

Sustainable consumption

A Global Status Report

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Glossary of Abbreviations and Acronyms

CI	Consumers International
CSD	Commission for Sustainable Development
DTIE	Division of Technology, Industry and Economics (UNEP)
ECOSOC	Economic and Social Council (UN)
OCSC	Oxford Commission for Sustainable Consumption, UK
OECD	Organisation for Economic Cooperation and Development
RS	Royal Society, UK
SC	Sustainable Consumption
UNCED	United Nations Conference on Environment and Development (Rio)
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
WBCSD	World Business Council for Sustainable Development
WSSD	World Summit on Sustainable Development

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1 Preface

The growing attention to issues of sustainable *consumption* is a natural outcome of decades of work on cleaner production and eco-efficient industrial systems. It represents the final step in a progressive widening of the horizons of pollution prevention; a widening which has gone from a focus on production *processes*, to *products*, (ecodesign to lower product impacts), then to *product-systems* (incorporating transport logistics, end-of-life collection and component reuse or materials recycling) and to *eco-innovation* (new products and product-systems designed for win-win solutions for business and the environment). Action focused on *consumption* has highlighted the need to address the creation of new *systems of production and consumption*, systems that might be truly sustainable, environmentally, economically, systems that will enhance the quality and equality of cultural, social and physical existence for all people.

This report is an overview of action and thinking on the issue of sustainable consumption since the publication of Agenda 21 in 1992. Its focus is the ten years that have elapsed since that publication. Chapter 4 of Agenda 21 (*Changing Consumption Patterns*) became the starting point for international work directed to improving understanding of global consumption patterns and their environmental and social impacts. It also led to work by a number of UN and international agencies on the development of appropriate policies and programs of action, to change unsustainable consumption patterns and promote the importance of sustainable and equitable consumption for human development. The United Nations Environment Program (UNEP) through its Division of Technology, Industry and Economics (DTIE) has played a key role in supporting and stimulating that work through the activities of its Sustainable Consumption Unit. Attention to this topic has also involved meetings, reports and proposals from the UN-CSD, UNDP, OECD, and from key NGO organisations within business, the scientific community and consumer protection and environment. Consumption-related issues have been addressed by many governments of both developed and developing countries as part of their own environment and resource policies and in response to the programs of UNEP and the other international agencies.

UNEP has initiated a series of international consultations on the issue in four regions – Africa, Asia Pacific, Eastern Europe and Latin America and the Caribbean¹ and published a report, *Consumption Opportunities*², which made important contributions to strategic thinking about Sustainable Consumption. UNEP recognises that industrialized countries have a special responsibility to promote, facilitate and achieve sustainable consumption. However, consuming and producing more efficiently will be fundamental to any strategies for eradicating poverty and creating business opportunities for developing countries. UNEP has thus placed great emphasis on promoting the concept for developing countries and countries with economies in transition and developing capacity building programs, designed to raise awareness, inform and train decision-makers in governments and (small and medium sized) companies. In addition to carrying out consumer trend studies focusing on global consumers and youth, supported by the Advertising and Communications industry, UNEP has also been reviewing the implementation of a set of Consumer Protection Guidelines specifically related to Sustainable Consumption. These were adopted by the UN General Assembly in 1999 as a specific section of the general guidelines for consumer protection (1985).

This report examines progress and the status of the area as preparations for the WSSD in August–September 2002 are underway. It considers whether the issues of concern in 1992 are still relevant today and what attention that sustainable consumption should receive at the WSSD. The history of the Sustainable Consumption debate is considered with reference to the key players involved. The outcomes of the UNEP regional consultations and the nature of actions proposed by UN agencies and governments, business, consumers and environment organisations and research institutions are reviewed and future action considered.

¹ These were launched in 1999, through the *Business forum on sustainable production and consumption - opportunities in a changing world*, with follow-up meetings in 2000-2002.

² *Consumption Opportunities* UNEP, Geneva, 2001

2 Executive Summary

2.1 Introduction

"Achieving sustainable development will require both efficiency in production processes as well as changes in consumption patterns... in many instances this will require a re-orientation of existing production processes and consumption patterns which have predominantly emerged from developed countries."
Agenda 21

Development, prosperity, wealth – the economic, social, cultural and environmental factors that underpin our sense of quality of life – are dependent, ultimately, on structure of our systems of production and consumption. However, in the lead-up to the first global conference on the human environment (Stockholm 1972), community. scientific and political debates targeted those systems of production and consumption as a potential threat to human survival. The 20 year period from Stockholm to Rio saw huge changes to global understanding of the relationship between economic activity and ecological systems. By the Rio summit, 1992, there was a sense of optimism that preventative strategies heralded the potential of a 'change of course', in which industrial and economic development would become compatible with sustaining the global environment.

2.2 Unsustainable consumption patterns – the inversion of development.

A critical review of achievements in pollution prevention, cleaner production and eco-efficiency can point to some real progress since Rio. However, whilst some gains are observable in production, consumption patterns appear to be moving in ways that continue to threaten sustainable development. Globally, unsustainable patterns of production and consumption demand attention and action, just as they did in 1992. In particular, there is:

- Growing disparities in levels of consumption between rich and poor counties
- Growing disparities in levels of consumption within developing countries
- Total growth in consumption of resources (particularly water, food and energy) in developed countries such that technical (eco) efficiency improvements are being overwhelmed.

Clarifying terms: 'consumption' and 'patterns of consumption'

Discussions of consumption, over-consumption and sustainability are prone to a confusion in terminology between *consumption of goods and services* (demand and volume) and *consumption of resources* (ecological impact). The term 'patterns of consumption' has grown in usage as a way of expressing the linkage between these two aspects of consumption and the impact that *arises from the consumption of goods and services and the way they are produced*.

The distorted geography of consumption

The inequalities in consumption between countries (and within countries) is so significant that it is of wide concern, representing a fundamental distortion in progress towards sustainable development. The overall consumption of the richest fifth of the world's population is 16 times that of the poorest fifth³. There are critical resource areas where consumption levels within countries are threatening future development because demand is exceeding supply. These problems reflect poverty, poor technology, inefficient supply systems, inadequate infrastructure, lack of demand management.

Measuring consumption impacts

Various attempts have been made to translate global consumption and the consumption of populations living in different regions, countries, cities, into a measure of their environmental impacts. This requires developing sets of appropriate indicators and the measurement and analysis of data.

The distorted demography of consumption

Affluent society consumption patterns are becoming the model for many nations of Eastern Europe and the former Soviet Union, Asia, Africa and Latin America and the Caribbean. These affluent populations reflect the reality of growing contrasts within developing countries and a distortion in the demography of consumption, a widening gap between rich and poor.

³ {UNEP Montreal background paper}

The distortion of improvements in production and products

Preventative approaches to improvements in production and the performance of products (cleaner production, product ecodesign, environmental technology, eco-innovation and environmental management) have demonstrated significant environmental gains. Increasing eco-efficiency remains the most optimistic strategy for sustainable production, with strong support from industry. However, there is evidence that GDP is growing at a faster rate than improvements in resource or energy efficiency – *consumption is outpacing the gains from improvements in production and products*. There is also increasing evidence of *rebound effects*, in which improvements in efficiency actually become a stimulus for increased consumption.

Over-consumption, trade, and competing for 'part of the pie'.

Conspicuous consumption in affluent countries is easily attacked for 'taking an unfair share of the pie'. The role of trade in commodities and resources from developing countries, to support affluent consumption in developed countries, is more complex and nuanced than some of the current debate over globalisation allows for. Consumption in the developed world is a vital source of income and wealth for developing countries. However, it is the case that trade can deplete local resources, removing them from potential consumption, or pricing them out of the market and *blocking development*.

The global diffusion of affluent 'Western' patterns of consumption

'Scaling-up' current western patterns of consumption as the basis of development for, say, China or India – adding another 2 billion 'western style' consumers – is simply not a realistic option unless the risk of catastrophic collapse of the global ecosystem is considered acceptable.

Western economies have been supported by an entrenched social and cultural commitment to the link between prosperity and per-capita consumption of goods and services. Through global business, trade, advertising and communications, concepts of quality of life in developing countries are strongly affected by the aspirations and goals of consumers and business in developed countries. The impacts of this 'global aspiration system' are acutely evident in the expressed concerns of regional

consultations on consumption and from the UNEP work on the emergence of a Global Consumer Class.

2.3 Action on sustainable consumption

Defining the idea

Since Agenda 21 these issues of unsustainable consumption have been addressed through a series of meetings, dialogues, research and publications from CSD, UNEP, OECD, UNDP and other business, consumer and research organisations (see the 'time-table' in Section 5.1). The idea of Sustainable Consumption has been developed and clarified through that process, emerging as:

an umbrella term that brings together a number of key issues, such as meeting needs, enhancing quality of life, improving resource efficiency, minimising waste, taking a life cycle perspective and taking into account the equity dimension; integrating these component parts in the central question of how to provide the same or better services to meet the basic requirements of life and the aspiration for improvement, for both current and future generations, while continually reducing environmental damage and risks to human health.

International Agencies

In defining targets for action and policy implementation, towards Sustainable Consumption there is broad agreement that it must embrace:

- Poverty eradication
- Change pursued by all countries, with the developed countries taking the lead
- A mix of policies including regulations; economic and social instruments targeted to land use, transport, energy and housing; information; products and services
- Partnership between governments, relevant international organizations, the private sector and consumer groups
- Special attention to unsustainable consumption patterns among the richer segments in all countries.

The UN has added a total of 14 points to its consumer protection guidelines to address issues related to sustainable consumption (and the implementation of these is being surveyed by UNEP). UNEP has developed programs and projects working closely with three key groups – *Consumers and consumer organisations; Advertising and communications industry; Youth* – and has been able to link the issue of

consumption patterns into its programs of *capacity-building* in sustainable production and products.

Industry

Industry (eg through the WBCSD) has approached sustainable consumption as an extension of eco-efficiency approaches to include:

- technological and social innovations to improve quality of life
- Provide and inform consumer choice.
- Improved market conditions through appropriate legislation and regulation

The Industry Sector Reports to the WSSD show good awareness and attention to reducing resource consumption in production and products and to providing information to consumers, to improve the effectiveness and quality of product use. Reducing end-of-life waste (usually through recycling) is also a common feature of product stewardship programs across most industry sectors.

Regional Concerns

A series of consultations initiated by UNEP in Africa, Asia-Pacific, Latin America and the Caribbean and Eastern Europe have confirmed concerns about the impacts of particular features of global development:

- Poverty and consumption scarcity
- Population growth
- The Globalisation of information
- The Globalisation of trade
- Trans-national Corporations
- Intellectual property rights
- Urbanisation
- Tourism
- Consumer Protection

Action and Approaches – Summary

From the extensive consultations, research and reports, actions can be grouped into three broad areas:

- Production and Product improvements (target: Business)
- Information and Awareness (target: Consumers)
- Equity (target governments and international agencies)

A broad consensus exists on the range of policies and actions appropriate for these three areas, which can be grouped into twelve goals. (Table 6.4)

2.4 Future Strategies and Action

A number of things stand out from a review of the past ten years' work on sustainable consumption:

- Progress towards sustainable consumption has to emerge from industrialised countries, where the dominant models and aspirations for patterns of consumption are generated. New aspirations for sustainable prosperity need to be widely and visibly embraced within developed countries if they are to become a global pattern.
- Action in developed countries has to be relevant to the conditions and needs of developing countries and open to solutions and approaches derived from the experience and practice of developing economies.
- Thinking about *consumption* has provided a valuable approach to the analysis of current conditions and an important way to structure strategies for future development. This has *exposed the limitations of production-focused strategies*. Consumption does not provide an alternative approach, just 'the other side of the coin'. It is *systems of production and consumption* which need to change – urgently.
- 'Production' and 'Consumption' is a limited way of thinking about systems of production and consumption. Other approaches are needed. Strategies for change will succeed or fail on the way that these complex systems can be focused into action that can be *communicated, understood and embraced by all stakeholders*.

Six strategic areas are discussed which address various problems in current work on SC. Taken together, they aim to bring about a greater integration of sustainable consumption and cleaner production. They are:

- Clarifying the various (and often confused) meanings of the *term consumption*.
- Developing better *feedback* - indices to measure consumption pressure and quality of life, and putting them to use
- Finding a more appropriate *conceptual schema* for describing systems of production and consumption, to allow for more complexity of elements and interactions but still simple enough to assist analysis and intervention.
- Supporting and enhancing *localised campaigns of action* to transform consumption of targeted resources or goods and services.
- Focusing production and consumption-oriented action on the transformation of *products and services*.
- Developing and promoting the idea of '*leap-frog*' change as a radical shift in existing product, services and business sectors.

3 Background: the focus on *consumption* in sustainable development

3.1 Changing perspectives on production and consumption

All aspects of the human condition are ultimately related to the state and structure of our systems of production and consumption. Development, prosperity, wealth; the economic, social, cultural and environmental factors that underpin our sense of quality of life, are dependent, ultimately, on the techniques and systems of production. *'Human life is ultimately nourished and sustained by the effectiveness of systems of production and consumption'*(UNDP 1998.)

The development of production and consumption capacity is evident from recent history. World consumption has expanded at an unprecedented rate over the last (20th) Century⁴. The benefit of such growth is manifold; *Living standards have risen to enable hundreds of millions to enjoy housing with hot and cold water, warmth and electricity, transport to and from work – with time for leisure and sports, vacations and activities beyond anything imagined at the start of the Century.* (UNDP 1998)

In the lead-up to the first global conference on the human environment (Stockholm 1972), community concern and scientific and political debates were largely focused on the emergence of the 'other-side' of industrial and technological growth. Far from being unquestionably the basis of human development and progress, systems of production and consumption were challenged as a potential threat to human survival. The 1972 event brought into the global political spotlight fundamental questions about the limits to growth, about resource depletion, pollution and the capacity of the biosphere to absorb what came to be called *unsustainable development*. Debates were frequently cast in terms of fundamental oppositions – conservation *or* development, industry *or* a healthy environment. Technology, mass-production, economies of scale, economic growth, consumerism – these were

⁴ In 1900 real consumption expenditure was barely \$1.5 trillion. By the end of the 1990's that figure had risen to above 24 trillion US\$. (UNPD 1998)

aspects of industrial societies that were open to question as *causes* of environmental degradation and potential future ecosystem collapse.⁵

The 20 year period from Stockholm to the Rio Summit saw huge improvement in global understanding of the relationship between economic activity and the ecological systems and natural resources which sustain that activity. Global treaties, the development of analytical and assessment methods, the diffusion of environmental management, policy development, education, research, innovation and investment in environmentally beneficial technology, progressively eased the sense of impending crisis. That 20 years saw a fundamental change from corrective to preventative approaches to the environment.

3.2 Rio and 'a change of course'.

By the Rio summit there was a sense of optimism that preventative strategies heralded the potential of a 'change of course' in which industrial and economic development would become compatible with sustaining the global environment – changes in infrastructure, cleaner production, product design, technology, which could produce both a win for business and the economy and a win for environment and society. The elimination of unsustainable systems of production and consumption and the development of new sustainable systems is the recurrent theme in the Earth Summit 'Rio Declaration' and Agenda 21 produced by the summit. Chapter 4 of Agenda 21 said...*achieving sustainable development will require both efficiency in production processes as well as changes in consumption patterns... in many instances this will require a re-orientation of existing production processes and consumption patterns which have predominantly emerged from developed countries...*

Throughout Agenda 21 there is a clear sense that a re-orientation of production and consumption is technically possible and achievable with the right approaches, the correct policy context and political action. The newly formed World Business Council for Sustainable Development (WBCSD) came to the summit with an agenda for *Changing Course* which called for business to accept a responsibility for sustainable

⁵ (## overshooting carrying capacity; Meadows et al 1972

development and to play a significant role in changing systems of production based on improvements in three areas:

- Eco-efficient, cleaner production
- Environmental technology
- Product design and development

These were not presented as mere ideas for improvements but as realistic targets for economically achievable change. *Changing Course* was based on examples and projections of improved technical and production efficiency achieved by better environmental management, life-cycle thinking, cleaner production approaches, process innovation and product ecodesign. Yet, as the evidence of technical improvements in production has grown, the contradictions have deepened, generating a new focus for concern and action – *consumption*.

3.3 Unsustainable consumption patterns – the inversion of development.

It used to be taken for granted that economic growth entailed parallel growth in resource consumption, and to a certain extent, environmental degradation. However, the experience of the last decades indicates that economic growth and resource consumption and environmental degradation can be decoupled to a considerable extent. The path towards sustainable development entails accelerating this decoupling process... i.e. transforming what we produce and how we produce it. { Yukiko Fukasaku OECD – STI 1999, p48}

A critical review of action and achievements in reducing the impacts of production – pollution prevention, cleaner production and eco-efficiency – can point to some real progress. The transformation of 'what we produce and how we produce it' *can* bring about a decoupling of resource consumption and environmental degradation from economic growth. However, whilst some gains are observable in production, consumption patterns appear to be moving in ways that threaten sustainable development. Globally, it is still the issues of unsustainable patterns of production and consumption that demand attention and action, just as it was in 1992 for the Rio Summit. In particular, there is:

- Growing disparities in levels of consumption between rich and poor countries
- Growing disparities in levels of consumption within developing countries

- Total growth in consumption of resources (particularly water, food and energy) in developed countries such that technical (eco) efficiency improvements are being overwhelmed.

