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TURNING CRISIS INTO OPPORTUNITY: GREENING ECONOMIC RECOVERY STRATEGIES

Note by the secretariat

SUMMARY

The unfolding financial crisis is likely to result in a global economic recession, which will affect the poor most severely. Several countries in the region have initiated or are planning to initiate economic stimulus programmes to combat the adverse impacts of the global economic recession on their economies. Many of these programmes would include investments in energy, water and transport infrastructure, housing and other sectors of the economy. The present document highlights the need to incorporate long-term sustainable development principles into short-term interventions. In this way, infrastructure investment and economic stimulus policies would avoid locking economies into a wasteful consumption pattern for decades to come.

The present document highlights some basic strategies for doing this. They include shifting to a low-carbon economy while boosting employment, economic opportunities and growth. However, the underlying needs of the millions without basic services should be the initial objective. Reorienting development policies in a way that considers the impact of consumption and production patterns will be a key factor in determining whether countries can weather the next crisis.

* The present document was the subject of extensive consultations with relevant and key ESCAP staff members, which resulted in the submission being delayed by one day.

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Introduction

1. The food, fuel and financial crises have had a compounding negative effect on development efforts, pushing back progress towards alleviating poverty. Just as people and economies start to adapt to one crisis, another strikes, requiring emergency strategies to limit the impact on economic growth and the most vulnerable people in society. The most recent financial crisis has led many Governments to respond in an unprecedented manner, which often links the environment to economic development. Underlying these strategies is the recognition that many of the crises are at least partly attributable, in one way or another, to ingrained unsustainable consumption and production patterns.

2. Economic stimulus programmes are being conceived and implemented in many developing Asian countries in an effort to buffer the impact of the recent financial crisis on society. These programmes are essential for short-term response, but the challenge and opportunity is to build in long-term recovery and resilience strategies that lead to sustainable development.

3. As the world stumbles from one crisis to another, Governments are recognizing that a drastic change in economic growth patterns and public attitudes is needed. The business-as-usual development approach means that countries risk becoming victims of the next crisis the world is prone to face. This situation will persist unless economic development strategies become more focused on promoting sustainable livelihoods. The impending threat of climate change is likely to bring new challenges in the form of deepening water insecurity, extreme climatic events and sea level rise. Given the impacts of the fuel, food and financial crises, many economies and people and the environment upon which they depend will be burdened further by climate change.

I. THE UNFOLDING IMPACT OF THE FOOD, FUEL AND FINANCIAL CRISES

4. The full impact of the combined food, fuel and financial crises is not easy to determine. When fuel prices peaked in 2008, many countries had not yet felt the full economic impact at the national level. However, according to a United Nations

Development Programme (UNDP) survey of four Asian countries, millions of poor people felt the sting of paying about 74 per cent more for their energy needs.[1] For oil exporting countries, the high oil prices brought a financial windfall, while for those countries that were heavily dependent on oil, it led to an economic slowdown and social unrest. Measured in purely economic terms, the high commodity prices cost India, China, and the Republic of Korea about $10 billion each per year between 2004 and 2007.[2] However, the full social impact has been less clear.

5. The increasing spillover of the effects of the global financial crisis into the real sector has driven home the stark reality that, for all its achievements, the Asia-Pacific region is under stress and is more fragile than was thought possible. The problem is compounded by the relatively weak social protection structures in the countries of the region, where over 80 per cent of the population does not have access to social protection systems. The financial crisis highlights this weakness, making evident intraregional and intranational disparities. The full social impact of the financial crisis is still not clear because data are not yet available on issues such as the increase in unemployment and the condition of vulnerable groups. However, as the 1997 crisis showed, the brunt of the impact will fall on those least able to cope. In any situation where people are affected by sudden shocks, it is the poor—many of whom are women, children, elderly and socially excluded groups—who are the hardest hit. The coping measures often available to these people tend to be harmful and exacerbate poverty over the long term. For example, these measures may include reducing meals and eating less nutritiously, taking children out of school so that they can become economically active to supplement the household income, selling livestock and other assets or borrowing money to buy food.[3]

6. In addition, it has been estimated that world unemployment could increase by 15 million to 20 million by 2009, with the number of unemployed in the Asia-Pacific region potentially rising by 8 million. Again, unemployment affects the poor and marginalized populations first, not only because they have less to cushion the impact of shocks, such as real assets and savings, but also because they have less influence on economic and political decision-making. Furthermore, these negative impacts last much longer than the actual crisis. While economic growth was re-established relatively quickly after the crisis in 1997, it took up to 10 years to recover ground lost in the struggle against poverty in some countries.[4]

7. As households are less able to afford basic food and supplies, they tend to shift back to relying on the land, thus increasing the pressure on the environment. Unsustainable agricultural practices deplete land and water resources, and a shift back to traditional fuels can lead to deforestation, the loss of biodiversity and land-use change. All of these contribute to climate change, which will, in turn, exacerbate the problem, as extreme weather conditions can lead to floods, drought or the further depletion of already limited water resources. There is a growing concern that climate change may create thousands of refugees as sea levels rise or the land can no longer sustain rural populations.

