UNU Report to the World Summit on Sustainable Development Regional PrepCom for Asia and the Pacific

High Level Meeting, 27–29 November 2001, Phnom Penh, Cambodia

Breaking Down Barriers to Sustainable Development in Asia and the Pacific

UNITED NATIONS UNIVERSITY

United Nations University

The United Nations University was established by the United Nations General Assembly in 1972 to be an international community of scholars engaged in research, advanced training, and the dissemination of knowledge related to pressing global problems of human survival, development and welfare. Its activities focus mainly on the areas of peace and governance, environment and sustainable development, and science and technology in relation to human welfare. The University operates through a worldwide network of research and postgraduate training centres, with its planning and coordinating headquarters in Tokyo.

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The United Nations University is mandated with the task of researching pressing global issues of importance to the UN and its Member States. There is, perhaps, no other issue that fits this description as completely as the need to protect our global environment, not just for ourselves, but for succeeding generations.

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Executive Summary

This report provides a summary outline of the research activities of the United Nations University that are aimed at removing key barriers to sustainable development and are of particular relevance to Asia and the Pacific. The university's work in this regard has focused on the interactions between natural and societal systems. Also of particular interest is the nexus that exists between social, economic, and political systems and processes. In this context, the university's work continues to emphasise the need for an integrated and holistic approach to sustainable development through all its stages from the identification of priorities, decision making, and policy formulation, to implementation at the local, national, regional, and global levels, and also in regard to monitoring and assessment. At the same time, the nature and scope of UNU research has consistently reflected a keen awareness of the potential negative and positive consequences of the twin processes of globalisation and rapid technological advancement.

The UNU presents this report in four sections. The first section provides an introduction to the UNU's own priorities in regard to the effective implementation of *Agenda 21* and its sustainable development goals. The second section of the report serves as a summary assessment of the implementation of *Agenda 21* within the Asia Pacific region. This assessment has been derived from relevant research conducted within the UNU network. Section three of the report highlights some of the key sustainable development challenges for Asia and the Pacific that have been identified through the university's research. The report concludes with a summary of ten key research findings that are of direct relevance to the Asia Pacific region and provides the details necessary to locate the full research findings.

Introduction

Since the first UN conference on environment and development was held in Rio de Janeiro in 1992, the sustainable development agenda has been transformed from global aspiration to human imperative. During this time the obvious decline in the condition of the natural environment has generated a global appreciation of the urgency with which we prepare for the 2002 World Summit on Sustainable Development. This sense of urgency has been heightened by a growing recognition of the critical need to address the widening gap that continues to divide the world's richest inhabitants from its poorest.

Throughout the last decade, many developed states and regions of the world have been able to embrace the opportunities and advantages that have accompanied rapid globalization. At the same time, many developing states and regions have become even more deeply entrenched within a vicious spiral of poverty and debt. A failure to strengthen the capacity of the developing world to take advantage of the positive aspects of economic globalization and the numerous spectacular advances in human technology, will only result in a further increase in the strain on the global environment. If greater efforts are not made to address the imbalance of capacity, developing countries will most likely continue to put pressure on their natural resources as they endeavour to meet the development needs of their citizens.

These realities all point to the same core consideration, that sustainable development goals must be more effectively mainstreamed within the broader global political agenda. This is why the 2002 World Summit on Sustainable Development in Johannesburg is so crucial. The summit has the potential to serve as a turning point in regard to the way that the international community attempts to pursue the goal of sustainable human development. The Johannesburg summit must signal a new, global level, appreciation of the need to approach sustainable development in a more comprehensive and integrated manner. This would require the development of a more strategic approach to the implementation and achievement of the priorities set out in 1992 through *Agenda 21*. This need is particularly apparent within the Asia Pacific region.

The United Nations University has, within its mission to research pressing global problems of human survival, development, and welfare, placed a keen emphasis on the identification of major obstacles on the path to sustainable development. At the same time, the university has placed a high priority on the location of timely and innovative ways to remove these obstacles. In this regard the university has developed a comprehensive, multi-layered, research approach to the study of sustainable development. Within this context, the university's international network of researchers has examined various challenges for sustainable development that are located at the local, national, regional, and global levels and then explored the ways and means through which these can best be tackled. This has evolved into, among other things, an emphasis on the development of integrated local, national, regional, and global policy formulation and implementation frameworks. These efforts have been reinforced by a number of cross-cutting research projects that have focused on the broader issues and processes that shape the interaction between human beings and their environment, such as, information technology, biotechnology, and the institutions of global governance.