These issues suggest an inversion of the historical links between production, consumption and development. Statements of concern once again carry a sense of crisis, reminiscent of the lead up to the 1972 Stockholm conference:

"The links [between consumption and human development] are often broken and when they are, consumption patterns and trends are inimical to human development. Today's consumption is undermining the environmental resource base. It is exacerbating inequalities....[and] the dynamics of the consumption-poverty-inequality-environment nexus are accelerating. If the trends continue without change today's problems of consumption and human development will worsen". (UNDP rep 1998 p 1)

"... extravagant and wasteful consumption of affluent communities constitutes an environmental constraint.. on rich and poor alike, and demands the application of science, technology and policies to address the problem. Furthermore, the skewed consumption patterns between rich and poor might well mean that the point is being approached when – contrary to much past experience – the poor are poor in part because the rich are rich. Worse the gap between the rich and poor is growing.." (RS report)

4 Consumption patterns – the continuing basis of concern.

4.1 Introduction

Attention to, and concern about, unsustainable consumption is clearly expressed in Agenda 21. After 10 years of meetings and reports on sustainable consumption, there will be little to report in terms of consumption data that is positive for the next WSSD in 2002. The picture continues to be dominated by two trends which threaten sustainable development: *Consumption scarcity* – a massive and growing consumption deficiency affecting the greater majority of the world's people; and *over-consumption* of resources in the affluent countries and communities.

Ever increasing consumption is putting a strain on the environment, polluting the earth, destroying the ecosystem and undermining lifestyles. This is a deadly side effect of the development model the North follows and the South emulates. Such consumption is not environmentally sustainable. Poverty and deprivation are increasing at an alarming pace and disparity in income and consumption is a feature in all countries.
{UNEP SE Asian Workshop on SC 2001 - background paper}

Perhaps one positive aspect of any considerations of these issues in 2002 is that the problem – and the data – is more transparent and that patterns of consumption are a focus of concern and debate.

4.2 Clarifying terms: consumption and patterns of consumption

Discussions of consumption, over-consumption and sustainability are prone to a confusion in terminology which arises from the economic focus on *consumption of goods and services* (demand and volume) and the ecological focus on *consumption of resources* and *generation of waste* (ecological impact). The term 'patterns of consumption' has grown in usage as a way of expressing the linkage between these two aspects of consumption. Whilst the ultimate concern is the impact of resource consumption (and waste) on the biosphere, it is vital to recognise that this impact *arises from the consumption of goods and services and the way they are produced*. How goods and services are produced, distributed and consumed affects the net resource consumption and waste which will result from their consumption. 'Patterns

of consumption' is a loose term which aims to describe particular ways in which *goods, services and resources* are consumed by some community or population⁶.

Sustainable Consumption is not about consuming less, but consuming differently, consuming efficiently and having an improved quality of life.
Jacqueline Aloisi de Lardere, Director UNEP DTIE

The Consumption Equation

The relationship between population, consumption and environmental impact can be described in approximate terms by an equation first proposed by Ehrlich and Holdren in 1971⁷:

$$TEI = P \times UC/hp \times EE^{-1}$$

Where *TEI* is total environmental impact, *P* is population. *UC/hp* is (average) units of consumption of products and services per head of population and *EE* is the environmental efficiency of the production, use and disposal of those units.

This equation makes it easy to visualise the importance of considering levels of consumption of goods and services (per head) *and* the resources used (and waste generated) to produce those goods and services. *Patterns of consumption* is a term that intends to capture both these variables. *Consumption pressure per head* describes the (aggregated) product of the two terms *UC/hd* and the inverse of *EE*.

It is from such an equation that the concept of *factor 4* (etc) emerges – being the level of change in *EE* that can be achieved through technical and organisational improvements (cleaner production; product re-design etc) If the intent is to reach some specific level of *TEI* (say for CO₂ production) in a given period, then estimates of the likely population growth over that period, as well as the likely rise in the average level of consumption per head (from development, GDP growth etc), will define the *factor* of improvement in *EE* necessary to compensate for this rise .

Arguments that arise over the role of population growth in environmental degradation can also be clarified with reference to this equation, since it is clear that the issue is the product of population numbers times the average *consumption pressure per head*. *Rebound effects* arise from a relationship between *UC/hd* and *EE*, where improvements in *EE* generate increased consumption per head

⁶ Thus patterns of consumption may differ between communities or populations because different *volumes* of goods and services are consumed which are, nevertheless, produced in the same way (i.e. with the same resource/waste impacts per good or service) or because the same volumes of goods and services are consumed in different contexts where their production impact is different.

⁷ Ehrlich, P.R. and Holdren, J.P. 1971 Impact of Population Growth. In *Sci Vol* 171 pp1212-1217. This equation has been described by Dasgupta (1998) as illuminating, descriptive, but not analytical.

4.3 The distorted geography of consumption

*The global human ecosystem is threatened by grave imbalances in productivity and in the distribution of goods and services. A significant proportion of humanity still lives in dire poverty, and projected trends are for an increasing divergence between those that benefit from economic and technological development, and those that do not. This unsustainable progression of extremes of wealth and poverty threatens the stability of the whole human system, and with it the global environment.
UNEP Global Environmental Outlook (GEO) 2000*

In the context of work on consumption pressures, on human development, on sustainable consumption and on business and market opportunities, data on consumption per capita (and by household, by industry and by category of goods and services) has been widely collated and analysed⁸. The inequalities in consumption between countries (and within countries) is so significant that it is of wide concern, representing a fundamental distortion in progress towards sustainable development. The overall consumption of the richest fifth of the world's population is 16 times that of the poorest fifth⁹. There are critical resource areas (such as fresh water) where consumption levels within countries are threatening future development because demand is exceeding supply. There may be instances where this represents the depletion of a resource that should be shared with another country or region (extraction of water from rivers, for example). (See Section 4.6) But, in most instances, these problems represent distortions in the patterns of consumption which may reflect poverty, poor technology, inefficient supply systems, inadequate infrastructure, lack of demand management. This is a good illustration of the need to talk about 'patterns of consumption' rather than resource consumption (see previous section).

On average, someone living in a developed nation consumes twice as much grain, twice as much fish, three times as much meat, nine times as much paper, and eleven times as much gasoline as someone living in a developing nation {WR 2000}

The distortion in the geographical distribution of consumption can be seen from data on wealth distribution – which determines access to consumption – and from data on actual consumption of key resources and goods and services.

⁸ {Extensive and up-dated data can be found from UNEP, WB, WRI – web refs}

⁹ {UNEP Montreal background paper}

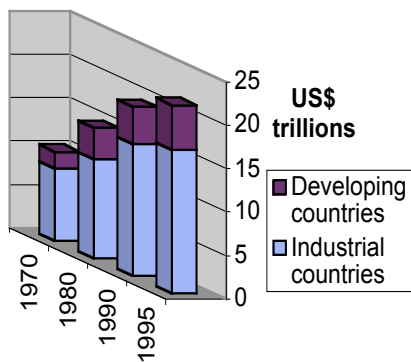
4.3.1 Indicative data

Wealth

Global wealth is rising – but the rich are getting richer and the poor are getting poorer. In 1970 the ration was 30:1, today it is 74:1 {UNDP 1998}

In the last 25 years the world economic output has more than quadrupled with significant rises and GDP in East Asia and the Pacific, Sub-Saharan Africa and Latin America and the Caribbean. Yet nearly 2.8 billion people live on less than 2 US dollars a day (India 82% of population, Indonesia 65%, China 55%, South Africa 37%, Brazil 17%){World Bank WDI 2000}. Close to 1 billion people cannot meet their basic consumption requirements (food, shelter, health support, education). Latin America and the Caribbean have more than 240 million people living below the poverty line; in the Asia Pacific region, 515 million people are considered undernourished, globally the figure is above 840 million people.

In 1999, the average African household had a daily consumption 20% lower than in 1975. {UNEP Montreal}. In 1950, the percentage of global population in the lower income strata was 33%; in the year 2000, this had risen to 41%. One fifth of the world's people – in the US, Europe, Japan and Australia – account for 86 per cent of total world expenditure on consumption.



Global Consumption Expenditure
{Source UNDP 1998}

Water

About 20 per cent of the world's population lacks access to safe drinking water and about 50 per cent lacks adequate sanitation. A third of the worlds population is affected by what the UN has labelled 'moderate to high' water stress as a result of

over-demand and pollution of fresh water supply. { UN 1997} By 2025 half the world will live in water scarcity. {WRI World Resource Report 276-277, 2000-2001} One third of the world's rural population does not have access to safe, clean and reliable fresh water. Worldwide, polluted water is estimated to affect the health of about 1200 million people and to contribute to the death of about 15 million children under five every year¹⁰. In many developing countries, rivers downstream of large cities are little cleaner than open sewers. Levels of suspended solids in Asia's rivers, for example, have almost quadrupled since the late 1970s and rivers typically contain four times the world average and 20 times OECD levels. The faecal coli-form count in Asia's rivers is 50 times higher than the WHO guidelines. People using such water for washing, bathing or drinking are at high risk. In Latin America as a whole, only about 2 per cent of sewage receives any treatment.

Consumption of bottled water is soaring around the world as consumers, particularly (but not exclusively) in developing countries, turn to it for safe drinking water. Consumers pay anywhere from 500 to 1000 times the price of municipal water for bottled water¹¹.

Percentage of the world's population that lacks access to clean drinking water: 28 percent, or as many as 1.7 billion people (UNICEF 2000)

Number of people who die each year because of polluted drinking water, poor sanitation, and domestic hygiene: 5 million. Additionally, waterborne diseases such as diarrhoea, ascariasis, dracunculiasis, hookworm, schistosomiasis, and trachoma cause illness in perhaps half the population of the developing world each year (WHO 1996)

Percentage of urban sewage in the developing world that is discharged into rivers, lakes, and coastal waters without any treatment: 90 percent (WRI et al. 1996:21)

Amount spent on bottled water worldwide in 1997: \$42 billion (Beverage Industry 1999)

Food consumption

The proportion of malnourished people living in developing countries has dropped around 5% since 1992 (falling almost 50% since 1980).¹² . Despite this trend, whilst global average calorie intake grew from 2,227 kcal/ day in 1970 to 2,760 in 1996, in developing countries average consumption grew from only 2,131kcal/ day to 2,572

¹⁰ UNEP (2000) *Global Environment Outlook 2000* UNEP: Paris

¹¹ {WWF 2001 March 22}

¹² {FAO State of Food Insecurity in the World 2000}

kcal/ day. In the OECD countries, average daily calorie consumption was 3374 kcal/day in 1996 (almost unchanged in 1999).

Meat Consumption

(Per capita 1996)

- World 35kg/yr.
- Australia: 110kg/yr;
- Bangladesh: 3kg/yr.
- China: 47 kg/yr;
- India: 4kg/yr;
- Indonesia: 9 kg/yr;
- Japan: 42 kg/yr;
- OECD: 87kg/yr;
- Singapore: 76kg/yr;
- USA: 122kg/yr ;
- Western Europe: 89kg/yr;
- {source FAO 1998; OECD 2002}

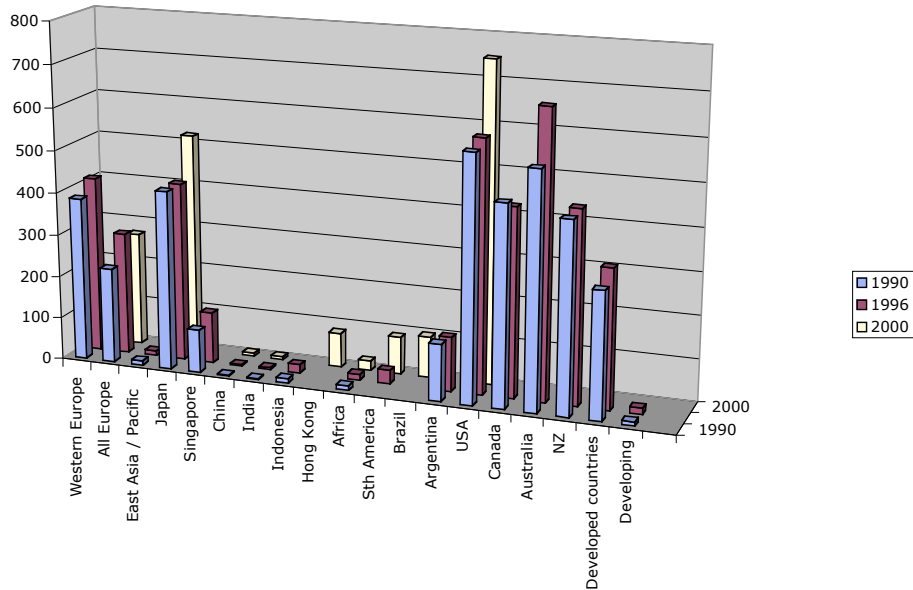
Depletion of Fish Stocks

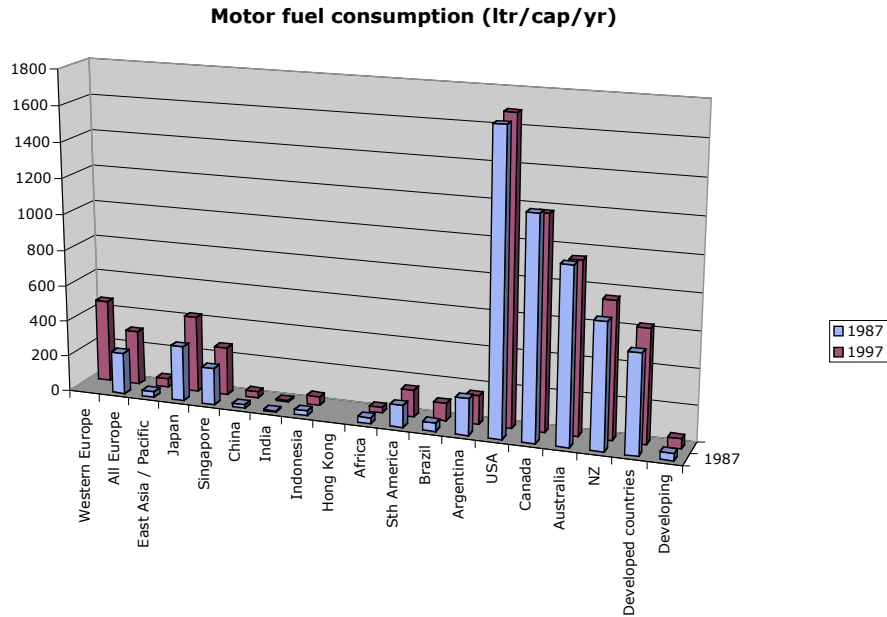
Stocks of North Atlantic cod crashed over the last 10 years and may never recover from over-fishing. In spite of fishing bans off the East coast of Canada, the Bedford Institute of Oceanography in Nova Scotia reports that the population dynamics of Cod have altered so dramatically it may be too late for recovery.

The University of British Columbia suggests that the amount of high quality table fish such as cod, tuna, haddock and flounder in the North Atlantic has fallen to one-sixth of what it was in 1900. Catches have fallen by about half since 1950 despite a tripling of the effort in fishing. {New Scientist, 23 Feb 2002 - 11}

Cars and fuel consumption 1987-2000

Car consumption (ownership per 1000 people)





4.3.2 Measuring consumption impacts

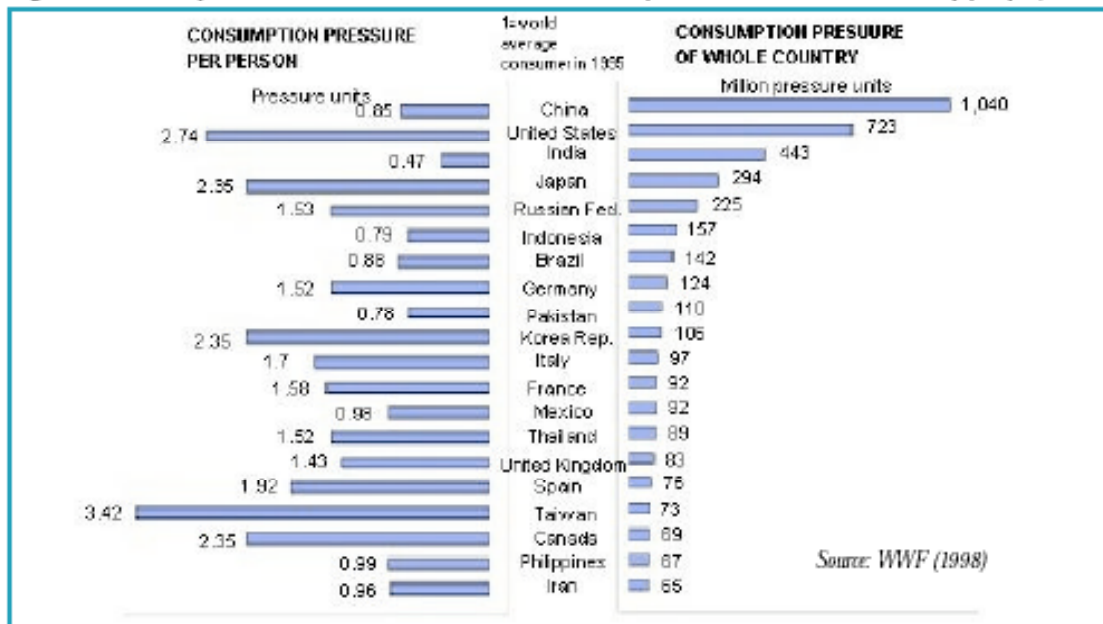
Various attempts have been made to translate global consumption and the consumption of populations living in different regions, countries, cities, into a measure of their environmental impacts. This requires the development of sets of appropriate indicators as well as the measurement and analysis of data.

WWF Consumption Pressure Index

In 1998 the World Wildlife Fund (WWF) developed an index of 'consumption pressures'. They analysed global consumption patterns to calculate a measure of the burden placed on the natural ecosystems by human activity in different countries. Resource consumption and pollution data were combined into a single index which could be used to depict differences between countries. See below for an sample of their data on consumption pressure per person and by whole county. The top five countries ranked by per capita consumption pressure on the environment are Norway, Taiwan, Chile, Singapore and Denmark. This analysis suggests that per capita consumption pressure in the Asia Pacific is around half that of Western

Europe, whilst Africa is less than a third. Non-OECD countries have less than half the consumption pressure of OECD countries.

