WWF

for a living planet®

SUSTAINABLE GOODS AND SERVICES IN THE 21ST CENTURY

A REPORT BY SANJAY KUMAR
FOR WWF'S TRADE AND INVESTMENT PROGRAMME

SUSTAINABLE GOODS AND SERVICES IN THE 21ST CENTURY

A REPORT BY SANJAY KUMAR
FOR WWF'S TRADE AND INVESTMENT PROGRAMME

This report is commissioned by WWF's Trade and Investment Programme, which aims to identify and cooperate with actors in the BRICS group of key emerging economies (Brazil, Russia, India, China and South Africa), to champion sustainable international trade and investment. The Programme examines the scope for these countries to become leading exporters of, and investors in, sustainable goods and services, whilst emerging as key actors in promoting a proactive international sustainable development agenda.

Edited by Alistair Schorn, WWF Trade and Investment Programme
With contributions from Dennis Pamlin (WWF-Sweden),
Dr. T. R. Manoharan & Rajesh Seghal (WWF-India)
August 2009

CONTENTS

FIGURES

BOXES

ABBREVIATIONS

ACP	Africa-Caribbean-Pacific (group of countries)
APEC	Asia-Pacific Economic Council
BPO	Business Process Outsourcing
BRICS	Brazil, Russia, India, China, South Africa
CBD	Convention on Biological Diversity
CFC	Chlorofluorocarbon (greenhouse gases)
CITES	Convention on International Trade in Endangered Species
CO2	Carbon Dioxide
CO2e	Carbon Dioxide equivalent
CTE	Committee for Trade and Environment (of the WTO)
CTE-SS	Committee for Trade and Environment – Special Session
CTS	Committee for Trade in Services (of the WTO)
CTS-SS	Committee on Trade in Services – Special Session
DDA	Doha Development Agenda (of the WTO)
EGS	Environmental Goods and Services
EPA	Environmental Project Approach
FDI	Foreign Direct Investment
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GEF	Global Environment Facility
GHG	Greenhouse gases
ICT	Information and Communications Technology
IMF	International Monetary Fund
ILP	Industrial Linkages Programme (of the WTO)
IPR	Intellectual Property Rights
IPCC	Intergovernmental Panel on Climate Change
LDC	Least-Developed Country
MDGs	Millennium Development Goals (of the UN)
MEA	Multilateral Environmental Agreement
NAFTA	North American Free Trade Agreement
NTB	Non-Tariff Barrier
OECD	Organisation for Economic Cooperation and Development
PPP	Public-Private Partnership
SCM	Subsidies and Countervailing Measures
SME	Small and Medium Enterprise
SPS	Sanitary & Phyto-Sanitary (import restriction measures)
TBT	Technical Barriers to Trade
TIP	Trade and Investment Programme (of the WWF)
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organisation
WWF	Worldwide Fund for Nature

PREFACE

Amidst the current global economic turmoil and accompanying calls for a new international economic framework, it is important to highlight the fact this report represents one outcome of a body of work that began more than a decade ago, as WWF was preparing to make inputs to the Third Ministerial Meeting of the World Trade Organisation (WTO), which took place in Seattle in the USA during November/December 2003. During these preparations, it became clear that the incremental changes to the international trade regime being discussed in the WTO were inadequate to effectively address global environmental challenges such as climate change, unsustainable economic development and rapid natural resource depletion. New measures were therefore required, both to resolve these issues and to capture the exciting opportunities that were beginning to emerge in the field of environmental goods and services as well as in innovative technologies and solutions that promoted environmental sustainability and decreased resource consumption.

Instead of focusing on the shortcomings of WTO, at that time a relatively newly created body (only four years old), and the short-term agendas promoted by governments and companies in developed economies that dominated discussion within the Organisation at the time, WWF took the decision to invest in the promotion of a far more proactive agenda, with a focus on emerging economies, and on the international trade and investment regimes required to deliver products, services and solutions that promote environmental sustainability.

The WWF Trade and Investment Programme (TIP) was accordingly created, with capacity located in and importantly, coordinated from emerging economies, in order to ensure that WWF was in a position to support the development of new ideas and the creation of new opportunities in those countries that will be amongst the most important of the 21st century.

At the same time, WWF did not completely abandon its involvement in the WTO negotiations, but instead shifted its focus from internal WTO process that in the opinion of WWF were not capable of addressing the major economic, social and environmental challenges of the day, to the area of policy development in emerging economies, particularly in the BRICS group of key emerging markets (Brazil, Russia, India, China and South Africa).

The pursuit of this proactive agenda has led to a number of significant initiatives, including a joint project with MOFCOM, the Chinese Ministry of Commerce, to explore the possibilities for export of environmentally sustainable products from China, as well as dialogues with leading academics, negotiators and policy analysts in India, research into environmentally sustainable investment in Africa, and investigations into the social and environmental responsibility practices of the most progressive companies in China, India, Russia and South Africa.

The process of engagement with emerging economies proved to be an interesting one. Initially, many government officials and trade experts from companies in OECD countries questioned this approach, since at that point, few individuals or governments in these countries gave much consideration to issues of environmental sustainability in developing nations, or to a global trade and investment agenda beyond that of the WTO and the Doha Development Agenda.

Increasingly, however, it became clear that the Doha mandate would in all likelihood prove incapable of effectively addressing the major international challenges of poverty alleviation, unsustainable consumption of natural resourses and increasing CO2 emissions, all of which have come to occupy centre stage in global discussions over the past decade.

Equally important in terms of WWF's decision to engage with emerging economies, was the fact that within the WTO, deviations from the approach that was most commonly followed in addressing the global concerns mentioned above, namely that of incremental improvements in the efficiency of environmental products and solutions, came almost exclusively from emerging nations. Furthermore, the global trading regime, including the WTO, almost totally ignored the emergence of companies in these rapidly developing economies that were in a position to develop technologies and solutions that addressed these challenges in innovative ways.

By the time of the Sixth WTO Ministerial Meeting held in Hong Kong in December 2005, a number of the initiatives undertaken by WWF in this regard had matured, and the organisation was in the position to host a side event to the Meeting, in association with MOFCOM, to discuss trade in sustainable goods and services. During the Meeting, WWF, in collaboration with representatives of the Indian delegation, also presented for the first time a demand-driven approach to the liberalisation of Environmental Goods and Services (EGS) in the WTO.

WWF's collaboration with key stakeholders in the BRICS countries has intensified over a period of several years, and this paper can be considered as one result of the organisation's efforts to support a transformative agenda that delivers concrete result from this next generation of economic superpowers. The paper is authored by Sanjay Kumar, a highly knowledgeable and experienced official of the Government of India, and during his tenure in the country's trade delegation to the WTO, one of the driving forces behind the project-based, demand-driven approach to trade liberalisation in the area of EGS.

At a time when many developed country governments continue to utilise the demand for increased environmental sustainability of products and services as a means to increase export opportunities for their companies, this project-based approach seeks to place the environmental and social requirements of the world as a whole, and of developing nations in particular, above narrow economic self-interest as a driver for liberalisation in this area.

The release of this report coincides with an ever-increasing consensus that a new global economic architecture is required, one that will prove significantly more robust than would currently appear to be the case, and one that can also promote poverty alleviation and the sustainable utilisation of natural resources. At the same time, debate is raging over whether this new architecture should be implemented through the reform of existing structures such as the Bretton Wood institutions, or through the creation of new structures. From WWF's point of view, however, this debate is of far less significance than the fact that such a structure needs to be capable of effectively addressing the most pressing issues of the day.

Instead of digging deeper into the minutiae of the debates surrounding trade liberalisation in the area of EGS, this report takes a broader view, in order to examine the basic structures that are requires to create an international framework that allows for the effective development and dissemination of environmentally sustainable products and service. Individuals who have been working in the area of trade liberalisation and the WTO might find the absence of technical details that are often discussed in the WTO Committee on Trade and the Environment (CTE), or the lack of in-depth analysis of well-known WTO decisions such as the "Shrimp-Turtle" and "Tuna-Dolphin" cases, somewhat confusing. The objective of this report is however not to delve into the technical details or history of the WTO in this area, or to attempt to resolve ongoing debates in the Organisation, but rather to place environmental sustainability at the centre of any emerging or future international trade and investment frameworks.

We trust that this report will inspire not only new initiatives in the field of trade and investment that support the innovation and dissemination of sustainable goods and services, but also the consideration of options that promote such initiatives beyond the constraints of the current institutional environment.

Dennis Pamlin, Global Policy Advisor, WWF-Sweden, and Alistair Schorn, Head, WWF Trade and Investment Programme, June 2009

EXECUTIVE SUMMARY

In many ways, 2009 will prove to be a historic year. Against the backdrop of the ongoing financial crisis, the inauguration of a new administration in the USA, the increasing global influence of emerging economies such as India and China, and the much-anticipated UNFCCC climate conference to be held in Copenhagen in December, it seems certain that the global economic and political landscape will have changed significantly by the end of the year.

At the same time, global challenges are mounting, and the window of opportunity to address these challenges is rapidly closing; the trend of rapidly accelerating urbanisation and massive increases in demand for energy, natural resources and consumer goods contrasts sharply with growing evidence regarding the scale of the climate crisis facing the planet.

As a result, never before in the history of human society, has the world been faced with such a complex challenge, namely the reduction of poverty and income inequalities, and improvement in the quality of life of over two-thirds of the world's population, while at the same time reducing the consumption of natural resources and reversing the trend of harmful greenhouse gas emissions. The achievement of these two objectives will require innovative solutions in the fields of urbanisation, energy, transport, communications and many others.

Unfortunately, however, it seems that the majority of international governance systems are particularly ill-equipped to deliver these solutions. While the concept of sustainable development has become increasingly accepted in the international political landscape, and the number of conventions, summits, treaties and sets of objectives around the subject has increased significantly over the past two to three decades, these have for the most part failed to produce the required shift from a "business-as-usual" approach to human development through economic growth and resource exploitation, to one which places a far higher degree of emphasis on reviving and maintaining the resilience of economic, social and environmental systems, in order to improve the development prospects for future generations.

This is particularly true for international economic and trade governance structures and institutions. The design of these structures and organisations appears to lend itself towards incremental changes to existing systems, rather than to the fundamental and transformational change that is required to address the challenges outlined above. In the case of the WTO, for example, the relationship of this organisation with various multilateral environmental agreements (MEAs) has been one in which the objective of trade liberalisation has in the majority of cases superseded that of environmental protection.

At the same time, the WTO's Committee on Trade and the Environment (CTE), which is responsible for promoting the liberalisation of trade in Environmental Goods and Services (EGS), has for a variety of reasons, proven largely incapable of creating a situation that both stimulates the development of the necessary technologies and innovations, and promotes the dissemination of these technologies to the countries in which they can make the most significant impact. A significant contributor to this lack of success on the part of the CTE appears to be a lack of consensus amongst WTO members (and seemingly very little likelihood that such consensus can be achieved) regarding the definition of these Environmental Goods and Services.

This situation would therefore suggest that an alternative approach is required to the promotion of trade and investment in the EGS sector. Such an approach should prioritise the achievement of environmental sustainability above that of export-led economic development, and should view international trade and investment as a means to achieving such sustainability, rather than, as is often currently the case, as an end in itself.

One possible means by which to promote such environmental sustainability is the so-called project-based approach to trade liberalisation in the EGS sector. This approach seeks to support international trade in products and services on environmental grounds based upon their inclusion in projects that hold environmental sustainability benefits, rather than upon the intrinsic environmental benefit of the products or services themselves. The value of such an approach is that it circumvents the debate regarding the definition of such products and services as environmental or not. It can also satisfy the requirement often expressed by developing countries in particular for "national policy space" which would allow countries to liberalise the importation of certain projects and services according to both the environmental benefits of these products and services, and the national economic interests of these countries, in terms of the development of domestic capacity in certain industry sectors.

In terms of the development and dissemination of environmentally beneficial technologies, it is beyond dispute that this process plays an essential role in the reduction of resource consumption and the promotion of economic growth, environmental sustainability and poverty alleviation, particularly within developing countries. The ability of these developing countries to integrate into the multilateral trading system and achieve a degree of economic growth through exports, depends to a significant degree on access to technology and technical knowledge, which in the majority of instances is not available domestically.

