

# Health, Environment and Sustainable Development: Towards the Future We Want

A collection of texts based on the PAHO Seminar Series towards Rio+20 that occurred in the period between 8 February and 13 June 2012



Pan American  
Health  
Organization



World Health  
Organization

REGIONAL OFFICE FOR THE Americas



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**Americas**

Special Program on Sustainable Development and Health Equity

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# CONTENTS

Preface..... iv

Acknowledgments ..... v

Introduction..... vii

**Seminar 1:** Public Health Challenges and Sustainable Development ..... 1

**Seminar 2:** Water and Sanitation ..... 9

**Seminar 3:** Climate Change and Health ..... 17

**Seminar 4:** Amazon Region, Environment, Health and Sustainable Development ..... 25

**Seminar 5:** Employment and Working Conditions towards Sustainable Development ..... 31

**Seminar 6:** The Voices of Civil Society in the Creation of a Healthy Future ..... 37

**Seminar 7:** Globalization and Health Equity towards Sustainable Development ..... 43

**Seminar 8:** Road Safety and Public Transportation Towards Sustainable Development:  
An Agenda for Rio+20..... 51

**Seminar 9:** The Voice and Experience of the Caribbean ..... 59

**Seminar 10:** Green Economy and Green Jobs: Health Benefits and Risks ..... 67

**Seminar 11:** Sustainable Development and Noncommunicable Diseases ..... 77

**Seminar 12:** Economic and Social Aspects of Noncommunicable Diseases (NCDs) ..... 83

**Seminar 13:** Health at the Heart of Sustainable Development ..... 91

**Seminar 14:** Global Sustainable Development and Environmental Health: Joint Discussions  
with the Institute of Medicine..... 97

**Seminar 15:** Food Security, Health and Sustainable Development..... 107

**Seminar 16:** Air Pollution and Sustainable Development ..... 119

**Seminar 17:** Sustainable Development and Health Promotion ..... 129

**Seminar 18:** Agenda for Social Determinants of Health..... 139

**Annex I:** Toolkit Rio+20 ..... 150

**Annex II:** The Making of the SDE Seminar Series Towards Rio+20 ..... 152

# Preface

The document, “*The Future We Want*,” endorsed by the United Nations Conference on Sustainable Development (UNCSD) Rio+20, affirmed the intrinsic relationship between health and sustainable development. Over time, it has become much more evident to PAHO that health plays an integral role in the context of sustainable development—as a prerequisite, an outcome, and an indicator—and this recognition has helped to shape the Organization’s commitment to advancing strategic and implementation priorities such as the achievement of equitable universal health coverage and the strengthening of intersectoral collaboration for health, among others, in further alignment with the urgent needs expressed within the UNCSD outcome document.<sup>1</sup>

In preparation for the UNCSD, the Pan American Health Organization (PAHO) joined efforts with the countries of Latin America and the Caribbean, including governments, and academic and civil society organizations, to reclaim the space of Health in the Sustainable Development Agenda. Over a five-month period in 2012, PAHO coordinated a number of activities that included the Sustainable Development and Environmental Health (SDE) Seminar Series Towards Rio+20 and the PAHO Toolkit Rio+20 to examine core themes related to health and sustainable development. Taken together, these activities present a vibrant picture of the challenges, opportunities, and priceless resources that can contribute to shaping the future we want.

I am pleased to present this collection of brief reports based on the PAHO Seminar Series Towards Rio+20, which has been authored by eminent scholars active in the world of global diplomacy. This publication will further contribute to stimulating active dialogue around the post-2015 development agenda and sustainable development goals, inspiring future leaders to action, while serving as a valuable resource to policy-makers, students, and activities committed to health and health equity.

Dr. Carissa F. Etienne  
Director

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<sup>1</sup> United Nations. The future we want. Resolution adopted by the General Assembly. 66th Session of the General Assembly, 123rd plenary meeting; 2012 July 27. New York: UN; 2012 Sep 11 (Resolution A/RES/66/288) [cited 2013 Jul 23]. Available at: [http://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/66/288&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E).

# Acknowledgments

The SDE Seminar Series towards Rio+20 could not have happened without the dedication and commitment of PAHO's technical staff working with the themes discussed in the seminars. The shared responsibility of developing each seminar agenda facilitated the mobilization of 66 speakers, whose work is acknowledged accordingly in the corresponding texts that received their comments and approval.

The efforts to coordinate the seminars involved 32 people from eight technical and administrative areas of PAHO Headquarters, as well as professionals and technical staff from six different PAHO country offices, including two PAHO/WHO country representatives. The collaboration with the United States Institute of Medicine (IOM), USA contributed to the best attendance of the seminar series and also strengthened a working relationship that has successfully produced a series of other joint activities to follow-up the implementation of the Rio+20 Declaration.

The preparation and writing of this report proved to be a challenge as it had to be concise and reflect the full contents of the SDE Seminar Series without it being a full transcription of each seminar. Maria Cristina Franceschini, SDE consultant for PAHO, drafted the text and incorporated the comments and corrections made by the presenters of each seminar. The technical revision was overseen by Agnes Soares da Silva, SDE Regional Advisor at PAHO.

The publication could not have been compiled and written without the dedicated assistance of the following SDE professionals: Kirsten Brownstein, Luiz Augusto Cassanha Galvão, Guadalupe Gomez de la Torre, Molly Hubbard, Janet Khoddami, Ofelia Nieto, and Carlos Santos Burgoa.





# Introduction



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The United Nations Conference on Sustainable Development (UNCSD), known as Rio+20, indicated in its Outcome Document titled *The future we want*, that “health is a precondition for and an outcome and indicator of all three dimensions of sustainable development”, that is, the social, environmental and economic dimensions. The Pan American Health Organization (PAHO) has been promoting this perspective, which is further reflected in the series of seminars outlined here. It was also stated that universal health coverage, the state of physical, mental and social well-being, and reducing air, water and chemical pollution are preconditions for sustainable development. There has been undeniable progress in addressing health, environment and sustainable development. However, it is also notorious that gains have not been distributed equally. Asymmetry between and within countries and regions in the burden of diseases and in gaining healthy life years remain basically unchanged or have worsened in some cases.

The UN Member States were clear on their “*commitment to sustainable development and to ensure the promotion of an economically, socially and environmentally sustainable future*”. However, an agreed agenda is not necessarily translated into policies, plans and programs that are effectively capable of “*empowering the poor and people in vulnerable situations*”, and removing “*barriers to opportunity, enhancing productive capacity, developing sustainable agriculture and promoting full and productive employment and decent work for all, complemented by effective social policies...*” Though essential, an ethical reasoning is not enough to promote the type of movement necessary to change the status quo. Economic, environmental, and social development may have different agendas and grow in different directions, and sustainable development can

only be achieved by having pre-agreed goals and targets that mobilize resources and engage stakeholders in multi-sector and multilateral agreements for a common future, *the future we want*.

From 8 February through 13 June 2012 the Pan American Health Organization held a series of seminars covering the most relevant issues relating sustainable development and health. This weekly-held Seminar Series towards Rio+20 presented the necessary evidence to sustain some of the most important statements related to health that were later approved by the Member States in the UNCSD document. It was highlighted for instance, that reductions in environmental risks in air, water and chemicals can prevent up to a quarter of the overall global burden of disease, and that cleaner energy policies could halve the number of childhood deaths from pneumonia and substantially reduce the number of people suffering from chronic lung disease.

The seminars also introduced some innovative ideas to respond to the current major public health challenges, and responded to questions such as: Is globalization good for your health? Can better urban planning decrease both air pollution and traffic related injuries and deaths? Where has this been implemented with good results? How could the increase in the prevalence of noncommunicable diseases curb sustainable development? Can we increase resilience of Small Island States to the effects of climate change? Why should the health sector lead the process of identifying which policies are good for health and what are the methodologies that contribute to assess the health impact of other sector's policies? Many other questions related to the role that the health sector could play in the construction of *the future we want*.

The Rio+20 Conference incorporated health as central for development. However, how to make it happen remains a major challenge. An open working group (WG) is working to identify the Sustainable Development Goals (SDGs) for the post-2015 development agenda that will play a crucial role in providing guidance for investments and measuring global progress towards sustainable development. Member States are called upon to contribute in defining the SDGs, and shall later be asked to commit to implement actions that will ensure that goals and targets will be met. The health sector is an active contributor to this process. *Health in all policies*, as well as *health for development*, and *development for health* must move beyond rhetoric and enter into force. This publication aims to contribute toward seeing this vision fulfilled.

The texts published here are organized in the order the seminars occurred, and may be read independently, as each theme stands on its own context. While the presentations and discussions during the seminars helped Member States to prepare for the discussions during the UNCSD Rio+20, these texts based on the seminars shall provide a valuable reference for action. They are prepared for negotiators during the construction of the SDGs, as well as for the technical advisors to build the basis of the future discussions on the targets and indicators of sustainable development, but they are also written in a language that can be followed by anyone interested in the theme.

For the complete record of all presentations, and access to all the relevant texts and supporting literature on sustainable development, please access the Toolkit Rio+20 at: <http://new.paho.org/tierra/>. For an overview of the toolkit and to understand the making of the seminars, please see Annex I and II of this publication.

# Seminar 1



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## Public Health Challenges and Sustainable Development



## Public Health Challenges and Sustainable Development

8 February 2012

### Putting Health at the Heart of the Sustainable Development Agenda: Making the Links for Rio+20

*Maria Neira, Director, Public Health and Environment, World Health Organization*

As the Rio+20 Conference approaches, various international organizations and government entities have mobilized efforts to better define how to incorporate the issue of health into the Rio+20 agenda. These efforts have resulted in an increased interest in the topic among key stakeholders and in the definition of specific strategies to help guarantee that health concerns are taken into consideration in the Rio+20 discussions. Earlier this year, Brazil requested that this issue be addressed as part of the discussion of the PAHO/WHO Executive Committee Meeting that took place in January 2012. As a result, a document (WHO, 2012a) was prepared which highlights the following key messages:

1. **Health is an important input to sustainable development.** Without health, there is no sustainable development; healthy people are better able to learn, work and contribute positively to their economies and societies.
2. **Sustainable development will produce more health.** Smarter development in sectors like transportation, housing, energy, and agriculture, can generate more health co-benefits and fewer risks, particularly for Noncommunicable Diseases (NCDs). For example, strategies that promote physical activities can lead to a reduced risk of obesity.
3. **But only if health is a key criterion for the selection of sustainable development policies and plans.** While there is an expectation that health will benefit from sustainable development initiatives, this might not happen automatically. “Health in green economy” opportunities have

not been fully exploited by health and development sectors. It is important that the “green economy” prioritizes interventions that will promote health among the greatest possible number of people. This requires that the risks and benefits of development strategies be explicit and that the economic sector also take them into account.

4. **The health sector can lead this process.** It can generate evidence on what policies are good for health by measuring sustainable development initiatives; it can also promote the adoption of Health Impact Assessments (HIA)<sup>1</sup> and help to set goals, define indicators and monitor how policies implemented by other sectors are contributing to health; furthermore, the health sector can lead by example by “greening” its own operations and activities.

While the importance of health was discussed during the Rio Summit in 1992, its follow-up has been neglected. Twenty years later, there is no evidence that health has benefitted from the initiatives that resulted from that event. For example, while health has been mentioned as a priority in the Climate Change Agenda, an analysis of climate change initiatives indicated that less than 0.5% of expected health damage cost were covered by adaptation funds<sup>2</sup> and that economic models informing the United Nations Framework Convention on Climate Change (UNFCCC)<sup>3</sup> mitigation assessments<sup>4</sup> ignored health co-benefits (WHO Submission to the UNFCCC, 2012).

In addition, it is important to highlight that approximately 25% of the estimated burden of disease worldwide is related to environmental factors (Prüss-Üstün A, Corvalán C, 2006). This emphasizes the need for collaborative efforts to improve environmental factors in order to reduce the burden of disease and deaths.

<sup>1</sup> For more information on HIA: <http://www.who.int/hia/en/>.

<sup>2</sup> Adaptation funds are funds promised to help countries adapt to climate change.