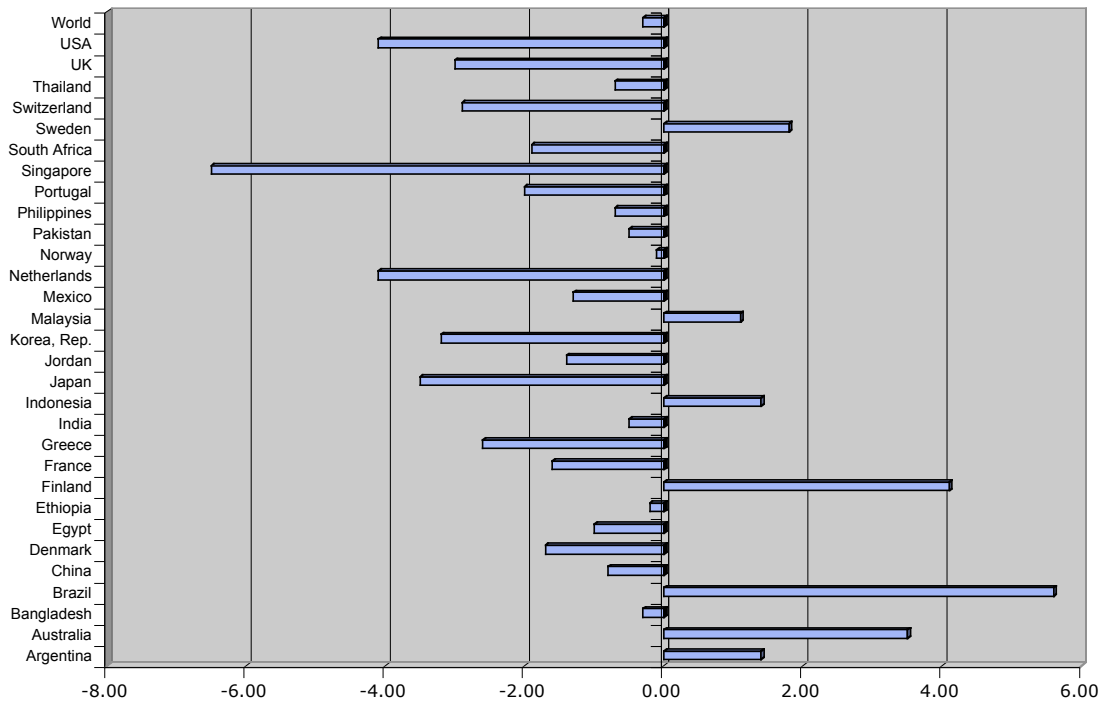
Figure 1: Consumption Pressure - A measure of the burden placed on the environment by people, 1995



Ecological Footprint Measurements

Ecological Footprint is a method of expressing resource use by referencing the consumption of resources and the associated environmental impacts to a common unit of geographical area. The land areas associated with the use of each resource or impact is then aggregated to give an Ecological Footprint (EF) – the equivalent area of land required to provide the resources and mitigate the effects of the impact on the environment. This is then often expressed in terms of the per capita EF. Expressed in these terms, 70% of worlds pop have eco-footprint smaller than worlds per person ecological capacity (70% 'occupy only one quarter of humanities total footprint). By contrast this is the same amount as 4% of population with the largest footprints. {Wackernagel and Bolibaugh 1999} Recent calculations suggest that 2 hectares of productive land and water were available per person, but some 2.8 hectares per person were currently consumed. This suggests that carrying capacity has over-shot by 40%. {Rees, W. ur Ecological Footprint. UBC Paper to Enviro 2002 Convention. Melbourne 2002} The Appendix has a table of recent calculations of

eco-footprint for a number of countries. The graph below shows the **ecological surplus for selected countries** (being the calculated footprint compared to the available eco-capacity for the country). (From Wackernagel 1999)



The UN-DESA

The United Nations department for Economic and Social Affairs have developed a core set of 17 indicators for changing consumption and production patterns. These are divided into key resources and consumption clusters. The indicators can be found in the Appendix. These core indicators form a part of a set of sustainable development indicators constructed by the UN commission on sustainable development in a response to Agenda 21 published in 1992. The indicators for sustainable consumption patterns were completed in 1998 and are seen as an essential tool for policymaking and give the opportunity of capturing the concept of sustainable consumption and production in statistics¹³ (UNDESA 1998).

¹³ However, such indicators need to be used by Governments – the UNEP survey of implementation of Consumer Protection Guidelines suggest that only approximate 50% of governments have some sort of monitoring in place.

Factor 'X' and materials and resource flow measures.

Based on various measures of the materials and resource flows in consumption¹⁴ and estimates of carrying capacity and resource depletion, these measures allow estimates of reductions in consumption for key resources and goods necessary to return to ecological balance. One outcome of such calculations for the UK appears below. These calculations use globally agreed targets and make estimates of global populations growth and development (average global GDP per capita).

Targets for reduction in consumption for various resources UK (relative to 1990 per capita consumption) in line with international requirements and global targets. (McLaren et al 1998, Friends of the Earth UK.)

	Target reduction in 2010	Target reduction in 2050
Energy	30%	88%
Land	7%	27%
Timber	65%	73%
Water	15%	15%
Aluminium	22%	88%
steel	21%	83%

4.4 The distorted demography of consumption

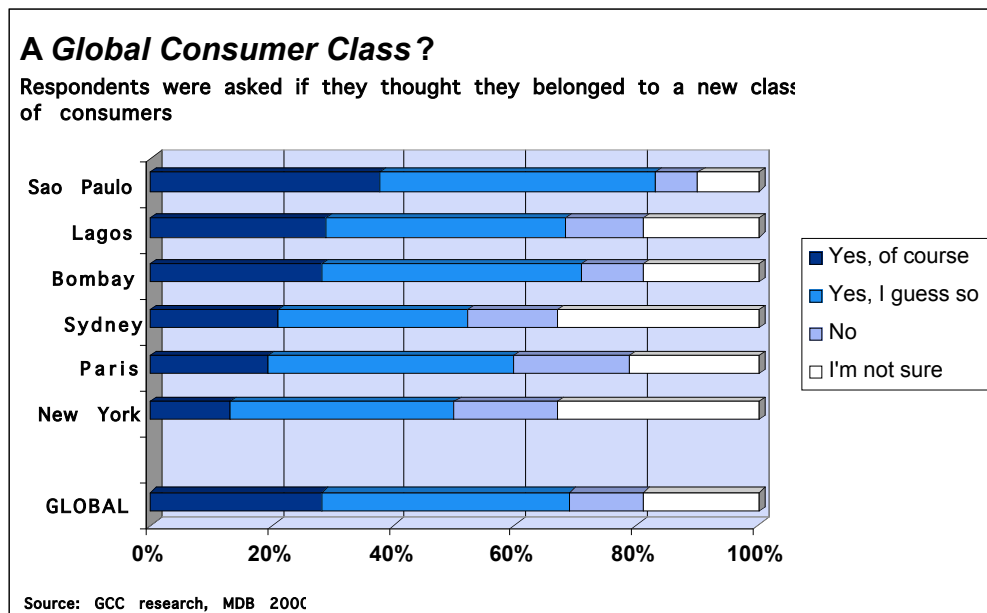
Global elites and global middle classes ..follow the same consumption styles, showing preferences for global brands. ...A host of ... options have been opened up – but many [people] are left out through lack of money. Pressure for competitive spending mounts...from striving to match the consumption of a next door neighbour to pursuing the life-styles ..depicted in movies and television shows' {UNDP 6}

Affluent society consumption patterns are becoming the model for many nations of Eastern Europe and the former Soviet Union, with the rise of an affluent class now totalling 150 million. {Myers 1997} In many developing nations too, there are large numbers of people entering the high consumption classes: some 300 million in south eastern China, 50 million elsewhere in China, 80 million in India, and sizeable communities in other nations with strongly emerging markets, notably Mexico, Venezuela, Brazil, Argentina, Turkey, South Korea, Taiwan, Indonesia, Malaysia and

¹⁴ See for an overview of various approaches: Lindstead and Ekins, Mass Balance UK, Forum for the Future, UK 2001

Thailand. These new consumers total approximately 750 million people or as many as the long-established consumers of the rich nations {Broad and Cavanagh, 1995}

These affluent populations reflect the reality of growing contrasts within developing countries and a distortion in the demography of consumption, in which the gap between rich and poor is widening. In Brazil the poorest 20% of the population earns less than 5% of the total income, while the richest 20% earns more than 60%. {UNEP LAC workshop} In Nepal, more than 10 million people live below poverty lines. The bottom 20% of the households receive only 3.7% of the national income while the top 10% claim a share of 50%. {UNEP SA workshop} This demography of consumption should be viewed in the light of the evidence about the emergence of a Global Consumer Class (GCC). The UNEP GCC survey shows 'an average of 69% of those sampled globally considered themselves part of a new class of global consumers that demonstrates similar tastes and preferences'. The GCC 'recognition' appears to be higher in developing countries than developed ones as the data below illustrates. {UNEP Bentley ref}



4.5 The distortion of improvements in production and products

Attention and action over the last decades, by government, industry and research agencies, has focused on the application of preventative approaches to improvements in production and the performance of products. Broadly, cleaner production approaches, product ecodesign, environmental technology, eco-innovation and environmental management, have demonstrated the gains that can be achieved in increasing the eco-efficiency of production. This approach of 'increasing eco-efficiency' remains the most optimistic strategy for sustainable production, at least in the short term, and has the strongest support of industry. In general terms, eco-efficiency reflects an increasing economic and technical focus on resource efficiency, after almost 200 years of emphasis on improving labour-efficiency¹⁵. In October 1994, at a meeting in Carnoules in France this shift to resource efficiency and the setting of a 'factor 10' target for improvements in eco-efficiency, were cogently expressed in what became known as the Carnoules Declaration.¹⁶

The idea of eco-efficiency:

To grow economies qualitatively not quantitatively Eco-efficiency is a process-oriented decision support strategy for continuous improvement. It is not aimed at a specific endpoint. Eco-efficiency depends on the innovative capacity of business, to develop qualitative growth by:

- reducing the material intensity of goods and services;
- reducing the energy intensity of goods and services;
- reducing toxic dispersion;
- enhancing material recyclability;
- maximizing sustainable use of renewable resources;
- extending product durability;
- increasing the service intensity of goods and services.

{Source: WBCSD}

The success of this approach is evident from a substantial and growing body of case studies¹⁷. It can also be seen from aggregate data on resource-use and waste per unit of economic activity, which in most industrialised countries shows continuous improvement, particularly over the last decade.¹⁸ As an example, the energy use per

¹⁵ For a detailed analysis of this idea see *Natural Capitalism* by Hawken Lovinvs and Lovins 1999.

¹⁶ This, first, meeting of the Factor 10 Club was an initiative of the German think tank, the Wuppertal Institute. Participants came from Europe, the USA, Japan, UK, Canada and India. See <http://www.factor10.co.uk/carnoules>.

¹⁷ See for example the WBCSD web site; and the UNEP ICPIIC database. ##

¹⁸ However, a recent UK report concluded that de-materialisation may be followed by phases of re-materialisationuntil new technological breakthroughs enable another period of de-linking between economic growth and material consumption.... The evidence for de-materialisation and re-materialisation of the economy is inconclusive - they could be different sides of the same coin. {Sustainable Prosperity}

GDP in Japan¹⁹, (see upper graph fig 4.5 below), shows a progressive improvement in efficiency typical of most industrialised economies.²⁰

Factor X and dematerialisation.

This technical improvement in the environmental /resource efficiency of production and products is encapsulated in two widely used concepts: *Factor Four* (also Factor 10, factor 20 etc), from Weizacker, Lovins and Lovins and their book of the same name, and *dematerialisation*.

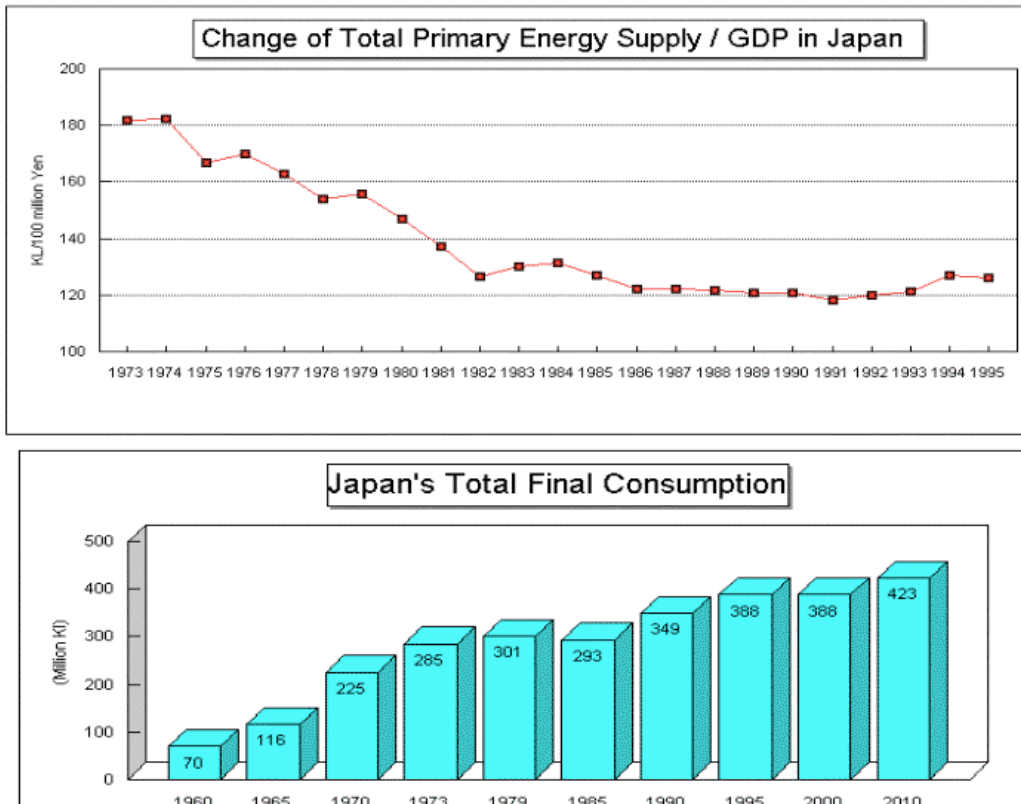
Factor Four refers to a halving of total material input into the economy while doubling wealth and welfare.

Dematerialisation is more a general approach which proposes a progressive and significant reduction in material throughput in the economy, ie reducing material flows in production and products, whilst maintaining (or increasing) value.

Both these concepts suggest a shift in the economy towards an increasing value for 'natural capital': 'Natural capital includes all the familiar resources used by mankind: water, minerals, oil, trees, fish, soil, air .. it also encompasses living systems.'²¹

'Dematerialisation' and 'factor X', like the umbrella term 'eco-efficiency' are strategies for *de-linking the economy from resource-use and waste-production*.

Fig 4.5 Energy consumption in Japan.



¹⁹ from <http://www.meti.go.jp/english/aboutmeti/data/a231201e.html>

²⁰ (eg. For the OECD countries – UNDP World Energy Assessment 2001)

²¹ Hawken, Lovins and Lovins, Natural Capital

When all inputs of materials and energy are aggregated to a Total Material Requirement (TMR), recent analysis {Wuppertal - Bringezu and Schultz 06/00} shows that TMR per capita has been levelling off or falling for most industrialised countries over the last 20 years. For example the production intensity (ration of GDP to tonnes of material) of steel and aluminium, globally, has risen slightly over the last 20 years {UNDP World Energy Assessment 2001}. These results support the idea that there is a general trend towards a de-materialisation of the economy.

However, a problem confronts the apparent success of eco-efficiency and de-materialisation: Total GDP can grow at a faster rate than improvements in resource or energy efficiency – *consumption can outpace the system wide gains from improvements in production and products*, so that the net effect is still growth in resource use and material flows. As the bottom graph of fig 4.5 shows, for Japan, this is indeed the case; total energy consumption over the period has continued to rise. Energy intensity has improved by better than 25% over a 30 year period to 1995, whilst total energy consumption has increased by around 35 %. Although the scale of the effect differs between countries this is a general picture for industrialised economies over the last decades²².

The same effect is visible from looking at the *outputs* of consumption – solid waste. A report²³ from research carried out by Austria's Institute of Interdisciplinary Studies²⁴ documented the net outcome for waste over the last 30 years. This revealed that "the total output of wastes and pollutants in Austria, Germany, Japan, the Netherlands, and the USA has increased by as much as 28 percent since 1975 despite their increasing efficiency in using natural resources. Even as decoupling between economic growth and resource throughput occurred on a per capita and per unit GDP basis, overall resource use and waste flows into the environment continued to grow."

²² {Source IEA}

²³ See: The Weight of nations, by Matthews and Ottke, World Resources Institute 2000.

²⁴ based on a collaboration by Austrian Universities, Germany's Wuppertal Institute, Japan's National Institute for Environmental Studies, the Netherlands' Centre of Environmental Science at Leiden University and the World Resources Institute.

Where eco-efficiency improvements have taken place over the last decade or so, there is increasing evidence of *rebound effects*, in which improvements in efficiency actually become a stimulus for increased consumption, such that the total societal effect may be little changed.²⁵ Broadly, rebound effects occur because of consumers behavioural patterns – if a refrigerator becomes more efficient and cheaper to run, people buy larger ones; if incandescent lights can be replaced with compact fluorescent ones using only one-fifth of the energy, people tend to leave lights on for longer. Automobile fuel efficiency has increased significantly since the beginning of the 1990's while the number of passenger miles travelled, for example in Europe, have increased even more. {UNEP Consumption opportunities} There is an economic underpinning to such behaviour; income saved on motor fuel because of improved efficiency will be spent on travelling more miles or elsewhere altogether; low energy prices will stimulate economic activity, pushing up energy demand. Income available from efficiency improvements may lead to consumption shifts towards products and services which are less efficient. For example, the *Weight of Nations* study concluded that the *'resource efficiency gains brought about by the rise of e-commerce and the shift from heavy industries toward knowledge-and service-based industries have been more than offset by the tremendous scale of economic growth and consumer choices that favour energy- and material-intensive lifestyles'*.