At the core of the university's research is the goal of greater global equity in terms of both opportunity and reward. To this end, our research and capacity building initiatives have remained focused firmly on issues that challenge developing country regions the most. This is the case, whether these challenges emanate from within the regions themselves or from global systems, structures, and processes that operate outside their immediate influence and control.

With this goal in mind, this report offers a summary of the university's core research activities and findings in regard to the challenges of sustainable development that are of particular import to the Asia Pacific region. The following section of the report is structured around an assessment of the status of implementation of key chapters of *Agenda 21* within the Asia Pacific. This is followed by a summary of the key challenges to the more effective implementation of *Agenda 21* within the Asia Pacific region. The report concludes with an outline of the key research findings generated within a number of the university's research projects. These findings are presented in the form of innovative proposals for the removal of current barriers to the effective implementation of *Agenda 21* within the region.

Assessment of the Implementation of *Agenda 21*

The World Summit on Sustainable Development represents a much need opportunity to conduct a global review of the implementation of *Agenda 21* in its entirety. The enormity of this task is surpassed only by its importance. The UNU hopes to contribute to this global assessment through making available the key research findings of various projects that have direct relevance to specific chapters of *Agenda 21* and to the Asia Pacific region.

Chapter Three: Combating Poverty

Over the past two decades China has achieved much in regard to the alleviation of poverty among its population. In terms of the number of people who have escaped absolute income poverty over the last twenty years, it is China that has made the most significant contribution to global poverty reduction. According to official estimates, the number of people now living below the poverty line decreased from 250 million in 1978 to approximately 34 million in 1999. In the last decade China began a number of initiatives aimed at encouraging the development of townships and enterprises in the poor central and western parts of the country. Similarly, the central government has initiated a voluntary resettlement scheme for those who are willing to leave areas with poor natural conditions and resources. While India has also achieved significant reductions in poverty ratios during the last two decades, the country is still home to approximately one quarter of the world's poor. National Sample Survey data from India, which covers the period July 1999 to June 2000, indicates a very significant decline in poverty levels throughout the 1990s. In 1986-87, poverty rates were 26 percent based on a 30-day recall and 23.3 percent based on a 7-day recall methodology, down from an original 38 percent. These figures demonstrate a decline of around 1 percent per annum. Indonesia also reduced poverty ratios significantly during the last 20 years from 50 percent to approximately 10 percent. These figures represent significant progress particularly given the dramatic impact of the East Asian crisis on the Indonesian economy.

Chapter Five: Demographic Dynamics and Sustainability

In the 1990s, China, India and Indonesia improved their family planning polices. All three countries have adopted integrated population control strategies that include much broader objectives such as human development, poverty alleviation, education promotion, and also female and infant medical care. These strategies have generally succeeded in slowing population growth. The population growth rate in China decreased from 1.5 percent per annum in the 1980s to 0.90 percent per annum in the late 1990s. Similarly, India and Indonesia's population growth rates also decreased from a high of 2.12 percent and 1.84 percent per annum in the 1980s to 1.69 percent and 1.35 percent in the late 1990s respectively.

Chapter Six: Human Health

With the exception of HIV/AIDS, significant progress has been made in the Asian Pacific in regard to the eradication of various major diseases. As a consequence, average life expectancy within the region has risen at a much sharper rate than in previous periods. During the 1990s, China, India, and Indonesia added two to four years to their average life expectancy. Chinese life expectancy increased from 68.8 in 1990 to 70.1 in 1999. Indian and Indonesian life expectancy increased from 59.8 and 61.7 in 1990 to 63.2 and 65.7 in 1999 respectively. It is worth noting that these countries also reduced their adult illiteracy rates significantly throughout the 1990s. During this period China reduced illiteracy from 23.0 to 16.5 percent, India reduced its rate from 50.7 to 43.5 percent, and Indonesia experienced of drop from 20.3 to 13.7 percent.