It is therefore essential that the development and dissemination of such technologies is encouraged and incentivised to as great a degree as possible, particularly in emerging markets, in which some domestic technology development capacity generally already exists. A revised international governance system that promotes such technology development and dissemination will allow for a departure from the historically common "linear development" model of technology transfer from developed to developing nations, and will instead promote the concept of technology collaboration and exchange between developed and developing countries. In this regard, the area of foreign direct investment (FDI) into emerging markets that possess technology capacity is key to the creation of such collaborative relationships.

In terms of the current situation regarding the development and dissemination of environmentally sustainable products and services, it is clear that the WTO and various other international governance organisations and systems, in their current incarnations and with their current spheres of activity and influence, do not allow for the effective international promotion of the EGS sector. At the same time, the ongoing global financial crisis and the accompanying calls for an overhaul of the global financial architecture (including the Bretton Woods institutions), would appear to provide a historically unique opportunity to ensure that future frameworks regulating global trade and investment flows are based on principles that support rather than undermine the concepts of sustainable development and environmental sustainability. In order to assist in the achievement of this objective, WWF would suggest the adoption of the following measures:

- A focus on the positive results to be achieved by international trade and investment, rather than the consideration of such trade and investment as an end in itself.

- Widespread support, particularly from OECD countries, for technology development in emerging markets, as well as support for a shift in focus from one-way "technology transfer" to bilateral technology exchange and multilateral technology collaboration.

- The provision of resources and assistance to developing countries, and in particular to least-developed countries, in order to promote technology assimilation, as well as the acknowledgement on the part of developed nations of the requirement by these developing countries for national policy space.

- The promotion of transparency through the introduction of reporting standards, measurements and indeces to track the performance of companies and governments in the development and implementation of sustainable goods and services, as well as of appropriate environmentally beneficial projects.

- The development of initiatives and incentive measures that target key sectors such as ICT, telecommunications, sustainable transportation, biotechnology and sustainable building design and construction, as well as the promotion of companies that develop innovative solutions to address environmental sustainability issues in these and other sectors.

- The creation of an international body capable of ensuring that trade and investment frameworks are evaluated according to their contribution to environmental sustainability, poverty reductions and other measures beyond their immediate financial and economic impact.

- The development of "triangular approaches" to trade and investment flows, that are currently relevant and capable of addressing unsustainable resource flows in the global economy.

1 INTRODUCTION

In many ways, 2009 promises to be a historic year; the global financial crisis which began in the second half of 2008 continues to destabilise the economies of the majority of countries, leading to calls for a complete overhaul of the global financial architecture, in order to shift the focus from the pursuit of financial and economic profit above any other consideration, to include consideration of issues such as poverty alleviation, climate change and reduced consumption of natural resources, particularly those of a non-renewable nature.

At the same time, the inauguration of a new administration in the USA looks likely to lead to significant changes in the foreign and domestic policies of the current world superpower, while the influence of emerging powers such as China and India continues to grow, in spite of the turmoil that threatens the global economy. Finally, at the end of the year, the members of the United Nations Framework Convention on Climate Change (UNFCCC) will gather in Copenhagen, Denmark, to negotiate a global climate deal that will replace the Kyoto Protocol with effect from 2012.

From a human development perspective, 2008 marked the first year in human history in which more people lived in cities than in rural areas. Over the coming decades, virtually all of the population growth in the world, estimated to be more than two billion people, will take place in urban environments. In two decades, the urban population will have increased by more than one-third of the entire current global population.[1]

As a result, global energy demand and natural resource consumption is set to increase rapidly, with energy demand expected to increase by more than 50 percent during this period, should current trends continue.[2] The majority of this growth in demand will take place in emerging economies, where per capita consumption of natural resources is generally very low.

At the same time, the growing urgency of the climate crisis requires a dramatic reduction of resource use and CO2 emissions. According to science, humanity must reverse a more than 150-year-old trend of close to exponential growth in global CO2 emissions, in order to avoid a climate catastrophe. The window of opportunity to achieve this is less than a decade.[3, 4]

Never before in the history of human society, has the world been faced with such a challenge, namely the reduction of poverty and income inequalities, and improvement in the quality of life of over two-thirds of the world's population, while at the same time reducing the consumption of natural resources and reversing the trend of harmful greenhouse gas emissions. Clearly, the achievement of these two objectives will require innovative solutions in the fields of urbanisation, energy, transport communications and many others.

Equally clear is the fact that in addressing these challenges, lie significant opportunities for profit by innovative companies and countries. Even without considering the requirement to shift to environmentally sustainable forms of energy generation, it is estimated that future energy infrastructure investment will exceed US$20 trillion between 2005 and 2030. Consideration of low-carbon solutions, including those for construction and transportation infrastructure, mean that this figure must be increased exponentially.[5]

1. http://www.un.org/esa/population/publications/wpp2004/wpp2004_volume3.htm
2. http://www.iea.org/textbase/nppdf/free/2006/key2006.pdf
3. http://environment.guardian.co.uk/climatechange/story/0,,2073006,00.htm
4. IPCC, fourth assessment report, climate change 2007: synthesis report, p. 18
5. http://www.strategy-business.com/resiliencereport/resilience/rr00045?pg=0

In terms of the potential financial resources to fund such a transition, traditional financial markets in developed countries will need to play an important role, but at the same time, other potential sources of funding should not be ignored. China's trade surplus surged to a record level of US$262.2 billion in 2007, while sharp increases in commodity prices, in particular oil, created increased revenue streams for those countries that possess these resources. It is imperative that these revenue streams be directed into investments that result in environmentally sustainable, low-carbon economic growth.

As discussed, increasing urbanisation, and the methods by which urban development takes place, will be of key importance in driving future technology development and institutional innovation. This is particularly true in rapidly emerging (and rapidly urbanising) economies such as China and India, and the manner in which these two countries in particular adopt new urban solutions, will in all likelihood prove to be a key driver of this technology development, not only within the two countries, but also on a global scale.

In 1995, the world was home to 14 megacities (defined as a city with more than ten million inhabitants), but by 2015, this number is expected to increase to 21.[6] This urban explosion is set to massively increase demand in the critical areas identified above, including construction, energy, transportation, communications and many others. It is therefore critical that these demands are met in ways that do not increase the consumption of natural resources beyond the capacity of the planet to supply these resources, or to deal with the effects of their consumption.

In many cases, the technologies that are required to achieve such "resource-extensive" (as opposed to resource-intensive) and environmentally sustainable demand growth already exist. However, the application of these technologies, particularly in developing countries in which they can provide the highest level of impact, is often hampered by a variety of factors, including historic investment in unsustainable infrastructure, vested economic interests, and market-distorting mechanisms such as subsidies, tariffs and non-tariff barriers.

A key factor in removing the barriers to the dissemination of environmentally-friendly, low carbon technology solutions, is the existence of a strong and robust global framework that can successfully guide trade and investment flows in a sustainable direction. In the absence of such a framework, however, it is likely that these technologies will remain islands in a sea of unsustainably.

Objective

The objective of this paper is to explore the possibilities for the creation of an international framework that promotes trade and investment in sustainable goods and services. The assumption behind the development of such a framework is that a requirement exists for development-related projects that enhance economic growth and improve quality of life, particularly in the developing world, while at the same time contributing to the preservation of the environment and the reduction of natural resource consumption.

The paper further assumes that a radical revision is required in the current global multilateral systems governing trade, investment and technology transfer, in order to address the challenges facing the human race in the remainder of the 21st century and beyond. Prior to the second half of 2008, the majority of international discussions focused primarily on the possibilities for revision of these international systems through the mechanism of the WTO. At present, however, the global financial crisis has, as mentioned, provided an opportunity for a robust discussion of the interventions that are required to address global

6. www.foreignpolicy.com/story/cms.php?story_id=3504

challenges, as well as a consideration of alternative frameworks through which these desired results can possibly be achieved.

The primary focus is on international trade as a driver for investment in and application of environmentally sustainable technologies. This can occur in the form of both import and export of these technologies, both of which are vital as countries interact in an increasingly interdependent economy.

The approach and recommendations contained in this paper have in part been triggered by the current lack of progress in the Doha Round of WTO negotiations, in terms of the seeming lack of urgency regarding the definition of environmental goods and services, and a prevailing attitude which seems to value trade liberalisation as an end in itself, rather than as a means to achieve economic growth, employment creation and human development. The paper is therefore designed to provide inputs into both the WTO negotiations and into various bilateral and multilateral negotiations taking place around the globe, as well as contributing to a broader discussion regarding global issues around the trade, investment and technology transfer in environmentally sustainable products and services. Special attention is given to emerging economies such as China and India, as well as to the requirements of least-developed countries (LDCs) within a revised international trade framework.

2. THE CONTEXT: SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL SUSTAINABILITY

Over the past two decades, much international attention has been focused on the subject of sustainable development. Various international conferences have attempted to define the concept and promote its application in economic development policies and strategies.

The first such event to succeed in attracting the attention and attendance of a significant number of world leaders, was the Stockholm Conference on the Human Environment, held in 1972. This proved to be something of a watershed in this context, since it placed, possibly for the first time, development and environmental issues firmly in the international spotlight, and also underlined the relevance of scientific and technological development for economic growth.

In 1987, the Report of the World Commission on Environment and Development (known as the Brundtland Commission) brought the concept of sustainable development further into the mainstream, and defined sustainable development as *"development that meets the needs of the present without compromising the ability of future generations to meet their needs".*

The Agenda 21 document, agreed at the United Nations (UN) Earth Summit held in Rio de Janeiro, Brazil in 1992, provided another such effort to put into practice the concept of sustainable development.

The UN Millennium Summit in 2000, which resulted in Millennium Development Goals (MDGs), was another such attempt to provide practical indicators and benchmarks for countries' progress towards the objective of sustainable development. These MDGs are a series of eight goals, to be achieved by 2015, which aim to address issues such as poverty and hunger, education, gender equality, child mortality, health, and environmental sustainability. These goals are contained in the Millennium Declaration, which was adopted by 189 countries during the Summit.

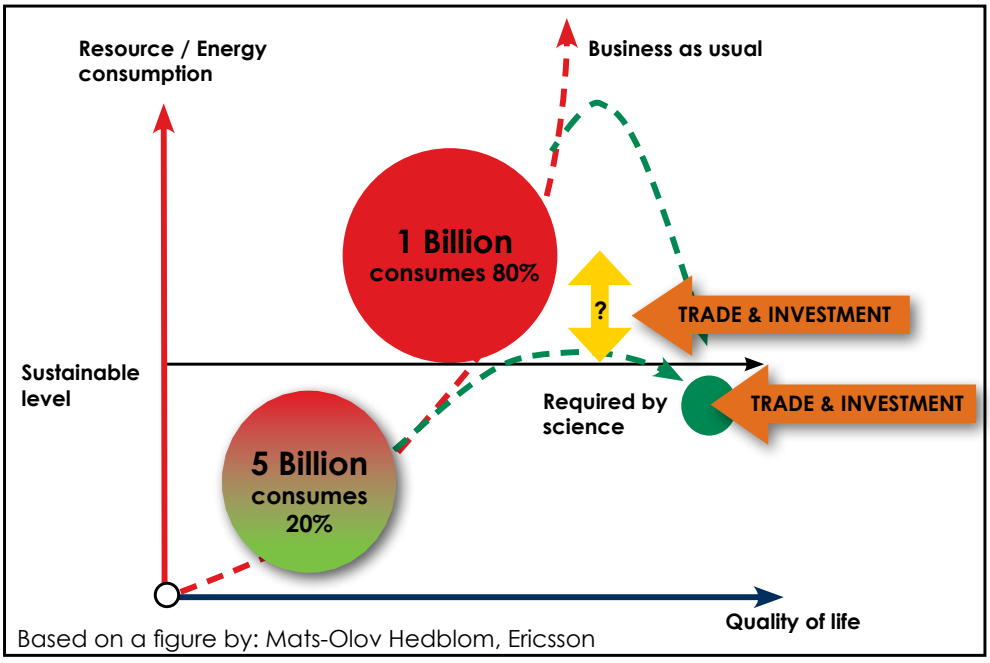

Figure 1: Resource consumption inequality

In spite of these various international conferences, reports and declarations, however, it would appear that human development has continued to occur in a particularly asymmetrical fashion, while at the same time, environmental destruction has continued virtually unabated.

This situation is expressed by the accompanying illustrations. Figure 1 provides an illustration of the global inequality in resource and energy consumption, while Figure 2 shows the WWF Living Planet Index, as well as humanity's ecological footprint, which illustrates the steady increase in human consumption of natural resources, as well as the declining biocapacity of the earth to sustain this consumption.