In its most progressive sense, eco-efficiency and production improvements should have meant that developed countries would 'save resources' so that developing countries would benefit from a bigger part of the pie.

4.6 Over-consumption, trade, and competing for 'part of the pie'.

Often extravagant and wasteful consumption of affluent communities constitutes an environmental constraint... for rich and poor alike. Furthermore, the skewed consumption patterns between rich and poor may well mean the point is being approached – contrary to much past experience – the poor are poor in part because the rich are rich' {Myers, N RS 5}

In the context of vast disparities in global consumption and wealth, conspicuous consumption in affluent countries is easily attacked for 'taking an unfair share of the pie', as *blocking development* (and necessary consumption growth) in less affluent,

²⁵ For examination of the rebound effect in relation to energy (and improvements in energy efficiency) see: Greening, Green and Difiglio. 'Energy efficiency and consumption – the rebound effect.' *Energy Policy*, Vol 28, Issue 6-7 2000; also: Pearce, F *Consuming Myths*. *New Scientist* Vol 159, Issue 2150, 1998.

communities and countries. The role of trade in commodities and resources from developing countries, to support affluent consumption in developed countries, is more complex and nuanced than some of the current debate over globalisation allows for. Consumption in the developed world is a vital source of income and wealth for developing countries. Whether such trade leads to a distortion in the demography of consumption within the developing country supplying commodities or resources, is an important issue for the reasons discussed above. Within developing regions, trade, driven by the economic power of developed countries and multi-national companies, is widely criticised²⁶ as the appropriation of indigenous resources and local markets²⁷.

It is the case that trade can deplete local resources, removing them from potential consumption, or pricing them out of the market. It comes down to an issue of whether the resource in question is 'used' or 'used-up'. In the latter category there are particular natural resources, such as fresh water, fish and agricultural land, which have fixed or limited supply and there are non-renewable resources which cannot be recycled – for example fossil fuel based energy. These are resources that can be, permanently or semi-permanently, removed from a local environment. As Myers²⁸ puts it, "there is nothing intrinsically wrong with rich nations consuming a large percentage of natural resources, if those resources remain plentiful and can be recycled, as in the case of iron and steel. .. Indeed, the rich nations' conversion of natural resources into human capital often enhances human welfare all round. It is of scant consequence that the average American consumes 115 times as much paper as the average Indian, provided the American recycles most of the paper (at present, only 41%). Much more significant is that the average American consumes 227 times as much petrol as the average Indian." The importance of looking in detail at the resource being consumed . This point is illustrated when consumption of fresh water per capita is compared globally. Thus data shown in the graph below needs to be very carefully interpreted.

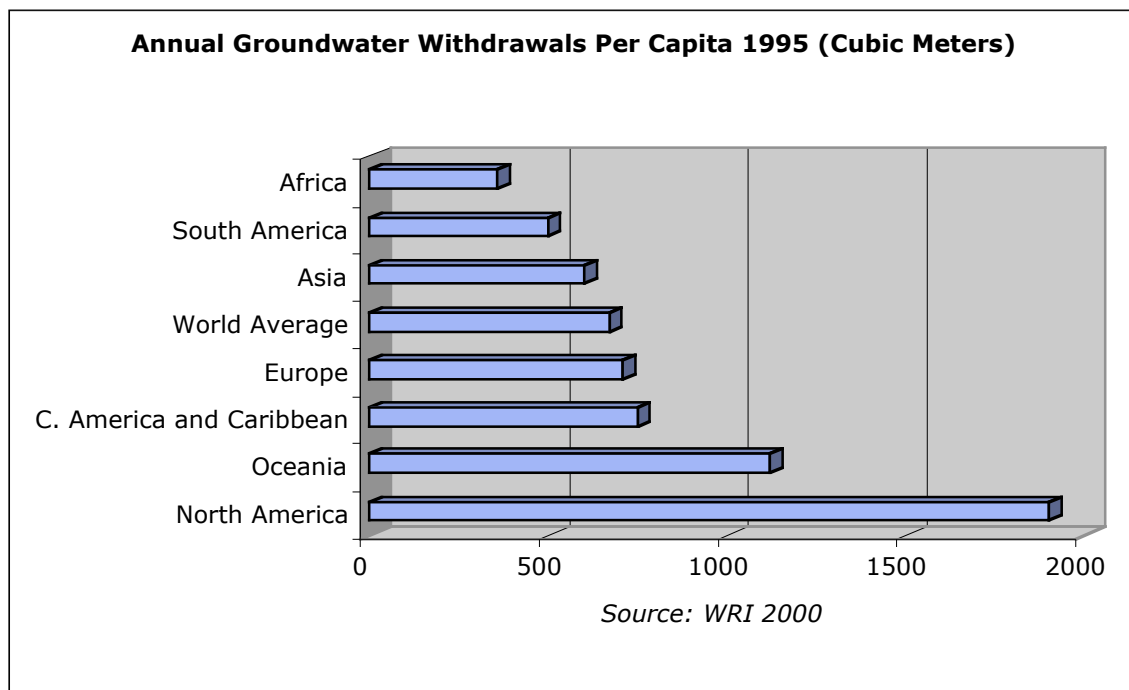
It matters little that the USA consumes per head four times more ground-water than Africa (except that such a pattern of water usage may distort aspirations for

²⁶ {eg: see UNEP Asia Pacific and LAC reports}

²⁷ The perpetuation of trade patterns that see basic resources exported from developing countries and value added products imported for consumption is also an ongoing source of concern as a barrier to sustainable development.

²⁸ {Myers, N. *Consumption in relation to population environment and development. Environmentalist 1997, p 34*}

consumption in other countries – see section 4.8). Water consumption is only an important issue in terms of the availability of fresh water and the capacity to deal with the supply. Water is traded in limited and specific ways, within countries (between cities and the country for example) and between countries (extraction from rivers for example). Water ‘saved’ in one place may or may not be made available for use in another. The key is to *distinguish whether consumption and trade in a particular resource/commodity is using resources or using them up*. In the context of ‘globalisation’, in its ‘free-trade’ sense, this distinction is likely to become very important in critically assessing the apparent inequities of ‘extravagant and wasteful patterns of consumption in affluent communities’ which will continue to be perceived as *blocking the space for consumption* in developing economies.



The plundering of Fish stocks

Poor coastal nations have been sacrificing their long-term prosperity by allowing European fishing fleets to catch their fish at rock bottom prices. A UN report prepared for the WTO says that such fishing threatens the future health of fish stocks worth billions of dollars to local fishers for paltry financial gains in the short term. Argentina saw a leap in ‘exports’ of fish between 1985 and 1995 of over 500%, with catches dropping by a quarter as a result of over fishing. The unsustainable fishing of Hake has cost Argentina 500 mill USD. The report concludes that a better managed fishery could benefit the Argentinean economy by as much as 5 billion USD. Fish stocks all over the world are suffering as too many, often heavily subsidised, vessels chase a dwindling number of fish. Klaus Töpfer, director of UNEP, says that rich nations send their surplus fleets to foreign waters, where they drive local fishing communities in to greater poverty, as well as robbing the marine environment. WWF is concerned that the EU is still trying to send its excess fishing capacity to countries like Senegal, with a deal in 2001 to increase its take of shrimp, hake octopus and grouper, from Senegal waters, by 60%. {New Scientist 12 Jan 2002.}

4.7 Trade in the end-products of consumption

In developed countries, concerns about end-of-life waste from the consumption of products has led to increasing pressure on producers to take responsibility for ensuring effective take back, reuse and recycling, of their products. First in packaging, and currently in electrical and electronic equipment (EEE), product policies are forcing producers to redesign products to reduce waste and to find economical solutions for turning waste from old products into new products or useful resources. This approach is important as it is leading to a variety of changes, in product design, in leasing and upgrading of products, in remanufacturing, in recycling of materials and even new businesses based around new systems of production and consumption, meeting existing needs in new ways.

Capturing value from end-of-life product (particularly from old products not designed to maximise such value) is creating some new trade in discarded products which are sent to countries with low labour costs for disassembly and materials capture. This could provide a valuable source of work and income for such countries. However, as an area of trade this needs to be carefully monitored.

Although the Basel convention controls trade in hazardous wastes, there is still a danger that trade in products not covered by that convention could lead to problems in working conditions, with occupational health and local environmental impacts. In the past concerns about such problems had focused on large engineering activities such as ship-breaking.²⁹ The first direct linkage of this area to dealing with consumption in developed countries appears to be with concerns raised by the trade in end-of-life electronics and electrical products. A report released in March 2002 by the Basel Action Network and the Silicon Valley Toxics Coalition, described Guiyu a town in the Guongdong province of China, near Hong Kong, where there are now 'horrendously polluted reprocessing centres for the West's electronics scrap'. 'Pollution levels are hundreds of thousands of times higher than those deemed safe in developed countries. The ground is saturated in lead and acid by-products. Many of the poorer villages still drink surface waters which are highly contaminated. The

²⁹ {Greenpeace toxics site – web reference}.

local economy seems to be wholly dependent on the recycling of imported scrap, which takes place without any health or environmental controls.³⁰

4.8 The global diffusion of affluent 'Western' patterns of consumption

How do we envisage a future with global equity in consumption, if China and India, for example, were to reach consumption levels of Europe or USA? The eradication of poverty, the removal of inequality, improving quality of life, maintaining economic growth, creating sustainability and development for future generations; these seem, for many people, to be factors in a equation for which there is no apparent solution. Worse still, there is the real sense that this may turn out to be the sort of equation that exhibits a sudden run-away discontinuity. { Sustainable Consumption – Theme Paper, CP6 Montreal Oct 2000 UNEP³¹ }

All of the above issues and data lead to a critical question for sustainable development: What patterns of production and consumption provide the basis for a future in which there is global equity in quality of life and access to resources and a sustainable existence?

Western economies have been supported by an entrenched social and cultural commitment to the idea that prosperity is directly related to per-capita consumption of goods and services (and resources). Global business, trade and communications along with a major expansion in advertising have helped globalise those 'western' ideas of prosperity; concepts of quality of life in developing countries are strongly affected by the aspirations and goals of consumers and business in developed countries. The impacts of this global aspiration system are acutely evident in the expressed concerns of regional consultations on sustainable consumption. (see Section 6.3).

Images of affluent 'western' lifestyles flood developing countries. Nepal is ranked second only to Ethiopia as one of the poorest nations. The level of imports of cosmetics, soft drinks and cameras into Nepal belies the severity of the poverty of its people. The imports of cosmetic goods increased from USD227 thousand in 1992/93 to USD1.5 million in 1997/98, ... cameras increased from USD227 thousand to USD1.3 million....soft drink concentrates accounted for USD202 thousand in 1992/93 and rose to USD823 thousand in 1997/98. These statistics are alarming in a country where more than 53% of the population lives on less than 1 USD a day. {UNEP Workshop on SC in Asia Pacific Aug 2001}

³⁰ Basel Action web reference.

³¹ Ryan, C. No sustainable *production* without sustainable *consumption*: thinking about sustainable systems. CP6 Montreal Oct 2000.

Exporting obesity

The American Association for the Advancement of Science (AAAS) received a report in February 2002 on the spread of obesity – an eating and lifestyle disease once dominant in developed economies now exported to developing countries. Countries such as South Africa and Egypt now have rates of obesity that rival the west's. In western Europe and the USA the percentage of the population that becomes obese each year is 0.5%. In China and Brazil the rate is now 1%. In Mexico women became obese at the rate of 2.5%, the same figure for men in Korea. In the developed world obesity is a disease of the poor who eat chips and hamburgers. The opposite appears to be the case in developing countries where 'western fast food' and overeating is something only the upper classes can afford. The knock-on effects of this fast changing pattern are expected to be high growth of related conditions such as Diabetes. {AAAS news Feb 2002}

UNEP has turned its attention to the Global Consumer Class (GCC) – consumers who share certain elements of a common lifestyle (e.g. access to IT and buying similar products) regardless of who they are and where they live³². The GCC is a term for middle to upper income earners from all regions of the world - approximately one third of the global population. UNEP selected this segment of global consumers for a study in 2000, surveying over 700 consumers from six global cities -Sao Paolo, Sydney, Lagos, New York, Bombay and Paris. The survey aimed to:

- discover similarities between consumers across the globe
- interact directly with global consumers to find out about their consumption
- explore the feasibility of global/UNEP policy options.

The results of this survey confirm that there is a large global set of consumers with similar tastes and preferences, recognising international brands and lifestyles. The importance of those results for policy making is that 'counter-aspirations' observed in developing economies – such as recognising the environmental implications of product choice – are also diffused amongst this set of consumers³³. Any shift towards more sustainable consumption in developed countries is therefore likely to have a global influence. (The important issue is to find ways of amplifying this potential, to ensure that developing countries grasp the business opportunities from increasing awareness – a focus of policies and action for the future, see Sect 7.³⁴)

'Scaling-up' current western patterns of consumption as the basis of development for, say, China or India – adding another 2 billion 'western style' consumers – is simply not a realistic option unless the risk of catastrophic collapse of the global

³² Bentley report ref#

³³ {Bentley ref}

³⁴ This approach is evident in UNEP initiatives planned and underway – see for example the CSD Chairman's Paper, PrepCom 111: www.johannesburgsummit.org

If China Consumed at the level of USA

If China were to match the US for levels of car ownership and oil consumption per person it would mean producing approximately 850 million more cars and more than doubling the world output of oil. Those additional cars would produce more CO₂ than the rest of the world transportation system.

If China were to consume seafood at the per capita rate of Japan, it would need 100 million tonnes, more than today's total catch.

If China's beef consumption were to match the USA's per capita consumption and if that beef was produced mainly in feedlot, this would take grain equivalent to the entire US harvest.
{Adapted from Myers 2000}

ecosystem is considered acceptable.³⁵ This is as evident today as it was at the time of the writing of Agenda 21. Whilst the intervening 10 years have seen real improvement in production processes and products, these have not been of the scale necessary to provide a realistic path for equitable global development.

The WBCSD proposes a way forward through innovation:

Recent history suggests that those living in wealthier countries do not intend to consume and waste less. Given that the other 80 % of the planet's people seek to emulate those consumption habits, the only hope for sustainability is to change forms of consumption. To do so, we must innovate.

Changing forms of consumption - and innovation - are fundamental to the idea of sustainable consumption.

³⁵ The NGO community has calculated that extrapolation of the consumption rates in developed countries to the rest of the world would require the equivalent of five earths. {reference???

5 The idea of Sustainable Consumption.

5.1 Defining sustainable consumption since Rio

Agenda 21

Throughout agenda 21 there are references to patterns of production and consumption as a cause of unsustainable development.

The major cause of continued deterioration of the global environment is the unsustainable patterns of consumption and production, particularly in the industrialised countries. {Cht 4 Agenda 21}

Chapter 4 of Agenda 21 was devoted to *Changing Consumption Patterns*. The idea of *sustainable consumption* emerges naturally from the concept of sustainable development, as defined in the 1987 Brundtland Commission report 'Our Common Future'. Given the fundamental place of production and consumption in the development process, it is natural for sustainable consumption to be widely interpreted in terms of intergenerational equity. Following the Rio conference the issue was taken up by academic researchers and international bodies for further exploration, generally following the areas for action delineated in Agenda 21:

- Promote patterns of consumption and production that reduce environmental stress and meet the basic needs of humanity
- Develop a better understanding of the role of consumption and how to bring about more sustainable consumption patterns.

CSD

The UN Commission for Sustainable Development set up an International Work Program on Changing Consumption and Production Patterns (IWPCPP). In 1994 it organised a Ministerial Roundtable in Oslo, Norway, from which a working definition of sustainable consumption emerged:

'The use of services and related products which responds to basic needs and brings a better quality of life, while minimising the use of natural resources and toxic materials, as well as the emissions of waste and pollutants over the life cycle of the service or

product, so as not to jeopardise the needs of future generations³⁶.

At a second roundtable meeting, again in Oslo, in 1995, the concept was further elaborated. The new extended definition attempted to bring together a range of related concepts and approaches that appeared to be integral to any action on dealing with unsustainable consumption. Most importantly this new statement dealt explicitly with the politically sensitive issue (for the business community in particular) of what *reducing* the impacts of consumption might mean for the economy:

'An umbrella term that brings together a number of key issues, such as meeting needs, enhancing quality of life, improving resource efficiency, minimising waste, taking a life cycle perspective and taking into account the equity dimension; integrating these component parts in the central question of how to provide the same or better services to meet the basic requirements of life and the aspiration for improvement, for both current and future generations, while continually reducing environmental damage and risks to human health. A key issue is therefore the extent to which necessary improvements in environmental quality can be achieved through the substitution of more efficient and less polluting goods and services (patterns of consumption), rather than through reductions in the volumes of goods and services consumed (levels of consumption). Political reality in democratic societies is such that it will be much easier to change consumption patterns than consumption volumes, although both issues need to be addressed³⁷.

In its work program the CSD also instigated a review of the UN Guidelines for Consumer Protection, signalling clearly that sustainable consumption should be viewed as having health and life quality outcomes for consumers which should be protected. After a consultation process (with the support of Consumers International) the Guidelines were extended with SC related issues which were adopted by the General Assembly in 1999. (The reception of these guidelines and their implementation is being studied by UNEP, with Consumers International).

UNEP

In its work, through the program of the Sustainable Consumption Unit, UNEP has added a vital regional perspective and widened the debate, analysis and action to include specific interest groups identified as holding key positions of influence in shaping current and future patterns of consumption. In particular its work with Consumers International, advertising and media industry and youth has emphasised

³⁶ Ministerial Roundtable 1994

³⁷ 1995 Oslo Roundtable on Sustainable Production and Consumption Accessed [Online] www.iisd.ca/linkages/consume/oslo004.html

that the concept is about consumer rights and that those rights include information and awareness of quality of life and the 'life behind the product'.

Consumers are increasingly interested in the world that lies behind the product they buy. Apart from price and quality, they want to know how, where and whom has produced the product. This increasing awareness about environmental and social issues is a sign of hope. Governments and industry must build on that."