Chapter Seven: Promoting Sustainable Human Settlement Development

Of the two billion people that will be added to the world's population over the next thirty years, approximately 99.5 percent will be located in urban centres. Of these, approximately 61 percent, or almost 1.3 billion, will be added to Asian cities. It is clear that urbanization is a driving force in terms of environmental change and that cities are not only the centers of population increase but also the new engines of global economic growth. This is nowhere more so the case than in the Asian context and the cities in this region are, increasingly, being considered as lynchpins in the search for regional environmental if not 'earth security.'

Recent UNU studies have indicated that rapid development processes, under the influence of globalization flows, have been encouraged by national and local decision making that privileges growth over environmental concerns. This has left many cities within the Asia Pacific region in a condition of environmental stress. Environmental conditions vary tremendously among cities and across the region because of a variety of factors including differences in income, health, basic infrastructure, housing stock, and culture. At the same time, variations between environmental conditions within cities also seem to be increasing. While many nations and cities have, since the 1997-98 financial crisis, demonstrated an increasing interest in sustainable urban development, most public decision makers remain uncertain as to the type and nature of policies to implement in order to improve their environments.

At present much attention has been focused on the rapidity of the industrialization process and the condition of the regions' mega-cities.[1] These cities are usually the capitals of their respective nations and the primary recipients of national infrastructure projects and attention. These urban centers, because of their vast size, are the location of intense extremes in environmental differentials with gleaming centres of commercial activity often situated alongside squatter residential settlements. Many of the smaller, and sometimes the fastest growing, cities are not receiving the attention they need and are often the locations of the worst environmental conditions. While urban poverty exists in all cities throughout the region, it is a dominant feature in these centers. Asian small to medium sized, and rapidly expanding, cities are generally characterized by a lack of basic services (water and sanitation) and housing, unemployment and underemployment, deficient social services, and extreme environmental degradation. This said, the positive impact of recent efforts to reduce environmental degradation within these cities is becoming increasing evident in some regions.

Chapter Thirty Eight: Institutional Arrangements
Chapter Thirty Nine: Legal Instruments and Mechanisms

A recognition of the need to strengthen the interlinkages between multilateral environmental agree-

ments is implicit throughout *Agenda 21*, although it was not translated into an explicit objective. As such, *Agenda 21* reversed the trend of approaching 'environment' and 'development' issues separately and put in place the basis for an integrated approach to their achievement under the broader principle of 'sustainable development.'

A cross-sectoral approach to sustainable development reflects better the natural links that exist within the earth's ecosystems and societal actions. Science identifies these natural linkages: within the earth's protective ozone layer, its biogeochemical and biological systems. These links are both positive and negative and occur in a never-ending cycle of cause and effect that, in turn, influences human activities and the ways in which we interact with natural systems. It is already evident, for example, that any change in global climate patterns will ultimately affect every major natural and societal system in the world. As the climate changed, land use patterns would alter as countries attempt to cope with rising sea levels. Climate change would also alter the fertility of soil in different regions, which would impact on crop yields and possibly threaten food supplies. In addition, even slight changes in temperature would influence the outbreak and spread of major infectious diseases. Thus, any change in climate could potentially lead to the large-scale loss of livelihood, economic dislocation, biodiversity loss, decline in agriculture and food production, worsening human health, and even loss of life. It would be possible to prepare a similar list of linkages for every issue covered by each Chapter of *Agenda 21.*

In the context of sustainable development the recognition of these inherent links within the natural environment, and between natural and societal systems, has not always been translated effectively into comprehensive and coherent policy making or institution building. At present, it is still the modus operandi for the UN to segregate problem solving on the basis of whatever institutional framework, legal boundary, or specific issue is acceptable to the majority of parties involved the making of a decision. This has led to inconsistencies between naturally synergistic environmental and societal issues, and the fragmented formal legal and institutional instruments that we formulate in an effort to manage them.

