmental protection and restoration, respectively) are very similar – and may actually amount to the same thing. Yet promoting environmental protection and restoration implies a richer, broader, and more ambitious vision than simply maintaining the minimum natural resource base necessary for human survival.

A daunting task

We can now appreciate something of the main challenge of sustainable development. For any human activity, the task of meeting all four of these criteria is a formidable undertaking. To do so when resources are scarce – and when economic and social pressures are intense – is harder still. We may sympathise with Kader Asmal, the Chair of the World Commission on Dams, when he said that ensuring that development is sustainable is like asking a surgeon to operate without inflicting any wounds. As this unit has illustrated, the issues involved in sustainable development are often vast, complex, and interrelated: they include a wide range of economic, social, and environmental considerations. Indeed, the main challenge of sustainable development is often expressed in terms of the need to balance the economic, social, and environmental costs and benefits of development, both for people living now and for future generations. Geographical scale is an important consideration, because some forms of development that appear to be sustainable at one scale (such as the local scale) may be judged to be unsustainable at another (such as the global scale). Another, complicating factor is that scientific knowledge and understanding of the nature of human impacts and of the behaviour of environmental systems is often incomplete – and may be embryonic – so decisions about development must sometimes be made in the context of radical uncertainty.

A multifaceted concept

Above all, it is crucial to emphasise that the relationship between environment and development lies at the heart of ideas about sustainable development: this means that environment and development must be considered together if there is to be any hope of promoting sustainable development. Furthermore, sustainable development is a multifaceted, political concept. Sustainable development may be viewed and interpreted from many perspectives, and there are many factors that could be taken into account in deciding whether or not development is sustainable. Not all of those factors are equally important, and not all interpretations of sustainable development are equally valid. Yet which factors are the most important ones, and whose interpretations should carry most weight, in making decisions about development? Asking and answering such questions is critically important in the task of understanding sustainable development.

Section 4 Self Assessment Questions

Question 10

Which of the following statements is correct?

(a) Global environmental change is invariably slow and incremental.

(b) The Antarctic stratospheric ozone 'hole' has now almost entirely recovered.

(c) Humans are causing one of the major extinction events of Earth's history.

(d) The effects of climate change are unlikely to be observed until after 2050.

Question 11

Which of the following statements about biofuels is NOT true?

(a) Biofuels are 'carbon neutral'.

(b) The growth of crops for use as biofuels may increase food insecurity.

(c) Using biofuels is a relatively quick way to reduce greenhouse gas emissions.

(d) Producing biofuels is consistent with the idea of sustainable development.

Question 12

Which of the following is NOT a criterion for assessing whether or not development is sustainable?

(a) Development promotes poverty reduction.

(b) Development promotes international relations.

(c) Development promotes environmental rehabilitation.

(d) Development promotes intergenerational equity.

UNIT SUMMARY

This unit has introduced the main challenge of sustainable development: the need to balance economic, social, and environmental costs and benefits, both for people living now and for future generations. This is a daunting challenge because of the magnitude and complexity of the issues involved. In particular, the immense problems of poverty and global environmental change are key concerns in debates about sustainable development: indeed, those two issues were important in prompting the emergence of ideas about sustainable development in the first place. The relationship between environment and development is central to understanding sustainable development. That relationship may contain profound tensions and is often one of conflict. Often, unsustainable forms of development have led to environmental degradation – and that environmental degradation, in turn, hinders further development. Occasionally, however, the relationship between environment and development is more positive, as in cases where environmental protection is one of the benefits of ecologically sensitive forms of development. Obviously, the latter situation is far preferable.

In this unit, examples have been used to illustrate various aspects of sustainable development. The example of food miles demonstrates that sustainable development issues may initially seem to be straightforward – yet they may actually be very problematic on closer examination. Despite this complexity, several criteria may be used to assess whether or not development is 'sustainable'. The example of the deforestation of Easter Island illustrates one of those criteria: the need to preserve a natural resource base that is sufficient for human survival – and one that allows future generations to survive, too. The example of the Akosombo Dam demonstrates that development should promote intragenerational equity – especially through poverty reduction. The example of palm oil production in Southeast Asia illustrates that development should promote environmental protection and restoration rather than degradation. Meeting all of these criteria is an extremely difficult task, and difficult choices must often be made between conflicting goals. This makes sustainable development a highly political concept: understanding how such decisions are made – and whose interests are given priority – is one of the key aspects of understanding sustainable development.

UNIT SELF ASSESSMENT QUESTIONS

Question 1

Using the list of terms provided, fill in the missing words/phrases in the diagram showing a generalised economy.

(a) Economy

(b) Waste (pollution)

(c) Energy

(d) Products and services

(e) Raw materials

Question 2

Is sustainable development a contradiction in terms?

Question 3

How does environmental change threaten development?

KEY TERMS AND CONCEPTS

bioaccumulation	the gradual build-up of a chemical in an organism, due to the rate of absorption being greater than the rate of excretion
biodiversity	the variety of species existing in a given ecosystem
biofuel	a fuel obtained from recently-living organic material (generally crops or wood). Biofuels are regarded as 'carbon neutral' because the carbon dioxide emitted during their combustion is offset by that absorbed during their growth
carbon dioxide	an important greenhouse gas emitted as a result of fossil fuel combustion
carbon neutral	an activity or process is said to be 'carbon neutral' if it releases no more carbon dioxide than it absorbs
dependence	in the context of sustainable development, dependence refers to the reliance of one society or individual on another, as in the case when small-scale producers in developing countries rely on the income obtained from the sale of their produce to affluent consumers in developed countries
food miles	the distance over which food products are transported from producer to consumer, which is regarded as an indication of the environmental impact of food transport
globalisation	the process of increasing integration of economies, societies and cultures, worldwide, as a result of advances in communications, technologies, and transport
hothouse	a heated greenhouse, generally used for food production
inter-generational equity	justice between people of different generations; in relation to sustainable development, it refers to the principle of protecting the survival, livelihoods, and wellbeing of future generations
intra-generational equity	justice within people of the same generation; in relation to sustainable development, it refers to the principle of reducing inequalities between people, especially through poverty reduction
neo-colonialism	the involvement of developed countries in the affairs of developing countries in order to ensure the economic, social, political or cultural dominance of the former; it often takes the form of foreign capital being used to exploit, rather than to promote, the development of the latter