*Klaus Toepfer,
Executive Director UNEP*

Based on this experience, UNEP published a report – *Consumption Opportunities* (2001), – which proposed an important elaboration and clarification of the meaning of sustainable consumption:

- *Efficient consumption* – making goods and services resource efficient
- *Different consumption* – changing patterns of consumption;
- *Conscious consumption* – focusing consumption on improving quality of life
- *Appropriate consumption* – making patterns of consumption, and their effects, the focus of social and political debate.

In addition, UNEP, with Consumers International, has held a series of regional workshops to consider the meaning of sustainable development in particular regional contexts and to add to policy formulation. (see Section 6.3).

UNDP

In its 1998 Human Development Report, the UN Development Program considered the critical role of consumption in human development, concluding that, for sustainable development, consumption must be:

- *Shared*; ensuring basic needs for all
- *Strengthening*; building human capabilities;
- *Socially responsible*; so the consumption of some does not compromise the well-being of others;
- *Sustainable*; without mortgaging the choices of future generations³⁸.

In this analysis, consumption is sustainable only if it enlarges people's capabilities to 'live long and well'. The key *targets* of sustainable consumption are therefore:

- Food, shelter, water, sanitation, health care, clothing
- Education and information

³⁸ UNDP (1998) *Human Development Report* OUP: New York

- Transport, mobility, energy
- Participation in community life (which involves exchange of goods and services and acceptance within a community-defined set of standards as to appropriate levels of consumption in each of the above areas).

From the human development perspective 'consumption' must cover individual as well as public, or collective, activity, encompassing unpaid activity outside the monetary system (barter and unpaid work). The Human Development report stresses the need for sustainable consumption to be defined in ways that avoid ideas of giving up or losing out, emphasising instead the idea of *low-impact affluence*.

OECD

Within its program on environmentally sustainable consumption³⁹ (1999-2002), which have included some detailed analysis of household consumption patterns, the OECD emphasises that the concept of sustainable consumption is *site and problem specific*. It is also *dynamic*, indicating a direction and sometimes a magnitude of change, which will vary over time. Finally they add that the concept can only be linked to specific *targets* (such as water consumption) *where ecological limits can be established*.

WBCSD and business

Reflecting activity and research within the business sector since Rio, the WBCSD has been a major voice in asserting that sustainable consumption need not focus on reducing the volume of goods and services consumed but increasing the (eco)efficiency with which they are produced.

Other reports- The Royal Society, Oxford Commission on Sustainable Consumption (UK), US National Academy of Sciences

These independent bodies have been working to improve understanding of the concept and measures to address consumption-related problems. through meetings, research and publications. National academies in Europe have collaborated to produce a publication *Towards sustainable consumption: A European perspective*. In May 2000 the world's national academies of science met in Tokyo at a conference organised by the Inter-Academy Panel (IAP) to examine the role that science and

³⁹ See for reports on consumption studies and sustainable consumption policies. ## www.oecd.org ##

technology can play in guiding policies to promote sustainability. This publication was a contribution to the IAP conference.

Concern over consumption-related issues in sustainable development has meant that research and analysis, and evaluation of strategies for sustainable consumption, has become part of academic research and government action. Whilst much of this has focused on policy and strategy development (see Section 7) as well as the development of useful measures of consumption impacts, there is a growing emphasis and attention to the design of products (and services) as a critical factor in shaping patterns of consumption.

Timetable of Major Events

1992
Event: Earth Summit (Rio de Janeiro).
Publication: <i>Agenda 21 Chapter 4, 'Changing Consumption Patterns'.</i>
1994
Event: Symposium on Sustainable Consumption (Oslo).
Publication: UNCED, <i>Report of the Secretary General, "Changing Consumption Patterns"</i> . New York.
1995
Event: Ministerial Roundtable Conference on Sustainable Production and Consumption (Oslo).
Event: Facilities for a sustainable household. Expert meeting, Netherlands. (Identified core areas of household consumption and distinction between behavioural policies and technology/product policies.
Program: UN CSD international work program on changing production and consumption patterns - includes revision of UN Guidelines on Consumer protection.
1997
Event: Earth Summit II (Rio+5) (New York) Review of Agenda 21 – review of policy instruments for changing consumption patterns
Publication: OECD, <i>Sustainable Consumption and Production</i> . Paris: OECD.
Publication: Robins, N. and Roberts, S. (eds), <i>Unlocking Trade Opportunities: Changing Consumption and Production Patterns</i> . London and New York: IIED and UNDP/CSD.

1998
Event/ Publication: Kabelvåg Workshop/Robins, N. and Roberts, S, <i>Consumption in a Sustainable World: Report of the Workshop held in Kabelvåg, Norway June 2-4 1998</i> . Oslo: Norwegian Ministry of Environment and IIED.
Publication: UNECE, <i>Fourth ministerial conference: Environment for Europe Aarhus, Denmark, 23-25 June 1998, Recommendations to ECE governments on encouraging local initiatives towards sustainable consumption patterns</i> . Geneva: UNECE.
Publication UNDP, <i>Human Development Report OUP: (Overview: Changing today's consumption patterns for tomorrow's human development)</i> New York
1999
Event: UN CSD 7th Session, focusing on sustainable consumption.
Event: Launch of Oxford Commission on Sustainable Consumption UK.
Publication: UN CSD, <i>Report of the Secretary General, "Changing Consumption Patterns"</i> . New York: UN.
Publication: UNEP DTIE, <i>Sustainable Consumption & Production; creating opportunities in a Changing World</i>
Web Publication: UNEP DTIE, SC network. First monthly web based newsletter
Publication: WWF <i>Living Planet Report</i> (incorporating global consumption-pressure analysis) Geneva.
Event: OECD Environment Directorate. Launch of program, <i>Towards Sustainable Consumption</i> (incorporating household consumption analysis and Policy Analysis)
Publication: UNEP and Earthscan: <i>Global Environmental Outlook 2000</i>
Event: UN Economic and Social Council (ECOSOC) adoption of UN guidelines on consumer protection re sustainable consumption.
Event: UNEP DTIE First International Expert meeting – Sustainable production and consumption.
Event: UNEP DTIE <i>Sustainable Consumption & Production; creating opportunities in a Changing World</i> , Berlin, Germany (with Carl Duisberg Gesellschaft)

2000
Publication: <i>Towards Sustainable Consumption: A European Perspective</i> . The Royal Society, London
Event: UNEP DTIE African Roundtable on Cleaner Production and Sustainable Consumption, Nairobi
Event: UN Economic and Social Council (ECOSOC) adoption of UN guidelines on consumer protection re sustainable consumption. <i>Is the Future Yours?</i> UNEP and UNESCO Youth Forum, Paris
Event: UNEP DTIE Product-Service-Systems. Consultative workshop. Paris
Event: UNEP DTIE Meeting of the board of the advertising forum. Paris
Event: UNEP / UNESCO Workshop: <i>Is the future yours: Youth and Sustainable Consumption</i> . Paris
Event: UNEP DTIE Design for Environment, Hanover, Germany. (with Carl Duisberg Gesellschaft)
2001
Publication: World Business Council for Sustainable Development, <i>Sustainability through the market: seven keys to success</i> . WBCSD, Geneva.
Publication: WBCSD, <i>The business case for sustainable development</i> , WBCSD, Geneva
Publication: UNEP DTIE, <i>Consumption Opportunities: strategies for change</i> . Paris.
Publication: UNEP / UNESCO, Youth, sustainable consumption patterns and life styles.
Publication: UNEP/ UNESCO <i>Is The Future Yours? Research Project on Youth and Sustainable Consumption</i> : ISBN 92-807-2011-2
Event: UNEP, Consumers International, Environment Australia, Carl Duisberg Gesellschaft. Workshop on Sustainable Consumption for the Asia Pacific, Kuala Lumpur, Malaysia.
Event: UNEP, DTIE Consumers International, Workshop: Towards Sustainable Consumption in Latin America and the Caribbean. Sao Paulo, Brazil.
Event: UNEP DTIE Workshop on Sustainable Consumption for Eastern and Central Europe. Sophia, Bulgaria
Event: UNEP DTIE Workshop on Sustainable Consumption for Eastern and Central. Tallinn, Estonia
Event: UNEP Workshop: Consumer needs and protection. 7 th ERCP, IIIIEE Lund Sweden
Event: UNEP / SETAC First official workshop of the UNEP SETAC life cycle initiative. Tokyo, Japan.

2002

Event: UNEP DTIE Second African Roundtable on Cleaner Production and Sustainable Consumption, Arusha, Tanzania

5.2 A new focus on *Quality of Life*

We may say that it is no longer controversial to suggest that mere consumption of materially-focused goods and services is not sufficient for human well-being. {UNEP Consumption Opportunities}

One widely acknowledged positive outcome of the focus on the consumption side of the equation is that it has increased debate about 'quality of life' and ideas of prosperity. Consumption is not an *end* in itself but the *means* to improved existence and quality of life. Such thinking has highlighted the inadequacy of measures of economic success such as GDP as a measure of real quality of life, and the need for alternative measures. Whilst a number of such indicators have been produced none have reached any significant level of adoption by governments or international agencies.⁴⁰

⁴⁰ ## ref here to some of the real quality indicators

6 The status of action on sustainable consumption

6.1 International Agency activities

UNCSD

Created in 1992 to ensure effective follow-up to the Rio UNCED, the UNCSD adopted an international work program on 'changing consumption and production patterns' in 1995. This has been the subject of discussion by the Commission at its first, second, third, fourth, fifth, sixth and seventh sessions. In the context of the multi-year programme of work adopted by the General Assembly for the Commission on Sustainable Development in 1997, it will continue to appear, as an "overriding issue," on the agenda of the CSD each year. At CSD 7, in 1999, the CSD affirmed that

- Poverty eradication and changing unsustainable consumption and production patterns remain the overriding issues of the Commissions' work programme.
- The principal goals of changing consumption and production patterns should be pursued by all countries, with the developed countries taking the lead
- Governments, relevant international organizations, the private sector and all other major groups have a role to play
- Special attention should be paid to unsustainable consumption patterns among the richer segments in all countries, in particular in developed countries.

For the work program 1999-2002, poverty eradication and sustainable production and consumption were priorities⁴¹ which should be linked within the four areas being: (a) effective policy development and implementation; (b) natural resource management and cleaner production; (c) globalization and its impacts on consumption and production patterns; and (d) urbanization and its impacts on consumption and production patterns.

- Policy development included internalising of costs; tax reform' elimination of subsidies' public awareness and education, particularly for youth; information and indicators.

⁴¹ Sustainable production and consumption will be a focal point in the WSSD, as is clear from the PrepCom ii meeting statements and the Chairman's report of March 2002 which says that 'sustainable development cannot be achieved without fundamental changes in the way industrial societies produce and consume. To change unsustainable consumption and production patterns, specific measures are needed'. 22 urgent actions are listed for action

- Natural resource management included, cleaner production and eco-efficiency policies; transfer of environmental technology to developing countries; best practice information; UNEP and UNIDO to enhance developing country clean enterprises and eco-product development and marketing.
- Globalisation and Urbanisation included research on assessing impacts on economic, environmental and social conditions; research on the role of finance sector in promoting sustainable production and consumption; incorporating sustainable production and consumption policies in city planning; development of programs for prevention, minimization and recycling of waste.

UN Guidelines for consumer protection

The UN has added a total of 14 points to its consumer protection guidelines to address issues related to sustainable consumption. These amount to a set of policy approaches and actions directed to governments, which 'should take the lead in introducing sustainable practices in their own operations'. They note that responsibility for sustainable consumption is shared by all members and organisations of society and that governments should act in partnership with *'informed consumers, business, labour organisations, and consumer and environmental organisations'*. The guidelines cover:

- Developing and implementing strategies that promote sustainable consumption through a mix of policies that could include regulations; economic and social instruments in such areas as land use, transport, energy and housing; information;
- Removing subsidies that promote unsustainable patterns of consumption and production...
- Implementing programmes to raise awareness of the impact of consumption patterns and the health related benefits of sustainable consumption and production patterns.
- Encouraging the design, development and use of products and services that are safe and energy and resource efficient, considering their full life-cycle impacts.
- Promoting the development and use of national and international environmental health and safety standards for products and services; such standards should not result in disguised barriers to trade.
- Setting up mechanisms for the impartial environmental testing of products and the provision of accessible information to consumers.

- Creating or strengthening effective regulatory mechanisms for the protection of consumers
- The development of indicators, methodologies and databases, for measuring progress towards sustainable consumption.
- Promoting research on consumer behaviour related to environmental damage

CI

Consumers International was founded in 1960 as the International Organization of Consumer Unions (IOCU) by a group of national consumer organisations that recognised that they could build upon their individual strengths by working across national borders. It has a membership of more than 260 organisations in almost 120 countries. It strives to promote a fairer society through defending the rights of all consumers, including poor, marginalized and disadvantaged people by supporting and strengthening member organisations and the consumer movement in general, and campaigning at the international level for policies which respect consumer concerns.

CI has developed a set of policies for consumer groups focused particularly on products and consumption impacts⁴². These emphasise the right to a healthy environment and the responsibility of consumers to preserve and protect the total environment. CI has been responsible for a number of sustainable consumption campaigns since the adoption of Agenda 21⁴³. Their program for action by consumer groups mirrors and supports the UN guidelines, working through their regional offices.

UNEP

Through the program of the Sustainable Consumption Unit⁴⁴, (with partner organisations where appropriate) UNEP has been able to engage with specific interest groups identified as holding key positions of influence in shaping current and future patterns of consumption:

⁴² The information can also be found on the Consumers International Homepage at www.consumersinternational/campaigns/environment/green.html

⁴³ For example, 'Greening Consumer Choice?' was published in 1995 to examine environmental labels, and CI's Regional Office for Asia and the Pacific conducted a nine-country examination of household consumption patterns in the region and also distributed a series of case studies, entitled 'A Matter of Living on Earth'.

⁴⁴ The SC program was launched in 1999 with a mission to better understand the forces that drive consumption and to work with governments, business and NGO's to take action.

- *Consumers and consumer organisations.* In partnership with CI, this involves work to influence governments, NGO's, consumers and businesses to implement the UN consumer guidelines and to conduct a survey of the global consumer class (GCC), examining the consumption patterns, expectations and dreams of over 700 consumers in Sao Paulo, Sydney, Lagos (Nigeria), New York, Bombay (Mumbai) and Paris.
- *Advertising and communications industry* (a forum addressing the projection of quality of life in marketing and the media), which attempts to bring the skills of these consumption 'imagers' to assist in projecting sustainable life-styles, appropriate consumption policies and new eco-products and services as desirable. The aim is to change the ideas of governments and producers that sustainable consumption and eco-products can be marketed with a message of 'altruism', 'guilt', 'giving-up', to project it instead (particularly to youth) as fun, satisfying, cool, going forward and not back.
- *Youth.* UNEP commenced its work with Youth in 1999 starting with a survey 'Is the Future Your?' distributed in cooperation with UNESCO to approximately 15,000 young people in 24 countries. This was intended to begin a dialogue with young people who are becoming actors in the political arena and to develop a profile of their current attitudes and concerns relating to consumption and environmental and social issues. This important constituency will be brought further into UNEP work on production and consumption through formal discussions with stakeholder organisations in youth and education and through developing training for people in this sector.

Other initiatives as part of the Sustainable Consumption work, include:

- Supporting industry and government in making changes to products, services and policies, through a new Life-Cycle Initiative, initiated jointly with SETAC and by updating its PROMISE manual for ecodesign to create a new *ecodesign support system* for businesses in both developed and developing countries.
- Reviewing the status and implementation of, the UN Consumer Protection Guidelines (with Consumers International)⁴⁵.
- Generating debate, and action programs on consumption-related impacts appropriate to regional needs and conditions. (An important series of regional meetings in Africa, Asia, Latin America and the Caribbean and Eastern Europe were initiated during 2000-02. See sect 5.2)

⁴⁵ A questionnaire has elicited over 50 country responses – half from developing countries and countries with economies in transition. Awareness of the guidelines appears strong.

UNEP's strength is the provision of information, resulting from approaches and action in developed countries, to improve understanding in developing countries about the potential contribution of sustainable consumption policies to the eradication of poverty and the preservation of the environment. This North-South and East-West dialogue is facilitated by a monthly newsletter which UNEP has published via email and the internet⁴⁶ since the 1998 Kabelvåg meeting in Norway.

Their regional workshops have highlighted the urgent *need for information* in developing countries on:

- analysis of consumption patterns and trends and their implications for sustainable development
- new approaches to policies, methods and tools, arising from business and government action in developed countries
- the sort of practical knowledge and experience which UNEP has gained from its own work in its engagement with key constituents – eg young people and with the advertising and communications industry (for example, in marketing sustainable life-styles and products)⁴⁷.

Through its strong international position in Cleaner Production, UNEP is able to link the issue of consumption patterns into its programs of *capacity-building* in sustainable production and products⁴⁸. Its *Youth XChange* program has a focus on training trainers in youth organisations. UNEP is currently involved in launching new initiatives and partnerships to improve skills of decision makers to implement sustainable production and consumption policies and strategies in line with the UN Consumer Protection guidelines (above) and EU programs on changing production and consumption patterns. These capacity-building programs will focus strongly on the regions of Africa, Asia, Latin America and Caribbean and Eastern Europe.⁴⁹. They will involve both North-South and South-South knowledge transfer and address information and training of value to small to medium sized businesses to grasp

⁴⁶ SC-Net provides an important link and communications system for the regional networks: <http://www.uneptie.org/pc/sustain/sc-net/sc-net.htm>

⁴⁷ Also transfer of information about concepts and tools - such as Life cycle economy, Life Cycle Assessment, eco-design, labelling, green procurement.