Chapter Thirty Six: Public Awareness and Training
Chapter Forty: Information for Decision–Making and Promoting Education

These chapters of Agenda 21 help chart an exciting new course in the transition to a new knowledge-based, participatory, economy for the Twenty First century. In the Asia Pacific region Internet use has expanded rapidly and is expected to reach 130 million by 2005. Much of this new growth will be fuelled by China, whose annual rate of Internet growth over the next five years is expected to reach 60 percent. At present, Internet usage is not evenly distributed around the globe with fifty five countries accounting for 98 percent of all information and communication technologies (ICTs) in 150 countries across the globe. Of these, eleven are located in the Asia Pacific.

In this context, at the UN Millennium Summit in September 2000, heads of state and government resolved to ensure that the benefits of new information technologies are made available to all. Subsequently, the UN Secretary-General formed an advisory group of 21 experts from the private and public sectors to help bridge the digital divide by harnessing the potential of ICTs for development. According to the report of the UN Secretary-General to the CSD in December 2000, the implications of the emergence of the information society were unforeseen at Rio. Indeed, it is now widely recognized that ICTs are "changing the ground rules for information flow in society." The Internet and computer-mediated information systems shift the balance of control from information suppliers to consumers. Moreover, the pool of electronic information worldwide is growing exponentially.

Key Regional Sustainable Development Issues for Asia Pacific

Interlinkages between MEAs

As a result of institutional, historical, financial, or capacity conditions, the laws, conventions, treaties, institutions and mechanisms for the environment have been developed in isolation and are often segregated based on topic or theme. Such systems have not paid due regard to the natural interconnections that exist between ecosystems or bio-geo-physical relationships. Similarly there is a chronic lack of coordination at the international, regional, and national levels, and between environmental institutions that deal with related environmental problems. The segregation of these institutions has led to inadvertent conflicts between governance regimes, which has resulted in a general lack of institutional effectiveness.

Urbanization and Ecosystems

There is still a crucial need for more in depth research concerning the relationships between increasing wealth because of globalization-driven growth and demographic shifts, and environmental conditions in cities and the wellbeing of urban populations. As most data is collected at the national level there is only a limited body of regional knowledge relating to the environmental conditions of most cities within the Asia Pacific. This remains the case despite the recognition that cities play such an important environmental and economic role within the region. It is crucial, therefore, that more information be collected and assessed in order to further our understanding of the relationships between the driving forces of change, their impacts, the state of the urban environment, and current policy responses. The first step in understanding these complex inter-relationships is an urban assessment.

It is also of critical importance to the Asia Pacific region that sustainable urban environmental policies be integrated throughout all levels of governance and that they be made to include a broader range of interrelated issues such as health. In addition, policies for sustainable urban development must include "brown", "gray", and "green" issues. In poorer cities, dominant sustainable issues involve infectious diseases, access to safe water, indoor air pollution and appropriate sanitation. In rapidly industrialising cities, questions of sustainability are dominated by issues of motorisation, growth controls, air and water quality, and urban design. Finally, in richer cities of the region, key issues for urban sustainable development are those related to greenhouse gasses and other global ecosystem perturbations. All of these issues together make up the urban sustainability debate, although all do not get equal voice.

Zero Emissions

Zero Emissions is a strategy for reducing waste and improving the productivity of resources by improving symbiotic linkages between industries. These goals are achieved by identifying value-added uses for process emissions as raw-material inputs for other processes. This approach has proved to be especially effective in Japan, where many firms have used it successfully to reduce industrial waste while maintaining profitability. Zero Emissions has excellent potential for application across the whole of the Asian region. While the existing track record for manufacturing industries suggests application in this area, there are examples from the agricultural industry as well, the expansion of which needs to be explored.

Sustainable Frameworks for Large Developing Countries

Three large countries in the Asia Pacific have development imperatives that may have profound impli-

cations for the region because of their geographical, population, and resource endowments. The total population of these countries, China, India, and Indonesia is approximately 2.5 billion, which makes up about 42 percent of the world's population and accounts for about 36 percent of world population growth. The large population size and high growth of these countries places immense pressure on their environments and natural resource stocks. Rapid urbanization also worsens negative environmental impacts by causing a deterioration of air and water quality, high noise pollution, and increases in waste and sanitation problems. About one-third of the world's poor also live in these three countries and while poverty negatively affects the environment in various ways, these negative impacts themselves only serve to further reinforce the situation of poverty. Finally, all three of these countries are transforming themselves from agrarian societies to modern industrial societies and while this has contributed to rising income levels and increases in the standard of living, it is also placing a greater strain on their local environments.