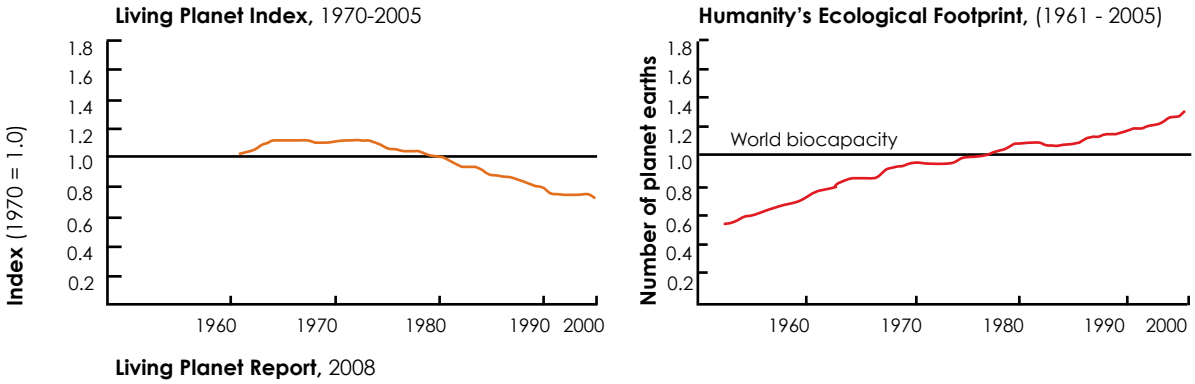

Figure 2: Living beyond our means - WWF's Living Planet Index and Humanity's Ecological Footprint

This situation of "ecological debt" in which the world's population is currently operating, is clearly evidenced in a number of ecological trends in the natural world, including biodiversity loss, habitat loss and species extinction, declining agriculture yields, and changes in rainfall and other meteorological parameters, to name but a few. In this regard, the issue of climate change is perhaps the most pressing crisis facing humanity in the first half of the 21st century. The potential impacts of unmitigated climate change include significant sea level rises, major changes in global weather patterns, including extreme weather events such as droughts, floods and tropical storms, and accompanying shifts in agriculture patterns.

Evidence presented by the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), suggests that the link between human industrial activity, primarily in the form of burning fossil fuels, and increases in global temperatures has been established to a degree of certainty exceeding 90%, while the primary cause of this temperature increase has been identified as increased levels of greenhouse gases (primarily carbon dioxide), also to a certainty of more than 90%.

The level of greenhouse gases present in the atmosphere is currently estimated at the equivalent of 430 parts per million (ppm) of CO2, compared with an estimated level of only 80 ppm prior to the start of the Industrial Revolution. These concentrations have already caused the world to warm by more than half a degree Celsius and will in all likelihood lead to at least a further half degree warming over the next several decades. Even if annual global emissions are stabilised at current levels, it is likely that the stock of greenhouse gases in the atmosphere will increase to 550ppm of CO2 equivalent (CO2e), and will continue growing thereafter. At this level there is at least a 77% chance – and perhaps up to a 99% chance, depending on the climate model used – of a global average temperature rise exceeding 2°Celsius, the threshold value at which the effects of this temperature increase are assumed to hold major negative implications for the planet and human society.[7]

The ongoing environmental degradation of the Earth, as described above, is already extracting significant economic and financial costs, and this trend is expected to increase as the impacts of climate change become more pronounced. In the past decade, natural disasters have cost the world over US$ 608 billion – as much as in the previous four decades together.[8]

In spite of the evidence of environmental degradation (and associated economic cost) as described above, it would appear that traditional views of development, including those expressed by the MDGs and other similar measures, continue to be framed in terms of increased resource consumption in the pursuit of economic growth, rather than in the context of reduced resource consumption and a reversal of this trend of environmental degradation. Furthermore, this pursuit of human development through exploitation of natural resources has in many developing and least-developed countries resulted in a "vicious circle", as the populations of these countries increasingly deplete their natural resources in an attempt to increase their living standards. As a result, despite impressive progress in countries such as China during the last two decades, human development issues such as health, starvation, poverty, and inequality have worsened in many parts of the world.[9] In terms of environmental parameters, according to the United Nations, 1.2 billion people lack access to clean water, and hundreds of millions breathe unhealthy air.

Returning to the definition of sustainable development provided by the Brundtland Commission, namely "*development that meets the needs of the present without compromising the ability of future generations to meet their needs*", it is increasingly clear, from our understanding of issues such as climate change and decreasing global biocapacity, that current development pathways present a definite threat to the abilities of future generations to address their developmental needs. As a result, in spite of the best efforts of international organisations, including the UN and various international development agencies, it would appear that ongoing human development is in fact not particularly sustainable.

This scenario would seem to suggest the need for a fundamental review of the context in which such human development takes place, with a shift in emphasis from sustained economic growth based on resource exploitation as a driver for such development, to an approach that seeks to achieve the required levels of human development through the preservation (and ultimately improvement) of the planet's capacity to support life. This might also be expressed as a shift in emphasis from "sustainable development" to "environmental sustainability".

7. Stern Review; *The Economics of Climate Change.*
8. Munasinghe, Mohan; *Making Development More Sustainable: Sustainomics Framework and Practical Application*; MIND Press, 2007.
9. Speth, James, 2007.

Such a shift implies a fundamental transition from a "business-as-usual" approach to human development through economic growth and resource exploitation, to one which places a far higher degree of emphasis on reviving and maintaining the resilience of economic, social and environmental systems, in order to improve the development prospects for future generations. It is vital to realise that this involves not only stopping and ultimately reversing the current development trend, but rather fundamentally shifting its direction, to become a *"trans-disciplinary, integrative, comprehensive, balanced, heuristic and practical"* framework for making development more sustainable. [10]

Such a framework will by its very nature require significant innovation and investment in science and technology, in order to develop new industries and new opportunities for economic growth and human development, particularly in developing and least-developed countries. It will also require a significant narrowing of the technology divide between developed and developing nations, allowing developing economies the opportunity to avoid the unsustainable development pathways that have characterised developed countries in the past, and from which they are currently attempting to escape.

Apart from technology dissemination from developed to developing nations, the shift in approach to development as described above, provides significant opportunities for innovation and technology development by developing nations, particularly rapidly emerging economies such as Brazil, China and India.

In order to ensure access by developing nations to appropriate technologies, as well as to wherever possible encourage the development by these nations of appropriate solutions, it is vital that an appropriate international legal and institutional framework exists. Such a framework should allow these developing nations the opportunity to, and in fact actively assist them in, fundamentally shifting their economic and human development paths from ones that are unsustainable, to ones that allow for improvements in environmental sustainability while at the same time achieving development objectives such as those contained in the MDGs.

Such an international legal and institutional framework will need to comprise regulations regarding a wide range of issues, including standards of various types, trade liberalisation and intellectual property rights, if it is to achieve the objective of being *"trans-disciplinary, integrative, comprehensive, balanced, heuristic and practical"* as described above. It should be targeted equally at the achievement of economic, social and environmental gains, and at the same time promote technological innovation. It is furthermore vital that the various elements of this system remain highly integrated, so as to allow for the creation of future capacity in all stakeholders, as illustrated below.[11]

10. Munasinghe, supra.
11. Munasinghe, supra.

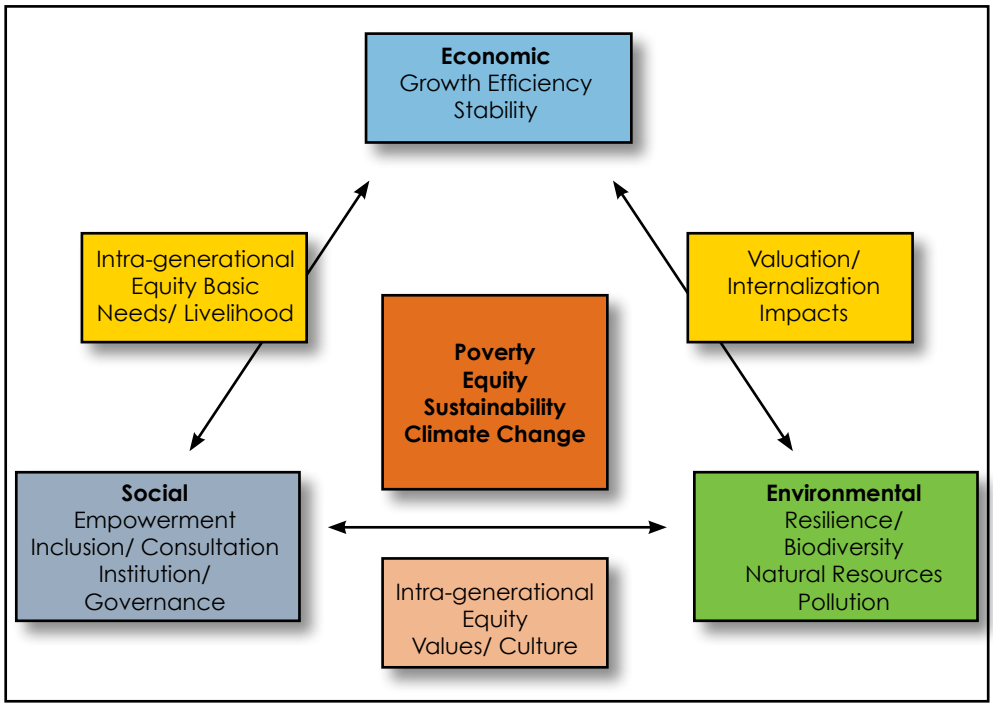

Figure 3: An institutional framework for economic, social and environmental sustainability

3. A GLOBAL FRAMEWORK FOR RESOURCE EFFICIENCY

Current Institutional Frameworks

Given the requirement for a revised global framework that is capable of delivering economic growth and human development while promoting resource efficiency and at the same time ensuring environmental sustainability (as discussed in Chapter 2), it is necessary to investigate the global frameworks that currently exist to promote each of these objectives, sometimes individually and sometimes across two or more of these objectives.

The majority of institutions that make up the current system of international economic, social and environmental governance trace their roots back to the aftermath of the Second World War. In this period, the international community (comprised chiefly of the victorious Allied powers – namely the USA, Russia, Great Britain and various influential members of the British Commonwealth) created a number of multilateral agencies aimed at governing political and economic relations between nations. These agencies included the United Nations, with its Security Council and various specialised agencies, the so-called Bretton Woods institutions – namely the World Bank and the International Monetary Fund (IMF), and the General Agreement on Tariffs and Trade (GATT).

These institutions set about creating a model of global governance that, apart from a few amendments and additions, none of which has proven to be of major consequence, is presently still in existence. At the same time, these institutions developed unique international characteristics, with each one focusing on a particular area of activity.

In the broadest possible terms, the United Nations, along with its various agencies, has since its inception remained responsible primarily for the political relations between countries, as well as for issues relating to human development. Its responsibilities include amongst others conflict resolution, alleviation of starvation and poverty, health care and access to basic amenities such as clean water and sanitation. As mentioned in the previous chapter, the UN's sustainable development objectives are currently expressed primarily through the Millennium Development Goals.

Within the economic sphere, the General Agreement on Tariffs and Trade (GATT) was created with the aim of liberalising and regulating trade between nations in an era, immediately following the end of World War Two, in which international trade was highly distorted, both by the widespread destruction of industrial capacity as a result of the war, and by highly protectionist policies implemented by governments in an attempt to protect their domestic economies from foreign competition. Over the next forty years, the members of the GATT negotiated reductions in global tariffs through a series of negotiation rounds, culminating in the Uruguay Round, which ended in 1996, and which mandated the creation of a new global agency to regulate international trade, namely the World Trade Organisation (WTO).

The WTO was created in 1995 by the Marrakech Agreement (signed the previous year), with the primary objective of promoting international trade through the reduction of tariffs and the elimination of non-tariff barriers and other impediments to trade, by means of a transparent and non-discriminatory multilateral trade negotiation system, including a mechanism for dispute settlement between member nations. At the same time, the WTO also recognises the objective of sustainable development, with the Preamble of the Agreement stating that trade should be conducted in a manner that allows for the *"optimal use of the world's resources in accordance with the objectives of sustainable development"*.[12]

12. Marrakech Agreement establishing the WTO, 1995.

Following the end of the era of European colonialism in Africa, Asia and South America in particular, and the creation of a significant number of new nations in these regions, the world has experienced the rise of various factional groupings representing the interests of countries on either a regional or developmental basis. The best-known examples of such groupings include the G8 group of industrialised economies, the G77 group of developing and least-developed nations, and the ACP (Africa-Caribbean-Pacific) group, also comprised primarily of developing and least-developed nations.