<sup>3</sup> For more information: <http://unfccc.int/2860.php>.

<sup>4</sup> Mitigation assessments are assessments of measures to reduce greenhouse gases.

## Health and the Green Economy

Mounting evidence demonstrates how the “green economy”<sup>5</sup> can benefit health. “Green” urban transport, for example, has been shown to reduce the burden of Noncommunicable Disease (NCD) (WHO, 2012b). While transportation systems that are based on individually-owned motor vehicles can lead to traffic, pollution, injuries and sedentariness, studies have demonstrated that public transportation systems can result in less sedentary lifestyles, increased physical activity, decreased environmental contamination, decreased accident rates, decreased rates of respiratory illnesses, and increased equity (WHO, 2012b).

In Shanghai and Copenhagen, cycling to work has reduced annual mortality rates by 30%, even when injury and pollution risks were taken into consideration (Anderson et al, 2000; Matthews et al, 2007). Furthermore, packages of rapid transit and non-motorized transportation measures have helped to reduce inequities and improve access to basic services for the poor and vulnerable, in particularly for women, children and the elderly (Dora and Phillips, 2000).

The “green economy” can also play an important role in improving equity. Currently, three billion people cook using biomass/coal fuel, which can result in harmful health effects. It is estimated that this practice results in one million women dying each year from chronic-obstructive pulmonary disease (COPD) or cancer, and one million children dying of pneumonia (Lopez et al, 2006). In addition to important health improvements, providing the poor with access to clean cook stoves could generate benefits such as:

- Reduction of time spent gathering fuel;
- Promotion of development and gender equity;
- Reduction of pressure on forests; and

- Reduction of emission of harmful gases that contribute to climate change.

The health sector can play a key role by promoting efforts to “green” health facilities. These can not only contribute to the environment but also to improve health outcomes. “Greening” health facilities, such as hospitals and health centers, can help to expand coverage of reproductive and child services in remote and rural areas. For example, a WHO analysis<sup>6</sup> shows that 21% to 59% of health facilities in six African countries had no electricity, which resulted in women giving birth in the dark, by candlelight or under car headlights. Five to twelve percent of clinics surveyed in these same countries lacked access to water from an “improved” (protected, well or piped) source. The installation of small solar PV units in these health clinics could generate basic electricity for the provision of light, maintaining the cold chain necessary for vaccine maintenance, support for diagnostic tools, telecommunications and functioning of water pumps.

## How Can the Health Sector Support Sustainable Development?

It is important to reflect on the role of the health sector in view of the upcoming Rio+20 Conference. The health sector can help to set goals and measure progress and outcomes. It can, for example, provide evidence on the health impact of green economy strategies, innovations and technologies.

Governance for sustainable development, a key issue in the Rio+20 discussions, should incorporate indicators that will allow for such measurement of progress in health to take place. It is important to ensure that health is considered an outcome of any sustainable development policy and promote the adoption of health impact assessment (HIA) as part of healthy public policy development.

<sup>5</sup> The UNEP has defined Green Economy as an economy that “results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is **low carbon**, **resource efficient** and **socially inclusive**.”

<sup>6</sup> For more information: [http://www.worldenergy.org/documents/monaco\\_consultation\\_energy\\_access\\_\\_cooking.pdf](http://www.worldenergy.org/documents/monaco_consultation_energy_access__cooking.pdf).

Rio+20 provide a unique opportunity to promote the application of the “Health in All Policies” approach in a matter that also attaches a measurable component. Examples of areas for measurement and the development of indicators that could be proposed include:

- **Sustainable Cities:** % of urban population exposed to air pollution that is above the WHO recommended Air Quality Limits.
- **Greener transport:** % of urban roadways with dedicated walking and cycling facilities.
- **Proportion of policies going through a “health check” (i.e. HIA).** This is of particular interest for the follow-up of policies from sectors other than health, in order to assess the impact of sectoral policies on population health.
- **Food security, nutrition and sustainable agriculture:** proportion of population with access to healthy foods; rates of heart disease, diabetes, obesity, colon cancer.
- **Health care:** % of facilities with access to clean energy and water supplies.
- **Proportion of “green” jobs that are healthy jobs:** % of workers that are exposed to health risks, diseases and disabilities in “green” jobs.

## Conclusions

The Rio+20 Conference offers a unique opportunity to highlight the contribution and define the role of health in sustainable development and, in particular, in supporting the “green economy.” Health should be part of the Rio+20 actions, particularly in efforts aimed at NCD prevention, policy development (health and other sectors) and in improving the social determinants of health. It is key to highlight the importance of universal health coverage as central to sustainable development. Without health, access to health service, or to the basic right to health, there can’t be justice, equity, or sustainable development. ■

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## Public Health Challenges to Achieve Sustainable Development: A Regional Perspective

*Luiz Augusto C. Galvão, Manager, Area of Sustainable Development and Environmental Health, Pan American Health Organization*

The Pan American Health Organization and its partners in the Region of the Americas have been actively involved in the preparations for the Rio+20 Conference. The Region has been working in close collaboration with our partners in Geneva and New York. This regional process is expected to generate important inputs to fuel the discussion and to help shape the actions on sustainable development and health.

Brazil has been particularly involved in the preparations for the Conference. During 2011, a meeting that took place in Sao Paulo, convened representatives from the countries in the Region that had participated in a survey aimed at assessing the Regional advances on Agenda 21<sup>7</sup> since the year 1992; this survey particularly focused on Chapter 6 of Agenda 21. The active and engaged discussion that took place during this meeting helped stakeholders understand the relevance of sustainable development processes that are taking place throughout the Region.

The meeting report (PAHO, 2011) included an analysis of the advances and challenges that the Region experienced over the past 20 years, and outlines the following conclusions:

- **Primary Health Care (PHC):** the Region has greatly advanced on the adoption and improvement of PHC systems mostly through health sector reform that took place in various degrees in the countries; nevertheless great challenges remain, particularly on how to provide PHC in rural areas and how to achieve universal health coverage.

<sup>7</sup> Agenda 21 is a comprehensive plan of action taken by Governments, Major Groups, and the United Nations System in any area where humans impact the environment. For more information: <http://www.un.org/esa/dsd/agenda21/>.

- **Transmissible diseases:** despite much progress in this area, important challenges remain, particularly those associated with urban health, such as dengue.
- **Protection of vulnerable groups:** while poverty has decreased in the Region, inequity remains a stark reality; it is well known that the most vulnerable population groups are the most affected by development and environmental problems.
- **Advances in urban health (water and sanitation):** great advances have been reported on improving access to water and basic sanitation across the Region; yet, some issues like drainage have not been properly addressed. The recent natural disasters that have affected the Region, such as deadly flooding in urban areas, highlight the extent of the challenge that remains to be addressed.
- **Reduction of environmental contamination risks:** the Region has made advancements in the implementation of policies, regulations, and programs to increase sanitation and minimize environmental pollution, which include lowering greenhouse gas (GHG) emissions, pesticide and mercury pollution. However, there are still gaps in many areas such as hazardous waste disposal, carbon emissions, occupational health, and pesticide control., la salud ocupacional y el control de plaguicidas.

## Inequity, Disease Burden and Energy Use

Currently, three billion people worldwide use solid fuel (e.g., wood, agricultural residue, coal) to generate energy. It is estimated that these activities are responsible for two million deaths each year related to chronic-obstructive pulmonary disease (COPD), primarily among the poor, women and children.

An analysis of data collected between 2004 and 2008 among children less than 5 years old indicated the high impact of the use of wood for energy in terms of disability-adjusted life years (DALYs) and disease burden in the Region. The most affected countries included Bolivia, Brazil, Guatemala, Haiti, Honduras, Mexico, and Peru<sup>8</sup>.

<sup>8</sup> WHO Global Repository Data.



## Noncommunicable Diseases: A Challenge for Sustainability

The main causes of death among men and women in the Americas include cardiovascular diseases, cancer and diabetes. These accounted for 4.45 million deaths in 2007; of these, 37% affected people younger than 70 years old (i.e., premature death) (WHO, 2012). Currently, more than 100 million people in the Region live with NCDs, and an even higher number faces the risk of developing them (WHO, 2012).

The conditions and settings in which people live, as well as their life styles, influence their health and quality of life. Poverty, unequal distribution of wealth, lack of education, rapid urbanization, aging, and social, economic, and environmental determinants are contributing factors. Mental health problems also remain highly prevalent in the Region (WHO, 2012). High incidence of depression has important implications for the productivity and development of countries affected.

A study conducted on the economic burden of NCDs predicted that between 2011 and 2030, the worldwide cost of such illnesses will amount to US\$ 46.7 trillion (Bloom et al, 2011). Almost half of this cost will occur in low and medium income countries. Another study analyzed the worldwide cost of cardiovascular disease in 2010 (WHO, 2011c). It highlighted that the poorest groups in the population paid the highest amount of out-of-pocket expenses. These studies clearly point to the impact of NCDs on development efforts. They indicate that health cannot be seen only as a consequence of development but also as a factor that can limit development, if not properly addressed. There are specific actions that can be taken in the areas of diet, tobacco, physical activity, etc. to prevent these NCDs.

## Health at the Center of the Development Agenda

Over the years, various committees and organizations have discussed and reported on the health dimension of development efforts. Two of the most relevant reports produced include the WHO Commission on Macro Economy and Health (WHO, 2003) and the

Final Report of the WHO Commission on the Social Determinants of Health (CSDH, 2008). Nowadays, health is commonly incorporated as a central aspect in all development agendas; yet, while the critical role of health is acknowledged, health is often described as a consequence, and not as a contributing factor for development. It is essential that health be understood as a key aspect of sustainable development.

## Conclusions

Currently there are three development-related agendas in which health plays a key role:

1. Social Determinants of Health, which addresses the issue of health equity that is central to any development effort;
2. Noncommunicable diseases, which are responsible for more deaths than all other causes combined globally, and are increasingly recognized as a public health challenge by all countries in the Region; and
3. Energy and Green Economy, which can benefit health and contribute to long term goals of sustainability.

The Rio+20 Conference offers a unique opportunity to address how to properly position health at the center of development agendas and to identify synergies for future collaborations and action. It is critical that we acknowledge the interconnections and roles of economic, social, and environmental aspects in achieving sustainable development. Health must be understood not only in terms of its costs and limitations on sustainable development, but as an essential component of development, the basic fuel that will propel countries to achieve sustainable development. ■

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# Seminar 2



## Water and Sanitation

## Water and Sanitation

15 February 2012

### Water and Sanitation: Achievements, Unfinished Agenda and New Challenges

*Ana Treasure, Water and Sanitation Technical Team, Sustainable Development and Environmental Health, Pan American Health Organization*

The Rio+20 Conference calls for “settling the basis of a world of prosperity, peace and sustainability,” and proposes three issues for discussion: strengthening the political commitments for sustainable development; analyzing the advances and difficulties related to their implementation; and defining the responses for societies’ emerging challenges.

Sustainable development is not possible without a healthy population. Health plays a key role in decreasing poverty given that healthy individuals are more productive and can compete in equal basis with other individuals. As such, health places people at a situation of equal opportunities which improves their income and the growth of the economy.

The permanence of problems related with water and sanitation in the global political agenda indicates the extent of the difficulties and challenges to be addressed. One of the obvious consequences is the public health impact of the lack of water and sanitation networks which leads to diseases that can negatively affect the economy of families.

The cost of water sold by water trucks and tanks is much higher (RAS-HON, 2011: PNUD/BM, 1998; Southgate and Figueroa, 2006). The time and physical effort required to collect water (lines in water sources that are far away from home, carrying heavy water recipients) reduce family income and can prevent women from exercising a lucrative activity.

Furthermore, families that lack access to water and sanitation face problems related to the harassment of children and women in public bathrooms, the discomfort of using inadequate and poorly maintained

public latrines, the difficulties related to managing water inside the houses, and the risk of accumulated water converting into mosquito breeding sites. There is also the risk of other vectors and environmental health problems related to the deficient management of solid waste.