8. An increase in urbanization is also likely to put pressure on cities that already suffer from serious air, water and waste problems. Cities tend to be some of the most

[1] United Nations Development Programme, *Overcoming Vulnerability to Rising Oil Prices: Options for Asia and the Pacific* (United Nations publication, Sales No. E.08.III.B.5, 2007).
[2] ESCAP, *Economic and Social Survey of Asia and the Pacific 2009* (United Nations publication, Sales No. E.09.II.F.11, forthcoming).
[3] Ibid.
[4] International Labour Organization, "Shaping a fair globalization: Perspectives and prospects for the decent work agenda" (Working Party on the Social Dimension of Globalization, Governing Body document GB.303/WP/SDG/1, Geneva, November 2008).

significant sources of greenhouse gas emissions due to the unsustainable consumption of electricity and petroleum. A lack of technical capacity in urban planning, zoning and building codes has generally led to poorly designed buildings, which require substantial amounts of energy to heat or cool, and transport systems that are inadequate and inefficient and encourage the use of private vehicles over public transport.

9. On a more macroeconomic scale, the financial crisis, in particular, is likely to impact development efforts at the time they are needed most. Foreign direct investment, which is often considered a more stable source of financing during crisis periods, is expected to decrease, primarily because the crisis first hit the home countries of the investors, where massive stimulus programmes are taking away financial resources that could otherwise flow to developing countries.[5] This may lead to slower growth and infrastructure development within the region as potential investors delay decisions to consolidate finances.

10. In addition, financial institutions are likely to be more hesitant to provide loans. This would be particularly detrimental to small and medium-sized businesses, which are often seen as more risky. Since income generation for poverty reduction frequently relies on some kind of seed funding, the reluctance of financial institutions to grant loans could restrict opportunities for low-income households.

11. All of these impacts have led to some drastic rethinking and action by Government policymakers and business leaders to support the struggling national and global economies. Economic stimulus programmes are being instituted in many countries. However, what is interesting is the approach now being taken by many Governments to incorporate long-term plans that will help to reduce the impact of climate change.

II. INTERNATIONAL AND REGIONAL RESPONSES—THE GREENING OF RECOVERY STRATEGIES

12. The impacts described above have led to the development of economic recovery programmes by Government policymakers and think tanks world wide. The economic stimulus programmes being instituted include measures to stimulate consumer spending, create employment and expand infrastructure. However, it is worth noting that, while crisis is not new to regional or global economies, never before have recovery strategies so strongly emphasized the integration of short-term economic growth and long-term sustainability goals. This reflects a changing development context, a growing sense of environmental crisis and an increasing recognition that economic growth and environmental sustainability strategies must be integrated.

13. Global green recovery strategies include the Global Green New Deal proposed by the United Nations, with the United Nations Environment Programme (UNEP) in the lead, which was referred to recently by the Secretary-General at the World Economic Forum entitled “The Global Compact: Creating Sustainable Markets”. The plan calls on world leaders to promote a massive redirection of investment away from unsustainable production and consumption patterns into job-creating programmes that restore the natural systems underpinning the global economy. The recovery strategy of the United States of America is termed Green Recovery, while a think tank in the United Kingdom has proposed the Green New Deal. Within the ESCAP region, the Republic of Korea has announced a Green New

[5] *Economic and Social Survey 2009.*

Deal policy and initiatives, and in Australia, a multi-stakeholder group has released a strategy for a green new deal for Australia.[6]

14. Common elements of these green strategies, some of which are described in the following sections, include a focus on energy efficiency, renewable energy development, alternative infrastructure development initiatives and green jobs. These strategies recognize that recovery strategies should lead to long-term sustainable development. Recovery strategies that focus on economic growth without sufficiently considering the implications for social development or environmental sustainability tend to cost more over the long term. For example, environmental degradation not only costs millions to clean up, but it can also lead to chronic health impacts, which indirectly reduce the labour force due to extended illness and result in more social and health-related costs. The impacts of climate change are also of considerable concern. They are estimated to be phenomenal, with potential impacts such as whole countries disappearing; prolonged and more severe weather, such as droughts, typhoons and flooding; reduced availability of freshwater in a region already suffering from an extreme lack of access; and reduced food production.