A primary motivation for the creation of these groups over the past two decades, has been the inability of global economic institutions to successfully implement a fair and equitable international trade system, and similarly the inability of both the WTO and the Bretton Woods institutions (including the UN) to successfully implement the principles of sustainable development in their activities, or to close the development gap between developed and developing nations.

In an attempt to address these issues of equity and development in the international trade system, the WTO in 2001 instituted the Doha Development Agenda (DDA), also known as the Doha Round of WTO negotiations. The areas of primary focus in the Doha Agenda include agricultural and non-agricultural market access, intellectual property rights, and WTO rules relating to various issues such as subsidies, regional trade agreements, investment, services and the environment. The equity and developmental aspects of the Doha Round are encapsulated in the principle of "special and differential treatment" which is a departure from the GATT principle of equal treatment for all countries in trade negotiations (the so-called "most-favoured nation" principle), and which provides for more favourable trading conditions for developing and least-developed countries.

Since its inception in 2001, however, the DDA has achieved very little progress towards the creation of a fair and equitable multilateral trade deal, primarily due to an inability on the part of developed economies on the one hand, and developing and least-developed nations on the other, to reach an agreement regarding market access for agricultural products (from developing into developed countries) and non-agricultural manufactured products (from developed to developing nations). This situation has further reinforced the ideological divide between developed and developing nations, and has also led to the creation of a host of regional and bilateral trade agreements, as countries seek to liberalise their international trade relationships and gain market access for the products in which they hold competitive advantages.

In terms of the sustainable development objectives of the DDA, there is no doubt that this fragmentation of the multilateral trade governance regime has served to undermine global efforts to create an international framework capable of addressing the challenges of sustainable development, as well as negatively impacting on the efficient distribution of resources that is required to address these challenges.

Multilateral Environmental Agreements (MEAs)

Apart from the international trade and development governance institutions as described above, a number of international environmental agreements and organisations have also come into existence, all of which are aimed primarily at protecting the environment, but also at achieving a balance between economic, social and environmental considerations in the relations between countries.
As mentioned above, the relationships between economic growth, international

trade, cross-border investment, social development and the environment have over the past several decades become increasingly important. Concerns regarding the impact of increased trade and economic development on both social development and the environment first surfaced in the late 1960s, and the 1972 Stockholm Conference on the Human Environment represented the first significant international attempt to address these challenges. During the 1970s and 80s, the environmental movement continued to gain strength in in many industrialised countries, becoming an important political lobby, while environmental issues became an increasingly relevant political platform.

The 1992 Earth Summit in Rio added further momentum to this movement, and attempted to integrate economic growth, human development and environmental protection through the concept of sustainable development. As a result, many national governments adopted this principle of sustainable development as the underlying credo of their economic development strategies.

In addition, the Earth Summit resulted in the creation of a number of landmark environmental agreements, including the UN Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD). Following the Summit, a number of other environmental agreements were also concluded, such as the Montreal Protocol banning the use of chemical substances that deplete the Earth's ozone layer, and the Kyoto Protocol on greenhouse gas emissions.

While these agreements, as well as the WTO Agreement, all share a basic objective of sustainable development, they are at the same time functionally independent, each with a specific set of objectives and priorities, a specific constituency, an individual set of technical terminology, a specific organisational structure and a particular specialised focus.[13] While such a group of dedicated institutions and agreements may have been appropriate in the past, it would appear that in the current environment, a far more integrated and coordinated global framework is required to adequately address the interconnected global challenges of economic and human development, resource consumption, climate change and environmental sustainability, to name but a few.

13. Boughton, James B. and Bradford, Colin; *Global Governance*: *New Players, New Rules – Why the 20th Century model needs a makeover*; Finance and Development, IMF, Dec 2007.

4. THE WTO AND THE ENVIRONMENT

The Relationship between the WTO and Multilateral Environmental Agreements

Trade and investment have long been recognised as crucial instruments for promoting economic growth within countries, particularly because they allow opportunities for specialisation according to the competitive advantages and resource endowments of each country, as well as providing access to imported raw materials, finished products, services, labour, capital, information and ideas. Over the past two centuries, however, these instruments of economic growth have on many occasions been distorted according to competing national interests, and as a result have failed to realise the maximum benefits for all countries. The primary objective of the WTO is therefore to eliminate these distortions, and to create an international trading system based upon stability and predictability, tariff reductions and an effective dispute settlement mechanism.

In terms of the environment, the 1994 Marrakech Ministerial Decision that created the WTO also mandated the creation of a Committee on Trade and Environment (CTE) within the Organisation, a primary objective of which was to address the relationship between the provisions of the multilateral trading system on the one hand, and MEAs on the other. This Committee was designed to fulfil the vision of the Agenda 21 document adopted at the Rio Earth Summit, that international trade and environmental laws should be mutually supportive. It was therefore stated in the Ministerial Decision that the aim of the CTE would be to make *"international trade and environmental policies mutually supportive."*

As mentioned, however, the WTO has not been particularly successful in creating an effective and liberalised international trade regime that is at the same time capable of addressing the twin challenges of human development and environmental protection. This remains the status quo, as evidenced by the long-running deadlock in the Doha Round of WTO negotiations.

In terms of the WTO approach to sustainable development, although as mentioned above, this principle is recognised as an objective of the WTO, it would appear that a significant gulf exists between the approaches of developed and developing country members to its practical implementation. From the perspective of developed nations, sustainable development would appear to involve a focus on liberalisation of trade in environmental goods and services that provide incremental improvements to existing industrial solutions (which are primarily produced by these developed economies), as well as improvements in environmental and/or labour standards, particularly in their developing country trading partners. Developing nations, on the other hand, would appear to see the possibilities for a focus on sustainable development to lead to increased access to technology, and therefore to improvements in efficiency and resource utilisation. At the same time, these developing nations have expressed the concern that increased environmental or technology standards could be abused by their developed nation trading partners as a form of non-tariff barrier.

In contrast to the WTO, MEAs are designed to provide the mechanisms by which nations can share access to global environmental resources such as the atmosphere and oceans, as well as to commit nations to assume responsibility for the protection and appropriate utilisation of these resources. The rights and responsibilities associated with these agreements are equally applicable to nations in their international trade and investment activities as in their domestic practices.

In many instances, it can be argued that environmental damage resulting from such international activities in particular can be ascribed to various types of market failures, such as instances in which long-term environmental costs are not included in the costs of international transactions. The international trade in mineral resources provides probably the most common examples of such transactions, particularly in the case of fossil fuels, which of course have

a massive environmental impact in terms of climate change. In fact, climate change has been dubbed "the largest market failure in history".[14] In this regard, the issues of inter-generational consumption and equity, as included in the Rio Earth Summit Declaration, are of particular relevance.

The majority of existing MEAs contain a mix of regulatory and economic instruments, which can range from reporting requirements to bans on exports and imports of certain products, such as in the case of CITES, the Convention on International Trade in Endangered Species.[15] As mentioned, however, many developing countries fear that the use of trade measures to achieve environmental objectives holds the potential to create non-tariff barriers, and as a result, compliance with such trade measures is often resisted by these countries.

In relation to international trade, the objectives of MEAs would appear to be primarily related to the innovation and dissemination of appropriate technologies. Once again, the provisions of these agreements in relation to the achievement of this objective are in some instances rather general, and in others particularly specific, as in the case of the UNFCCC, the Montreal Protocol and the CBD.

With the possible exception of the CBD, it would appear that the majority of provisions contained in MEAs regarding transfer of technology, are linked primarily to the political and economic interests of developed countries. In certain instances, the developed world appears to be seeking collaboration and concessions from developing nations in addressing global environmental issues, which have of course for the most part been brought about by environmentally unsustainable practices in these same developed countries. This situation has to some degree strengthened the bargaining position of developing countries and provided them an opportunity to enforce specific demands in the area of transfer of environmentally sustainable technologies within certain MEAs, by making the implementation of obligations by developing countries dependent upon the effective implementation by developed countries of provisions regarding financial cooperation and technology transfer.[16]

In spite of such provisions and the apparent bargaining power of developing nations, however, it would appear that MEAs have not proven particularly effective in bringing about the required dissemination of technologies appropriate to addressing environmental issues. This may be ascribed to several factors, including the fact that in the majority of instances, technology is embodied in capital equipment, and its transfer therefore takes place primarily through either international trade or foreign direct investment (FDI). While a number of MEAs are supportive of these types of transfers, the fact remains that many trans-national corporations retain control of both the equity and the intellectual property rights associated with their investments in developing nations, resulting in limited dissemination of the appropriate technologies. The same can unfortunately be said for technologies developed through public funding, for example through national research institutes or educational institutions.

From the above, it would appear that there exists an urgent requirement for appropriate funding mechanisms that can facilitate the dissemination of environmentally beneficial technologies, particularly to developing nations. In this regard, Public-Private Partnerships (PPPs) could prove to be of considerable value, as could the creation of technology development funds within the framework of appropriate MEAs. A pertinent example in this regard is the Global Environment Facility (GEF), a partnership of 178 countries, international institutions, NGOs, and private sector companies, which provides grant funding to developing countries for projects that address global environmental issues while supporting national sustainable development initiatives.[17]

14. Stern Review; *The Economics of Climate Change*
15. Hoffmann, Ulrich (2002); *Clear and Effective Trade Measures in Multilateral Environmental Agreements and Their Compatibility with the Rules of the Multilateral Trading System*; paper presented at the UNEP-UNCTAD CBTF Workshop on Post-Doha Negotiating Issues on Trade and Environment in Paragraph 31, Singapore.
16. Art. 5.5 of Montreal Protocol; Art. 20.4 of CBD; and Art. 4.7 of UNFCCC.
17. www.gefweb.org

In this context, it should also be noted that unless the interface between international trade and environmental issues departs from its historically conflictual basis, it will remain particularly problematic to address the global challenge of sustainable development and promote reduced consumption of natural resources.[18] This therefore reinforces the importance of developing a global legal and institutional framework that is integrated and holistic in both content and vision.

The Conflict between Trade and Environment

The conflictual nature of the trade-environment interface mentioned above, can be seen primarily as a result of the existence of externalities, which in this context can be described as those consequences of economic decisions that are not mediated through the marketplace. This exclusion of certain factors relating to international trade (and investment), primarily in the form of the true or full costs attached to such trade, is most often apparent in the area of the environment, in cases where the environmental impacts associated with such trade, or with related activities such as resource extraction or manufacturing, are not calculated in financial terms and are also not included in the final costs of the particular products or services being traded. Such an exclusion of the environmental impacts of international trade could, and very often does, result in the exploitation of natural resources in ways and at scales that result in significant environmental damage.

Over the past several decades, a number of trade disputes of this nature have arisen between countries, usually in instances where one country attempts to restrict the access of another county to its domestic market on the basis of an environmental concern. The most famous such dispute was the so-called "Tuna-Dolphin" case between Mexico and the USA, in which the USA attempted to ban the importation of tuna from Mexico, on the basis that the capture of this tuna did not comply with the measures implemented in the USA to prevent bycatch of dolphins in tuna fishing activities.[19] Mexico's protest at this embargo was heard by the dispute settlement panel of the GATT, marking the beginning of the modern institutional trade-environment debate.