In Latin America and the Caribbean, 40 million people lack access to improved sources of water for human consumption, 117 million do not use improved sanitation structures and 36 million still practice open defecation (WHO/UNICEF, 2012). The lack of universal access to water and sanitation compromises the health status of the population and the sustainable development of countries. The implementation of public policies that incorporate a human rights approach is important to guarantee access to a basic level of water and sanitation services that allows people to live healthfully and with dignity.

The systematic and organized efforts by governments and financing agencies have increased coverage of water and sanitation services and, as a result, improved life expectancy and decreased the prevalence of mortality by diarrhea and other diseases related to the quality of water and excreta disposal. Nevertheless, the average coverage achieved under the indicators for use of an “improved drinking-water source” and “improved sanitation facility” disguises the lack of equity within and between countries and does not measure the safety of the water (i.e., quality) or the continuity of services or sustainable access.

Seven countries in the Region have developed national laws related to solid waste that prohibit the use of uncontrolled landfills. These also oblige governments, States and municipalities to develop solid waste treatment plans and to establish specific goals and recycling programs. The new tendencies related to solid waste management in Latin America and the Caribbean also highlight residue assessments, source selection and recycling programs, and the financial sustainability of services.

During the past few years, the use of regional solutions for the adequate management of solid waste has intensified in Latin America. Many municipalities in

the Region have joined together to achieve economic benefits and a better application of regulatory norms.

Coverage of solid waste collection services in the Region reaches 93.4% of the population, which indicates a greater than ten percentage point increase since 2002. The majority of the countries maintain coverage above 80%, especially in large localities and mega-cities, however, there remain marginal areas or neighborhoods where services are either not provided or are of very low quality (IED/ADAIS/OPS, 2010).

The final disposal of urban solid waste in Latin America and the Caribbean remain a key issue given that 45.6% of the population does not have access to adequate means of waste disposal (IED/ADAIS/OPS, 2010).

Climate change and contamination by chemical products represent a threat to water and sanitation systems, especially those that serve the most vulnerable populations and those of island states and coastal areas. Our challenge is to provide technical support to countries in their formulation of policies and plans that contribute to decreasing vulnerabilities.

Taking into account some of the issues previously discussed the unfinished water and sanitation agenda could be summarized as the following:

- Make sure that “improved services” take into consideration the quality of water for human consumption and that services are continuous and sustainable;
- Reduce inequities in coverage in poor countries and in the rural areas of all countries;
- Implement social protection policies so the poor have access to basic sanitation services;
- Increase coverage of residual water treatment systems;
- Advocate for policies that incorporate variables related to risk management in the design and operation of basic sanitation systems;
- Broaden the terms of reference of PAHO’s Policy Brief in order to incorporate other basic sanitation areas;

- Regulate solid waste laws and adopt control mechanisms for their implementation;
- Increase coverage for recollection and removal of solid waste in urban-marginal areas; and
- Propose solutions for the treatment and disposition of solid waste in urban areas.

One of the greatest challenges is to increase visibility of the sanitation agenda using its own indicators. This requires the use of homogeneous terms so the statistics generated can be compared. Waste management policies should incorporate an integrated vision of waste and a preventive health and environmental approach that promotes the minimization of waste in qualitative and quantitative terms (generation of less waste and decreased risk for the environment and health), and that guarantees the sustainable and efficient development of the sector.

It is also important to recognize carbon markets as a cost-effective means to promote mitigation actions in developing countries. Solid waste disposal sites should be designed and operated based on the Clean Development Mechanism in order to guarantee sustainable management through carbon bonuses.

The United Nations and the Organization of American States (OAS) have published more than 25 documents that describe water and sanitation rights. Our greatest challenge is to have a document that is binding to countries, such as the Framework Convention for Tobacco Control and the International Sanitary Regulation, and that promotes internal actions in countries to establish water as a human right. ■

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### **Inequity in Water and Sanitation Access Among Various Countries in the Region**

*Julio Monreal, Water and Sanitation Technical Team, Sustainable Development and Environmental Health, Pan American Health Organization*

The averages used to analyze water and sanitation coverage hide the inequities in the Region. While the coverage of access to improved technologies is approximately 80%, there are substantial differences among countries since Haiti is far from that estimate and another eight countries rank below the average (WHO/UNICEF, 2010).

Substantial differences are also observed between urban and rural areas within countries. In six countries the difference in access to improved sources of water between urban and rural areas is above 20 percentage points. Furthermore, nine countries also have differences of 20 percentage points with respect to access to improved sanitation installations between the urban and rural sector (WHO/UNICEF, 2010).

Despite decreases rural-urban gap in the Region between 1990 and 2008 in the access to improved water and sanitation installations, an important disparity between both zones persists. Only 55% of the rural population utilizes improved sanitation instal-

lations in comparison with 86% of the urban population. Eighty percent of the rural population has access to an improved water source, in comparison with 97% of urban areas (WHO/UNICEF, 2010).

In relation to the urban sector, in 2008, seven countries of the Region still presented levels of access to improved water and sanitation installations that were similar or below the Region's average in 1990 (WHO/UNICEF, 2010).

The case of Haiti deserves special attention given that between 1990 and 2008 (before the 2010 earthquake), the country experienced a progressive decrease in the levels of access to improved sanitation installations in both urban and rural areas. Between these years, the coverage and access to water decreased from 44% to 24% in urban areas and from 19% to 10% in rural areas (WHO/UNICEF, 2010).

Inequities do not happen in an isolated manner but are part of a chain. The majority of people without access to potable water and sanitation services belong to low-income groups. In the Region, on average, 13% of the population lives on less than US\$ 2 a day. Nevertheless, at the country level, this number oscillates between 72% (Haiti) and 1% (Argentina, Chile, and Uruguay) (World Bank, 2012).

The proportion of family income directed toward water is much higher in poorer families than in the rest of the population, sometimes being four times higher. Add to this the time that these families are required to set aside to access water sources that are of lower quality and farther from their homes. Low-income groups are often obligated to resort to alternatives (e.g., trucks, tanks, private vendors, etc.) which result in great costs for their family income without any quality guarantee (PAHO, 2011).

Urban populations enjoy better access to potable water than rural ones. Still, among the richest 10% of the rural population, the proportion of residences with connection to potable water is lower than among the poorest inhabitants of the urban areas (PAHO, 2011). The high levels of poverty highlight an undeniable truth: one sector of the population has little or no pay-



ing capacity to afford access to adequate water and sanitation systems.

The unequal distribution of potable water also contributes to inequities in health. In 2004, Brazil registered 40,225 deaths by causes related to water and sanitation, which represents 40% of the deaths that took place in Latin America by that cause. Bolivia, Guatemala and Honduras present one of the highest mortality rates by causes related to water and sanitation, which oscillates between 30 and 50 for each 100,000 inhabitants. In Haiti, this figure more than quadruples (PAHO, 2011).

Water and sanitation should be at the base of sustainable development and the green economy paradigm. This requires attending to the challenges related to population growth, increasing urbanization and the unattended rural population.

The global population has increased by almost 1.5 billion people since 1990 and 94% of this growth has taken place in developing regions. The proportion of people living in urban areas has increased from 43% in the 1990s to 50% in 2008. The number of urban dwellers with access to potable water between 1990 and 2008 was 1,056 billion while the increase in the total urban population was 1,089 billion (UNW-DPC, 2012).

Nevertheless, in Latin America and the Caribbean, the water coverage in urban areas increased little between 1990 and 2008, which makes the increase in the urban population an important challenge. The investment needed to address the projected water and sanitation coverage is not feasible for some of the countries in the Region. Only 42% of the official development assistance (ODA) for water and sanitation is aimed at less developed countries and other low-income countries (WHO/UNICEF, 2010). The ODA

assigned for potable water and sanitation systems for rural populations has been reduced from 27% to 16% of the total ODA in the five years previous to 2008.

The use of regional and national averages to evaluate advances in water and sanitation access is not sufficient since it does not reflect inequalities that exist in many dimensions within countries. The indicators used so far to characterize water and sanitation access need to be fine-tuned. For example, the indicator “use of improved drinking-water source” does not necessarily mean access to “potable water.”

Finally, climate change will probably lead to greater water stress which means that the needs for potable water will compete with other water uses such as agriculture and industry. Sanitation systems will need to incorporate a perspective that fosters resource conservation and water reuse applying strict sanitary standards. ■

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## Deliberative Dialogue as a Tool for the Incorporation of Evidence-Based Water and Sanitation Public Policies in National Contexts

*Evelina Chapman, EVIPNet Coordinator for the Americas, Pan American Health Organization*

Public policy, public health and service delivery should be based on trusted evidence. When policies are poorly founded, services may not reach the neediest, and health indicators may not improve. To achieve evidence-based public policies it is necessary that research results are accessible, effectively communicated and adapted for decision-making.

Research competes with many factors in the policy formulation process. Research, even if available, is not always easy to utilize given that it is not communicated in an effective and opportune manner to policymakers and program managers. The lack of specific forums creates difficulties for the discussion among interest groups of challenges related to policy development. Also lacking are mechanisms to support those responsible for making decisions on the use of evidence generated by research.

The need to close the research gap related to research production and its proper and sound utilization to orient decisions and the formulation of policies that guarantee “health for all” and access to potable water and basic sanitation, led the Pan American Health Organization to prepare a summary of evidence for policy (Policy Brief) entitled: “Agua y Saneamiento: evidencias para políticas públicas con enfoque en derechos humanos y resultados para la salud pública” (“Water and Sanitation: evidence for public policies with a human rights and public health impact approach,” available in Spanish only) (PAHO, 2010).

The “Policy Brief” aims to clearly summarize how to make use of available evidence to formulate water and sanitation policies that take into consideration human rights, equity and public health. Furthermore, the “Policy Brief” intends to:

- Emphasize the need to value scientific and other types of evidence in order to understand their role in informing decisions;

- Help clarify problems related to policies, the available approaches possible, and develop a shared understanding;
- Foresee barriers and facilitators to contribute to the effective implementation of policies;
- Foresee implementation strategies to overcome such barriers;
- Promote dialogue about the most probable effects of such strategies;
- Define monitoring and evaluation priorities; and
- Contribute to good governance and democracy.

The development of informed policies should be based on deliberative dialogues that: promote collaboration among those involved; search for consensus, strengths and common ground; seek to open new perspectives; generate new ideas, and re-evaluate hypotheses. In relation to water and sanitation, deliberations should focus on the advantages and disadvantages of options as they relate to human rights, equity and public health, and to the identification of facilitators and obstacles within the context and the reality of each country.

Deliberative dialogue was applied to the elaboration of the “Policy Brief” which brought together researchers, decision-makers and experts in relevant issues in order to reach consensus on the fundamental aspects to be incorporated in the document. This process allowed for the contextualization of global evidence in analysis of local problems with the aim to understand how to promote effective local implementation of such policies.

Decision-making in health is a socially constructed process in which evidence plays an important role. Nevertheless, evidence by itself does not generate decisions. It is necessary to create a bridge between health sciences and the world of politicians (and political science) with the aim to understand how to construct effective public policies.

The “Policy Brief” aims to create this bridge by compiling the best available evidence in a manner that allows for the development of informed policies



and that facilitates deliberative dialogue based on a rational foundation for the construction of a new public health agenda that promotes universal water and sanitation access and that considers the links between public health policies and the need to guarantee people's rights. ■

### **Water, Sanitation and Human Rights in the Green Economy**

*Paulo Fernando Piza Teixeira, Regional Advisor for Urban Health, Sustainable Development and Environmental Health, Pan American Health Organization*

Water is vital for life and sustainable development of countries and is intrinsically related to human rights and the social and environmental determinants of health. As such, universal access to water and sanitation should be incorporated into the Rio+20 agenda.

The World Health Organization's Constitution establishes that "the achievement of the highest attainable level of health is a fundamental right of every human being without distinction of race, religion, political ideology or economic or social condition." This implies that WHO Member States are committed to guarantee the exercise of this right to all people, particularly to groups in situations of vulnerability, such as children and indigenous people. Therefore, the WHO constitution also establishes that "governments are responsible for the health of their people, which can only be achieved through the adoption of the appropriate sanitary measures." Such measures include access to water and sanitation.