Given their size, population, and resource endowments, the progress made in these three countries will have major ramifications on world markets, the global resource base, and the environment. Assisting these countries onto the path of sustainable development represents a crucial challenge for the entire international community. In addition, the lessons learned within this effort will be of immeasurable value to other large developing countries as they face a similar challenge in the future.

Agrobiodiversity

Through generations of innovation and experimentation farmers have nurtured a diversity of plants and animals, either wild or domesticated, and accumulated a vast amount of knowledge concerning the management of biodiversity. New commercial and intensified farming methods are, however, beginning to contribute substantially to biodiversity loss. In the face of these increasing pressures, it is crucial that indigenous knowledge that has been gained through the process of learning, experimentation, and innovation in farming and land management throughout the developing world is not lost. Indigenous knowledge of the management of fragile environments, the local genotypes of food crops and traditional farming practices has the potential to teach us many lessons on how to preserve diversity and halt environmental degradation. At present, an insufficient amount of research has been aimed at capturing the potential embedded within these indigenous knowledge systems.

Prioritization of Poverty Eradication

A focus on the eradication of poverty is paramount to the success of the Summit. In order to move forward on the issue, we need to concentrate on the lessons learned since the Rio Summit in 1992. Key lessons include the need to focus on both sides of the reciprocal relationship between environmental degradation and poverty. It is also important to give priority to improving the ecosystems and resources upon which the poor depend (e.g. water) and to endorse the ownership of essential support systems by the poor themselves. Other lessons include the importance of giving priority to the pre-growth stage of economic development rather than relying on 'trickle down' economic approaches. Empowerment of the poor is, for example, a core pre-condition for sustainable development and equitable environmental problem solving.

Globalization

Economic globalization has an impact on the environment and sustainable development in a wide variety of ways and through a multitude of channels. The core challenge in this regard relates to the question of how the positive aspects of economic globalization can be more directly focused toward those

who need it the most. There are several possible solutions to this question, all of which need to be more fully researched and considered. Most of these solutions relate to the structure and functioning of the current global governance system. Some have suggested that current difficulties stem from the fragmentation of environmental and economic international institutions. Others suggest that environmental institutions are weak and have no teeth when compared to global economic institutions. Still more have suggested that there are no institutions in place that can gain control of the rapid forces of globalization or its tendency to move power, capital, and technology in a way that serves only to make the rich, richer while leaving the poorest out on the margins.

Greater Integration of Socio-Economic Development and Environmental Protection

If we are to truly realise the concept of sustainable development then we should work towards making better use of the positive interlinkages between globalization and sustainable development. This would lead to a better understanding at how the challenges of sustainable development could be effectively met and how solutions could most equitably be implemented. The World Summit on Sustainable Development could provide an opportunity to look afresh at different possibilities for improving current approaches.

Trade and Environment

The trade and environment debate has continually raised speculation and created a climate of uncertainty concerning potential incompatibilities between international trade and MEA rules, and how certain trade practices may conflict with environment and sustainable development imperatives. The underlying cause of this debate is the deep concern of developing countries in regard to the linking of environment issues with trade issues within the context of the WTO. Their concern is that this will result in increased environment-related trade-restrictions that serve to limit their access to global markets. Any future negotiations must be aimed at ensuring that this concern is not realised.

The link between trade and the environment is a key issue in the Asia Pacific region because of the region's rich natural resources and reliance on open markets for trade and commerce. These factors alone raise immense concern for a resolution that is mutually supportive to both trade and environment interests. Several key issues in the trade and environment debate must be clarified within the context of the next round of global trade talks that were launched in Doha at the 4th WTO Ministerial Conference, and also at the WSSD in 2002. Greater clarity is needed in order to dispel existing uncertainties and to begin to build international confidence in the global trading system and the regulations that have been put in place to protect the environment. These issues include the clarification of the rules between MEAs and the WTO and regional trade agreements, consistent application of environmental principles in trade dispute settlement proceedings, and addressing perverse subsidies such as fishing, agriculture, and energy subsidies that adversely affect both trade and the environment.