Despite the fact that the issue of the environment did not feature prominently during the Uruguay Round of GATT negotiations, as mentioned above, the Marrakech Agreement establishing the WTO did make mention of the objective of making *"...optimal use of the world's resources in accordance with the objective of sustainable development..."*. This phrase has proven significant in a number of environmentally-related trade disputes that have been brought before the WTO's Dispute Settlement Body and Appellate Body. Although these bodies have over the course of a number of such disputes ruled both for and against trade restrictions on environmental grounds, it would appear that as a rule, WTO members are under certain circumstances entitled to utilise trade measures to pursue environmental objectives (provided of course these measures are applied

18. Gray, Kevin R; *Accommodating MEAs in Trade Agreements*, 2004
19. The first case was brought before the GATT by Mexico, which argued against a United States (U.S.) law imposed in 1990 that prohibited tuna imports from countries lacking appropriate dolphin conservation programs. Mexico believed that the U.S. legislation violated its GATT rights by prescribing extraterritorially how it should catch its exported tuna. The U.S. defended its action on the grounds that its neighbour was taking insufficient measures to prevent the accidental capture of dolphins by its tuna fishers. The GATT panel ruled in 1991 that the U.S. could not suspend Mexico's trading rights by prescribing unilaterally the process and production methods (PPMs) by which that country harvested tuna. The U.S. eventually lifted its embargo following an extensive domestic "dolphin safe" labeling campaign and negotiations with Mexico. A subsequent case brought against the U.S. tuna embargo by the European Union (EU) on behalf of the Netherlands Antilles in 1992 found that the U.S. dolphin conservation policy was GATT-consistent and could be applied extraterritorially. However, it broadly upheld the first panel decision by ruling that the actual measure used (i.e., the tuna embargo) was neither "necessary" (along the lines of Article XX), nor GATT-consistent. The Tuna-Dolphin cases brought into sharp focus how differing environmental norms between developed and developing countries could prove a source for conflict. (Excerpted from *Trade and Environment Handbook*, IISD, 2007)

within the rules of the WTO). In the so-called "Shrimp-Turtle" case of 1998, the Appellate Body interpreted the above phrase as implying that *"the signatories to the Agreement were, in 1994, fully aware of the importance and legitimacy of environmental protection as a goal of national and international policy".*[20]

Furthermore, the WTO has in certain instances utilised MEAs to determine the legitimacy of trade restrictions imposed by some of its members, in other words using non-trade law to interpret and apply trade law obligations,[21] as in the case of imports of salmon and herring into Canada.[22]

The net result of these cases was both to propel environmental issues into the mainstream of the WTO negotiating agenda, and also to promote the use of MEAs as the preferred mechanism for addressing global environmental issues until clarity on these issues can be reached within the framework of the WTO. This has in turn resulted in a sharp increase in the number of MEAs being concluded between countries.

Of the approximately 200 MEAs in existence worldwide, nearly thirty contain trade measures as options with which to achieve their goals.[23] Although these trade-related environmental measures are intended to regulate environmental policy, they can also affect international trade, in terms of the restrictions and economic incentives they put in place in order promote certain environmental objectives. From a WTO perspective, of course, there exists no mechanism for ensuring that such trade measures contained in these MEAs are in compliance with WTO rules.

In the above context, it is interesting to note that in contrast to the several MEAs that contain provisions dealing with trade, international trade agreements rarely addressed environmental matters; a notable exception in this regard is the North American Free Trade Agreement (NAFTA) which contains a number of parallel environmental agreements aimed at raising environmental standards and creating a dispute settlement mechanism to address failures by members to enforce environmental laws or regulations. This would seem to suggest that while it is not necessary to protect the environment to facilitate trade, it is often necessary to regulate trade to protect the environment.

In this regard, it appeared that some tangible progress would be made in developing a mutually supportive international trade and environment policy framework when in 2001, the Doha Ministerial Declaration mandated the negotiation of *"the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services with a view to enhancing the mutual supportiveness of trade and environment".*[24] The intention of this phrase would appear to be the achievement of gains from trade through improvement in environmental standards, in order to create "win-win"[25] situations, which would in turn bring about economic benefits (through the promotion of production efficiencies and greater access to consumption products at lower prices), developmental benefits (by addressing basic human needs in terms of the Millennium Development Goals) and environmental benefits (by promoting sustainable modes of production and consumption).[26]

20. WT/DS/58/Appellate Body/R, 12 October 1998: United States – Import Prohibition of Certain Shrimp and Shrimp Products: Report of the Appellate Body, Para 153.
21. Howard Mann, Stephen Porter; *The State of Trade and Environment Law - 2003: Implications for Doha and Beyond*; International Institute for Sustainable Development & Center for International Environmental Law, September 2003.
22. WT/DS18/R, 12 June 1998.
23. Trade and Environment Handbook, IISD, 2007.
24. Para 31(iii) of the WTO Ministerial Declaration at Doha, 2001.
25. The 1996 Report of the WTO Committee on Trade and Environment (CTE) acknowledges that "an open, equitable and nondiscriminatory multilateral trading system and environmental protection are essential to promote sustainable development and that there is a close linkage between poverty and environmental degradation".
26. India's submission to WTO, TN/TE/W/51.

It would appear, however, that the negotiation of trade liberalisation in environmental products has to a large degree been subject to the deadlock between developed and developing nations regarding market access for manufactured products (primarily from developed to developing nations).

Non-Tariff Barriers

Apart from reductions in import duties, the Doha Ministerial Declaration mandates Member countries to negotiate the reduction or, as appropriate, elimination of non-tariff barriers (NTBs), including those applicable to environmental goods and services. It would appear, however, that as is the case for tariff negotiations around agricultural and manufactured products in the Doha Round, very little progress has been made on this front over the past several years. In fact, average tariff levels on environmental products have consistently declined, primarily as a result of bilateral agreements and unilateral actions by WTO members, to the point where the trade-weighted average tariff rates applied to EGS products in 2003 was less than 2 percent.[27]

As a result, it would appear that NTBs are in fact the primary barrier to trade in EGS, and that with the steady decline of tariff rates, the application of various such NTBs has increased significantly. [28]

It would further appear that these NTBs are applied somewhat differently in trade in EGS products between developing and developed countries, versus trade between developing nations. [29] In trade with developed country partners, the NTBs experienced by developing nation exporters are predominantly in the form of technical barriers to trade (TBT) and sanitary & phyto-sanitary (SPS) measures, with trade facilitation issues – relating to customs and administrative procedures, being rather less predominant.[30] By contrast, trade between developing nations is often subject to NTBs related to customs and administrative procedures and customs charges.

In addition to the NTBs described above, trade is often limited by measures such as local content requirements, aid-related trade measures, trade balancing requirements, and of course environmental barriers.

A particularly important factor in terms of the impact of NTBs, concerns the capacity of developing nations to comply with international norms relating to for example, SPS and TBT measures. In this regard, developed countries often focus on the application of international standards, with very little consideration of the ability of their developing nation trading partners to implement these standards. This in turn leads to accusations on the part of developing countries of abuse of NTBs for protectionist purposes,[31] thereby leading to trade disputes and further widening the gulf between developed and developing nations.

27. Ulrich Hoffmann; *The Reality of Trade in Environmental Goods*; ICTSD Asia Regional Dialogue on Environmental Goods and Services, 2006.
28. Rokiah Alavi; *An Overview of Key Markets, Tariffs and Non-tariff Measures on Asian Exports of Environmental Goods*; ICTSD, 2006.
29. B Fliess and I. Lejarraga; *Analysis of Non-Tariff Barriers of Concern to Developing Countries*; OECD Trade Policy Working Paper, No.16, 2005.
30. WT/CTE/ETB/3, WTO Environmental Database for 2003. In 2003, out of the 2516 notifications submitted, 247 were environment-related, representing 9.8 percent of the total. When compared with the average figures for the period 1997-2003 (221 notifications and 11 percent), this represents a small increase in number, but a slight decrease in proportion. In 2003, amongst the agreements, the TBT and SPS Agreements had the highest number of environment-related notifications (100 and 51 percent respectively), accounting for 40.5percent and 20.6 percent of all WTO environment-related notifications. However, in terms of the share of such notifications in selected Agreements, the most common environment-related notifications were submitted under the Agreements relating to ILP, SCM and Agriculture. These represented 32 percent, 24 percent and 20 percent of the total notifications made under the respectively Agreements.
31. Michelle Egan; *Bandwagon or Barriers – The Role of Standards*; University of Pittsburgh, 1997.

5. APPROACHES TO LIBERALISING TRADE IN EGS

The Definition of EGS

One of the major stumbling blocks to negotiating the liberalisation of trade in EGS, as per the mandate of Paragraph 31 (iii) of the Doha Ministerial Declaration, is the lack of a widely accepted definition of what precisely constitutes an environmental product or service. In this regard, one of the most widely accepted definitions of EGS is that of the Organisation for Economic Cooperation and Development (OECD), which states:

"The environmental goods and services industry ***consists of activities*** *which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems. This* ***includes*** *cleaner technologies, products and services that reduce environmental risk and minimize pollution and resource use."* (**Emphasis added**)

Within the Doha Round of negotiations, responsibility for managing the liberalisation of EGS under Paragraph 31 (iii) was given to the Special Session of the Committee on Trade and Environment (CTE-SS),[32] and implicit in this mandate was the responsibility for developing a viable definition for the products and services for which trade liberalisation was to be negotiated.[33]

In this regard, it must be noted that, unlike the majority of the negotiations under the Doha Round, the mandate of the CTE-SS is oriented primarily towards environmental benefit, with market access being the identified means to achieve this objective, rather than towards trade liberalisation as an end in itself.[34]

The mandate of the CTE-SS does not, however, define the means by which this trade liberalisation and consequent environmental benefit are to be achieved, with the result that several different approaches to defining the concept of EGS have been proposed by various WTO member nations. Unfortunately, however, none of these approached have thus far been able to gain widespread support from the full membership of the WTO, for a variety of reasons, as discussed below.

As a first step, negotiators in the CTE-SS set about developing a list of products which were seen as environmentally beneficial, and in which trade was to be liberalised. Unfortunately, however, this list was drawn up primarily from inputs made not by individual countries, but rather by intergovernmental organisations such as the OECD and the Asia-Pacific Economic Council (APEC), as part of their sectoral trade liberalisation inputs to the Doha Round.[35] As a result, these lists were perceived by some developing countries as being primarily in the interests of exporters of manufactured products from the developed world, and this approach was therefore opposed by countries such a Brazil and Chile.[36]

Thereafter, a number of variations of the so-called "list-based approach" have been proposed by various WTO members, none of which have produced any definitive progress in defining the concept of EGS. The principal reason behind this lack of consensus appears to remain the fact that some member countries, particularly developing countries, feel that that the negotiations have lost sight of the environmental and sustainable development objective, in the pursuit of trade liberalisation as an end in itself, and specifically in the pursuit of market access for developed country producers of EGS in developing country markets.

32. WTO Ministerial Declaration at Doha, 2001.
33. OECD Trade and Environment Working Paper No. 2005-05.
34. Indian submission (TN/TE/W/54) to the WTO states, "The mandate of Paragraph 31(iii) is essentially environmental-benefit oriented, and market access is a means to that objective; not the objective itself".
35. Supra.
36. Para 16, "We agree to negotiations which shall aim, by modalities to be agreed, to reduce or as appropriate eliminate tariffs, including the reduction or elimination of tariff peaks, high tariffs, and tariff escalation, as well as non-tariff barriers, in particular on products of export interest to developing countries. Product coverage shall be comprehensive and without a priori exclusions".

This view would seem to be supported by trade data. An analysis of trade figures for the combined lists of EGS items compiled by the OECD and APEC[37] between 1997 and 2003, indicates the size of the global market for these items to be approximately US$ 350 billion[38] with developed countries accounting for over 80 percent of this trade. Furthermore, amongst the share of this trade originating in developing countries, over 90 percent came from nine nations, namely China, Mexico, Singapore, Korea, Malaysia, Brazil, Thailand, Indonesia and India.

A further complication of a list-based approach would appear to be the fact that many of the items which are included as being environmentally beneficial, can potentially have more than one use or application.[39] Obviously, not all of these applications will result in the same environmental benefit, implying that in many instances, developing nations would face a difficult trade-off between a reduction in much-needed tariff revenue on goods included in an EGS list on one hand, and uncertain environmental benefits of these products on the other.[40]

Liberalisation of Trade in Environmental Services

Apart from the liberalisation of trade in products with environmental benefits, the Doha Declaration mandates WTO members to negotiate the reduction or elimination of tariff and non-tariff barriers in the field of environmental services. In general, the negotiations in the CTE-SS have focused on the liberalisation of trade in environmental goods, with the issue of trade in environmental service barely having been addressed at all.[41]

One reason for this situation may be that the liberalisation of trade in services (including environmental services) within the WTO takes place primarily in the Special Session of the Committee for Trade in Services, also known as the CTS-SS. It is however highly questionable whether this separation of environmental good and services within the WTO negotiations is beneficial, or even whether it is in fact accurate. It would appear that traditional thinking on the subject has considered environmental goods and services to be separate and almost mutually exclusive. The reality is however that many environmental activities entail the delivery of services in conjunction with application of products, and that in many instances, these services are in fact a larger component of the value of an environmental project than the products that they support.[42]

Environmental services have traditionally been understood to comprise those services and facilities normally provided by the public sector, such as water and waste-treatment services. Over the past two decades, however, with the emergence of new regulatory mechanisms and trends such as the privatisation and commercialisation of public services, the scope of environmental services has changed significantly, and many of these formerly public services have become increasingly subject to the demands and distortions prevalent in the market for environmental products. This trend implies that the traditional definition of environmental services under the General Agreement on Trade in Services (GATS) is no longer necessarily acurate or sufficient.