The 64th Session of the United Nations General Assembly declared in July 26, 2010, in its Resolution 64/292 that "health is a fundamental human right indispensable for the exercise of other rights. Every human being should be entitled to the highest attainable standard of health to live on. And since there can be no health without water and sanitation, the right to health thus includes the right of access to safe water and basic sanitation."

In May 2011, WHO's Assembly approved Resolution 64.24, which recognizes the normative role of

WHO in issues related to water for human consumption. Access to water and sanitation contributes to the development of human capital. To think that investing in economic and financial capital is more important than in human capital is a miscalculation of sustainability. It has been demonstrated that investments in human capital contribute up to 65% of a country's economic growth and that health constitutes a key ingredient in the construction of this human capital.

Diseases resulting from contaminated water affect public health and are associated with a loss of income due to low productivity and absenteeism. Health plays an important role in decreasing poverty. A healthier individual is also more productive and can compete with other individuals on an equal basis of conditions and opportunities, which in turn contributes to economic growth and social justice.

Health is a cause and consequence of economic growth. Some studies revealed that a 10% increase in population income is associated with one extra year of life expectancy. Economic analyses available demonstrate the cost-benefit of improving access to potable water and sanitation. It is estimated that in developing regions, for each US\$ 1 invested in water and sanitation, between US\$ 5 and US\$ 46 are gained. Eighty percent of these gains are obtained through the time saved to reach improved water and sanitation facilities.

Precarious access to potable water and sanitation services endangers the life of millions of people, compromises the right to education and subjugates women. Not being able to "exercise the right to potable water" can prevent children from attending school and require women to cover great distances to fetch water for their family while also being exposed to violence and bad weather. Furthermore, lack of access to water and sanitation diminishes the capacity of the poorest to cultivate food and participate in income-generating activities. The search for water can lead to migration and ethnic and cultural conflicts that can threaten peace in countries.

Many countries of the Americas include the principles related to public health and human rights in their

constitutions. Many countries have also signed up to international and regional treaties that protect the right to health and other human rights. Nevertheless, not all countries have translated these principles into laws or public policies.

In order to guarantee this basic human right, all nations should adopt strategies, actions and plans to achieve universal access to water and sanitation, as well as to allocate the necessary budget to that end. Governments should also reformulate and strengthen strategies and public health policies that highlight the importance of potable water and basic sanitation as elements for the primary prevention of disease. In consultation with bilateral and multilateral stakeholders, and in close collaboration with local authorities, governments should mobilize efforts to prioritize and reduce inequalities in the access to potable water which abound in urban, suburban, and rural areas.

Recognizing water and sanitation as a human right is a fundamental step for States to assure the fulfillment of these rights and to formulate policies with national and international instruments to end the conceptualization of water as a commercial good. While it is important that the private sector participates in the provision of services, the State has the responsibility to regulate, respect, protect and guarantee the realization of these rights, especially for the most vulnerable groups.

As the Rio+20 Conference approaches, it is important to reflect on the multiple links between the green economy and water, sanitation and sustainable development. The green economy is based on the concepts of human well-being and social equity, and seeks to reduce and control environmental risks and water scarcity. As such, water and the green economy are co-dependent. Lack of water weakens efforts to eradicate poverty and achieve economic growth, equity and sustainable development. The green economy cannot be achieved without water. The Rio+20 agenda should approach these issues and include objectives and goals related to (a) access to potable water and sanitation, (b) management of waste water, and (c) management of solid waste.

The Conference Preparatory Committees are in a privileged position to promote the inclusion of water and sanitation into the Rio+20 agenda. The UN Water and the UN Secretary-General's Advisory Board on Water and Sanitation (UNSGAB) are coordinating the Rio+20 process and other events in order to determine how to ensure that the Rio+20 agenda incorporates sustainable development goals which include water and sanitation as a condition for a more just, healthy and prosperous planet. ■

# Seminar 3



## Climate Change and Health

## Climate Change and Health

22 February 2012

### Pillars of Sustainable Development

*Carlos Corvalán, Senior Advisor, Risk Assessment and Global Environmental Change, Pan American Health Organization*

In preparation for the upcoming United Nations Conference on Sustainable Development to be held in June, 2012, in Rio de Janeiro, Brazil (Rio+20), the Pan American Health Organization organized a Consultative Meeting on Health and Sustainable Development in the Region of the Americas that took place in Sao Paulo on November 2011<sup>1</sup>.

Delegates, from the Ministries of Health of 17 countries of the Region, came together to assess the main challenges that remain to be addressed and the progress made by countries in the area of health and sustainable development. Discussions focused on documenting progress and gaps in the implementation of Chapter 6 of Agenda 21 which deals with health and its mandates, identifying emerging health issues, and seeking consensus on actions for continued progress.

The concept of sustainable development clearly outlines three pillars: social, environmental, and economic. Health and health promotion are often incorporated within the social dimension. However, because health influences and is influenced by social, economic and environmental situations and changes, addressing health within only a social context poses a challenge for effective action and needs to be reconsidered.

As the world faces climate change, it is pertinent to focus action on adaptation strategies that promote clean environments free of contamination. Studies have demonstrated that 25% of diseases are related to environmental factors (Prüss-Üstün and Corvalán, 2006). Therefore, our efforts in developing and implementing adaptation and mitigation strategies

should focus on modifying these environmental factors in order to decrease such disease burden.

When analyzing the social dimensions of climate change, within the context of the sustainable development pillars described above, three main areas can be highlighted: individual, basic and social needs. Individual needs refer to what people require in order to live: health, decent work, social protection, and empowerment. The basic needs for families include water, food, energy, shelter, transportation and security. Finally, social needs, which should be guaranteed at the community level, include equity and social inclusion, human rights, participation, governance, cooperation, solidarity, and education.

These pillars and dimensions of sustainable development, when taken together, offer an integrated roadmap for public health action. In order to advance the field of sustainable development and health in the Region, it is key to define a new paradigm for fully integrating health as an intrinsic part of social, environmental, and economic processes. These dimensions of sustainable development should also be understood as interactive and intrinsically linked. Without sustainable development there is no health, but equally, we cannot have health without sustainable development. ■

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### Climate Change and Health: Key Messages for Rio+20

*George Luber, Associate Director for Climate Change and Health Program, National Center for Environmental Health, US Centers for Disease Control and Prevention*

Despite the existing breadth of organizations and sectors with initiatives on climate change, and the likelihood of anticipated health effects of climate change, the public

<sup>1</sup> For more information consult: [http://new.paho.org/tierra/index.php?option=com\\_docman&task=doc\\_download&gid=262&Itemid=77&lang=es](http://new.paho.org/tierra/index.php?option=com_docman&task=doc_download&gid=262&Itemid=77&lang=es).



health effects of climate change remain largely unaddressed. While progress has been made, many important questions have not been addressed. Rio+20 offers an opportunity for renewed action in this area.

The impact of climate change and its potential health effects are well-known. They include heat waves and severe weather, deteriorated air quality, and increased incidence of a range of diseases related to water and ecological factors. Mental health issues should also be emphasized as a consequence of environmental change. Most importantly, among the main challenges of climate change is the fact that the most vulnerable populations are the ones who will be most affected by future disruptions in water and food quality and quantity.

The US Centers for Disease Prevention and Control (CDC) collaborates with the Pan American Health Organization and other partners to define priority actions in the area of climate change and health in order to inform policy and decision-making processes.

CDC's *Priority Actions for Climate Change* guide the institution's public health approach; these emerged from recommendations made to the CDC Climate Change Workgroup during a meeting in January 2007 and form the cornerstone for CDC's policy on Climate Change<sup>2</sup>. Given that environmental justice, poverty and disempowerment have been identified as critical vulnerability factors, one key priority action is to focus on the most vulnerable within our communities.

Studies using density-equalizer cartograms have illustrated the distribution and impact of carbon emissions worldwide<sup>3</sup>. They demonstrate that the United States of America and Europe emit one quarter of global greenhouse gas emissions. Yet, developing countries are the most affected by the problems caused by such emissions, in other words, those who are most affected are the least responsible for the greenhouse gas emissions that cause the problem. It

is important to more clearly understand the variability of this impact on developing regions.

CDC also strives to integrate action in climate change and public health at the policy level, given that efforts to mitigate or adapt to the effects of climate change frequently yield other health benefits. As such, another of CDC's priorities in climate change refers to the identification and leverage of climate and health co-benefits and synergies in climate change mitigation and adaptation policies.

Improvement of environmental factors and of communities' structures can positively impact individual and communities' health. For example, if children can walk to their neighborhood school, there will be fewer emissions of greenhouse gases, less contamination, improved health status, less injuries resulting from traffic accidents, and improved social capital, as community members have better opportunities to interact among them.

However, important challenges remain for the effective implementation of integrated approaches to climate change and public health. Policies that promote healthy, low-carbon lifestyles are necessary but insufficient. These policies must be tied to evidence to support their continued use; they must demonstrate their effectiveness and the co-benefits they generate in public health. In order to achieve such goal, enhanced public health surveillance is critical.

The Central Texas Climate Change Environmental Public Health Indicators Tracking Tool exemplifies a best practice in the area of public health surveillance. In this experience CDC partnered with the city of Austin's Climate Protection Program to create health indicators related to local climate change mitigation strategies. These health indicators allow for the tracking of the health effect of policies that are implemented at the local level.

The program allowed bringing together information that demonstrated the effectiveness of policies to improve health and decrease the impact of climate change on the environment. For example, epidemiological studies were able to show the impact of tree

<sup>2</sup> <http://www.cdc.gov/nceh/climatechange/>.

<sup>3</sup> Mark Newman, University of Michigan, [www.worldmapper.org](http://www.worldmapper.org).

planting in areas suffering from high temperatures and decreased mortality rates from cardiovascular diseases among the elderly population in these areas. Using EPA indicators, the program also allowed for the identification of areas most vulnerable to flooding. These findings have helped to better shape policies aimed at addressing climate change while also emphasizing the role of public health, the identification of the most vulnerable populations, and the integration of information related to climate change.

Lastly, CDC's Global Climate Change Program focuses on developing adaptation strategies for climate change, particularly with a view to: develop data-driven approaches that identify spatially-specific vulnerable populations and places; enhance surveillance by integrating environmental, meteorological and health data; and identify co-benefits for health of mitigation and adaptation strategies. ■

### **Participatory Assessment of Climate Change and Climate Variability in Cities Located in Mountainous Ecosystems**

*Marilyn Aparicio Effen, Biodiversity Environment and Health Unit, Bolivian Institute for Altitude Biology, Faculty of Medicine, Universidad Mayor de San Andrés, La Paz, Bolivia*

The effect of climate change started to become evident since the 1990s when it was estimated that less than 50% of the population lived in cities. In the near future more than 60% of the world's population will live in urban areas; as the concentration of urban population increases, so does urban poverty. This situation becomes particularly concerning as we try to understand the impact of climate change in urban areas.

Urbanization leads to higher concentration of human populations exposed to climate change and the impact of climate variability. Some of the problems currently affecting urban areas include extreme weather events (more serious and frequent), food insecurity, reduction in the availability of water resources, increased poverty and inequality, lack of urban planning, illegal settlements, restriction of basic services, and contamination of environmental systems.

In La Paz, Bolivia, a research initiative was launched to determine the population's health vulnerability to climate change-related situations such as extreme weather events and restricted access to water and sanitation. The goal was to better inform the design and implementation of adaptation and community resilience strategies for the city of La Paz.

The initiative used participatory-based approaches and incorporated a breadth of partners such as PAHO/WHO-Bolivia, La Paz Municipal Government, the Ministry of Health and Sports, the National Meteorological and Hydrological Services, non-governmental organizations (NGOs) and community organizations. The research took place in an area that suffered a major landslide in February 2011.

The city of La Paz is particularly vulnerable to the effects of climate change. It is located in a mountainous ecosystem at a high altitude (average of 3,600 meters) and contains 350 streams and rivers. Thirty five percent of the population lives in highly unstable and steep areas (over 50% inclination), while 28% and 37%, respectively live in areas of medium and low inclination.