⁴⁸ UNIDO and UNEP joined forces to help introduce Cleaner Production in developing countries and countries in transition. The UNIDO/UNEP Programme for National Cleaner Production Centres (NCPCs) is a unique programme of capacity development to help achieve adoption and further development of the Cleaner Production concept at the national level. There have been 22 Centres established in the following countries, since late 1994: Brazil, China, Costa Rica, Czech Republic, El Salvador, Ethiopia, Guatemala, Hungary, India, Kenya, Korea, Mexico, Morocco, Mozambique, Nicaragua, Slovak Republic, Sri Lanka, Tanzania, Tunisia, Uganda, Vietnam, and Zimbabwe

⁴⁹ For example, see UNEP's SCOPE (Sustainable Consumption Opportunities for Europe) project – www.unep.org

opportunities arising from the increasing awareness of consumers about sustainability.

UNEP activities can therefore be summarised as:

- awareness raising, information and education campaigns directed generally to consumers (in developed countries and developing countries) and to youth;
- assisting governments in implementing integrated policies addressing consumption, products and services;
- assisting business (small and medium sized companies) to apply demand side technologies and tools to better market cleaner products and services to domestic and export markets.
- empowering civil society to engage in multi-stakeholder dialogue.

UNDP

As an outcome of their Human Development Report, the UNDP developed a seven-point agenda for action for improving the 'profile of sustainable consumption' and encouraging a 'move towards a more sustainable lifestyles'. {UNDP 1998} They are directed at governments and other international agencies:

- Ensure *minimum consumption requirements* for all – as an explicit policy objective in all countries
- Develop and apply *technologies* and methods that are environmentally sustainable for both poor and affluent consumers
- Remove *perverse subsidies* and restrictive taxes to shift incentives from consumption that damages the environment to consumption that promotes human development
- Strengthen public action for *consumer education and information* and environmental protection
- Strengthen international mechanisms to manage consumption's global impacts
- Build stronger alliances among the movements for consumer rights, environmental protection, poverty eradication, gender equality and children's rights
- Think globally, act locally. Build on the burgeoning initiatives of people in communities everywhere and foster synergies in the actions of civil society, the private sector and government.

OECD

The OECD has conducted a comprehensive review of policy instruments developed since the Rio Summit and have divided them into economic, legal and social instruments relevant for changing consumption patterns: {OECD 2001}

- *Economic instruments* – Full cost pricing, environmental taxes and charges, green tax reform, removal of environmentally harmful substances. (All OECD countries had introduced environmental taxes to a varying extent and an increasing number of countries were implementing or considering comprehensive green-tax reforms.)
- *Legal instruments* – Speed limits, product standards, product bans, labelling, reliable information about environmental impacts.
- *Social instruments* – These instruments have been identified as the most promising for sustainable consumption. Promoting positive attitudes towards sustainable consumption through education, public awareness programmes, voluntary agreements where firms make commitments to improve their environmental performance beyond legal instruments.

A summary of the OECD review of policy instruments can be found in the APPENDIX

EU Governments

The sixth EU Environmental Action Plan, which will come into force in 2002, includes a number of consumption-related policy approaches are being developed under the broad goal to

Ensure the consumption of renewable and non-renewable resources and the associated impacts do not exceed the carrying capacity of the environment and achieve a decoupling of resource use from economic growth through significantly improved resource efficiency, dematerialisation of the economy, and waste prevention.

Measures being considered include:

- Increasing support for research and technological development of less resource-intensive products and production processes.
- Introducing best-practice programs for business.
- Shifting of the tax burden onto the use of natural resources, a virgin raw materials tax and the use of other economic instruments such as tradable permits to encourage the uptake of resource-efficient technologies, products and services.
- Removal of subsidies that encourage the over use of resources
- Integration of resource efficiency considerations into Integrated Product Policy (IPP), eco-labelling schemes, green procurement policies, and environmental reporting.

The above approaches are repeated in terms of waste management policies which also seek to decouple the generation of waste from economic growth⁵⁰.

The Integrated Product Policy (IPP) process in Europe includes experimentation with *community product panels* – multi-stakeholder panels which are focused on different categories/sectors of products and services to discuss needs, product improvement areas, consumption issues etc⁵¹. These are very similar to the multi-stakeholder dialogues proposed in the regional UNEP meetings (see below).

6.2 Industry attention and action

Industry has not been idle since the UNCED. Changes and improvements can be seen in company's' environmental performance, which have impacts both on production and consumption. Active attention to consumption issues has only recently emerged, although progressive changes to systems of production and consumption is a result of the growing policy pressures to deal with product improvements. Extended Producer Responsibility (EPR) and eco-labelling, in the European context, for example, has shifted attention to consumption issues, at least to end-of-life management and waste reduction. Thus generally along with improved environmental performance and eco-innovation there is growing business discussion of the idea of 'Asset Retention' – recapturing the value embedded in products through recovery systems or leasing⁵². {Rachagan and Kanniah 2001}

WBCSD

The World Business Council for Sustainable Development (WBCSD) launched a project focused on developing a better understanding of the concept of sustainable consumption in 1997. This addressed the issue that extrapolation of the consumption rates in developed countries to the rest of the world was not possible. The WBCSD was concerned to seek responses to that situation that did not include reducing consumption of goods and services, which would destroy the very premise

⁵⁰ Specific targets for such reductions are being set and are expected to require a reduction of 20% by 2010 and 50% by 2020

⁵¹ Initial experience with such panels has emerged from trails in Denmark – see ##

⁵² An example is the Xerox Corporation. For more information see <http://www.fujixerox.com.au/environment/>

for business to continue. In two reports, the WBCSD has sketched out a broad program for business⁵³ dealing with both sustainable production and consumption:

- Develop technological and social innovations to improve quality of life and tackle depletion of resources.
- Practice eco-efficiency (more value with less impact, growing qualitatively not quantitatively).
- Build alliances and move towards partnerships for progress.
- Provide and inform consumer choice (improving quality of life and increasing market-share of sustainability minded companies).
- Improved market conditions through appropriate legislation and regulation (promote competition and eliminate monopolies, corruption, perverse subsidies, prices that do not reflect real economic, social and environmental costs).
- Establish the worth of earth with accurate and timely price signals based on proper valuation of natural capital (so that resources are not wasted and future opportunities squandered).
- Make the market work for everyone – poverty is one of the single largest barriers to achieving sustainability (create more opportunities for the poorest – enable access to effective markets and spread consumer purchasing power).

Industrial Sector Approaches

As part of its contribution to the WSSD, UNEP DTIE has facilitated a series of industry Sector Status Reports⁵⁴. Six of those were briefly reviewed for this report to examine the approaches to sustainable-consumption-related issues and approaches within those sectors. All these Sector Reports are in themselves substantial reviews by the industry, involving input from individual member companies, industry organisations and other stakeholders. A large volume of consumption and production data has been collated in this process.

Because of the total size of these reports and their complexity, a sample was chosen and these were considered principally in relation to environmental aspects of sustainability (though of course this dimension cannot be divorced from the others). Two of the chosen sectors were major goods and services – automobiles and food and drink; two were important resource areas – iron and steel and chemicals; two were high profile cross-cutting areas – information technology and tourism. Whilst

⁵³ WBCSD Sustainability through the market. 2001; The Business case for Sustainable Development 2002. See <http://www.wbcd.org>

⁵⁴ See <http://www.uneptie.org/outreach/wssd/sectors/sectors.htm>

these different sectors have specific issues relating to their own position – markets, technology and production and consumption – there is a clear common focus running through all their reported actions and approaches to sustainable development. This largely reflects the idea and approach of what could be called incremental eco-efficiency.

In terms of consumption, the product sectors (including IT and Tourism) emphasise eco-efficiency gains from:

- *cleaner production*
- *process innovation*
- *product development.*

For the Auto industry, for example, the emphasis in such improvements is in manufacturing and use; reduction in energy, fuel consumption, CO₂, removal of lead, reduction in noise. *Increase in efficiency of inputs to outputs* is a common approach across all these sectors with the main goals and successes relating to *technical* improvements in:

- *overall resource efficiency,*
- *water efficiency*
- *energy efficiency and*
- *material efficiency (dematerialisation)⁵⁵.*

The interconnections between the sectors is particularly clear. Tourism cuts across travel and transport, construction, land-use and urban planning and natural resource management. The IT sector emphasises that its contribution has to be judged less from its own performance and more from its potential to transform other sectors. All of the others (particularly chemical, automobiles and tourism) emphasise the critical importance of information (to companies, to consumers) and the great potential for more intelligent and effective solutions from application of IT.

Information and awareness (indicators, reporting, education, marketing) to *change consumer behaviour* is seen as a critical strategy within tourism, auto, chemicals and food sectors; broadly part of their approach to product stewardship and sustainable consumption. It offers greater potential for effective measurement, reporting and

⁵⁵ For steel this means light-weighting (e.g. a 75% reduction in steel use per can in 40 years) and for IT it means miniaturisation.

exchange of information (another key area for development seen by all the industry sectors).

The steel and auto sectors emphasise *recycling* as another key to product stewardship, reducing the impact of end-of-life and producing flow-on efficiency improvements from a reduction in energy and resource consumption in production of new product (for example - 60% reduction to make steel from scrap).

Each of the sectors considered here face significant challenges from consumption – from total global consumption or from distortions in geographical consumption. The iron and steel sector report says:

A measure of the impact of steel on the world's social condition is the apparent consumption per capita. This statistic might be considered one indication of a country's prosperity with the notion greater steel consumption per capita is a sign of economic prosperity.

They give data on comparative consumption rates between developed and developing countries as an illustration of this point.

However, the sense that sectors are facing serious challenges from the limits to total consumption and that this will require radical innovation (as distinct from improvements in production technology and to existing products) does not appear to be clearly and strongly recognised. For example, whilst emphasising the contribution to reducing the volume of consumption in many areas of the market that is arising from the use of information technology (emails instead of letters etc), the IT report gives little attention to the growth in consumption of its own products. Only limited examples of take back and reuse are given, even though the products of the industry (PC's, mobile phones, digital devices) have now reached levels of production and consumption which are of widespread concern, when the (shortening) useful life of those products is considered. (Shipments of computers from OECD countries totalled more than 90 million in 1998, or more than 350 million units over the previous five years, about the average life of a PC. Average growth rate in that period was 18% per annum. ⁵⁶)

⁵⁶ Source OECD (2000) OECD Information Technology Outlook.

Only the Auto industry report gives some sense that the industry (production and consumption) as currently constructed may have to radically change. This point is taken up further in Section 7.

6.3 Regional perspectives and issues.

Regional differences are a key consideration in sustainable development, due to significant environmental, social and economic characteristics which are specific to particular eco-geo-political conditions.

As well as its work examining the implementation of the Consumer Protection Guidelines, UNEP, with Consumers International (CI), Carl Duisberg Gesellschaft (CDG) and various regional agencies, has conducted a series of workshops in Africa, Asia-Pacific, Latin America and the Caribbean and Eastern Europe⁵⁷. These provided an opportunity to discuss and debate consumption issues as they appeared to countries and communities within the regions.⁵⁸ There was substantial agreement across these regional meetings on the importance of consumption issues and on the broad approach to change. In particular, there was a strong call for UNEP to better integrate consumption-related issues and Sustainable Consumption activities into existing programs on Cleaner Production.

Whilst these workshops confirmed the importance of considering specific localised issues, they also provided confirmation of the importance attributed to particular features or patterns of global development which shape consumption patterns. These included:

- Poverty and consumption scarcity
- Population growth
- The Globalisation of communications and information
- The Globalisation of trade
- The role and power of Trans-national Corporations
- Intellectual property rights and the Agreement on Trade related Intellectual Property Rights (TRIP)

⁵⁷ In addition to these formal meetings a similar format meeting took place in the USA organised by a coalition of groups associated with the UNEP cleaner production program. NGOs and Government representatives attended this meeting. The formation of a new Alliance emerged from this meeting. The outcomes are included in the Appendix to this report.

⁵⁸ Each of the roundtables and workshops (conducted end 2001 and early 2002) followed the same general format and were designed to raise awareness, identify information and training needs and define actions to take on the issues of sustainable consumption. Experts from business, government and organisations were invited to attend.

- The process of urbanisation
- The role and impact of tourism
- Consumer Protection

In terms of proposals for policies and actions there was again a great deal of agreement, with some differences in priorities. These are summarised below with their support noted as LC (Latin America and Caribbean), A (Africa), EE (Eastern Europe) AP (Asia-Pacific):

- Governments should take a leadership role in ensuring sustainable government procurement policies, by enforcing regulations, and economic and social instruments, and by sectoral policies in such areas as land use, transport, energy and housing. (AP; LC)
- Governments should support UN consumer protection guidelines and widen debate about consumption patterns, the environmental impacts of consumer choices and behaviour, efficient use of materials, energy and water, and of recycling. (AP;EE)
- Governments should encourage, promote and incorporate sustainable consumption in all sectoral policies and development plans. (LC; AP A)
- Support multi-stakeholder regional coalitions for sustainable consumption where appropriate collaborative activities can be developed and sustained. These should involve consumer, youth, government, business and industry. (LC EE; A; AP)
- Business should be supported to 'domesticate' the globalisation process by making a sustainable use of regional (natural and human) resources and supporting traditional technologies and knowledge, and culturally specific production, products and services. LC; A; AP
- Business should accept obligation for resource efficiency and ecodesign – in the uptake of industry methodologies, investment and development programmes, and the creation of products and services, which deliver environmentally sustainable consumption in cost-effective and socially benign ways. (AP; EE)
- Micro-small and medium sized enterprises need to be actively involved and consumption approaches linked closely to cleaner production and eco-design, within a life-cycle framework. (A; LC.)
- Standardise global eco-labels this would diminish the obstacles for export. (A)
- Develop programs for capacity-building and creation of networks focused on support for business and consumers with specialised training and information materials. International and bi-lateral cooperation programmes, as well as national initiatives, are essential to disseminate information. (A EE; LC`)

6.4 Actions and approaches – summary.

Production and product improvement (Target: Business)

Goal	Approaches	Actions	Key Actors
Un-link resource consumption and economic growth. Significant increase in eco-efficiency of production and consumption. (Global).	<p><i>Dematerialisation, decarbonisation and detoxification of consumption.</i></p> <p>Reduce material/resource flows; increase use of renewable energy, eliminate toxics (or keep in closed cycles).</p> <p><i>Increase competition and innovation for new eco-products and services. Products and services that are resource efficient and safe from a life-cycle perspective</i></p>	<p><i>Green purchasing</i></p> <p><i>Continuous improvement in performance standards</i></p> <p><i>Independent evaluation of performance</i></p> <p><i>Labelling of products and communication of product life information</i></p> <p><i>Education, training and information on ecodesign, LCA, for professionals and SME's</i></p> <p><i>resource taxes; removal of perverse subsidies</i></p> <p><i>Integrated Product Policies</i></p> <p><i>Polluter pays policies to follow global production chains</i></p>	<p><i>Government, Business (WBCSD)</i></p> <p><i>Designers</i></p> <p><i>Education</i></p> <p><i>Research</i></p> <p><i>International Agencies (WTO; UNEP)</i></p>
Ensure green market information and product ecodesign strategies 'shape' new production, products and services, in developing economies.	<p><i>Develop and extend global information – ensure access in developing countries.</i></p> <p><i>High profile communication of case studies of eco-products and new environmental business development in developed economies</i></p> <p><i>Use trade systems to support flow of eco-products and services from developing countries to developed markets</i></p>	<p><i>Information provision to developing markets from best practice in developed countries (production and policies)</i></p> <p><i>Education and training support</i></p> <p><i>International labelling schemes</i></p> <p><i>Capacity building networks</i></p>	<p><i>UNEP</i></p> <p><i>WTO</i></p> <p><i>Bi-lateral Governments agreements (research and education)</i></p>

Ensure new products and services are ‘designed as desirable’ – to project to the market as sophisticated, of high(er) quality, advanced.	<i>Eco-design work to extend beyond technical, engineering changes (to reduce impacts) to include aesthetics, cultural expression, market values, creativity.</i>	<i>Link ecodesign methods and strategies closely to marketing Consumer research on positive values of sustainable products</i>	<i>UNEP Education Research Ecodesign organisations.</i>
Ensure transfer of best environmental technology and production to developing countries	<i>TNC’s, and other developed country industries, to use only best available production facilities in investments in developed countries</i>	<i>Investment controls (target countries) Case study exposure and reporting Consumer organisation monitoring</i>	<i>Countries Business CI</i>

Information and awareness focus (Target: Consumers)

Goal	Approaches	Actions	Key Actors
Ensure consumers can see the ‘life behind the product’ and make informed choice	<i>Labelling and product information reporting Ensure product standards and claims to highest international levels</i>	<i>Global labelling systems Performance standards Independent evaluation of performance Best practice information</i>	<i>Government, Business Research International Agencies UNDP, UNEP, CI</i>
Promote (global) ideas and examples of ‘sustainable prosperity’ or ‘low-impact affluence’	<i>Quality of life indicators adopted internationally Market such ideas using the same techniques and positive images as selling products and ‘product-accumulation affluence’ Case studies of high quality of life, low impact living</i>	<i>Develop WWF and UN-DESA consumption data and indicators Develop consistent de-materialisation indicators. Data on health and consumption Transfer skills and approaches from advertising and marketing to governments</i>	<i>WWF UNEP UNDESA WHO CI Governments Advertising, marketing and communications</i>

		<i>and producers of eco-products</i>	<i>professionals</i>
Build on positive aspects of Global Consumer and Youth awareness and concern about links between consumption and environmental damage, to increase demand on producers for improved products.	<i>Continue work on engaging with consumers to understand their attitudes and concerns.</i> <i>Bring advertising and communications industry into network,</i>	<i>Regular consumer and other stakeholder dialogues</i> <i>Continue UNEP/UNESCO Youth programs</i> <i>Link UNEP advertising and communications forum strongly to youth programs</i> <i>Youth TV and Music program content on consumption issues</i> <i>Global communications Award scheme</i>	<i>UNEP</i> <i>UNESCO</i> <i>Communications industry</i> <i>Advertising industry</i> <i>CI</i>

Equality focus (Target: International Agencies and Government)

Goal	Approaches	Actions	Key Actors
Ensure minimum consumption standards globally for key goods and services	<i>Development of essential infrastructure in water, healthcare, sanitation, electricity, education in all countries</i> <i>Stimulate participation in decisions about consumption patterns</i>	<i>Global action for human development</i> <i>Reporting on consumption indices – guide to aid and investment.</i> <i>Multi-stakeholder dialogues</i>	<i>Government, Business</i> <i>International Agencies</i> <i>World Bank</i>
Increase access to information systems and technology and to local control of information hubs	<i>Appropriate local infrastructures</i> <i>Community access to IT</i> <i>Training in IT and communications</i>	<i>Development of local IT networks</i> <i>Work from communal access as starting point</i> <i>Local information collection</i>	<i>Governments</i> <i>Education and research</i>

Increase choice of eco-products and services in all countries / markets	Development of local infrastructure and integrated product policies	Capacity building and support programs to help producers in developing countries Government procurement programs to emphasise environmental criteria for product choice	<i>UNEP</i> <i>WBCSD</i> <i>Governments</i>
Strengthen consumer protection	<i>UN Consumer Protection guidelines</i> <i>Polluter pays policies</i>	<i>Ensure awareness and implementation</i> <i>Extend polluter pays policies in North to cover all of the global product chain</i>	<i>Consumers</i> <i>CI</i> <i>Governments</i> <i>UN</i>
Remove economic barriers	(See OECD policy options)	<i>Modernise tax systems to include resource taxes</i> <i>Discourage perverse subsidies</i>	<i>Governments</i>

7 Towards a more integrated approach to sustainable consumption and cleaner production – A strategic focus for the future

Sustainable development cannot be achieved without fundamental changes in the way that industrial societies produce and consume... Urgent actions are required to.. adopt policies and measures in developed countries aimed at changing unsustainable patterns of production and consumption via technological and educational policies which, inter alia:

- *Raise consumer awareness of the importance of sustainable production and consumption*
- *Improve the role of the media and other public information tools in promoting sustainable consumption and production.*

Chairman's report for the WSSD, 2002.