III. THE IMPLICATIONS OF GLOBAL GREEN RECOVERY STRATEGIES FOR DEVELOPING COUNTRIES IN THE REGION

15. These global recovery strategies signal both threats and opportunities for countries in the region. One of the opportunities that can be readily identified is the changing basis for competitiveness in new sectors. Countries such as China are already global industry leaders in solar panel and wind energy production, while countries that are agricultural producers can find growth opportunities in organic agriculture and, at the same time, reduce the environmental impacts and costs of agricultural inputs.

16. The greening of recovery strategies also implies, in the long term, a possible acceleration of the greening of global economies. The global automobile industry is just one case in which competitiveness has been based on being able to integrate the creation of consumer value with a reduction in the environmental impact of the individual consumer. A new competitive paradigm has placed automotive producers that achieve high energy efficiency and low-carbon emission standards in the lead.[7] The implications for developing countries should be carefully examined by countries in the region, both those which are already heavy exporters, and those in which the industrial sectors are still latent.

17. A key threat to countries is the possibility that economic stimulus programmes that are imbalanced and short-sighted or that promote investments in the wrong sectors could entrench the existing economic development patterns, which would make economies vulnerable in two important ways: first, they would be vulnerable if similar crises were to occur in the future and, second, they would be increasingly vulnerable as the rules of the global economic game change.

18. In the course of the negotiations on the post-2012 framework on climate change, many developing countries expressed their concerns about the negative spillover effects of new mitigation policies. As developed countries will strengthen

[6] See www.acfonline.org.au/uploads/res/Green_economic_stimulus_FINAL_w_logos.pdf.

[7] In 2005, the European Union established a high-level group to make public policy to support the development of environmentally friendly cars as a way to fight global warming and keep the industry competitive. See the European Commission Enterprise and Industry: Automotive website http://ec.europa.eu/enterprise/automotive/pagesbackground/competitiveness/cars21.htm, accessed on 30 January 2009.

policies aimed at lowering the carbon intensity of business practices and products, developing countries are concerned about losing their market competitiveness. This concern could be applied to the green new deal of developed countries. Developed countries have embarked on a new economic transformation, opening a race for a new economy. This race is, to a certain extent, similar to the dawn of the industrial and information technology revolutions in that developing countries could be left behind if they are hesitant to join. Thus, it is critical for them to respond proactively to this emerging trend towards strengthening market competitiveness and mitigating climate change.

19. Even before the crises, ESCAP had advocated a green growth approach based on the principles of enhancing the quality of economic growth, eco-efficiency and environmental sustainability. The key strategies under the green growth approach include a green tax, budget reform, the development of sustainable infrastructure, the greening of business and the promotion of sustainable consumption patterns. Other programmes have been put forward by various international organizations. The United Nations Industrial Development Organization has proposed a green industry plan, while the International Labour Organization and UNEP have developed a joint initiative on green jobs.

20. These strategies and the development challenges faced by countries suggest some key considerations and opportunities for developing countries in the region in greening their economic recovery strategies, including the following:

(a) Investment in sustainable infrastructure—avoiding infrastructure development that will be more expensive over the long term in terms of the use of energy, water and other resources;

(b) Employment generation strategies that contribute to: (i) eco-efficient, sustainable infrastructure development that meets basic needs; (ii) the greening of economic sectors; and (iii) investment in natural capital;

(c) Investment in energy efficiency to reduce energy costs, the impacts of the crisis on the poor and production costs;

(d) Spending stimulus strategies that are supported by measures (such as a green tax and budget reform) to promote demand for eco-efficient products and services, particularly those produced in rural areas;

(e) Investment strategies to support economic recovery and social support systems for those who are most vulnerable and most in need, including the greening of capital and financial markets, and the swapping of debts for reinvestment in natural and human capital for the greening of economic growth;

(f) Strengthening of the agricultural sector based on eco-efficient, rather than intensive, models of agriculture.

21. Sustainable infrastructure development is particularly important for some of the least developed countries in the region. As infrastructure is underdeveloped and policies are still fluid, a shift from traditional development policies to those promoting greener growth would place the economy on a healthy development path that would enable social development and economic growth, while preventing countries from locking themselves into infrastructures that will cost more over the long term.

22. A number of policies exist that could support economic growth and poverty reduction while seeking to minimize environmental impacts. Some of these, such as

energy efficiency, are already economically feasible and are being implemented in many countries. Others require a shift in attitude to recognize that a country's natural resources are the foundation of its economy. They provide the food, minerals and fuel on which the population depends to survive. However, natural systems also provide an essential service to both the country and the planet, including water treatment and air purification.