37. TN/TE/W/33 – An information note submitted to CTE-SS by the OECD Secretariat on comparison of OECD and APEC lists.
38. UNCTAD Study, 2005 (unpublished).
39. Separating harmful waste products from an effluent stream would require a centrifuge. But centrifuge has a large number of other uses. One report had estimated that in mid-1990s only 10% of the centrifuges were sold for environmental purposes. (OECD Trade and Environment Working Paper No. 2005-05). Other examples include electricity meters, liquid flow meters, heat exchangers, conveyers and centrifugal drums. (India's submission TN/TE/EW/51)
40. At present tariffs on environmental goods in the developed countries are low i.e., 5 percent or less. On the other hand, tariffs on environmental goods in developing countries are around 25 percent. As developed countries account for about 80 percent of the world export of environmental goods, unrestricted reductions or eliminations of tariffs in developing countries would increase their trade deficits.
41. WTO document JOB (07)/54, 27 April 2007.
42. *Trade in Environmental Services: Opportunities and Constraints*, ICRIER, 2000.

An example in this regard might be a river rehabilitation project, which requires not only facilities and equipment for water treatment and waste disposal, but also services relating to areas as diverse as geographical information systems, landscape rehabilitation and biodiversity conservation.

To date, proposals submitted to the CTS-SS with regard to the liberalisation of environmental services, seem to be attempting to address the issue on the basis of a request-offer method of negotiations, without therefore addressing the requirement for the integration between environmental goods and services.[43] It would therefore appear that a definite requirement exists for a negotiation framework which can deliver concrete results in terms of trade liberalisation in both environmental goods and services, without affecting the more general negotiations on services taking place in the CTS-SS.

An Alternative Approach to the Definition and Liberalisation of Trade in EGS

From the above, it is clear that the traditional methods of negotiating trade liberalisation within the GATT and more recently the WTO cannot be readily applied in the case of EGS. Furthermore, the imperative of creating a situation in which the achievement of sustainable development, poverty alleviation and environmental protection are possible at the same time, implies that a different approach needs to be implemented to the liberalisation of trade in this area.

As previously mentioned, the achievement of these three objectives is highly dependant on access by developing countries to appropriate modern technologies, as well as on the creation within these countries of sound social and economic fundamentals and access to instruments of economic development such as capital (both human and financial), governance, education and infrastructure.

In an attempt, therefore, to resolve the impasse created by preceding attempts to define and liberalise trade in EGS according to the "list-based" approach, the Indian government in June 2005 submitted a proposal to the CTE-SS that sought to provide a more holistic approach to achieving "win-win-win" situations in the context of trade and environment negotiations.[44] This submission was intended to provide an alternative approach to defining environmental goods, but crucially also to address the environmental and developmental objectives included in the Doha Ministerial Declaration.[45]

The approach proposed by India is based on the liberalisation of trade in goods according to their inclusion in projects with an environmental benefit, rather than their inclusion in an agreed list of environmental products and services. This so-called "project-based" approach, also known as an Environmental Project Approach (EPA), provides for the achievement of both developmental and

43. The European Comission (EC) had proposed that "core" services should be classified according to environmental media (air, water, solid and hazardous waste, noise, etc), and that commitments in this regard should be scheduled according to a revised classification, comprising of seven sub-sectors that would better reflect trade and sectoral realities. The EC has also proposed that apart from "purely" environmental services contained in W/120, related services such as design, engineering, R&D and consulting services that remain classified elsewhere in GATS, but that can have an environmental "end-use", could be subject to a cluster negotiation, the result of which will be scheduled in the relevant GATS sectors other than environment. This approach would take into account end-use for the definition of the cluster, but not for amending the existing classification. Several WTO Members proposed the concepts of "core" (based on W/120 with possible amendments as proposed, for example, by the European Community) and "related" environmental services. The European Communities and Switzerland proposed the following related services: (a) professional services, (b) research and development, (c) consultancy, sub-contracting and engineering and (d) construction relating to the environment The United States also supported the current classification of core environmental services sectors, along with related services that have not historically been classified as being environment-related (e.g. construction, engineering and consulting), but that are nevertheless significant to the provision of environmental services.

environmental objectives, since it can be flexibly applied in such a manner as to allow countries to determine the level of liberalisation of trade in EGS products, based upon the environmental (and to a lesser degree social) benefits to be achieved by a particular project. It furthermore provides for the opportunity to address differences in the environmental standards of WTO Member countries, through the application of the principle of "common and differentiated responsibilities". This principle recognises the common responsibility of all WTO members in addressing environmental challenges, but at the same time acknowledges that the capacity of member countries to address these challenges differs significantly.

BOX 1: SUGGESTED CRITERIA FOR PROJECTS UNDER THE EPA

The following criteria could be considered for entitling WTO Member countries to authorise preferential market access for environmental project-related goods and services under the EPA:

- Compliance of the project with commitments made under Multilateral Environmental Agreements, for example the Convention on Biodiversity, the Basle Convention or the Kyoto Protocol. The project promotors would be required to specify the means by which, and the extent to which, the goals of relevant MEAs would be achieved.
- Compliance with internationally financed programmes that might be jointly undertaken with international organisations such as the United Nations Environment Programme (UNEP).
- Compliance of the project with domestic environmental programmes and legislation. WTO members should be entitled to permit preferential market access for products utilised in projects that comply with constitutional or statutory requirements imposed in the field of environmental protection.
- Compliance with specific goals and purposes reconised by the framework agreement addressing the EPA. Such an agreement might provide broad criteria, including for example the following:
  - Supply of drinking water
  - Sanitation and disposal of sewage
  - Reduction of carbon emission
  - Promotion of alternative energies, in particular solar, wind and tidal energy, biofuels
  - Waste disposal, in particular hazardous waste
  - Drainage
  - Protection of biodiversity (fauna and flora)

A framework around the EPA could also contain a number of criteria for assessing whether the privileges granted to certain goods and services are justified, and that these do not discriminate against other products not employed in a particular project. To this end, the framework agreement might include a necessity test, requiring implementing members to justify the exclusion of certain products from preferential treatment, in circumstances where these products could also be included in a particular project. Furthermore, such a framework might also set out minimum standards and conditions under which preferential market access is granted under EPA; such as the duration of the project, financial conditions, procurement regulations etc. Finally, the framework agreement might stipulate procedures for appeals and judicial reviews that deny preferential access for certain products and services.

44. WTO Submission TN/TE/W/51.
45. Under the EPA, concessions on goods (tariffs) and services included in a project are proposed to extend for the duration of the project.

National Policy Space

Within the context of the Doha round of trade negotiations, developing countries have, in line with the principle of special and differential treatment, consistently voiced a demand for "national policy space", that will allow them to continue to protect their economies, or certain sectors of their economies, from foreign competition, in order to continue growing their economies and thereby fulfill their development objectives.[46]

Similarly, the requirement for national policy space has been advocated in the case of environmental issues, on the basis of, amongst other factors, the reduction of adjustment costs in developing country economies.[47] Such policy space would allow countries the freedom to continue to utilise technologies that are possibly less than environmentally optimal, while at the same time restricting access to their domestic markets for foreign products that might hold environmental benefits, in order to both gain a revenue stream from import duties on such products and allow the development of domestic industries. As in the case of any move to resist trade liberalisation, in any industry, the ultimate justification for such steps is the achievement of economic development objectives by developing and least-developed nations.

Given this context, it is important to note that the EPA does in fact allow for such policy space, since countries can under this approach apply trade liberalisation policies according to their own specific national economic development and environmental priorities, by liberalising the import of specific products which might be required for certain environmental projects (and in which, it might be assumed, no domestic manufacturing capacity or potential exists).[48]

46. Nagesh Kumar and Kevin P. Gallagher; *Relevance of 'Policy Space' for Development: Implications for Multilateral Trade Negotiations;* RIS, March 2007.
47. Supra. National Policy space has been effectively and successfully used by the newly industrialising economies in East Asia to build internationally competitive modern industries despite the lack of the apparent comparative advantage.
48. India's submission to the WTO, TN/TE/W/67.

6. THE ROLE OF TECHNOLOGY, TRADE AND INVESTMENT

It is beyond dispute that the development and dissemination of appropriate technology is an essential element in the reduction of resource consumption and the promotion of economic growth, environmental sustainability and poverty alleviation, particularly within developing countries. The ability of these developing countries to integrate into the multilateral trading system and achieve a degree of economic growth through exports, depends to a significant degree on access to technology and technical knowledge, which is in the majority of instances not available domestically.

As a result, various multilateral trade agreements, including the Doha Round, place significant emphasis on the transfer of technology – typically from developed to developing nations.[49] Although there is no explicit mention of technology transfer in the Doha Ministerial Declaration, it remains a key concern of developing countries, in terms of the developmental nature of the Round. The Ministerial Declaration does however contain a number of provisions relating to technical cooperation and capacity building in developing nations. These include Paragraph 38, which confirms *"…that technical cooperation and capacity building are core elements of the development dimension of the multilateral trading system"* and *"… welcome(s) and endorse(s) the New Strategy for WTO Technical Cooperation for Capacity Building, Growth and Integration".* Similarly, Paragraph 42 recognises that *"…the integration of the LDCs into the multilateral trading system requires meaningful market access, support for the diversification of their production and export base, and trade-related technical assistance and capacity building."* Furthermore, the importance of technology transfer is also acknowledged in the creation of a WTO Working Group on Trade and Technology Transfer.

The term "transfer of technology" is generally interpreted as referring to the "transfer" of high-technology products and equipment from developed to developing countries, in which the capacity to manufacture these items does not exist. Such transfers can take place via a number of mechanisms, including development aid, licensing agreements, international trade or foreign direct investment (FDI). From an economic development point of view, such transfers are ideally meant to take place without costs to developing nations, through mechanisms such as overseas development aid.[50] In reality, however, owners of technology, located primarily in developed countries, have a (not unreasonable) expectation to be compensated for the dissemination of their intellectual property, while in many instances, import duties and restrictions in many developing nations limit the market access for much-needed technology.

An implicit element of this viewpoint regarding the concept of "technology transfer" is that of so-called "linear development", in which it is assumed that the majority of the technologies required for improvement in economic, social and environmental conditions originate from developed nations and therefore need to be "transferred" to developing nations as an element of overseas development aid or assistance on the part of these developed nations. It is however becoming increasingly clear that any successful attempts to address the issues facing both developed and developing nations, such as the requirement to dramatically reduce both greenhouse gas emissions and the consumption of natural resources, will require a departure from this "linear" development paradigm. Furthermore, the

49. Agenda 21 defines transfer of environmentally sound technologies (ESTs) which involve know-how, procedures, goods and services, and equipment, as well as organisational and managerial procedures.
50. *UN Millennium Development Goals Report, 2007;* "In real terms, official aid dropped by 5.1 per cent, the first decline since 1997. Even excluding debt relief, aid still declined by 1.8 per cent from the year before. The only donors to reach or exceed the United Nations target of 0.7 per cent of gross national income for development aid were Denmark, Luxembourg, the Netherlands, Norway and Sweden. Aid is expected to continue to fall slightly in 2007 as debt relief declines further. Other forms of aid will increase if donors fulfill their recent pledges. However, the present rate of increase in core development programmes will have to triple over the next four years if donors are to deliver on their promises".

rapid emergence of economies such as China and India, and the accompanying development of innovative capacity in these countries, mean that the concept of "technology transfer" is increasingly being replaced by that of "technology development and exchange".

Given this historic situation, it might be expected that over the past decade, the increased trend towards liberalisation of the international trade regime, would increase the dissemination of appropriate technologies, particularly those holding the potential for real economic, environmental or development benefits. Access to best-available technologies is vital for developing countries to take advantage of opportunities for export-led growth, particularly in terms of compliance with WTO requirements such as those relating to the TBT and SPS Agreements of the Organisation, as well as in terms of compliance with commitments under various MEAs (such as those relating to climate change or biodiversity conservation).