Conservation and Sustainable Use of Biodiversity

Conservation and the sustainable use of biodiversity is a key goal that has been stressed on a number of occasions in the preparations for next year's world summit and in major environmental treaties such as the Convention on Biological Diversity. In view of the rich biodiversity in the Asia Pacific region it would be beneficial for regional bodies to promote an increased emphasis on biodiversity in the Rio process, the strengthening of the Convention on Biodiversity, and the promotion of an ecosystems approach to development. The newly launched Millennium Ecosystem Assessment will contribute significantly to the development of a more complete understanding of the link between biodiversity in the

Asia Pacific region and other regional level environmental processes. This assessment will also provide a more comprehensive account of the capacity of various regional, sub-regional, and sub-national ecosystems to provide the goods and services that are essential to the well being and development of the peoples of the Asia Pacific.

Specific Proposals to the World Summit on Sustainable Development

Key Findings ONE: Enhance Interlinkages between MEAs at the Regional and National Level [2]

While efforts to improve Interlinkages at the global level must continue, challenges and opportunities for enhanced coordination and synergies at the regional and national levels are of key importance. An inter-linked approach at the regional and national level will more effectively take advantage of the natural synergies that exist in ecosystems that have boundaries within and across the sub-national, national, and regional levels. In addition, MEAs are often more effectively implemented within regional frameworks and cooperative action plans that specify how global agreements can be applied to the contextual particularities of a geographic or ecological region or sub-region. Also, most agreements, such as the various environmental conventions negotiated under the auspices of the UN regional economic commissions or sub-regional organizations and programmes (e.g. ASEAN, SPREP, SACEP), are regional in scope. Finally, many of the administrative problems experienced at the global level also surface at the regional and national levels in the form of coordination problems, conflicting institutional roles, communication failures, and duplication.

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Key Finding TWO: Financial Mechanisms and Donor Institutions Must Promote Greater Interlinkages between MEAs [3]

Financial mechanisms play a key role in creating the priorities for achieving sustainable development. A close examination of current financial mechanisms and existing donor arrangements shows that although there are increasing efforts to create projects that encourage and support synergies between MEAs, efforts are still greatly lacking. Opportunities should also be explored on how common lending criteria, reporting and policies between multilateral and bilateral donor agencies could be developed. At the national level capacity needs to be strengthened to better promote integrated and coordinated policy making processes and synergistic implementation of environmental and sustainable development agreements. Innovative and alternative financing methods at national and local levels for projects that have multiple or synergistic benefits should also be explored.

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Key Finding THREE: The Principle of Subsidiarity Should be More Readily Applied in Environmental Decision-making and Implementation [4]

The principle of subsidiarity, which calls for decisions to be taken and implemented at a level appropri-

ate to the problem they address, should be facilitated in environmental management and governance. Ecosystems are best defined, understood and protected at the regional or local level rather than the global level. The level and type of decisions made must match the scale of the challenge or issue. This has long-term implications for the empowerment of communities and their ability to decide for themselves those aspects that affect their everyday lives. Creating an environment that facilitates such subsidiarity is a challenge for local governments, stakeholders, and for those responsible for global decision-making as well as regional and national implementation.

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Key Finding FOUR: Clustering of MEAs is an Effective and Cost Efficient Approach to MEA Implementation [5]

A fundamental starting point for environmental law and policy is science. The bio/geophysical relationships between sectors, substances and the inter-relationship of ecosystems, and activities that MEAs seek to protect or regulate, provide an obvious organizing principle for MEA coordination.

From this starting point policy makers could ensure greater effectiveness and cost efficiency of MEAs by initiating a process to strategically group MEAs together according to their scientific and natural relationships. A suggested grouping could be the following:

- Conventions related to biodiversity (possible sub-clusters regional sea etc)
- Conventions related to oceans and seas
- Conventions related to fresh water, forests and lands
- Conventions related to the atmosphere
- Conventions related to chemicals and hazardous wastes

Pragmatic work programmes could be devised within each grouping based on common functions such as capacity building, technology transfer, education and awareness raising, and information dissemination and reporting.