23. As the global economy recovers and evolves from the financial crisis, it is an ideal time to shift policies to incorporate the cost to the environment and to pay for these environmental services. Investments in ecosystem services can improve rural livelihoods and, at the same time, support economic activity in all sectors. Innovative policies to support payment for ecosystem services have been established, or are under consideration, in some countries in the region, including Viet Nam, Indonesia, the Philippines and Sri Lanka.

24. From a private enterprise perspective, a number of corporations are looking into policy changes to increase environmental and social responsibility, including the introduction of carbon neutral policies on a voluntary basis. The direct or indirect benefits of these policies are profitable to the private sector; however, Governments could support considerable further action by creating a policy and institutional environment where environmental services are not only recognized as a valuable commodity, but where protecting these resources is profitable in the short and long term.

A. Reorienting industrial policy to a low-carbon development path

25. The growing economies in Asia and the Pacific have achieved phenomenal economic growth, with hundreds of millions of people lifted from poverty. However, this has resulted in an increasing demand for energy in the region. The lack of technology and cost considerations have led to an energy-intensive development path. As a result, the region's share of global greenhouse gas emissions has increased, contributing significantly to global warming. The risks of global warming include shrinking mountain glaciers, rising sea levels and an increasing intensity and frequency of severe weather conditions. Water stress could become a particular concern for Asia and the Pacific given that the region already suffers from a shortage of clean water. In addition, given that agriculture is one of the primary sources of income for millions, the possibility of reduced agricultural productivity due to rising temperatures and water restrictions may pose a serious problem for food security. Mitigation measures and policies are vital to avoiding a catastrophe; however, adaptation to climate change is likely to become a part of life.[8]

26. Moving away from supporting carbon-intensive industries and redirecting that support to the low-carbon economy, including the wide application of energy-efficient technologies and the promotion of renewable energy industries, and to measures that could restore the natural resources upon which the global economy depends, will create millions of green jobs. Some countries have already started to translate this concept into action. In Mexico, 1.5 million people are being employed to plant and manage forests, and China now has some of the world's largest solar industries. The world market for environmental goods and services stands at $1.3 trillion and is continuously growing.[9]

[8] *Economic and Social Survey 2009.*

[9] G. Lean, "A 'Green New Deal' can save the world's economy, says UN", *The Independent*, 12 October 2008, available at www.independent.co.uk/environment/green-living/a-green-new-deal-can-save-the-worlds-economy-says-un-958696.html.

27. One of the most publicized proposals has been the push by newly elected President Obama to reorient the United States economy through the creation of green jobs that would support economic development and climate change action. The plan proposes a short-term stimulus to jump-start the economy and a long-term transformation to a low-carbon economy. The basic activities that will be promoted under the plan are:

- Retrofitting buildings to improve energy efficiency
- Expanding mass transit and freight rail
- Constructing smart electrical grid transmission systems
- Producing wind power, solar power and next-generation biofuels

28. The Republic of Korea has also just announced that it will be investing 50 trillion won ($37.8 billion) over the next four years in a Green New Deal to revitalize the economy, create jobs and tackle climate change. Projects will include the construction of hydropower facilities and green transport networks; the production of green vehicles, including hybrid cars; the development of renewable energy resources; and the expansion of forests.[10] China recently announced a $586 billion stimulus package which includes spending on programmes in energy efficiency and the environment, along with the expansion of the rail network, which is an alternative to air and road travel with lower carbon emissions.[11]

29. There are several pro-poor policy tools and strategies available that would enable countries to green their economic recovery in the short term and, in the medium to long term, to reduce their dependence on fossil fuels and move towards a low-carbon and energy secure economy.

1. Getting the economic incentives and disincentives right

30. Many countries in the Asia-Pacific region have fuel subsidy programmes that became extremely costly when crude oil prices soared, providing a clear example of unsustainable consumption and production patterns. In 2005, the energy subsidies of five countries in the region (the Russian Federation, the Islamic Republic of Iran, China, India and Indonesia) alone amounted to about $140 billion.[12]

31. Some energy subsidies lead to the excessive use of energy by the affluent. For this reason, the need to integrate social protection and economic policy and environmental policy should be reiterated. A market-oriented pricing mechanism that also includes the cost of environmental impacts, coupled with a targeted subsidy for the less affluent, could alleviate the pressures on energy use and the environmental damage it causes. Replacing subsidies with fuel taxes will not only reduce the adverse impact of future crude oil price increases on fiscal accounts but will also create incentives for consumers to economize their consumption of fuel. Subsidies could then be redirected towards the promotion of energy efficiency and the use of

[10] "Green New Deal", *Korea Times*, 6 January 2009, available at www.koreatimes.co.kr/www/news/opinon/2009/01/202_37378.html.