In reality, however, the majority of developing nations have proved somewhat resistant to the idea of liberalising trade in high-technology items, since this will in the short to medium term increase the import propensity of these countries and have a negative effect on their economies. These countries also argue that liberalising their domestic markets reduces much-needed income derived from import duties, and potentially stifles the domestic development of high-technology sectors, as a result of unrestricted competition from international products.

In the longer term, of course, these negative impacts are almost certain to be countered by the positive impacts of technology on domestic economic growth, development and environmental sustainability, for example through the reduced cost of compliance with international agreements as mentioned above.

It would therefore appear that there exists a requirement for a global regime that can balance the interests of developing and developed nations in terms of intellectual property rights and access to technology, as well as in terms of the promotion of trade liberalisation, economic growth and environmental sustainability.

In terms of the structure and composition of such a regime, there is little doubt that international trade and investment are key elements in facilitating both the local development and the international dissemination of appropriate technologies.[51] In this regard, a number of options exist for policymakers, at the level of both multilateral and bilateral agreements, as well as in terms of the implementation of national policies, that can assist in the achievement of these objectives.

At an international level, these options might include the further pursuit of trade liberalisation in the CTE-SS and CTS-SS of the WTO, and the conclusion of bilateral development agreements that facilitate the transfer of appropriate technologies and skills, and provide incentives for innovation-oriented foreign direct investment, in order to contribute towards the creation of domestic capacity in high-technology sectors.[52]

51. OECD Working Paper 2005-02.
52. A study conducted in the East Asian economies and India determined that a significant link exists between the technological capabilities and modern IT-based communications infrastructure that exists in a country, and the attraction of FDI. "The level and quality of technological development achieved by different developing Asian economies does explain why some of them have remained attractive destinations for FDI, while others have fallen behind." *Technological Capability as a Determinant of FDI Inflows: Evidence from Developing Asia & India*; Amitendu Palit and Shounkie Nawani, ICRIER, April 2007.

On a national level, one of the most important interventions that governments can make, is investment in appropriate education, and the implementation of policies to stimulate innovation and skills development, in order to strengthen the technical knowledge base within developing countries.[53] Furthermore, a key determinant of the success of such programmes aimed at the promotion of skills development and innovation, is the creation of vibrant small and medium enterprise (SME) sectors, that can implement these skills and technologies within domestic economies, thereby leading to their wider dissemination and creating tangible development benefits across the social spectrum within developing nations.

In order to assist in the development of such highly innovative SME sectors, a number of policy options may be implemented to promote the uptake of technologies by SMEs, including concessional financing options for appropriate technologies, fiscal incentives, and legal and administrative reforms that lower the costs of such technologies. In terms of the environmental benefits associated with certain technologies, it is of particular importance that governments incentivise the dissemination of these technologies to the SME sector, since they are relatively capital-intensive and therefore often inaccessible to SMEs.

In the event that countries are successful in creating efficient, high-technology domestic SME sectors, it is likely that in the medium to long term, the demand for environmentally sustainable technologies from these SMEs will increase along with an increase in the export orientation of these sectors. This might in turn increase the incentive for these countries to liberalise their international trade regime in such products, but will also increase the effect of restrictions in the access to such technologies, such as the costs attached to intellectual property rights, or the costs of adapting foreign technologies to suit local manufacturing conditions.

In such situations, the role of international cooperation is once again important, as collective action by various stakeholders, including technology suppliers, industry associations, research institutions, governments of both developed and developing countries, and various international development organisations can play a significant role in promoting access to environmental technologies, particularly for SMEs. In this regard, the primary responsibility of developing country governments is the creation of an environment conducive to the transfer (and where appropriate, local development) of such technologies, through factors such as the establishment and enforcement of appropriate standards, protection of IPR, liberalisation of the trading regime and reduction of transaction costs.

The creation of such an enabling environment in developing countries should provide significant impetus to the achievement of the economic, developmental and environmental benefits associated with the dissemination of appropriate technologies. A number of examples exist of successful implementation of such strategies, including Costa Rica (environmental protection), Singapore (pharmaceuticals) and South Africa (energy industry).[54]

53. Successful domestication of foreign technologies depends on indigenous capacity for innovation and on a country's investment in the creation of a technology infrastructure. IMF Working Paper No. 16, 2007.
54. *Technology Transfer Issues in Environmental Goods and Services*; Issue paper No. 6, ICTSD, 2007.

The Impact of Foreign Direct Investment

Figures provided in Chapter 5 above would appear to indicate that the impact of trade liberalisation in EGS is likely to be particularly low in terms of exports by developing countries, while the potential revenue loss resulting from the liberalisation in importing sectors in these countries, is significant in terms of its potential impact on their development objectives. At the same time, despite the theoretical argument for economic benefits derived from technology transfer in export sectors as described above, it would appear that evidence regarding the impact of trade on technology transfers is mixed.[55]

The general consensus regarding technology transfer is that technological spillover (benefits accrued by importers of technology with no costs attached) is not significant, but rather that technologies that are acquired by developing countries in international markets, or that are transferred through FDI, hold far more tangible economic benefit to these countries.[56] As mentioned, such investment also often results in an improvement in the technological skills base of developing countries, as well as in certain instances resulting in a relocation of manufacturing capacity to these countries, in order to take advantage of increased levels of productivity and lower production costs – a direct economic benefit to developing countries.

In this regard, the rapid growth of the ICT (information and communications technologies) and BPO (business process outsourcing) sectors in India provides a tangible example of the positive impact that sustained levels of FDI can have in a developing nation. This trend was of course to a large extent prompted by the possibility of productivity improvements offered by a significant untapped resource, in terms of a large and highly-skilled labour pool available in the country, but there exists little doubt that this resource would have remained largely untapped if firms located in developed economies had not taken the decision to invest directly in establishing operations in India.

With regard to the issues around intellectual property rights, as discussed above, it would appear that linking technology dissemination with FDI can successfully avoid the majority of these issues, since in such situations, the owners of these technologies are involved in the firms that are applying or developing these technologies in developing countries.

From a developmental perspective, it is clear that the development of intellectual capital is critical for the sustained economic growth of developing countries. Technological capacity is a significant factor in improving the international competitiveness of firms in these countries, and inextricably linked to the development of this capacity is the accompanying development of the skills required to effectively manage these technologies.

In terms of an international framework capable of managing the development and dissemination of technologies that can assist in achieving both environmental and developmental objectives, it is critical to differentiate between those countries that possess some domestic capacity to develop these technologies for themselves (and sometimes also for export purposes), and those countries that primarily require inflows of technology in order to address their domestic economic, social and environmental objectives. In this regard, the BRICS group of key emerging economies (Brazil, Russia, India, China and South Africa), are amongst the best examples of countries that possess this type of developmental capacity.

55. WTO Document, WT/WGTTT/W/1.
56. For example, productivity increases as a result of technology upgrades.

Any international regime that is developed must therefore be capable of addressing the very different requirements of these distinct groups of countries, in terms of factors such as access to finance, differing approaches to IPR, and differing capacities and objectives in terms of trade liberalisation, particularly in high-technology and environmental products and services. Such a regime would need to be flexible enough to allow for the domestic policy space discussed in Chapter 5, while at the same time providing increased levels of market access for both developed and developing countries in accordance with the rules of the WTO, as well as promoting the developmental objectives of the Doha Round in line with the principle of common but differentiated responsibilities.

7. THE CURRENT SITUATION AND POSSIBLE WAYS FORWARD

"Reducing barriers to trade is not enough to fulfill the development promise of Doha. Trade must be part of a larger development strategy for each country, a strategy that includes attention to macroeconomic policy, infrastructure, education, and health as well as to accountable and responsible governance. These elements of investment climate take time to develop but are essential for growth and poverty reduction and are crucial to make a sound strategy pay its growth and poverty reduction dividends." [57]

Sir Nicholas Stern

The Current Situation

From the preceding chapters, it is apparent that two significant categories of multilateral fora that focus on the achievement of environmental objectives, namely the WTO Doha Development Agenda on the one hand, and the various MEAs in existence around the world on the other, possess a particularly important common goal of sustainable development. Furthermore, both of these regimes to some degree incorporate development concerns and recognise the Rio principle of common but differentiated responsibilities and capabilities amongst nations.

However, some fundamental differences between these regimes hold important environmental implications. As a rule, international trade in goods and services generally involves "private goods" which are the property, either physical or intellectual, of companies. This implies that the costs of non-compliance with international rules governing trade in these products and services are generally confined to the parties, and that direct external effects to other parties not involved in these transactions are therefore minimal. MEAs, on the other hand, are designed to prevent and/or address the negative impacts associated with the contravention of agreed environmental norms or regulations. In the majority of instances, these negative impacts extend far beyond the parties committing them to the general public, for example in the case of global warming associated with greenhouse gas emissions, or ozone depletion as a result of the use of chlorofluorocarbon (CFC) gases. These impacts are also as a rule not included in the cost structures associated with the economic activities, such as manufacturing, trade and investment, that lead directly to their occurrence, and are therefore often referred to as the externalised or externality costs associated with particular activities.

As a result, the role of national governments in addressing these externality costs assumes far greater significance than is the case for market transactions that do not create such negative environmental impacts. Given the fact that, as mentioned above, the capabilities of countries to manage and deal with these environmental impacts varies widely, as well as the assumption that all nations can stand to benefit from international cooperation in this regard, the importance of creating a multilateral governance structure that can effectively address these issues cannot be overstated.[58]

57. World Bank; *Global Economic Prospects—Realizing the Development Promise of the Doha Agenda*; 2004
58. The UN Secretary General has stated in the *UN Millennium Development Goals Report, 2007* that all stakeholders need to meet, in their entirety, the commitments already made in the Millennium Declaration, the 2002 Monterrey Conference on Financing for Development, and the 2005 World Summit. Lack of any significant increase in official development assistance since 2004 makes it impossible, even for well-governed countries, to meet the MDGs. The report also makes it clear that adequate resources need to be made available to countries in a predictable way for them to be able to effectively plan the scaling up of their investments. The Report strongly advocates that all stakeholders need to fulfill, in their entirety, the commitments they made in the Millennium Declaration and subsequent pronouncements.

Possible ways forward

The ongoing global economic crisis and the accompanying calls for an overhaul of the global financial architecture (including the Bretton Woods institutions), as well as the almost nonexistent progress in the WTO negotiations, would appear to provide a historically unique opportunity to ensure that future frameworks regulating global trade and investment flows are based on principles that support rather than undermine the concepts of sustainable development and environmental sustainability. In order to assist in the achievement of this objective, WWF would suggest the adoption of the following measures:

1. A focus on the positive results to be achieved by international trade and investment, rather than the consideration of such trade and investment as an end in itself.

This should particularly be the case when considering the liberalisation and promotion of international trade and investment in environmentally sustainable goods and services, in order to ensure that countries do not exploit this liberalisation as a means to promote those products and services in which they possess a competitive advantage and which they choose to define as "environmental".

An approach is required to the issues of sustainable products and services that allows for both protection of the economic rights of the parties directly involved in trade and investment transactions in such products, and the avoidance of widespread negative impacts associated with these transactions, including increasing GHG emissions, poverty and unsustainable consumption.

An underlying condition of such a situation, is that a positive approach towards sustainability should be accepted. This implies a requirement to implement measures that actively promote sustainable goods and services, rather than simply remove the barriers that currently exist in this area. Policy space should therefore be allowed, particularly for developing and least-developed countries, for the implementation of such measures and the resultant accelerated uptake of resource-efficient solutions, particularly when these solutions serve to strengthen the collaboration between developing nations (the issue of policy space is further elaborated in point 3 below).

One possible solution in this regard is the one offered by the "environmental project approach", as described in Chapter 5 above. This approach implies that products and services required for the implementation of environmentally beneficial projects can be procured internationally, with lower multilateral barriers to such trade, and with the prospect of accompanying inward foreign investment and technology development and exchange. It also offers possibilities for the implementation of such environmentally beneficial projects by both the public and private sectors; thereby allowing the opportunity both for governments to play a leading role in the promotion of appropriate infrastructure and the avoidance of negative impacts for their respective populations, and for the private sector to invest in more efficient manufacturing facilities (and in certain instances, also to invest in supporting infrastructure) and create a direct positive environmental impact.

Furthermore, as innovation and development of technologies is an ongoing process, investment in appropriate environmentally beneficial projects might allow greater opportunities for countries to achieve the environmental objectives contained in various MEAs to which they are signatories, especially in circumstances in which the objectives of these MEAs change as a result of new scientific evidence or improved analysis (as in the case of climate change, for example).