Such clustering should consider more effective modalities for future international negotiation, scientific assessment, and international-regional-national implementation and coordination.

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Key Finding FIVE: Trade and Environment [6]

The Doha WTO Ministerial Declaration reaffirms the need to place developing countries at the heart of the future round of trade talks and also stresses its commitment to the objective of sustainable development. These two guiding imperatives must form the basis to finally resolve the ensuing international debate on the multilateral trading system and legitimate environmental concerns.

In this context the work programme on trade and environment of the WTO that, according the Doha Ministerial Declaration, will be proposed for the 5th Session of the WTO Ministerial Conference and be

considered for the "desirability of future action" should include the following key issues:
Consistent interpretation and application of the precautionary principle, and other recognized principles under international environmental legal instruments in WTO dispute settlement proceedings.

Perverse subsidies are both harmful to the economy and to the environment. In a number of sectors (such as fish and fish products, and agriculture) they restrict, in particular, imports from developing countries. In such cases, removing perverse subsidies is considered to be a "win win" scenario where the environment could be improved and the exports of developing countries and least developing countries could be expanded.

MEAs rules that have trade implications and which enjoy "universality" must be recognized as having supremacy and authority over conflicting trade rules. Such cases must be recognized as legitimate exceptions under the WTO and regional trading agreements. Member states of MEAs and the WTO and other economic legal instruments should conclude mutually recognized guidelines of how possible legal inconsistencies could be interpreted between their respective agreements.

Other UN agencies and international organizations must join forces to provide greater capacity development and technical assistance to create the necessary awareness, and expertise to ensure that trade and environment can be mutually supportive. The UNU as the premier research and training institution within the UN system could play and strong role in this regard.

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Key Findings SIX: Greater Connectivity is Required between Urbanization and Sustainable Development and Priority Issues such as Poverty, Health, and Rural Development [7]

The UNU joins GEA in the recommendation that in order to implement new approaches to sustainable development, urbanization must be connected to such issues as poverty, the environment, health and urban-rural linkages.

Further, urban ecosystem assessments must become part of urban action plans as they link the driving forces (i.e., demographic shifts), pressures (i.e., wealth and poverty), states of the environment (including the health of populations) and responses (policies) related to urban activities, focus on the ability of cities to provide the environmental/ecological services needed for human well-being. These assessments will facilitate an integrated and multi-scale examination of urban activities and their impacts and therefore be vital to decision-makers at all levels.

In collaboration with a number of scholars and UN agencies (WHO and UNESCO/MAB), the UNU/IAS is leading an effort to undertake urban ecosystem assessments as part of the Millennium Ecosystem Assessment. The assessments will operate in ways commensurate with *Local Agenda 21*, as multi-stakeholder dialogues and public participation will be important components.

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Key Finding SEVEN: Promotion of Information Communication Technologies are Critical for Environmental Education and Conservation [8]

As governments struggle to meet their reporting obligations, for example, under international conven-

tions, they recognize the need for harmonization and rationalization of reporting requirements. New avenues are opening for preparing and presenting information in formats that are more easily understood by decision makers and the general public. Multimedia technologies, software packages, and such tools as indicators and animated graphical presentations can assist decision makers in their sustainable development efforts. The educational value of scientific and policy inputs to decision-making and information technologies are increasingly bridging the gap between policy and education. This has the additional bonus of increasing the transparency of decision-making processes and enhancing public awareness of environmental concerns, thus complying with the objectives set out in Chapters Thirty Six and Forty of *Agenda 21*. The potential being opened up by these new patterns of ICT supported communication, policy formulation, and education is revolutionary and still far from being appreciated adequately.

Regional strategies (e.g. European Commissions e-Europe strategy) could also offer a way to maximise the potential economic and environmental opportunities associated with the shift to an information society in the Asia Pacific. This should not be a case of "grow now, clean later" but "grow a clean industrial structure now" and share knowledge in the process.