A number of things stand out from a review of the past ten years' work on sustainable consumption. Given the scale of global inequalities, progress towards sustainable consumption has to emerge from action taken within industrialised countries where the dominant models and aspirations for global development are generated. This point was made strongly in Agenda 21 and has been strengthened by the many meetings and reports since. Developed countries have the resources to assist in the eradication of poverty and the economic and technical capacity to transform current systems of production and consumption to achieve the levels of environmental efficiency necessary for a sustainable existence. Unless new aspirations for sustainable prosperity are widely and visibly embraced within developed countries they will not become a global pattern. However, any action in developed countries has to be relevant to the conditions and the needs of developing countries and open to solutions and approaches derived from the experience and practice of developing economies. Change will occur only through North-South and East-West dialogue and collaborative projects.

Thinking about *consumption* has provided a valuable approach to the analysis of current conditions and an important way to structure strategies for future development. There is considerable agreement about actions and policies which are must be pursued (Section 6.4) to bring consumption back from its unsustainable precipice. A critical task is to focus such action in a way that does not lead to a simplistic division into separate spheres of action: Production-focused (producers,

processes, technology facilities) and consumer-focused (needs, awareness, behaviour). Thinking about Sustainable Consumption has exposed the limitations of production-focused strategies. Consumption does not provide an alternative approach, just 'the other side of the coin'⁵⁹. It is *systems of production and consumption* which need to change – urgently – and changing patterns of consumption requires an understanding of the complex features of such systems which shape particular modes of living, markets for goods and services and the means by which they are produced.

'Production' and 'Consumption' ('producers' and 'consumers') is a limited way of thinking about such systems, other approaches are needed. However, as systems of production and consumption involve a complex set of interacting factors, strategies for change will succeed or fail on the way that these complexities can be focused into areas of action which can be *communicated, understood and embraced by all stakeholders*. Moving forward towards a fundamental change in the 'way that industrial societies produce and consume', will involve further attention, analysis and action to the following:

- 1) Clarifying the various (and often confused) meanings of the *term consumption*.
- 2) Developing better *feedback* - indices to measure consumption pressure and quality of life, and putting them to use
- 3) Finding a more appropriate *conceptual schema* for describing the essential elements of systems of production and consumption, allowing for more complexity of elements and interactions (than the two-sided consumption and production) but still simple enough to assist analysis and intervention.
- 4) Supporting and enhancing *localised campaigns of action* to transform consumption of targeted resources or goods and services.
- 5) Focusing production and consumption-oriented action on the transformation of *products and services*.
- 6) Developing and promoting the idea of '*leap-frog*' change.

⁵⁹ This phrase has been used by UNEP in their SC work. The importance of linking production and consumption seems to be well appreciated within the regional consultations organised by UNEP which have all called for strong integration of work on cleaner production, product eco-design and sustainable consumption.

7.1 Clarifying the meanings of 'consumption'

Interest in Sustainable Consumption partly reflects a tradition of using consumption as a measure of activity both within economics and environment. A focus on consumption as a *measure* of systems of production and consumption is obviously both appropriate and valuable. However, another meaning of consumption springs from the substantial literature on consumerism and consumer culture, which portrays consumption as *the* driving force of the economy and production. In the context of this voluminous literature, the label 'consumption' can easily be interpreted as singling out the consumer and their behaviour/need/wants as the target for action and change.

Thus, to the confusion already discussed (economic measure – goods and services; environment measure – resources and waste) there is also confusion over whether 'consumption' is a *system measure*, or *short-hand for 'consumer behaviour'*. These different meanings are evident, for example, in the four strategies for approaching changing 'consumption' proposed in the UNEP Consumption Opportunities report – *Efficient consumption; Different consumption; Conscious consumption; Appropriate consumption*. The first two, 'efficient' and 'different' apply to the total system (outcome) of production *and* consumption; 'conscious' refers to changing *consumer attitudes and behaviour* whilst 'appropriate' focuses on using consumption as a *measure of system performance*.

These two broad meanings for consumption (as measure, and as shorthand for consumer behaviour) need to be clearly distinguished in discussions about Sustainable Consumption, particularly in developing action and policies⁶⁰.

⁶⁰ Even talking of *unsustainable consumption* is open to a misinterpretation (which may exaggerate the role of consumer behaviour). What such a phrase actually means is – taking consumption of resources, goods and services, as a measure of the performance of current *systems of production and consumption*, demonstrates that these *systems are unsustainable*. As the OECD has emphasised in its own analysis, consumption data can only be interpreted for a particular site, problem and time, and the sustainability or unsustainability of that data can be interpreted only where specific ecological limits can be established.

7.2 Knowing where we are going and how we are doing – the need for *indicators and meaningful feedback.*

Section 4.3.2 reported on some of the attempts to measure – and aggregate – consumption and its impacts. The WWF ‘consumption pressure’ analysis was, in their own terms, limited to sets of data that were consistent, recent and updated. Their index was based on resource consumption and pollution data from 152 countries, in 1995. It represents an attempt to quantify the burden placed on the global environment by the inhabitants of these countries. They used six components to calculate Consumption Pressure: grain, marine fish, and wood consumption; freshwater withdrawals; carbon dioxide emissions, as a proxy for fossil fuel consumption; and cement consumption, as a proxy for land consumption. Each of the six components was given equal weighting in calculating the final measure. This approach was adopted for simplicity. Since the publication of that 1995 data in their Living Planet Index of 1998 no updates have been published. Yet, as a limited and one-off ‘first attempt’, this measure has been widely reproduced and referred to. The need develop a set of measures (such as the UN DESA set) and collect data to use to track aggregate change is clearly evident from the SC literature.

There are numerous proposals and publications of alternative measures to GDP which attempt to capture some sense of prosperity and quality of life. Measuring and reporting on quality of life is directly or implicitly called for in many of the strategic actions for SC. Explicit and comprehensible feedback on quality-of-life conditions would seem (along with consumption-environment-impact data) to be an essential platform for sustainable development. None of the alternative ‘green accounting’ measures have managed to achieve the status and institutional commitment of GDP.

Industry sectors (see Section 6.2) recognise the need for effective measurement, reporting and data exchange. From the Sector Reports it is clear that some measures of consumption (energy, water etc) are seen as necessary for effective management and strategic planning for sustainable development.

Feedback can play a role at the individual or small group (e.g. household) level, where the availability of information (or lack of it) can become a critical factor in changing motivations. There is simple software that gives individual computer users feedback on the implications of their printing decisions, as a measure of cumulative paper used, which appears as desk-top icons of (percentage of) trees consumed. Power and water suppliers in many countries have adopted a simple demand management feedback system by including relative monthly use figures (over past years) in their billing for consumers. This fills an information feedback gap which can change consumers' awareness of the results of their daily-use decisions. Information technology offers enormous potential to expand consumption feedback at all levels (individual, community and aggregate) for many key resources⁶¹.

7.3 An alternative conceptual approach for describing systems of production and consumption.

The UN-CSD definition of *sustainable consumption* as an 'umbrella term' talks of addressing needs, quality of life, equity, resource efficiency, waste, (environmentally-improved) goods and services. It emphasises changes in patterns of consumption, referring to both the levels of utilisation of goods and services *and* the way those goods and services are produced and delivered.

Consumption of goods and services is not an end in itself; patterns of consumption reflect the existence of markets for goods and services – 'systems of production meeting the expressed needs of consumers'. The 'expression of needs' is a complex issue. Even needs which could be considered as universal (nourishment, health, shelter, mobility, etc) are obviously expressed (and met) in different ways in different contexts. Even in a given context, the way those needs are expressed (and met) changes over time.

How needs are created and expressed and how they both shape, and are shaped in turn, by the market of goods and services has been the focus of much theoretical analysis from a number of different perspectives. What is generally interpreted as expressed needs (derived from patterns of consumption) is an aggregation of the

⁶¹ A point that the industry appears well aware of; see the IT Industry Sector Report – UNEP web.

behaviour of individuals and groups of consumers, who are certainly not homogeneous in their priorities, concerns and choices. From a social and economic viewpoint, theories have attempted to focus on individual behaviour (which has often been depicted as 'irrational' or contrary to the theoretical 'best interests' of the individual) and the influence of group allegiances at different levels (family, age-group, socio-economic, etc). From an environmental view-point it is often only aggregate 'patterns' that are of interest (in terms of total resource consumption etc). However, strategies for changing unsustainable consumption patterns need to be well attuned to differences in individual and group behaviour, because such strategies generally *rely on building on behaviour that is (at least in some respects) different from the aggregate pattern.*⁶²

The OECD, like UNDP, examined a range of analytical frameworks which have been used to explain the behavioural and infrastructural basis of consumption. These reflect various attempts by researchers to deal with the large number of factors which are assumed to influence systems of production and consumption:

- Human needs and desires – social, cultural and biophysical
- Social and cultural structures
- Education
- Marketing and the media
- Availability and cost of products and services
- Availability and cost of resources.
- The quality and appeal of product form and function
- Technological development
- Economic development and levels of affluence
- Population size and demographics
- Infrastructure – physical structures, resource distribution and information systems

A problem for developing policies and programs is that these factors are not independent and their interaction can be complex⁶³. It is difficult to decide where it is effective and practical to intervene. Policies and actions have, as the UN 'umbrella' definition would suggest, involved a variety of stakeholders – not just 'producers' and 'consumers' – and have focused on resources, production, technology, products and services, information, economic factors, standards, education and training,

⁶² This is the basis, for example, in the UNEP work with Youth

⁶³ Michaelis, for example, proposed a framework consisting of four sets of forces which shape consumption: Demographic, economic and technical changes; Resources, infrastructure and time constraints; Motivations, habits needs and compulsions; Social structures, identities, discourse and symbols. {RSA, 2000}. The UNDP Human Development Report 1998 examines the history of the idea of consumption and nine hypotheses about consumption from Veblen, through Keynes to Amartya Sen. {UNDP 1998 p 39}

knowledge systems and cultural values (etc). These do not divide easily into *actions for changing production* and *actions for changing consumption*.

An alternative approach is needed which provides a practical way of describing the system (to guide intervention) but allows for more complex modelling of the real world than dividing it into *production* and *consumption*. The SC literature, examination of various case studies of multi-stakeholder action to shift patterns of consumption and the range of actions discussed in Section 6, suggests an alternative approach to describing systems of production and consumption. In this model, the system is described from three perspectives – *provision* (the way that goods and services are produced and their systems of delivery and function); *motivation* (the incentives and disincentives which shape the market for goods and services) and *access* (factors which include or exclude consumers from participating in the market). These three view-points reflect an aggregation of forces which affect patterns of consumption into three logical areas for analysis and action. They are briefly discussed below.

Green Power – Provision, Access, Motivation.

A number of industrialised countries have introduced programs to enable consumers to purchase 'green' electricity from the grid (usually at some premium value). Green electricity is produced from renewable sources such as wind, solar, tide, etc. Increasing the contribution of renewable energy to the total energy mix, is one of the fundamental ways to reduce consumption impacts. For this to be successful requires each of the three areas – provision, motivation and access – to be addressed through appropriate policies and programs. Green power requires new structures of *provision* (it has to be generated and distributed via a grid); it has to be *accessible* to consumers (in terms of cost, information, mechanisms of purchase and accounting – production has to be audited to ensure it is matched to demand, consumers have to be able to select green providers); consumers have to be *motivated* to purchase and pay higher charges (to understand the environmental value of renewable power and their ability to contribute in this way to more sustainable consumption); producers have to be *motivated* to invest in power production (through economic and market incentives). One State in Australia – New South Wales – recently reported that consumers take-up of their audited program of renewable power saved 114,000 tonnes of greenhouse emissions in the year 2001, equivalent to taking 25,000 cars off the road. {Green Electricity Watch Report. Australian Consumers Association 2002}

Systems of provision

This refers to all those processes and infrastructures through which goods and services are made available for consumption. *Provision*⁶⁴ is more than *production*. It is used to describe the combination of established industry processes and business practices, the accumulated physical production and delivery infrastructure and the corresponding social and cultural practices, which together define the ways in which *life-styles and particular sets of products and services become mutually supporting structures*. This includes not just all the processes involved in the *design, production, distribution and disposal* of products and services (along with the *necessary technical and organisational infrastructure*), but also *the shared set of expectations and established practices of consumption* that affirm particular categories of products and services as 'necessary' for daily lifestyles to function.

Considering systems of provision means examining the various ways in which the consumption of products and services *and* the use of resources (and production of waste) associated with that consumption, are determined by structures of *creation, delivery, utility, disposal and information*. Systems of provision also includes the collective and non-material goods and infrastructure which are not traditionally part of the market but essential to quality of life – such as clean air and fresh water, natural capital,⁶⁵ etc.

DIY Products

In many industrialised countries, household consumption includes tools and hardware for the 'home handyman' (drills, saws, sanders, routers, saw benches, timber, paint, glues etc). These commodities reflect a set of structures of provision – investment in the design, production and distribution of simplified professional tools and (ready to use) materials. There are cultural, economic and organisational structures that turn such do-it-yourself (DIY) products into a viable market, as an established approach to household maintenance/improvement. The existence of this category of products (available for consumption) and the institutions of use (education, information, shared behaviour, social expectations) create a structure of utility, an accepted way in which 'things are done'. This becomes clearer when other ways of doing things are considered – for example, other economies or cultures where the functions performed (repairs, mending, refurbishment, building) are met instead through the provision and consumption of professional services and skilled labour. In this case the structures of utility are different; different products (professional tools) and materials mesh with different institutions of use (professional, skilled-labour services). The existence of DIY products implies 'a need', but this need exists in a particular context of established patterns of provision which define the way a desired outcome ('home-improvement') will be met.

⁶⁴ The term *systems of provision* has been used by Chappells et al [2000], to describe a framework for understanding production, consumption and lifestyles. It is used here in a closely related, but more narrowly focused, way.

⁶⁵ a point made in the UNDP 1998 report, the OECD 2001 and in the Kabelväg workshop

Systems of motivation

Actions and behaviours of people as citizens, as consumers, as workers and managers, can be attributed to motivations which arise from needs and desires (individual, social and cultural). Traditionally needs/desires are described in general terms⁶⁶ as:

- *survival* (biophysical needs and safety, safety and risk),
- *acceptance* (belonging, love esteem, status and power),
- *cognition* (understanding, exploration),
- *aesthetic appreciation*, (appreciation of form and beauty, comfort)
- *self-fulfilment* (personal improvement, stimulation, excitement)
- *transcendent ideals* (concern for others; political spiritual and moral beliefs)

From the sustainable consumption literature there is broad agreement on the following aspects of consumer motivation:

- Ultimately all motivations are dependent on *information* and *understanding* (of options and implications of action). Information is a key aspect of systems of provision which affects motivation. (It is a fundamental determinant of access.) However, as sociological studies show and marketing divisions know, there is no simple, direct, relationship between information, awareness and behaviour, which is influenced and modified by other factors.
- Motivations are both *individual* and *socially contingent*; they reflect personal concerns and social and cultural influences which are often weighed up in a conscious process. (For example in deciding whether to use a car or public transport – personal comfort and convenience is weighed against pollution etc.). Social and cultural influences on motivations emphasise that consumers 'belong' to more than one group (based on kinship, class, age, religion etc) with sets of expressed needs which can be very different. (The UNEP Global Consumer Class survey highlights aspects of the multiple nature of group 'belonging'.)
- Motivations also reflect *habits* and repeated sets of practices that relate to past experience and *established routines*. These are often re-enforced by the development of infrastructures. This is one way that motivations are connected to systems of provision⁶⁷; motivations reflect patterns of behaviours related to patterns of provision. (For example, travelling by car in cities designed without effective public transport.)