[11] David Barboza, "China unveils $586 billion stimulus plan", *International Herald Tribune*, 10 November 2008, available at www.iht.com/articles/2008/11/10/asia/10china.php; Paul Maidment, "China Announces Massive Stimulus Package", Forbes.com, 19 November 2008, available at www.forbes.com/business/2008/11/09/china-stimulus-economy-biz-cx_pm_1109notes.html.

[12] International Energy Agency, *World Energy Outlook 2007* (Paris, 2007).

alternative and renewable energy sources. The current oil prices, which are lower than 2008 prices, could provide a good opportunity to implement tax reform.[13]

32. Other policy tools to facilitate the reorientation of industrial policy relate to the use of efficient production technologies by industry and a behavioural change in energy use by consumers. A market-based financial incentive system, for example, could influence the behaviour of producers and consumers by providing them with a choice on the appliances they purchase.

33. According to the ESCAP *Economic and Social Survey of Asia and the Pacific 2009*, the following actions and recommendations could also help to reduce carbon emissions:

(a) Providing tax incentives for investments in newer and cleaner technologies in electricity generation, fuel combustion, manufacturing and construction;

(b) Creating an enabling environment for renewable energy through "feed-in" tariffs, inducing electricity utilities to purchase electricity generated from renewable sources at above-market rates set by the government;

(c) Imposing graded user charges on energy use, including electricity, while providing incentives (such as lower rates) for energy conservation;

(d) Imposing higher taxes on old and inefficient motor vehicles and those with high engine displacement or auctioning permits for buying and using motor vehicles;

(e) Providing incentives to adopt energy-efficient technologies for producing goods and providing services;

(f) Applying building and industry standards in energy use. In particular, promoting active solar-integrated buildings and improved insulation, and upgrading of old industry infrastructure;

(g) Managing consumption demand by pricing utilities properly and adopting policies that oblige consumers to be ecologically responsible, by, among other things, regulating the use of inefficient electrical appliances and high-energy-consuming lights.

2. Promoting green industries and jobs

34. Investment in green industries, such as those that manufacture goods and services for energy efficiency and renewable energy development and those that manufacture low-carbon motor vehicles and mass transit systems, is likely to be profitable for private businesses as well as creating new green jobs.

35. The United States Green Recovery programme recognizes the potential for creating an army of "green collar" workers who are employed in jobs such as retrofitting buildings to be more energy-efficient or installing renewable energy systems. The table below highlights the employment opportunities under the United States plan.

[13] *Economic and Social Survey 2009.*

36. Green jobs can, however, extend beyond energy. There are considerable opportunities in the solid waste and wastewater sectors, which can also contribute to a low-carbon economy by reducing the need to manufacture more goods, which generally uses energy, through the recycling and reuse of products. Most cities in Asia and the Pacific have a large informal recycling industry, which recycles up to 30 per cent of waste in some cities and which should be supported and integrated into any new sustainable solid waste management approaches. However, as up to 60-70 per cent of the region's urban waste is organic, organic waste treatment strategies can also result in green jobs. Organic wastes are a significant source of methane, which is a potent greenhouse gas but also a source of energy. Capturing and using methane for energy reduces the reliance on alternative fossil fuels and converts the methane to a less harmful greenhouse gas.

37. Good examples of green jobs include the small-scale, neighbourhood-based compost plants promoted by ESCAP. Such plants are self-financing and provide secure employment for hitherto informal waste pickers. Such models can be easily scaled up using carbon financing.

Table. Potential employment opportunities under the Green Recovery programme

Strategies for green economic investment	**Representative jobs**
Building retrofitting	Electricians, heating/air conditioning installers, carpenters, construction equipment operators, roofers, insulation workers, carpenter helpers, industrial truck drivers, construction managers, building inspectors
Mass transit/freight rail	Civil engineers, rail track layers, electricians, welders, metal fabricators, engine assemblers, bus drivers, dispatchers, locomotive engineers, railroad conductors
Smart grid	Computer software engineers, electrical engineers, electrical equipment assemblers, electrical equipment technicians, machinists, team assemblers, construction labourers, operating engineers, electrical power line installers and repairers
Wind power	Environmental engineers, iron and steel workers, millwrights, sheet metal workers, machinists, electrical equipment assemblers, construction equipment operators, industrial truck drivers, industrial production managers, first-line production supervisors
Solar power	Electrical engineers, electricians, industrial machinery mechanics, welders, metal fabricators, electrical equipment assemblers, construction equipment operators, installation helpers, labourers, construction managers
Advanced biofuels	Chemical engineers, chemists, chemical equipment operators, chemical technicians, mixing and blending machine operators, agricultural workers, industrial truck drivers, farm product purchasers, agricultural and forestry supervisors, agricultural inspectors

Source: Center for American Progress and Political Economy Research Institute, *Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy,* 2008.