It therefore appears that a cohesive strategy of both private and public investment in appropriate projects can contribute to the creation of a system of collaborative action on local, regional and multilateral level, thereby assisting in the resolution of the major environmental issues with which humankind is currently faced.

2. Widespread support, particularly from OECD countries, for technology development in emerging markets, as well as support for a shift in focus from one-way "technology transfer" to bilateral technology exchange and multilateral technology collaboration.

As discussed previously, it is widely recognised that the majority of OECD countries (as well as an increasing number of emerging economies) reflect a level of resource consumption that is increasingly unsustainable. It would further appear that the bulk of products, services and technologies that are classified as "environmental" in these countries, are targeted at the achievement of incremental improvements in systems that remain fundamentally unsustainable and resource intensive.

At the same time, however, in many parts of the world, solutions are under development which can potentially contribute to the creation of a global society that allows for both sustainable economic development and environmental sustainability in the long term.

In order to assist in the development of such technologies, as well as to improve the access to and dissemination of sustainable products and services, it is essential that the tariff and non-tariff barriers to international trade in these products and services are reduced or eliminated to as great an extent as possible. In order to achieve this situation, however, it is necessary that the context in which such reduction or elimination takes place supports such a situation.[59] This is applicable in the case of both MEAs and the WTO. In this regard, the principles of "special and differential treatment" and "less than full reciprocity" in terms of trade liberalisation, as proposed in the Doha Development Agenda, should be applied in the context of technology transfer and exchange.

In principle, therefore, negotiations such as those under Paragraph 31(iii) of the DDA should consider the objective in this regard as stated in the Agenda 21 document, namely that the principal means of access to technology, through commercial sale, is made as simple as possible.[60]

Furthermore, in a national context, it is essential that wherever possible, both private and public sector funding is channeled into research and development and the promotion of technological innovation. This is of particular importance in emerging economies, since in many instances, some capacity in this area already exists. Very often, the financial sector also plays a critical role in this process, through the provision of funding to take technical innovations from a development phase to a situation of commercial viability.

59. Keynes (1930: *Economic Possibilities of Our Grandchildren*) stressed the role of technological advancement in fostering economic growth as a means to end the problem of poverty in industrialised nations such as Britain. This solution depends not only on the creation of new technologies, but also on their dissemination to relatively less skilled or poorer segments of the population. However, technology alone is not sufficient to address the problem of poverty. According to Jeffrey Sachs (2005: T*he End of Poverty: Economic Possibilities of Our Time*), there is an absolute need for 'collective action, through effective government provision of health, education and infrastructure, as well as foreign assistance'. In this instance, however, emphasis is placed on the role of technology. The nexus between technological capabilities, institutional capacity and the reduction of income inequality is a complex one, both in theory and in practice. According to Dyke (2001: *Attacking Global Poverty: Technology for Economic and Social Uplift*), "Poverty can be eliminated within the next 50 years if a broad range of technology—not only information technology—is used as a tool to spark and enhance a comprehensive development strategy that encompasses economic, political, social, and environmental elements (p. 17)." Applied correctly, technology can to some degree ameliorate the issues of poor governance and economic distance, by increasing productivity and enabling a nation to move ahead by leap-frogging.
60. Paragraph 34.11 of Agenda 21: Proprietary technology is available through commercial channels, and international business is an important vehicle for technology transfer.

3. The provision of resources and assistance to developing countries, and in particular to least-developed countries, in order to promote technology assimilation, as well as an acknowledgement on the part of developed nations of the requirement by these developing countries for national policy space.

In the context of the liberalisation and promotion of trade and investment in sustainable goods and services, it is important to acknowledge the fact that the capacity of economies to both acquire and apply these goods and services varies widely. It is therefore vital that countries, particularly least-developed countries, are provided with appropriate development assistance that will lead to an increase in their capacity firstly for technology assimilation, and in the longer term, for domestic technology adaptation and development. In this regard, the capacity for both technology assimilation and development is strongly dependant upon so-called "social capital" factors such as literacy and formal education (particularly tertiary and technical education), as well as, in a less direct manner, institutional factors such as political stability, basic governance and infrastructure such as telecommunications and information technology connectivity.

Furthermore, the capacity of least-developed countries in particular to improve their domestic capacity for technology innovation and adaptation, is in many instances directly connected with the "policy space" that these countries are permitted in terms of protecting the industries associated with such innovation from foreign competition, particularly in the earliest stages of their establishment.

At the same time, in line with the principle mentioned in point 1 above, of focusing on the environmental benefits to be achieved by trade and investment in sustainable products and services, it is vital that this policy space does not restrict the inflows of FDI into domestic industries, or does not hinder the implementation of environmental projects within these developing and least-developed countries.

4. The promotion of transparency through the introduction of reporting standards, measurements and indeces to track the performance of companies and governments in the development and implementation of sustainable goods and services, as well as of appropriate environmentally beneficial projects.

Over the past two decades, as the concept of so-called "triple-bottom line" accounting, or the measurement of social and environmental indicators along with those of financial or economic growth, has become more widespread, a number of integrated measurement techniques have evolved to capture these diverse elements. Furthermore, the practice of ranking companies and countries according to these measures, as well as the development of indeces and other measures to promote socially and environmentally responsible investment, for example, have become increasingly commonplace. At the same time, the proliferation of internet-based and other technology-enabled tools has significantly increased the ease with which such measurement can take place and be recorded.

WWF would therefore recommend, wherever possible, the implementation of such measures, in both a national and international context, in order to firstly acknowledge leaders in this area, and secondly encourage corrective actions on the part of laggards. Furthermore, the technology platforms that currently exist, and that are under development in various parts of the world (particularly in a number of emerging economies) can be applied to encourage international collaboration and the exchange of best practice.

Included amongst the measures that should be considered in this regard, are tools that allow states, regions, cities and companies to measure the economic, social and environmental consequences of their exports, imports and foreign investment activities.

As mentioned above, the objective of such measurement activities should be the promotion of those activities that provide a positive impact, rather than simply the reduction of negative impacts. Such an approach would assist in identifying those companies and sectors that provide these positive solutions, and provide a basis for the development of support measures to strengthen these sectors.

5. The development of initiatives and incentive measures that target key sectors such as ICT, telecommunications, sustainable transportation, biotechnology and sustainable building design and construction, as well as the promotion of companies that develop innovative solutions to address environmental sustainability issues in these and other sectors.

Historically, the majority of public policy activity, as well as civil society advocacy, in the field of the environment has focused upon the creation and enforcement of a set of minimal compliance standards, and has furthermore in general viewed corporate entities and their activities as a significant cause of environmental problems.

WWF would however encourage an attitude towards the corporate sector that encourages and rewards those companies that invest in the development of innovative solutions to environmental issues and that thereby position themselves as leaders in this field. These innovative solutions, and the companies that produce them, should target issues such as poverty alleviation, low-carbon development and the reduction of natural resource consumption.

Various measures might be applied by national governments and multinational organisations to reward companies that develop such innovative solutions, including fiscal incentives such as tax reductions, export assistance, trade liberalisation, enterprise development financing and funding for scientific research and technology development.

6. The creation of an international body capable of ensuring that trade and investment frameworks are evaluated according to their contribution to environmental sustainability, poverty reductions and other measures beyond their immediate financial and economic impact.

There exists a requirement to develop an international regime capable of achieving a balance between on the one hand, the economic, social, developmental and environmental benefits associated with international trade and investment, and on the other, the objective of WWF and other environmental organisations of ensuring that humanity's impact on the planet remains sustainable. It is clear that such a framework cannot operate effectively without a significant degree of international cooperation, based upon the assumption that such cooperation is both voluntary and beneficial to all parties involved. From previous evidence, however, it would appear that the requisite level of cooperation in this regard has not been achieved to any great degree in existing multilateral fora,

In order to achieve the required levels of environmental sustainability, as well as to address the most pressing international issues of the day, including climate change, poverty and over-consumption, it is therefore necessary for the international community to move outside the constraints of the existing institutional framework. Whether this shift entails the reform of existing

institutions, or whether the requirement exists for a completely new institution, is a matter that is yet to be resolved. From the point of view of WWF, however, it is essential that whatever the structure and history of such an organisation, it is equipped with the mandate, authority and resources required to achieve this most daunting of tasks.

7. The development of "triangular approaches" to trade and investment flows, that are currently relevant and capable of addressing unsustainable resource flows in the global economy.

While a "traditional" bilateral approach to international trade remains relevant in some contexts, the unsustainable environmental impacts which have historically resulted from such bilateral trade relationships means that a requirement exists to develop new trade and resource flow patterns that minimise or possibly even eliminate environmental impacts. A "triangular" approach to trade and investment flows seeks to identify three categories of actors within the global trading system; namely providers of natural resources, producers or manufacturers of products and services, and consumers of these products and services.

In a globalised economy, these three categories can obviously not simply be applied to individual countries, since every country will contain actors falling into each of these categories. However, an investigation into issues such as the size of trade and investment flows, the areas in which new innovative solutions are most likely to occur and the regions in which the challenges are most significant, quickly reveals the significance of certain triangles above others. For instance, the most important providers of natural resources are currently the developing nations of Latin America, Asia and Africa, while the prime example of a producing and manufacturing economy is China (although India is assuming increased prominence in this regard). In terms of consumption, it is readily apparent that the majority of this activity still occurs in the EU, US and Japan (although high-impact consumption is steadily increasing in the rapidly emerging markets of the BRICS countries, and pockets of such consumption can also generally be found even in the poorest of the least-developed countries).

It would therefore appear that triangular discussions to promote sustainable trade and investment flows and sustainable use of natural resources, need to be established between those countries that occupy the differing roles identified above, for example Africa-China-EU or Latin America-China-US.

In this regard, the opportunity exists for the developed consumer economies of the EU, US and Japan to make use of existing bilateral trade discussions with China, and broaden the scope of these to include the objective of reducing resource consumption. From observations of these existing discussions, it appears that the parties are beginning to explore this aspect, but the scope of discussion on the subject is at this point hopelessly insufficient to have any meaningful impact on the current unsustainable levels of resource consumption implicit in the trade and investment flows between these countries.

Implicit in a triangular approach to trade and investment, is the fact that countries that depend heavily on the export of natural resources for economic growth (and, it is to be hoped, for the subsequent human development of their populations) should be supported by both producing and consuming countries in diversifying their economies away from a dependence on steadily increasing levels of export of these resources, thereby decreasing the environmental impact of their economic growth.

This process could take place through a number of means. For example, consuming countries could ensure that their public (and private) procurement policies support innovation, both in resource-rich and manufacturing countries. This innovation should be aimed at both a reduction of the levels of input of natural resources into manufacturing processes, and the development of new products, services and solutions that can satisfy the needs of consumers while eliminating the requirement for the input of these resources (especially when they are either non-renewable or unsustainably extracted). Rules should therefore be developed that encourage companies to use their supply chains to promote such innovation, rather than, (as is currently often the case) merely enforcing compliance by resource providers with certain minimum standards.

At the same time, producing countries should develop models which encourage dialogue regarding mutually beneficial economic development, particularly with those countries that are providers of natural resources.

A very tangible example of the type of economic diversification that results in positive natural resource impacts is the growth of the business process outsourcing (BPO) sector in India over the past two decades. Similarly, an example of innovation that reduces the inputs of natural resources and negative environmental impacts, whether for consumers, producers, or suppliers of natural resources, is a shift from non-renewable to renewable sources of energy generation.

From the above, it is clear that the interests of resource providers, manufacturers and consumers are inextricably linked through global supply chains. If the mutually dependent interests of these various parties are to continue to overlap in the context of global environmental imperatives and a shift towards environmental sustainability, it is vital to engage and link these three groups of actors in a process of analysis and dialogue. Each is in the position to provide different elements of vital global solutions to the problems of resource depletion, unsustainable production and consumption patterns and global climate change.

The triangular initiatives that are required to address these issues can take place on an overarching level between international and regional bodies, as well as on a national level between countries, and can cover a wide range of issues that are key to resolving global development challenges. Given its global network, WWF would appear to be well placed to promote and facilitate the creation of such triangular dialogues.

WWF Trade and Investment Programme
www.panda.org/investment

WWF- India
www.wwfindia.org

WWF- South Africa
www.wwf.org.za

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:
- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- promoting the reduction of pollution and wasteful consumption

for a living planet®