Since 1945, the average maximum and minimum temperature have steadily climbed, particularly since the 1990s. Comparisons between baseline information (1960-1990) and current weather (1991-2010) showed increasingly warmer summers and winters. The intensity and frequency of extreme events has also increased since 1990. It is expected that by 2020 and 2030, La Paz will experience a significant increase in average temperature with increased daily precipitations during the rainy season and higher relative humidity.

This situation is of particular interest when predicting the effects of climate change in local water resources and glaciers. Eighty percent of the glaciers are receding in Bolivia, which creates a high vulnerability risk for water resources. Eight to ten percent of La Paz's water supply comes from glaciers located in the Andes. Snow surface in these glaciers has reduced significantly since the 1940s. It is expected that the dry seasons will be drier and that the rainy seasons

will experience higher precipitations. Some areas of the city were identified as being most vulnerable to such changes, either due to the demographic demands or to the extinction of nearby glaciers.

In February 2011, a major landslide affected the area of Callapa (9 neighborhoods) with important economic and infrastructure losses. The La Paz Municipal Government early warning system and emergency systems put in place allowed for the timely evacuation of the region's inhabitants without the loss of human life. Some of the health outcomes related to the Callapa landslide included dehydration in children and adolescents, increased cases of diarrhea among children younger than 2 years of age, muscle ruptures due to the efforts of relocating personal belongings, acute respiratory infections, mental health issues, and traumatic injuries.

Callapa is a very high risk area, with a history of small landslides. One of the main causes of the 2011 major landslide was the excessive precipitation that took place at that time in the area. February 2011 presented the 6<sup>th</sup> rainiest recorded February since 1919, with the highest number of rainy days ever recorded (25 out of 28 days). A record precipitation (34.2 mm) was registered the day before the landslide, which caused the saturation of the soil. In addition, in the previous eight years, construction had almost doubled in the affected area, which led to higher demographic concentration. Rivers located in the area had not been properly channeled and received an influx of solid wastes due to inadequate waste management from neighboring newcomers; as a result, these waterways were unable to absorb the excess water from increased precipitation.

Based on this experience, a series of intersectoral policies and strategies were developed to improve adaptation measures to climate change and to reduce the population's vulnerability to extreme weather events. These included:

- Raising awareness among local actors and authorities about the importance of protecting water resources.

- Developing a local Climate Change Adaptation Plan aimed at reducing the impact of climate change in urban health.
- Increasing investments for the protection of water sources and establishing systems to compensate and protect water springs as part of natural resource management plans.
- Improving the Municipal Government early warning system (SAT) using landslide models.
- Developing health and environmental education initiatives to improve prevention of extreme weather event health impacts.
- Promoting the recovery of local ecosystems and water springs.
- Generating jobs for the use of new technology to help prevent landslides and other risks related to extreme weather events.
- Strengthening local weather surveillance systems.
- Strengthening systems and reinforcement of regulations related to construction, particularly in high risk areas.

The experience of Callapa highlights the interconnection between development and climate change. It is important to promote the development of intersectoral policies and to implement adaptation measures in order to protect the environment and decrease the population's vulnerability to events related to climate variability and change. ■

### **Barbados and Preparation for Extreme Events**

*Winfred Austin Greaves, GEF Project Manager,  
Ministry of Health, Barbados*

In the country of Barbados extreme events are experienced in the form of hurricanes, fires and droughts; these often result in the increase of vector-borne diseases such as dengue fever and leptospirosis. As the adverse effects of climate change increase, it is expected that more extreme events will occur, such as sea level rise and saline intrusion of underground aquifers.

In order to prepare for the impact of extreme events, Barbados' Department of Emergency Management has developed and implemented a comprehensive disaster management program. This program conducts annual disaster simulations and trains personnel at all levels (telecommunication, shelter management, District Emergency Organization, volunteers) for emergency response. This is a collaborative initiative that partners with government officials, communication sectors, local organizations and volunteers.

Barbados' Emergency Preparation Program collaborates in a series of activities related to infrastructure and financing. Recently, it supported the development of the Caribbean Building Code (CuBiC) which sets construction regulation and norms. It also works with the Town Planning Department in the elaboration of emergency plans in the event of extreme weather situations. Barbados is also part of the Caribbean Catastrophe Risk Insurance Fund, established in 2007 to support the financing of actions related to emergency situations. A local disaster fund was also established in 2007.

Given that flash flooding is of particular concern in Barbados, a Drainage Division was established in 1995. This Division has helped to relocate people from flood prone areas and developed hazard maps in order to more proactively identify areas prone to flooding and prepare emergency responses. Such areas often experience mosquito infestations following floods, which require the development of strategies to prevent the increase of vector-borne diseases.

While not necessarily climate change-related, fires occur annually in Barbados. The Training and Development Unit for Barbados Fire Service has strategic located fire stations throughout the island and trains the general public in fire safety (such as in the use of smoke alarms). The Unit is also investing in the integration of new and modern fire-fighting equipment and technologies.

Water is a particular national concern. Barbados does not have rivers and water resources are scarce. The country is entirely dependent on groundwater.

Furthermore, the country experiences yearly episodes of droughts.

A series of initiatives have been implemented to develop the infrastructure to maintain water levels. In 1996, a Coastal Zone Management Unit was established to conduct surveillance of the country's 92 km of coastal area, with a particular focus on monitoring and reporting on the situation of underground aquifers. In 2000, a desalination plant was established in collaboration with the private sector. The Barbados Water authority has developed a Drought Management Plan and new legislation mandates that all new buildings construct water tanks to capture rain water from their roofs.

Dengue greatly affects Barbados; multiple outbreaks have occurred in the past few years. In order to improve the country's response to this issue, the government has upgraded laboratories' capacities to test for dengue, hanta virus, and other vector-borne diseases. The Environmental Health Department created a Surveillance Unit focused on vector control and implemented a new Geographic Information System to help predict future outbreaks.

An Environmental Health Specialist Unit has also been established and is working to identify new vectors which might have entered Barbados. There is a rudimentary insectary developed for testing the efficacy of chemicals used on the *Aedes* mosquito vector. Further work is being done to identify any new mosquito vectors which might have entered Barbados and to determine if there are any changing patterns of vector behavior which can be linked to climate change.

Finally, a seismic monitoring station was also established in 2006 as part of a region-wide tsunami warning system. ■

### **Preparing Not Just for Heat Waves but for Other Extreme Events**

*Pierre Gosselin, Scientific Coordinator, Institut National de Sante Publique, Quebec*

The Quebec government's 2006-2012 Climate Change Action Plan (PACC) contains an adaptation



component with a number of health-related projects. Many of the PACC priority actions focus on improving monitoring systems for heat waves (implemented in 2010), for all other extreme weather events (implemented in 2012), and for zoonotic and vector-borne diseases (in progress).

The strengthening of monitoring systems includes a research component aimed at exploring how the links between health and meteorological variables have evolved in recent decades, both in the short-term and for seasonal or decadal trends. This has allowed for a historical analysis of excess mortality as a function of heat and the establishment of new alert levels by geographic region. Systematic review of the investigation tools were also validated for monitoring the psychosocial impacts of extreme weather events. Other relevant research projects included in the PACC are:

- Geosimulation of Lyme disease, West Nile virus and bird flu (in collaboration with the Public Health Agency of Canada);
- Virtual cohort on cardiovascular disease and climate (1996+) (in progress);
- Retrospective studies on the psychosocial impacts of major disasters within the same cohort;
- Study on fragility fractures and climate; and
- Modeling of air pollution, heat and deaths/hospitalizations (current and future).

In order to improve emergency preparedness, PACC's surveillance approach considers factors that are present before, during and after the event. The variables of relevance identified for surveillance systems include exposure to extreme weather events, determinants of health and vulnerability, monitoring of health status, and monitoring of interventions. Information is available in real and delayed time; rapid and annual reports are also published. In addition, the PACC has established a series of permanent users' committees to help identify relevant and useful indicators.

The information is available online through an open and free web application entitled the SUPREME System (which stands for «Surveillance and Preven-

tion of the Impacts in Public Health of Extreme Meteorological Events »). The System includes maps that pinpoint regions prone to extreme heat and allow for the consultation of air quality indexes. Information is monitored and updated in real time.

The user-friendly tools allow users to select parameters according to their needs, both for online consultations and for printing reports. The list of indicators can also be modified according to the user's need. The tools allow for more detailed images, such as with zooming, and for the detection of urban heat islands in regions across the country.

The SUPREME System has been demonstrated as a useful and important resource. It is easy to add layers of information as they become available or needed. It can also be a key asset for monitoring alerts and deployment of response plans in real time. Furthermore, the system can be used to identify areas at risk or heightened vulnerability in the event of a disaster or in order to prioritize preventive interventions.

The establishment of the SUPREME system and its application to the issue of heat waves has produced some key lessons. The portal was very useful and appreciated by end users as a common and shared source for discovering alerts, areas at risk, and vulnerabilities (age, poor housing, etc.). Group training prior to heat events was crucial in order to cultivate common understandings around risk factors, the significance of thresholds/alerts, and predictive uncertainties. Finally, the portal highlighted the difficulties of going into full intervention mode at a local level, as it is a decision that needs to be made before the heat wave hits.

In an experience such as this one, it is important to emphasize a proactive attitude and community participation. This allows for information to be utilized for prevention and development of interventions to help detect other types of vulnerabilities.

For more information on the SUPREME system, consult: <http://www.ij-healthgeographics.com/content/10/1/39/abstract>. ■



# Seminar 4



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## Amazon Region, Environment, Health and Sustainable Development

## Amazon Region, Environment, Health and Sustainable Development

29 February 2012

### Context of the Amazon Strategic Cooperation Agenda and the ACTO in Rio+20

*Mauricio Dorfler, Executive Director, ACTO Permanent Secretariat*

The Amazon comprises an immense and challenging territory. In order to act on behalf of the Amazon region it is important to understand and highlight its features and characteristics.

The Amazon accounts for 6% of the planet's surface and occupies 40% of Latin American and Caribbean territory. Its rivers provide 20% of the world's freshwater to the oceans, an amount greater than the Mississippi, Missouri, Nile and Yangtze rivers combined. Its basin covers 25,000 km of navigable rivers. The Amazon River is the world's largest, stretching over 6,900 km, and including over a thousand tributaries and 220,000 m<sup>3</sup> of water. Forty thousand species of plants have been identified in the Amazon, and of these 2,000 have been classified as useful for food, medicine and other purposes.

The Amazon's cultural diversity stands out as its main characteristic. The region houses 420 indigenous and other tribal communities who speak approximately 86 languages and 650 dialects. About 60 communities live in complete isolation. The 38.7 million people living in the Amazon region correspond to 11% of the population of the eight Amazonian countries<sup>1</sup>.

The Amazon Cooperation Treaty (ACT), signed in July 1978 by Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela, is the legal instrument that recognizes the trans-boundary nature of the Amazon. The Treaty reaffirms the sovereignty of the Amazonian countries and promotes guides

and institutionalizes cooperation among the member countries. It aims to promote the harmonious development of the Amazon and the incorporation of its territory into the respective national economies, which is critical to maintain balance between economic growth and environmental preservation<sup>2</sup>.

In 1995 the Amazonian countries decided to institutionally strengthen the Amazon Cooperation Treaty with the creation of the Amazon Cooperation Treaty Organization and the establishment of a Permanent Secretariat. The decision was implemented in 1998 with the adoption of the ACT Amendment Protocol that officially instituted the Organization (ACTO) as a mechanism responsible for the improvement and strengthening of the cooperation process developed within the scope of the Treaty.

In 2002 the headquarters of the ACTO was inaugurated in Brasília, Brazil. It houses the ACTO's Permanent Secretariat which is responsible for implementing the Treaty and the dispositions adopted by the countries under the ACT. The ACTO's Permanent Secretariat strategic priorities include the creation of policies, programs, projects, and activities to minimize geographical discontinuities through concrete actions and by facilitating regional processes.