B. Providing basic services to all

38. The need to provide access to basic services should be the underlying principle behind all development policies. As of 2006, 1.7 billion people in the Asia-Pacific region lacked access to improved sanitation, while half a billion lacked access

to safe water and 2 billion lacked access to piped water.[14] In addition, almost 1 billion people lack access to electricity and rely heavily on biomass, such as wood and animal waste, for their basic energy needs.[15] Though many of these people are in rural areas, cities also have significant problems with access to and the sustainability of basic services. With 40 per cent of the population living in urban areas, cities tend to suffer from significant environmental problems and poverty. Providing for these marginalized people will not only bring significant health benefits, it will also contribute to large productivity gains in the economy.

1. Water and sanitation

39. To halve the proportion of people without access to safe drinking water and basic sanitation by 2015, which is one of the Millennium Development Goals, developing countries would need to spend a total of about $42 billion for water and $142 billion for sanitation over a 10-year period, a combined annual equivalent of $18 billion.[16] These are staggering sums, particularly in the context of the current financial and economic crisis. Developing countries, which were already unable to finance such projects on their own before the financial crisis, will be in no better position now and will need assistance from the international donor community. The total economic benefits of meeting the water and sanitation Millennium Development Goal target could reach up to $38 billion annually, a figure that could increase fourfold if 100 per cent sanitation coverage were to be achieved. These benefits are mostly associated with time savings.[17] It is hopeful that some countries, such as Viet Nam and Bangladesh, are already starting to bring these issues to the top of the political agenda by mapping out national strategies and policies. More work is needed to ensure that adequate attention is paid to access to water and sanitation, as well as to identify the potential of market-based instruments, such as private financing and water pricing. Furthermore, eco-efficiency criteria need to be introduced to ensure that these new investments do not exert additional pressures on the environment, which is already fragile.

40. Cities in Asia and the Pacific are also struggling with water and sanitation problems. Many cities face increasing cycles of floods in rainy seasons and droughts in dry seasons. Key mitigation and adaptation strategies include rainwater harvesting, grey water reuse and water recycling. Good practices include, for example, the local regulations in Bangalore and Tamil Nadu, India, that have made the instalment of rainwater harvesting systems in new housing compulsory or that have exempted households that have installed rainwater harvesting systems from property taxes. As most people are willing to pay for water but are not used to paying for wastewater disposal, another promising approach that has been tried out in Kathmandu Valley, Nepal, is to integrate the two in decentralized, community-based systems that, for example, use communal septic tanks, reed bed systems and biodigesters.

2. Energy

41. Though it is not included as a Millennium Development Goal itself, energy is essential to meeting most of the Goals. It is necessary for the provision of nutritious food, clean water, light and a place to live. Without access to modern energy services,

[14] World Health Organization (WHO) and United Nations Children's Fund (UNICEF) Joint Monitoring Programme for Water Supply and Sanitation (JMP). *Progress on Drinking Water and Sanitation: Special Focus on Sanitation* (UNICEF, New York and WHO, Geneva, 2008).

[15] *World Energy Outlook 2007*.

[16] A. Rosemarin, N. Ekane, I. Caldwell, E. Kvarnström, J. McConville, C. Ruben and M. Fogde, *Pathways for Sustainable Sanitation—Achieving the Millennium Development Goals* (IWA Publishing, 2008), 56p.

[17] Ibid.

many people rely on traditional fuels, such as wood and animal waste. The use of these fuels impacts health through indoor air pollution and it also has social impacts, particularly for women, who spend many hours a day collecting fuel and therefore have no time for education or income generation activities. Though the number of people without electricity looks formidable, the amount of energy required to meet the basic cooking needs of the 2.4 billion people in the world without access to modern energy services corresponds to no more than 1 per cent of global commercial energy consumption.[18]

42. Supporting policies and programmes that allow households and enterprises to afford renewable energy services also boosts the energy security of the economy by reducing dependence on imported fuels. As an additional benefit, renewable energy systems help cut greenhouse gas emissions. The possible reorientation of many national and global economies in response to the financial crisis and the volatile fuel prices that have affected so many over the last few years provides an opportunity to integrate poverty reduction policies into long-term sustainable development priorities.