The UNU is implementing a number of projects under the theme of ICT and the Environment. These include projects on information harmonization for national reporting on multilateral environmental agreements, exploratory research on the impact of ICTs on the environment, and an exciting initiative called the UNU Virtual University.

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Key Finding EIGHT: "ZERO Emissions" Strategies are a Practical and Economically Efficient Path to Sustainability [9]

Strategies such as the Zero Emissions concept, which advocate all industrial inputs being used in final products or converted into value-added inputs for other industries or processes, are practical methods to achieve greater environmental sustainability. Such strategies could be implemented by reorganizing industries into clusters such that each industry's wastes / by-products are fully matched with the input requirements of another industry, and the integrated whole produces no waste of any kind. National governments should, with the cooperation of industry, sponsor feasibility studies to determine what sectors could most benefit from application of Zero Emissions. In some cases, national investment in R&D will be needed to get past the initial non-market barrier that exists for all new technologies. As Zero Emissions symbiosis requires new cooperation between companies, local governments can play an important brokering role between firms, as well as stimulate development of Zero Emissions industrial parks.

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Key Finding NINE: Promotion of Best Practices on Agrobiodiversity through Local Knowledge is a Key to Biodiversity Conservation (The PLEC Approach) [10]

Biodiversity exists largely in landscapes that are managed for agriculture and rural livelihoods. Generations of farmers have experimented and developed innovative ways to manage biodiversity. In the process they have devised management practices that combine superior production along with the enhancement of biodiversity. One useful approach to the preservation of biodiversity within the Asia

Pacific region is to promote best practice farm management by identifying "expert" farmers and facilitating their training of other farmers, technicians, scientists, extension agents, and policy makers. This would represent a bottom-up approach to technology and knowledge transfer that is dramatically different from the top-down approach that is often used in agricultural extension and reforestation programmes in this Asia Pacific region.

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Key Finding TEN: Creation and Implementation of Strategic National Frameworks for Sustainable Development are Required [11]

Strategic planning frameworks for sustainable development are an effective method of identifying the priorities, compromises, and trade-offs that countries must take account of in order to achieve sustainability. Such frameworks should measure progress and set priorities. They should also serve to identify, analyse, and help show how best practices can be adapted in pursuit of the socio-economic and environmental goals outlined in . As an example of how such frameworks could be constructed the UNU has formulated three strategic frameworks that focus on China, India, and Indonesia. The frameworks take into consideration specific country factors that are inherent to large developing countries. These include the tremendous population pressures that can give rise to deforestation and soil erosion as well as the natural resource endowments of each country.

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Endnotes

1 Cities with a total population exceeding eight million.

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Abbreviations & Acronyms

CBD	Convention on Biological Diversity
CCD	Convention to Combat Draught and Desertification
CITES	Convention on International Trade of Endangered Species of Wild Flora and Fauna
CITs	Countries in transition
CMS	Convention on Migratory Species
COP	Conference of the Parties
DAC	Development Assistance Committee
ESCAP	Economic and Social Commission for Asia and the Pacific
FCCC	Framework Convention on Climate Change
GEIC	Global Environment Information Centre
IGO	Inter-governmental Organization
ICT	Information Communication Technology
JICA	Japan International Development Agency
LDC	Least Developing Country
MEA	Multilateral Environmental Agreement
MA	Millennium Ecosystem Assessment
MOU	Memorandum of Understanding
NFP	National Focal Point
NSSD	National Strategy for Sustainable Development
ODA	Overseas Development Assistance
PICs	Pacific Island Countries
PLEC	People, Land Management, and Environmental Change
ROAP	Regional Office for Asia and the Pacific
RTC	Research and Training Centre of UNU
RTP	Research and Training Programme of UNU
SAARC	South Asian Association for Regional Cooperation
SACEP	South Asian Cooperative Environmental Programme
SPREP	South Pacific Regional Environmental Programme
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNU	United Nations University
UNU/IAS	United Nations University Institute of Advanced Studies
WTO	World Trade Organization
WHO	World Health Organization
WSSD	World Summit on Sustainable Development
ZEF	Zero Emissions Forum
ZERI	Zero Emissions Initiative

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