In 2004, the 2004-2012 Strategic Plan that defined the priorities for action in the Amazon was approved. In 2009, with the emergence of new regional initiatives such as UNASUR<sup>3</sup>, and a series of national institutional reforms, issues related to the Amazon returned to the center of debates on national public policies. As a result, a review of the Strategic Plan and the development of the 2010 Work Plan were initiated. In 2009, the presidents of the member countries adopted the Declaration of Heads

<sup>1</sup> The Amazon countries are Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela.

<sup>2</sup> For more information on the Amazon Cooperation Treaty consult: <http://www.otca.info/portal/>.

<sup>3</sup> The Union of South American Nations (UNASUR) is a regional entity conformed by Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela that aims to "construct a South American identity and citizenship, and to develop an integrated regional space". For more information consult: <http://www.unasur.org/> (site in Spanish only).



of State on the ACTO<sup>4</sup>, which called on the ACTO's Permanent Secretariat to support the work of the Foreign Ministers to update the regional priorities and prepare a new strategic agenda for Amazon cooperation.

The Permanent Secretariat, in collaboration with the countries' Foreign Ministries, conducted site visits, consultations, regional workshops for the formulation of thematic agendas, secondary data collection in member countries, and a meeting of the Ad Hoc Focal Group in Rio de Janeiro. As a result, in 2010 the new Strategic Agenda for Amazon Cooperation, which included a set of initiatives to work in different areas of the treaty, including health, was adopted.

This agenda incorporates a cross-section and multisectoral vision of all programs, projects and activities identified to address the concerns and needs of Member Countries and the mandates of the ACT. Its implementation incorporates adjustment and review mechanisms which allows it to function as a guiding, flexible and adaptable tool in order to properly reflect all interests. It also includes ACTO's vision, mission and strategic objectives based on two transversal approaches (conservation and sustainable use of renewable natural resources, and sustainable development).

In 2011 the Foreign Ministers of the ACTO's Member Countries adopted the *Commitment of Manaus* and the *Declaration of the Foreign Ministers of the ACTO Member Countries to the Rio+20 Conference* at its eleventh meeting held in Manaus, Brazil.

The *Commitment of Manaus* constitutes a new political support for the ACTO in its renewal process that began in 2009. This commitment seeks to promote political dialogue and institutional capacity to stimulate the adoption and implementation of Amazon cooperation projects; it also prioritizes actions to bring the ACTO together with national authorities and local populations that live in the Amazon region

in order to facilitate the process of identifying local demands for regional cooperation projects.

In the *Declaration of the Foreign Ministers of the ACTO Member Countries to the Rio+20 Conference*, the Ministers recognized that the United Nations Conference on the Environment and Development held in Rio de Janeiro in June 1992 meant the consolidation of the sustainable development paradigm, with integration of and equal weight attributed to the social, environmental and economic pillars of development, and which highlighted the importance of the ACT as an instrument for sustainable development in the Amazon region.

In this regard, the member countries expressed confidence that the Rio+20 Conference to be held in the city Rio de Janeiro in June 2012, is an opportunity to assess and identify actions and measures to achieve sustainable development in the region. The Member Countries reaffirmed their conviction that development should be achieved through the balance between sustainable use of resources and their protection and conservation so as transform the current models into models of development that are sustainable, economically inclusive, and in harmony with nature, ecosystems and the rights of peoples.

The Rio+20 Conference is an opportunity to highlight the importance of the Amazon for its contributions and significance for biodiversity, climate stability and development. It is expected that the Rio+20 Conference will generate actions to overcome obstacles to sustainable development, and solutions to the structural causes of negative environmental, economic and social policies and patterns caused by production and consumption patterns in areas that are essential for the survival of humanity. ■

## Health in the New ACTO's Strategic Agenda

*Antonio Restrepo, Health Coordinator, ACTO*

The Amazon Cooperation Treaty, signed in 1978, refers specifically to health in Article VIII by stating that “the Contracting Parties decide to promote the coordination of existing health services in their respective Amazonian territories and to take other measures as

<sup>4</sup> Available at (in Spanish only): [http://www.otca.info/portal/admin/\\_upload/documentos/DECLARACION\\_LIMA\\_ES.pdf](http://www.otca.info/portal/admin/_upload/documentos/DECLARACION_LIMA_ES.pdf) (accessed 3 May 2012).

may be advisable in order to improve sanitary conditions in the region and improve methods for preventing and combating epidemics.”

This commitment was reaffirmed in 2009 with the Presidential Declaration of Manaus, which determined “the construction of a comprehensive vision for Amazonian Cooperation that incorporates the dimensions of economic, health, indigenous and tribal peoples, education, science and technology, water resources, infrastructure, commercial shipping and its facilitation, tourism and communications, with the goal of promoting harmonious and sustainable development of the respective Amazonian spaces” (Decision 3).

More recently, the *Commitment of Manaus* adopted at the 2011 Eleventh Meeting of Foreign Affairs Ministers of the ACTO’s Member Countries, reaffirms the commitment to contribute to the success of the UN Conference on Sustainable Development (Rio +20) by promoting successful experiences, including those in the field of health, within the scope of the Amazon cooperation in order to achieve development.

The OTCA’s Amazon Cooperation Strategic Agenda currently in effect seeks to facilitate regional health management. It aims to generate an operational framework of agreed strategies, instruments and indicators for the institutionalization of environmental health surveillance in the Amazon region, which are incorporated into national health systems, compatible with International Health Regulations and the Five-Year Health Plan 2010-2015 of the UNASUR South American Health Council, and also guided by the Millennium Development Goals (MDGs) while strengthening the regional Amazon cooperation process in issues of health.

The agenda identifies the following priority themes: coordination with other initiatives (for example, with PAHO and South-South Cooperation); implementation of epidemiological surveillance processes; promotion of environmental health; improvements in health determinants in the Amazon; development of human resource policies for the Amazon; promotion, strengthening and consolidation of research in the Amazon, and financing of the Health Agenda.

The main lines of work include short-term activities as well as those that address questions related to the increase of urban population in the Amazon over the last decades. Line of Work 3, for example, seeks to improve management of environmental health risks through the coordination of mechanisms to assure the proper management of residential solid waste. There are plans to elaborate a project to collect information on the regulation and disposal of residential solid waste in Member countries.

The strategic agenda for health defined environmental health surveillance as a central issue. The agenda seeks to establish an Environmental Health Surveillance System for the Amazon Region through a program financed by the Inter-American Development Bank and implemented by the ACTO’s Permanent Secretariat through its Health Coordinating Unit.

The Pan-Amazon Network of Science, Technology and Innovation<sup>5</sup>, established 6 years ago in Belem, Brazil, aims to strengthen science, technology and innovation for health in order to improve health and life conditions for the populations of the Amazon Region. It is a joint activity among PAHO, UNAMAZ, FIOCRUZ (Brazil), and ACTO, and it incorporates Member countries’ Ministries of Health and health institutes. The network includes representatives from the scientific and academic community and from the public and private sector.

The network seeks to strengthen and support development policies, as well as national and regional capacities for science, technology and innovation for health and to contribute to human development in the Amazon Region through an approach of social and economic sustainability and social inclusion.

The network has formed seven working groups to guide its activities in the following themes: ehealth; health and environment; Virtual Health Library; Pan-Amazon Science, Technology and Innovation for Health; technological innovation and intellectual property; malaria research; Amazon health systems and services research; and interculturality and health.

<sup>5</sup> For more information consult: <http://panamazonica.bvsalud.org/php/index.php> (in construction).

In the past few years, the ACTO's Permanent Secretariat, through its Health Coordinating Unit, has developed an important collaboration with PAHO, particularly with the PAHO/WHO Representative Offices in Member countries.

This has resulted in the Health and Knowledge Management Cooperation Agreement 2012/2013 signed between PAHO and ACTO which consolidates the alliance between these institutions to work within the framework of UNASUR and with all ACTO countries to support the implementation of the health strategic agenda.

A Joint Work Plan has been developed to support the implementation of the activities defined under the theme of health in the ACTO's Strategic Agenda, in the short and medium-term, and to contribute to improve health management with the goal of improving the life conditions of the Amazon populations.

The Agreement also seeks to establish international health alliances to promote technical and financial resources for health and the implementation of the Amazon Cooperation Strategic Agenda; strengthen the management of activities in member countries; support the Environmental Health Surveillance System Program to be implemented in selected pilot sites in Member countries; collaborate with the Pan-Amazon Network for Science, Technology and Innovation in its renewal efforts, centered around the thematic issues defined in the Network's VI meeting; and, lastly, to develop joint actions to incorporate the issue of health in the decisions of the Rio+20 Conference. ■

### **The ACTO/IDB Environmental Health Surveillance System Program in the Amazon Region within the Rio+20**

*Francisco Sánchez Otero, Program Coordinator, SVSA ACTO/IDB*

The *Environmental Health Surveillance System Program for the Amazon Region* (SVSA for its acronym in Spanish) is an initiative of the Amazon Cooperation Treaty Organization that is financed by the Inter-American Development Bank (IDB) and that has

been in place since December 2008. It aims to adopt a system of consensual indicators and strategies to institutionalize environmental health surveillance in the Amazon Region<sup>6</sup>.

Based on this initiative, those responsible for the development of public policies will be able to determine the risk factors and actions needed for environmental health surveillance in their countries. This will facilitate prevention, protection, adaptation and mitigation in case of environmental damage, changes, contamination and other impacts that affect human health.

In 2009, the countries agreed on the following priority areas for action:

1. Water and environment: water for human consumption and basic environmental sanitation
2. Chemical substances: pesticides, mercury and air quality
3. Extreme weather events: vector-transmitted diseases, emergencies and disasters

The program includes three basic components: a current environmental health situation analysis in the Amazon countries, the definition of good practices in environmental health surveillance, and the validation of the system through pilot sites in the Amazon region.

Under this component, inventories on the situation of environmental health surveillance in each of the ACTO's Member Countries are completed, taking into account the existing legal framework, intersectoral action, and the linkages between health information systems, health surveillance and other official sources of information. These inventories will help to establish a baseline of Environmental Health Surveillance Systems in the Amazon Region, reach consensus on priorities and areas for action, and develop environmental health indicators.

<sup>6</sup> The documents describing the program are available at (in Spanish): <http://www.otca.info/portal/coordenacao-interna.php?p=otca&coord=1> (accessed 3 May 2012).

## Component 2. Regional Instrumental and Diagnostic Guidelines

Regional guidelines to improve procedures related to the detection and control of diseases and risk factors for environmental health in the Amazon region are identified under this component. Needs related to human resource capacity and training for member countries are also highlighted under this component (standardization of laboratory techniques, geographical information systems for epidemiological and environmental use), according to sectors and levels.

## Component 3. Pilot Projects on the Shared Management of the Operational and Instrumental Framework

This component defines the operational implementation of the systems and the evaluation and validation of the instruments and methodologies developed in priority border zones (bi- and tri-national), using a participatory, intersectoral, strategic, sustainable, and administratively integrated approach.

It also promotes the formation of quick action teams, the healthy settings initiative, and environmental education as mechanisms for the development of capacities for local response in case of environmental health risks for the Amazon population.

The *Environmental Health Surveillance Systems for the Amazon Region Program* will provide an operational environmental health surveillance framework and regional instrumental and diagnostic guidelines and best practices, as well as experiences and systematized and disseminated lessons learned, all of which will help to strengthen national health systems.

The Work Plan proposes the establishment of a database to support the assessment of the current state of surveillance systems in the ACT countries. It also proposes the development of a toolkit that includes work methodologies for surveillance, laboratory and capacity-building that can be useful for the eight ACT countries. Currently, the program defines the work plan of the eight countries through virtual communication and periodical work meetings with delegates and working groups in the countries.