3. Solid waste management

43. Almost all cities in Asia and the Pacific are experiencing a crisis in solid waste management, with poor service that leaves most waste uncollected, incurs high costs for local governments (sometimes as much as 40 per cent of their budgets), and causes serious disposal difficulties, as existing land dumps are overflowing and there is no land available for new ones. The problem with conventional solid waste management systems, such as landfills and incinerators, is that they are capital- and technology-intensive, end-of-pipe solutions. Therefore, new approaches that reduce waste, create circular flows of reuse and recycling, and treat trash as cash are urgently needed. The focus has to be on minimizing transport costs, improving waste collection services and providing better income and working conditions for waste pickers.

4. Transport

44. Another priority sector that must be considered to develop a sustainable city is transport. Increasing motorization is leading to traffic congestion and air pollution on a scale that is seriously affecting the economic and social functions of cities. Transport is also a significant source of greenhouse gas emissions. Sustainable and resilient urban transport development strategies should focus on mass mobility rather than individual mobility.

45. Good urban mass transit systems, such as metros, skytrains and bus rapid transit, can lead to lower carbon emissions. Changing fuels that urban vehicles—particularly public transit and commercial vehicles—use to alternatives such as compressed natural gas, hybrid and purely electric systems can improve air quality, reduce the incidence of respiratory diseases and, in many cases, reduce greenhouse gas emissions. The environmental cost of using individual vehicles should be reflected more realistically in taxes, zone-differentiated tolls and parking fees. While such new policies and initiatives should focus on eco-efficiency, they should also incorporate existing structures and employment opportunities—especially of the informal and small and medium-sized enterprise sectors, including rikshaws, tuk-tuks and minibuses—to the greatest extent possible. Each city has a unique transport mix

[18] Amulya K.N. Reddy, "Goals, Strategies and Policies for Rural Energy", *Economic and Political Weekly* 34 (49):3435-3445, 1999, as quoted in United Nations Development Programme, United Nations Department of Economic and Social Affairs and World Energy Council, *World Energy Assessment: Energy and the Challenge of Sustainability* (United Nations publication, Sales No. 00.III.B.5, 2000).

and any strategy should ensure flexible solutions for short- and long-distance travel and commuting; they should, however, focus more on access than on mobility to ensure increased opportunities for participation in income generation activities for poor and disadvantaged groups, as well. In addition, though some strategies necessitate longer-term, expensive investments that will pay off over time, others can be implemented quickly and at relatively low cost.

5. Buildings

46. Buildings are one of the most resource-intensive structures in the world, using about 30 to 40 per cent of the world's primary energy.[19] This is due not only to their operation and maintenance, but also to their construction and the production of the materials used for their construction. Often, buildings are made from materials with a high embodied energy—that is, the materials were energy-intensive to manufacture—and are designed in a manner that does not adequately consider the environment. For example, in hot regions, buildings with a large number of windows facing the sun during the hottest part of the day substantially increase air conditioning requirements and therefore expense. Many municipal level planners are now recognizing the importance of passive energy-efficient design in buildings. Often, with forethought, the payback period for energy-efficient improvements in buildings can be relatively short. According to the International Energy Agency, implementing energy efficiency measures in buildings would reduce global energy use by about 11 per cent by 2030 compared to a business-as-usual scenario. This would equate to about 400 GW of avoided installed electricity capacity, or almost the entire current energy consumption of the European Union residential and service sectors combined.[20] In developing countries, this potential is much greater. A number of mechanisms can support the construction of sustainable buildings. Policy measures include building codes and planning regulations; however, voluntary methods such as energy rating schemes and standards and labelling are also effective. Often, however, a range of tools needs to be used for the best effect. Innovation in building construction to increase the health of buildings will reduce their use of natural resources, benefit climate change action efforts and improve their ecological footprint.

6. Urban planning

47. However, it is not enough to consider each sector in isolation. Urban planning is the key to designing sustainable cities and the responsibility lies predominantly with municipal governments, though national Governments and the private sector are also essential stakeholders. One method of improving the sustainability of a city is to increase its density so that people don't need to travel as far between their home and their source of income or education. While compact cities are advantageous in terms of cost and the efficiency of providing basic services and infrastructure, due attention has to be given to the heat island effects that result from urban density and energy consumption in highly concentrated urban areas. Green buildings can contribute to lessening the heat island effect, as can open spaces. It should also be noted that vertical compactness does not suit everyone. Many poor people who work from home providing small-scale services often prefer horizontal housing. In addition, policies and incentives to increase the green areas of cities and urban environments with natural microclimate control islands, green roofs and urban agriculture zoning can greatly improve the well-being of their inhabitants, as well as their ecological footprint.

[19] International Energy Agency, *World Energy Outlook 2008* (Paris, 2008).
[20] Ibid.