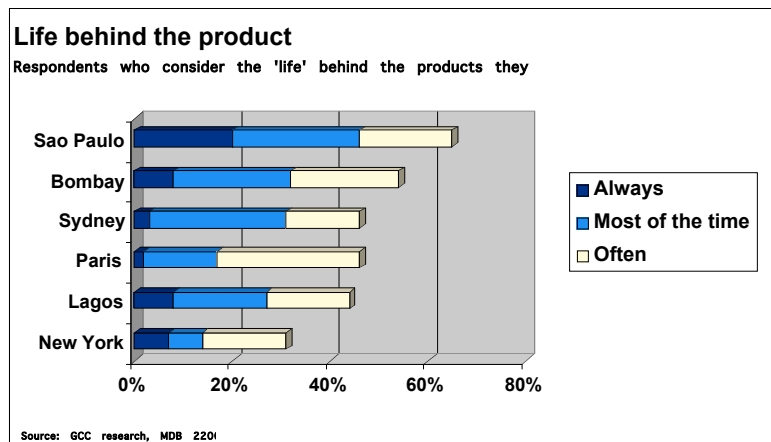
⁶⁶ Based around Maslow's hierarchy – see UNDP 1998; OECD 2002, OCSC 2002.

⁶⁷ Spaargaren and van Vliet (1999) describe the ways that consumers and producers are co-actors in the creation and maintenance of systems of provision.

- Consumer motivations and behaviour are not consistent and stable over time; change can be sudden and rapid. (Use of the internet is one example.)

Various organisations and reports on Sustainable Consumption have focused on analysing the drivers which lead to 'over-consumption', or the desire to acquire and accumulate goods. These are summarised in the Appendix. However, it is very important to recognise that (some) consumers do see the connection between consumption and pollution/waste and are concerned about the 'life behind the product'. In particular circumstances, consumers can be motivated by longer-term interests rather than short-term, by collective and social goals rather than individual, and do act to consume responsibly. As the UNEP Global Consumer (and Youth) surveys have shown, such behaviour is not limited by region or country (see graph below).

Global Concerned Citizens – UNEP Global Consumer Survey.



Discussion of sustainable *consumption* has a tendency to focus on *consumer motivations* and behaviour. As systems of provision highlight, consumption patterns reflect a market shaped by *consumers and producers* (and products and infrastructure). Policies and action aimed at changing *systems of motivation* need to consider the motivations of producers and businesses, product designers and 'infrastructure creators'.

Analysing the motivations for business to improve environmental outcomes has identified factors such as⁶⁸:

- market competition and 'recognition' of a 'green market'
- long range planning (recognition of trends and potential future risks)
- regulation or potential of future regulation
- improved relationship with customers
- individual company personnel desires (to contribute, through work, to socially positive outcomes)
- protecting "brand" image

Systems of access

Patterns of consumption reflect systems and structures that control access to the existing market and to processes of influence in shaping the market. Critical factors affecting access include:

- *Income.* Levels of income either widen or restrict access to the market. This is obviously most critical in conditions of scarcity where poverty is the major barrier. The increasing dependence of consumption, in all markets, on private income (with a reduction in public infrastructure) has important implications for access.
- *Time.* Along with income, conditions of life can make time a critical commodity and an important factor in access – to the market, to information, to political and social process which affect the market – consumer action.
- Availability and ownership of *infrastructure* of essential goods and services. Provision affects access.
- Availability and choice of products and services (no eco-lifestyles without eco-products and services- WBCSD).
- *Information.* An absolute determinant of access in all market conditions. Knowledge of goods and services, Knowledge of 'life behind the product'. Awareness of quality of life issues with choices. Awareness of best practice possibilities.
- *Education and training.* Along with information, this affects abilities to participate in shaping markets, in the utilisation of opportunities

⁶⁸ {refs – eg Portter, Orsato...}

7.4 Enhancing the potential of limited, localised actions

The complexity of production and consumption systems – provision, motivation and access – can be significant barrier to taking action, with only large global or regional organisations and governments appearing to have the power and resources to tackle the problem. However, there are *campaigns of action* directed to reducing consumption of *particular* sensitive resources, or changing the patterns of consumption of specific goods or services, which offer another approach. These campaigns are not well recoded or analysed within the SC literature; yet they represent a level of action that may have great advantages in terms of involvement and achievable outcomes. Unlike actions and policies intended to shift consumption patterns in whole economies, or which aim to change global conditions, these campaigns of action are often conducted in localised areas – regions, cities, towns, communities. They include such things as: Shifting modes of transport from cars to public transport, creating car free areas, reducing water consumption, reducing energy consumption, shifting energy consumption towards renewable energy; reducing household waste. Such campaigns arise when a relatively focused pattern of consumption is recognised as having detrimental localised effects. Eco-tourism is another example; recent campaigns have been proposed (and are underway) to deal with the impact of mass-tourism in specific resort locations (such as islands).

Although tourism is receiving some media attention (because of bed-taxes or proposals for visitor fees) only the creation of 'car-free spaces' and domestic waste management, seems to be well documented with a network of information and case studies. These have in part been assisted by high-profile journals and web-sites from organisations such as Adbusters, which have been able to bring the skills of advertising and marketing professionals to campaigns such as 'car-free-days'.⁶⁹

Creating a global network and a data-base of case studies of such actions, could provide a valuable resource and inspiration for communities interested in dealing with local consumption issues, particularly in the critical resource areas such as water and fossil-fuel energy. Case studies could provide guidance for developing appropriate supply and demand approaches, highlight the role of new products and

⁶⁹ See: www.adbusters.org which includes links to car-free spaces action. Or: <http://www.electrifyingtimes.com/carfreedayinrome.html>

services and showcase the linkages between consumption, production, poverty-reduction, quality of life, policy development.

Water Conservation Campaign - Windhoek Africa ⁷⁰

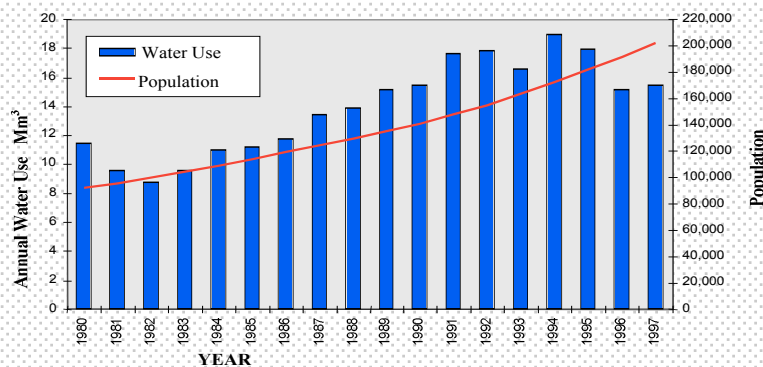
Windhoek is the capital city of Namibia, sub-Saharan Africa's driest country. It is estimated that only 1 % of annual rainfall recharges groundwater and only 2 % becomes available for storage in dams, the rest is lost to evaporation. Water consumption increased rapidly, by almost 300% between 1970 and 1995. If the growth continues, by 2020, demand would exceed 500 Mm³ per year, the estimated total yield of domestic surface and groundwater resources.

A water demand management programme was initiated in the mid 1990s by the city authorities to tackle the growing demand for water in the city. The programme includes addressing all aspects of provision, motivation and access:

- maximising reuse of water and use of grey water,
- promoting dual flush toilet cisterns
- water metering taps in hotels
- requiring pools to be covered.
- a block tariff system,
- penalties for wasting water on private properties,
- prohibiting watering gardens during mid-day
- water conservation guidelines for businesses

Water consumption in Windhoek grew by 6.6 percent annually until 1980, and between 1982 and 1991 demand grew by nearly 8.8 percent. With the initiation of the water campaign in the early 1990s, demand began to level off, even with a rise in population. Total water use (including the use of reclaimed waste water) in 1997 was approximately the same as 1990. When considering the consumption of new water, *i.e.*, without reclaimed water mixed in, Windhoek's 1997 use was equivalent to 1987 use, despite nearly a *doubling* of population from 105,000 to 202,000. If Windhoek continues to successfully implement water conservation strategies, demand in 2005 should be more than 30 percent lower than originally predicted.

Water consumption and population in Windhoek



Source: B. van der Merwe, 1998

Of course such campaigns are usually limited to dealing with one particular resource, or impact area, and there is always the possibility that proposed solutions will

⁷⁰ Rotherth, Steve (1999) Meeting Namibia's Water Needs while Sparing the Okavango. www.im.org accessed 2002

exacerbate consumption problems in another area. They do, however, reflect an awareness of the need to address consumption-related impacts and they have the advantage of local(ised) action which makes the engagement of multiple stakeholders more realistic. With the development of indices such as eco-footprints and improved monitoring of consumption patterns and impacts, there is the potential for such action to widen to a more-holistic approach⁷¹. Case studies of localised campaigns could be the basis of research to examine total life-cycle changes resulting from campaigns for specific reductions in consumption, as well as providing an opportunity to test the appropriateness of indices for use at the community and regional level.

7.5 Improving products and services – the logical focus for production and consumption

*Individual consumers can reduce their environmental impacts by:
using fewer resources (eg water saving)
using more eco-efficient resources (eg solar electricity)
using fewer products (eg one TV instead of three)
using more eco-efficient products and services (eg public transport)
producing less waste (avoiding packaging, recycling).
However the ability and willingness of households to choose such options depends on a wider set of conditions over which they have little control. [OECD [72]*

Business and other stakeholders can... promote sustainability messages and a new vision of the "good life". But nothing can be achieved if the message is not consistent with an offering of goods and services that deliver the promise. There is no point in advertising eco-efficient living without ... eco-efficient products and services... {WBCSD Business case for sustainable development 2001}

Products and services form the link between production and consumption. Production systems deliver products and services to the market; it is these products and services that are consumed; it is the *volume* of their consumption and the *efficiency* (in environmental terms) with which they are produced that is the critical issue. Products and services define systems of provision; they play a major role in systems of motivation; the range of products available affects systems of access.

⁷¹ The development of eco-footprint measurements for some cities {ref##} is a good indication of future possibilities.

In the list of the ways that individual consumers can reduce their impacts itemised by the OECD (above), only the option of *using fewer products* appears not to depend on products and services able to deliver different outcomes. In practice all other 'options' depend strongly on the availability of products, services and infrastructure. As the WBCSD suggests, *there can be no eco-efficient living without eco-efficient products and services.*

In the decade since Agenda 21, products (and services) have become an increasingly important area for government policy, as analysis and practical experience in industry has demonstrated that⁷²:

- Environmental impacts from products has continued to rise (in gross terms) relative to impacts from production processes
- A life-cycle perspective on the environmental impacts of a product 'captures' the whole production-consumption chain
- 60-80% of the (life-cycle) environmental impacts from products are determined at the design stage
- When product-related environmental-impacts are made explicit in the design process, there are well tried design strategies for reducing them
- A focus on products is a good way to engage company interest and action because it focuses on their core business
- The existence of new eco-designed products changes the market, projecting a new 'demand space' for product competition .

A focus on the creation of sustainable products and services, if considered from a life-cycle perspective, results in changes to both systems of production and patterns of consumption. The 'well tried' ecodesign strategies, developed for managers and designers in companies, tend to stress the technical and engineering aspects of such work (the use quantitative life-cycle analysis, the optimisation of material use, the development of simple and reversible fasteners, the selection of recycled materials, the selection of technically efficient components, etc). However, in practice, these technical, production issues only partly shape the outcome.⁷³ Other factors enter the

⁷² {Ryan, C, EcoLab: A Jump Towards Sustainability. Journal of Industrial Ecology Vo5, No 3, 2002}

⁷³ For a good review of such strategies see: How to do EcoDesign. Tischner, U, et al. Verlag Form Praxis, Frankfurt. 2000

process, factors which play an increasingly important role in the creation of value and which reflect the complex forces that *shape* patterns of consumption.

Products are not just *enablers* of change, as the WBCSD argument would suggest. The history of product design in industry since the second world war demonstrates that designed products have played an increasingly important role in the shaping of consumption. Through the design process and with the increasing technical sophistication of the manipulation of materials, *consumer products* have become symbols of possibilities and potentialities as much as objects of function and utility. They are *designed* to motivate consumers, to create desire for ownership and possession, to communicate value, identity, status, enjoyment and fulfilment.

"The process by which design incorporates ideas is by no means direct... [M]anufacturers filter and distil ..ideas and add some of their own, all with the intention of making their products seem more desirable..., successful design is like alchemy: it fuses together disparate ideas from different origins, so that the form of the completed product seems to embody.. a single idea..." { Adrian Forty, Objects of Desire – design and society since 1750 }.

The availability of new eco- products and services in the market affects the structures of provision and access *and*, as a result of the increasing sophistication of design, they also become an important motivational force for change. Any recyclable, water-saving, solar energy, package-free products that exist in a competitive market must have been designed to attract consumers. Such products have the potential to change consumer desires, behaviours and ideas of satisfaction and quality⁷⁴.

Production-focused strategies (cleaner production, process redesign) have a solid history of achievement and established infrastructure. Consumption issues have drawn attention to the limits of such strategies and there are clear calls for the integration of action on cleaner production and sustainable consumption. The broad strategies for changing production and consumption, described in Section 6 have, in practice, focused on changing the material and resource content and flows of products and services. It is the development of new eco-products and services in developing countries that offers a way of advancing sustainable development.

⁷⁴ Studies of new car sharing systems demonstrate this well. {Meijkamp op cit}

The improvement of products and services through ecodesign and the creation of a policy framework conducive to such development (e.g. the EU's Integrated Product Policy) is a logical and easily communicated focus for integrating cleaner production and sustainable consumption. The development of improved support tools and information about eco-products and eco-services and eco-design (particularly for small and medium sized companies) in both developed and developing countries will be an important contribution to meeting demands from regulations, policy changes, standards and green procurement programs.

As a response to the increase in recognition of the need to safeguard natural resources a growing number of travel and tourism companies are seeking to create more responsible consumer behaviour by using their products and services to educate and inform their customers. (The Tourism Industry Sector Report to the WSSD)

7.6 The overall strategic goal: leapfrog to new systems of products and services

The creation of sustainable systems of production and consumption is increasingly viewed as a process that will depend more on a radical restructuring of existing systems (including products, services, lifestyles, business and measures of economic value) than on incremental improvement. There is a growing differentiation between the terms eco-efficiency and eco-innovation, intended to emphasise this point. Eco-efficiency is the progressive improvement in the resource efficiency and environmental impact of current systems and businesses. Eco-innovation is the creation of *new* systems and businesses which alter *fundamentally* the current relationships between resource-consumption-waste and the creation of economic value. This has been labelled the 'next industrial revolution'⁷⁵. In the desire to communicate the idea of change as a real discontinuity another term has come into use⁷⁶ : *Leapfrog change*.

For developing countries, sustainable consumption does not mean not consuming, It means quite the contrary, namely leap-frogging. ...Sustainable consumption will bring new business opportunities.
Jacqueline Aloise de Laderel, Director UNEP DTIE

⁷⁵ McDonough and Braungart – *The Next Industrial Revolution*

⁷⁶ (after Manzini [1998])

For developing countries, leap-frog changes in systems of production and consumption, products and services, in developed economies, offer the possibility of a 'development path' which will link economic development with sustainable consumption.

Leap-frog transformations of production and consumption systems will require changes in all aspects of systems of provision, motivation and access. The recognition of this restructuring of existing industry sectors, products and services is currently limited to a few leading companies, researchers and business schools; it is not as widely evident in the thinking of industry generally as the challenge of sustainable development demands. Talk of product stewardship as involving recycling of materials recovered from end-of-life products, is talking, at best, about limited transitional activity. Recycling of materials faces an energetic limit with growth in consumption. Even the idea of dematerialisation, when it is limited to light-weighting and miniaturisation, is a transitional approach which could quickly be overcome by growth in production and consumption of products.

However, in facing the reality of the limits of continued growth in product consumption, the implications and strategic directions of leap-frog change is beginning to appear. Growth in sustainable services and product service systems, the creation of new businesses based on sales of services with very low infrastructure and resource demands, is being discussed in business and government sectors. This means new industries or new alliances and partnerships within current industry and new consumer interests, behaviours and patterns of living (sustainable prosperity). In talking of the future, the Automobile industry Sector Report for example (see Section 6.2), talks of the need for new forms of partnership:

The challenge of sustainable development requires new forms of partnership and co-operation. The auto industry is only one of a number of players affecting transport. For major goals to be achieved a joint commitment from all players ..is required. The role of the industry is to promote technological development and provide integrated solutions for transport and mobility... Designing and managing a complex transportation infrastructure and developing linked modes of transport will be a key issue for countries and their governments in the developing world. Through intelligent transport systems solutions, the efficiency of different means of transport can be further enhanced.

That Report confirms that PSA Peugeot-Citroen has established a think tank to bring together urban planners, researchers and scientists, to study new mobility solutions to meet current needs and future challenges. This will study expectations and demands of city dwellers in Europe as well as in developing countries. Leapfrog

change means such developments will occur within all existing industry sectors with a shift to different concepts of provision and new concepts of products and services (analogous to the shift from *auto producers* to *mobility suppliers*). The Tourism Sector Report refers to another development in business thinking about the 'experience-based economy'⁷⁷ which describes what happens when 'a company uses services as the stage, and products as the props, to engage individual consumers in a way that creates memorable events and experiences'. It notes that the Tourism industry simultaneously thrives on this trend and is threatened by it, but that:

Tourism products and services that demonstrate greater sensitivity to the environment, traditional culture and local people at destinations, can create such an experience, whereas tourism in the context of uncontrolled growth which puts increase pressure on the natural, cultural and socio-economic environment, risks diminishing the visitor experience.'

Such thinking reflects the emergence of new ways of looking at products and services and new businesses. Product ecodesign has been progressively moving from improvement (or redesign) of existing products towards the redesign of product-systems, incorporating, as a target, changes in consumer use-patterns, product-longevity, disposal-collection and systems of reuse and remanufacturing of components. New models of system change are receiving attention derived from different patterns of ownership of products and services (such as leasing and sharing) and the replacement of products with services⁷⁸.

With a focusing of action for cleaner production and sustainable consumption on the creation of new products and services and the development of practical support systems for this, much more attention is needed to communication and promotion of leap-frog concepts and developments.

⁷⁷ { from J Pine and J Gilmore, Harvard Business Review 1998}

⁷⁸ See UNEP Product-Service Systems booklet##

8 APENDICES

To come

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