It is expected that as a result of all these initiatives and of the joint work conducted by the countries and participating entities, an Amazon Management System will be conformed that will allow for the integration of information and collaboration with and between countries. The Amazon Management System will be transversal and adaptable to the emerging needs of the Member Countries, which should facilitate access to practical, useful and dynamic tools that are of free use and distribution. ■



# Seminar 5



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## Employment and Working Conditions towards Sustainable Development

## Employment and Working Conditions towards Sustainable Development

7 March 2012

### Working Conditions for Sustainable Development: from Informality to Flexisecurity?

*Carles Muntaner, Bloomberg Faculty of Nursing, Dalla Lana School of Public Health and Program in Global Health, University of Toronto*

### Employment and Working Conditions as Social Determinants of Health

The ways employment and working conditions affect workers' health are a central area of the social determinants of health research agenda<sup>1</sup>. The conditions created by how societies structure labor relations, labor/capital agreements and employment contracts can differentially affect workers' health (WHO CSDH, 2011). Health inequities emergent from these related conditions are closely connected to other kinds of social inequalities such as in wealth, political power, and education. The WHO Network on Employment and Working Conditions, which was part of the WHO Commission on the Social Determinants of Health, summarized a few years ago the evidence on the relationship between employment conditions and health (Muntaner, Benach Chung et al 2010; WHO, 2012).

A study conducted by Muntaner et al, (2012) investigated the labor market regulations among low- and middle-income countries and proposed a labor

market taxonomy to further understand population health in a global context. Using Gross National Product per capita, 113 countries were classified into either low-income (n = 71) or middle-income (n = 42) strata. Standardized indicators of labor market inequality and poverty were used to generate a labor market taxonomy and to test its associations with a variety of population health indicators, such as mortality, healthy life expectancy, and years of life lost to communicable and noncommunicable diseases.

Based on these taxonomies, low- and middle-income countries clustered into six labor market groups: Residual, Emerging, Informal, Post-Communist, Less Successful Informal, and Insecure. Most of Latin American countries were classified as “emerging” labor markets; they showed a double burden of years of life lost to both, communicable and non-communicable diseases and a large proportion of informal workers.

This study's findings indicated that labor market regulations, expressed as levels of inequality and poverty, are important social determinants of population health among low- and middle-income countries. Labor market regulations can affect workers' health through (1) the physical and psychosocial conditions of work, and (2) the economic outcome of the labor process, usually expressed in wages and benefits. Therefore, improving material living conditions in low- and middle-income countries are crucial to enhancing population health through strengthening labor market regulations (e.g., decreasing levels of child labor and poor workers) (Muntaner et al, 2012).

### Employment Conditions and Poverty

Five years after the WHO Commission on the Social Determinants of Health have analyzed worldwide data related to employment condition and poverty, the situation has not improved (Pogge, 2002, 2012). Currently, of the seven billion human beings that inhabit the planet, 925 million are chronically undernourished, 884 million lack safe drinking water, 924 million lack adequate shelter and 1.6 billion lack electricity (Pogge, 2002; Pogge, 2012).

<sup>1</sup> Employment conditions include the power relationship between employers and employees (buyers and sellers of labor) which stipulate payment of wages, working conditions, and the level of social protection that employees can count on. Working conditions are determined by contracts between the employer and the employees; they are related to the tasks that workers perform: physical and chemical environment, ergonomic conditions, psychosocial factors, and the technology being used. Working conditions also include hierarchy and power relations, participation of workers in decision making, as well as workplace discrimination (WHO CSDH, 2011).

It is estimated that 218 million children (aged 5 to 17) do wage work outside their household, often under slavery-like and hazardous conditions: as soldiers, prostitutes or domestic servants, or in agriculture, construction, textile or carpet production (ILO, 2006). At least 1/3 of human deaths, some 18 (out of 57) million per year, or 50,000 daily, are due to poverty-related causes (WHO, 2008).

Much of the worldwide poverty is related to low wages. This means that for a very high proportion of the world's workforce, work does not pay; it leads to poverty and its direct relationship with poor health status. In the last two decades, poverty-related deaths have largely surpassed the number of deaths attributable to the greatest wars of the 20<sup>th</sup> century (Pogge, 2002; Pogge, 2012). Nevertheless poverty is not addressed with the urgency it deserves.

## Trends in Latin America

There are plenty of reasons to be optimistic about Latin America. The majority of its countries have experienced an improvement in inequality indicators (Montecino, 2012). Wages and minimum wages have increased when compared to other Regions. There is a marked decrease in poverty rates as well as a significant improvement of quality of life indicators that are related to poverty.

While working conditions have improved in Latin America over the last decade, significant inequalities persist in working relationships. Most indicators of progress do not show the inequalities that exist within and among countries, particularly in relation to labor market and employment conditions. There is a lack of studies focused on understanding the relationship between health inequalities and employment conditions in the Region (Solar et al, 2006).

One exception is the work conducted by Solar et al (2011) in Chile. The study looked into the relationship between employment conditions, social class and health. It found that workers who were from lower social class, performed mostly informal jobs, and had lower education, reported the worst perceived health status when compared to other popu-

lation groups. The best perceived health status was found among managers and business executives. This study emphasizes the need to better understand and to expand the investigation of the relationship between labor market and health. Although there is extensive literature on specific working conditions and health (i.e. occupational health), it does not fully cover the social determinants that shape health inequities in relation to employment (Muntaner et al, 2012).

## What are the Best Labor Market Policies with Potential to Reduce Health Inequalities Among Workers?

There are plenty of studies that describe inequalities related to employment and working conditions. Nevertheless, the research is skimp on the results of interventions and the evaluation of policies. As in many other areas of social determinants of health, policy recommendations on employment conditions and health inequalities need to be implemented and evaluated. Future research should focus on identifying which labor market policies have the potential to reduce health inequalities among workers (i.e. flexi-security, basic income) (Muntaner et al, 2010).

Labor market policies should aim to provide a balance between employment protection and flexibility. Venn (2009) analyzed estimates of the OECD employment protection indicators for 30 OECD countries and 10 emerging economies<sup>2</sup>. The results pointed to a great variability of employment protection among OECD and selected non-OECD countries. Indicators show that countries with higher union density provide greater protection against worker's dismissal (fixed and temporary workers). These indicators rank Denmark, Sweden and Finland at the top of countries with better employment protection, while the United States ranks lowest among the countries in terms of employment protection.

<sup>2</sup> The OECD indicators of employment protection measure the procedures and costs involved in dismissing individuals or groups of workers and the procedures involved in hiring workers on fixed-term or temporary work agency contracts.

A classification of countries according to labor market characteristics indicated that the “Flexisecurity” model offers the highest flexibility and protection to workers (Afzal et al, in press). While it is unclear whether such model improves the health indicators of workers as compared to other models, the evidence points in that direction.

A closer look into the relationship between unemployment and suicide rates among males in Sweden and Spain between 1980 and 2005 (David Struckler, personal communication), indicated that while unemployment and suicides rates seem to be correlated in Spain, the same correlation did not hold in Sweden; it is hypothesized that Sweden’s labor market protection policies provide greater security to workers during periods of unemployment, thus reducing the stress related to not having a job.

More recently, researches have attempted to determine what policies and interventions have been adopted in high income jurisdictions to reduce or eliminate health inequities arising from labor market conditions and whether or not health outcomes were a primary concern of the policy or intervention (Afzal, et al (in press).

An extensive literature review on the topic uncovered few assessments of health effects, which is probably to be expected given the complexity of relevant causal pathways and the difficulty of separating labor market policy effects from those of other social policies and changes in background economic conditions. Much of the most detailed literature involved comparative cross-national case study research on overall labor market policy, rather than research designed to test the impact of a specific policy or intervention.

### Flexisecurity: A Model to be Followed?

Flexisecurity has been defined as “a carefully balanced combination of flexibility where it matters for job creation, and protection where it is needed for social security ... based on the co-ordination of employment and social policies” (Viebrock and Clasen, 2009). This model is most closely identified with continental Europe, and with Denmark and the Netherlands, in particular.

The European Expert Group on Flexisecurity has identified four “flexisecurity pathways,” the relative importance of which varies among countries:

- Reducing contractual “segmentation,” e.g. between full- and part-time or permanent and temporary workers;
- Offering security during transitions between jobs (i.e. replacing job security with employment security);
- Addressing skills and opportunity gaps among the workforce; and
- Improving opportunities for benefit recipients and informally employed workers.

The “Golden Triangle” – the mutually supporting combination of a flexible labor market, generous welfare schemes and active labor market policy - has often been used to illustrate flexisecurity in Denmark (Wilthagen and Tros, 2004).

Denmark has experienced high levels of economic security with relatively generous unemployment insurance benefits. It incorporates an “activation” requirement for unemployment benefits: after one month, unemployed workers “enter a regime of mandatory activities such as interviews, counseling and monitoring of active job seeking;” enrollment in training is required after six or nine months (Madsen, 2008). Denmark’s unemployment has dropped from more than 12% in 1993 to 3.4% in 2008, which is significantly lower when compared to other European and OECD countries (Afzal et al in press).

Denmark has largely avoided creating a low-wage, marginalized segment of the labor market (Viebrock and Clasen, 2009), but at a cost in terms of public expenditure; some of the successes of flexisecurity may be due to other aspects of labor market policy, as the Danish pattern of relatively few low-wage jobs in comparison to a number of other high income countries long predates the flexisecurity reforms (Mason and Salverda, 2010).

An empirical assessment of Denmark’s labor market has found that the low levels of employment



protection legislation were compensated by a high investment in labor market policies and a strong system of social protection. While there are frequent transitions between jobs and high levels of short-term unemployment rates, the majority of the population finds their way back into employment. Job satisfaction, economic performance and competitiveness are comparatively high. Nevertheless, there are issues related to the sustainability of this model, mostly related to the rising expenses for activation programs (Afzal et al in press).

The flexisecurity model implies a series of assumptions that need to be considered. It is based on the notion that the interests of capital and labor are compatible, not contradictory. It requires an ideal political economic arrangement that strikes a balance between the forces of marketization and social protection. It also requires a macroeconomic environment in which social policies and labor markets function is fixed. The model also accepts that business cycles, including periods of economic crises and recessions, are a natural and inevitable part of the economy. The role of education lies in its ability to affect human capital, labor market productivity and worker employability. Economic security is equated with the well-being of workers, while psychological health is neglected.

Different versions of the flexisecurity model have been implemented in other European countries. Many have emphasized flexibility at the expense of security (i.e. Czech Republic), while others have opted for a practice of “selective flexisecurity” (i.e Italy and Czech Republic). Different levels of precarious risk were associated with different forms of non-standard employment (i.e Germany). These experiences highlight the need to develop a common conceptual and implementation framework.

## Directions for Future Research

Research should look into ways to address the current gaps in the study of how labor market policies affect the social determinants of health. This requires that research studies fully adopt the social determinants of health perspective. It should also examine social inequalities under flexisecurity and other ac-

tive labor market policies based on age, race, gender, class, informality, and attempt to isolate some of its salutary components (employment security, income stability). Additional literature reviews are needed in order to better construct the theories of key flexisecurity concepts and to empirically demonstrate their connections with health. Lastly, it is key to promote primary data collection studies and the evaluation of labor market interventions and policies. ■

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# Seminar 6



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## The Voices of Civil Society in the Creation of a Healthy Future

## The Voices of Civil Society in the Creation of a Healthy Future

14 March 2012

### The Voices of Women in Health Advocacy

*Maria José de Oliveira Araújo, Founder of the Network for Latin American and Caribbean Women's Health and the Brazilian Network for Women's Health*

The UN conferences in Vienna (1993), Cairo (1994), Beijing (1995) and Copenhagen (1995) placed women at the center of a new vision for health, sexual and reproductive health, and development with equity and gender justice. Women maintained a leading role in the Rio 92 Conference and we hope to do it again in Rio+20.

Women's organizations demand a society with social, political and economic justice that does not discriminate, and that ensures human rights and gender equality—including the right to comprehensive health and sexual and reproductive health—and empowerment, and women's autonomy to exercise their citizenship.

Women have traditionally been in charge of subsistence agriculture and the selection, purchase and preparation of food for the community and the family. Furthermore, women are primarily responsible for the task of parenting. However, much of the work carried out by women for their community and family has no economic value in the current development model. In addition, the triple work burden<sup>1</sup>, gender discrimination and low wages earned by many women, have a negative impact on their health<sup>2</sup>.