48. Effective urban planning would include city-wide strategies which link the inputs and outputs of various sectors to create synergies and virtuous circles of economic growth, social inclusion and eco-efficiency. Rather than being piecemeal, the approach towards resilient and sustainable cities should be holistic and systemic. For example, decentralized solid waste management systems can be linked with wastewater treatment and the resulting biogas can be used for household cooking or electricity generation.

49. Looking at the various economic sectors and services needed is not only a technical matter. In order to make a city-wide strategy that focuses on sustainability and resilience work, it is equally important to ensure that the legislative and governance regimes are enabling and inclusive. As has been mentioned in the sector-specific examples above, local governments can create tax incentives for green and pro-poor practices and discourage ecologically unsound practices by imposing restrictions and fees.

50. Another crucial ingredient in driving through successful reforms is to create a participatory multi-stakeholder process for planning and implementing policies. Governments should seek the participation of business through public-private partnerships and of poor communities through community-based approaches, as a city's various residents often know their local challenges best and therefore often have refreshing solutions to offer.

7. Natural resources management

51. The recent economic downturn may force people to return to rural areas and agricultural activities. The food crisis, which came about before the full development of the financial and economic crises, had already increased the importance of the agricultural sector's contribution to GDP in many developing countries. This shift is expected to lead to an increase in investment in water resources development, especially in irrigation, estimated at $60 billion per year over the next two decades. Improved water resources management becomes essential as more resources are devoted to agriculture, increasing the stress on already scarce resources. An innovative approach to new irrigation investment will ensure that past mistakes are avoided and that limited water resources are distributed in an equitable and efficient manner. Irrigated agriculture has played a crucial role in poverty alleviation, leading to increased crop productivity and contributing to the improvement of livelihoods for farmers in many countries in Asia and the Pacific. Yet, increased competition for water for industrial and domestic uses would likely intensify the stress on limited water resources. For years, appropriate water resources management has been sidelined in national agendas. A lack of irrigation systems and the deterioration of existing infrastructure is only part of the problem. Poor agricultural policies, uncontrolled pollution and a lack of human capital have also contributed to the increasing water stress. What is more, efforts to decentralize irrigation management in order to give farmers a voice have not always yielded the expected results or improved their socio-economic well-being.

52. Unlike new investment in water supply, sanitation and irrigation, some proposed policy measures do not require significant financial resources. The crisis presents an opportunity to reinstate adequate legal, regulatory and institutional frameworks that encourage sound water management and help increase land and water productivity. A new approach to agriculture would eliminate distortive policies that damage the environment, such as pollution and excessive groundwater withdrawal. Governments can also start by securing water and land rights and introducing payment for ecosystem services, targeting the poor. An example of an

innovative policy to support payment for ecosystem services is the ecosystem service fee collected from water users by the district water utility on the island of Lombok, Indonesia, as prescribed by local government regulations. The fee is paid to targeted land users who then have a contractual obligation to sustainably manage their land, and payments are targeted to areas which can impact water quality and supply. The payment for ecosystem services mechanism was seen as a way to address escalating conflicts over water use. Such mechanisms are an important requirement to ensure that the benefits of markets in carbon from avoided deforestation are equitably distributed.

53. In summary, the global financial crisis is expected to create an opportunity to introduce innovative financial mechanisms and policies to support the development of eco-efficient infrastructures for safe water and sanitation, renewable energy and sustainable agricultural practices. All of these will contribute to achieving the Millennium Development Goals. On the other hand, since the food crisis, Governments have started considering new institutional and managerial frameworks for water management to increase land and water productivity. The financial crisis is expected to add a new dimension by introducing financing constraints or delaying much needed changes. Political leadership and integrated development policies will be a key factor in seizing the potential opportunities to achieve long-term sustainable development.

IV. CONCLUSION

54. Millions of people are struggling with the impacts of the fuel, food and financial crises. Though many Governments are primarily focusing on reactive programmes to stimulate their economies in the short term, the long-term goals of sustainable development cannot be forgotten. Opportunities exist to reorient national and global economies to support sustainable development and build long-term resilience by protecting the natural resources upon which economies depend.

55. The present document highlights some basic strategies for doing this. They include shifting to a low-carbon economy while boosting employment, economic opportunities and growth. However, the initial objective should be to meet the underlying needs of the millions who lack basic services. Reorienting development policies in a way that considers the impact of consumption and production patterns will be a key factor in determining whether countries can weather the next crisis.

56. The opportunity and the challenge now lie in rethinking the way economies are structured. The focus should be on the quality of growth, which should be inclusive and sustainable and should work towards achieving the Millennium Development Goals.

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