<sup>1</sup> According to researcher Fernanda Wanderley, women's triple work burden is a legitimate and important gender reality. "The reality is that women assume a set of responsibilities. The first role is in the care of family, of dependents such as children or adults with disabilities. Also involves tasks such as meal preparation, housekeeping and others." More information at: [http://www.pieb.com.bo/sipieb\\_dossier.php?idn=4740&id=4747&c=2](http://www.pieb.com.bo/sipieb_dossier.php?idn=4740&id=4747&c=2).

<sup>2</sup> For more information: [http://new.paho.org/hq/index.php?option=com\\_content&view=article&id=2680&Itemid=4017&lang=es](http://new.paho.org/hq/index.php?option=com_content&view=article&id=2680&Itemid=4017&lang=es).

Several PAHO studies and publications have reviewed the various health issues that specifically affect women<sup>2</sup>. Many countries in the Region present a high degree of maternal mortality often associated with preventable conditions such as infections and abortions. These health problems, in turn, affect different dimensions of women's lives (e.g., work and mental health). Many of these problems are related to the difficulties faced by women in accessing health services. Environmental policies also impact women's health. The Amazon region, for example, has high rates of maternal mortality from malaria, a disease which disproportionately affects the poorest women<sup>3</sup>.

Large gaps persist in Latin America and the Caribbean, which remains the most unequal socio-economic region in the world. The current development model is not sustainable and disproportionately affects poor, black, indigenous and adolescent women, with serious consequences for their lives and health. Regional development programs and strategies should include the right to health and gender equality as central aspects in their planning and implementation.

Health is one of the pillars of equitable development processes and must be accompanied by social and economic justice. Women's organizations support the recommendations outlined in the 1994 *Cairo Conference Action Program* on population and development, especially those that recognize the importance of the triad "health, women and development," from a perspective based on rights.

Women's organizations expect that governments and society respect the rights of the people, particularly where concerning indigenous and Afro-descendant women, in regard to the right to land, territory and food sovereignty, as well as free and informed consent in all aspects that concern them.

<sup>3</sup> For more information: [http://new.paho.org/hq/index.php?option=com\\_content&view=article&id=2680&Itemid=4017&lang=es](http://new.paho.org/hq/index.php?option=com_content&view=article&id=2680&Itemid=4017&lang=es).

<sup>4</sup> For more information: <http://avina.net/esp/wp-content/uploads/2012/amazonia.pdf>.

It is critical that governments ensure that their laws, policies and regulations respect and recognize women of all ages and conditions as subjects of rights who have the capacity to make free choices. Governments should also consider the environment as one of the most important determinants of people's health.

As we head towards the Rio+20 Conference, women's organizations are mobilized and hope their voices will be heard, and that gender issues will be fully integrated into the agenda for discussion. ■

### Catalyzing Youth's Productive Energy for Sustainable Development and Health

*Luis Viguria, Executive Director, Young Americas Business Trust*

The *Young Americas Business Trust* (YABT)<sup>5</sup> is an international non-profit organization that works in cooperation with the *General Secretariat of the Organization of American States* (OAS). It was founded in 1999 as a private sector initiative to promote economic and social development of young people around the world.

The YABT provides a regional platform for the exchange of best business practices and initiatives that promote regional economies of scale and access to new innovative approaches and strategies.

YABT's programs, projects and activities focus on working with other institutions to create and promote efforts to improve the quality of life for youth and young adults, especially those who live in or near the poverty line.

Its strategy focuses on the following four areas of work:

- **Leadership:** Connect young entrepreneurs and national associations into a regional network with opportunities to form a new generation of responsible business leaders.

- **Training:** Emphasize practical experience ("learn by doing") through a methodology that fosters a spirit of entrepreneurship and innovation among young people, motivating and leading them through a "real life" business experience.
- **Technology:** Using the potential of the Internet, provide information and build networks of learning opportunities and virtual communities.
- **Strategic alliances and the YABT's national headquarters:** Collaborate with national and international partners that provide technical and financial support to programs for young entrepreneurs and businessmen.

Activities under the theme "leadership" aim to connect young entrepreneurs with business leaders and national organizations of young entrepreneurs in order to develop business opportunities and networking. They promote the exchange of best practices, the formation of alliances, and youth participation in the policymaking process.

Training activities and practices seek to provide young people with the tools and skills needed to start a business and understand what it means to be an entrepreneur. They promote the translation of ideas into action. An example is the *Business Labs Project* that provides young entrepreneurs with training, business contacts, and access to market and business opportunities.

YABT also promotes the *Program TIC Americas: Competition, Talent and Innovation in the Americas*. The *TIC Americas* is an international competition that awards business plans and accelerates the market entry of young entrepreneurs. It differs from other business plan competitions as it incorporates a "before and during" phase (coaching and mentoring) and an "after" phase (monitoring, networking, incubation, internships and other opportunities across the world).

The *TIC Americas 2012* offers two award categories. The *Talent and Innovation Award* is given to social and business projects that are in development and that demonstrate talent and innovation capacity in their proposal or startup strategy. The *Eco-Challenge*

<sup>5</sup> For more information: [www.yabt.net](http://www.yabt.net).



*Award* recognizes ideas or social or business projects that are in development and that offer a viable solution to problems related to water or environmental conservation. The goal is to encourage the participation of young people between the ages of 13 and 36 who are committed to environmental causes and to create settings that are sustainable and environmentally friendly.

In 2012, more than 1,800 participants from the Americas participated in the *TIC Americas Program*, 900 of which were projects related to the environment, which demonstrates the importance of the issue in the Region and young people's interest in being part of the solutions.

YABT has also had a major presence in the *Summit of the Americas* in 2005, 2009 and 2012 through the *Youth Forum of the Americas*, which provides a platform for young people to submit recommendations to the Hemisphere's Heads of State and Governments during such events.

The *Youth Forum of the Americas* provides a great opportunity to contribute to the building of democracy and progress in our Region. Through this platform, young people have the opportunity to analyze and discuss challenges and propose viable and sustainable solutions and new perspectives that contribute to the process of the *VI Summit of the Americas*.

This year the *III Youth Forum of the Americas* was held in the days before the *VI Summit of the Americas*, which took place in Cartagena, Colombia, with active participation from youths who were part of the consultation, national and regional dialogues, and other processes conducted prior to the Forum. For the first time in the history of the OAS, the youth's recommendations were presented at a special session of the Permanent Council, and youths were included as stakeholders in the Summit process.

YABT is a formal partner in the Rio+20 process. During 2011, several global players met regularly at events in New York, the UK and Paris. A strategic policy program was developed to promote the global mobilization of youth in order to contribute

to the Rio+20 Conference and to empower young people with skills and knowledge so that they may influence the crucial decisions that will be made and participate in the concrete actions resulting from the Conference. ■

### **A Health Perspective on Labor Unions' Demands in Preparation for Rio+20**

*Judith Carreras García, Coordinator of the Sustain Labour Program, International Labour Foundation for Sustainable Development*

The world of 2012 is not like that of 1992 or 1972. More than presenting an opportunity, the Rio+20 Conference presents an imperative. Today much more information exists about the issues that affect us, yet time plays against us. Instead of discussing in isolation each pillar of sustainable development<sup>6</sup>, Rio+20 should foster reflection on the connections between them and help find ways to integrate them. This is not a purely theoretical discussion. Rio+20 should provide real, feasible and integral answers to the multiple global crises.

Labor unions are holding a series of preliminary work to define the priorities and opportunities to be presented at Rio+20. Given that Rio+20 issues include the green economy and international environmental governance, it is essential that the green economy is clearly defined and that it considers the following principles:

- The effective use of natural resources;
- The importance of meeting human needs in the long term;
- The promotion of equity within and between countries;
- The need to be inclusive and promote a decent future for all (especially youth, women, indigenous peoples, and workers in the informal sector);
- The need to be based on the real and not speculative economy;

<sup>6</sup> The three pillars of sustainable development have been defined as economic, social and environmental.



- The need to be based on a perspective of rights and respect for worker's rights;
- The promotion of a democratic economy; and
- The search for social justice and the improvement of social protection systems.

Based on these principles, we present for Rio+20 three clear and specific demands:

### **Demand 1. The Creation of Green and Decent Jobs with Clear Commitments from Governments**

Inside the “green” economy we want to foster the agenda for “green” and decent jobs, in which “green” jobs are understood as those that reduce the environmental impact of enterprises and other economic sectors. “Green” jobs should not be dirty, dangerous, or difficult. “Green” and decent jobs should promote health in the workplace, which is a historical struggle of organized labor and has a fundamental effect on public health.

### **Demand 2. The Demand for Basic Social Protection**

Social protection systems are a key tool for increasing resistance to climate change impacts. We must find a compromise over people's rights and protection, and on this issue there is a clear demand for health coverage. Another important dimension refers to environmental aspects, given that a protected society is more resilient and better able to respond to environmental disasters while simultaneously exerting less pressure on the environment.

Social protection includes the gender dimension by demanding recognition of sexual and reproductive rights, which are essential when considering the number of women who still die each year from causes such as infections and abortions. Women who take care of the family are often unable to access the labor market. This double or triple work burden could be alleviated with adequate social protection in order to enable these women to enter the labor market and reduce the burdens that many are forced to carry.

### **Demand 3. Taxation and Financing**

We believe this is a fundamental aspect that must be agreed upon in Rio+20. It is important to seek commitments on the imposition of taxes on financial transactions, as well as on other global responses. It is essential to move from the financial to the real economy, and this dimension encompasses the discussion on how to finance basic social protections using national resources.

The three demands from labor unions provide concrete examples of how to integrate the three pillars of sustainable development at Rio+20. We need concrete actions and responses. During Rio+20 we will also be organizing the *Second Union Assembly on Labor and the Environment* to renew commitments and promote an action plan for the coming years. ■

### **The Voice of Indigenous People**

*Marcos Terena, Indigenous Coordinator Rio+20 - KARI-OCA II*

Indigenous people are preparing to participate in Rio+20. We are convinced that we have much to contribute with our knowledge and practices regarding water use and conservation, social and natural biodiversity, and our proposal for “Good Living.”<sup>7</sup> Significant participation of indigenous peoples is expected in Rio+20, with the presence of over 400 Indians from Brazil alone, and more than 1,000 worldwide.

The *United Nations Declaration on the Rights of Indigenous Peoples*<sup>8</sup>, adopted by the UN General Assembly in 2007 provides a framework for the full and effective participation of indigenous people in all stages of Rio+20. We seek to create appropriate opportunities for indigenous people to present alternative proposals on the concepts of green economy and the institutional framework for sustainable development.

<sup>7</sup> According to the presenter Marco Terena, for indigenous people “good living” means living in harmony with the life cycles, knowing that everything is interconnected, interrelated and interdependent; “good living” implies knowing that the deterioration of one species implies the deterioration of the whole.

<sup>8</sup> Available at: [http://www.un.org/esa/socdev/unpfi/documents/DRIPS\\_es.pdf](http://www.un.org/esa/socdev/unpfi/documents/DRIPS_es.pdf) (consulted on May 3, 2012).

The basis of our discussion is presented in the paper prepared for Rio+20<sup>9</sup> which describes our perspective on modernity and technology based on our traditional knowledge and science. Among the new priorities we include food sovereignty from an indigenous perspective, agriculture and the cultural importance of water.

In terms of specific activities, we are building an indigenous village for the Rio+20 Summit which will be composed of three “ocas”<sup>10</sup> that will focus on the following topics: indigenous knowledge, traditional, and electronics. The Electronic Oca aims to transmit our thoughts online for the people of the Americas.

In terms of health, we would like to discuss issues related to quality of life and health and nutrition from an indigenous perspective. For indigenous people, quality of life is related to the opportunity to have family, food, medicine, and natural resources. It is also key to discuss the issue of traditional habitats, since a tribe must first have security in its land and use of natural resources as a source of food and medicine, to even begin speaking of quality of life, health and food.

The guarantee of indigenous people’s culture, traditions and way of life forms the foundation of indigenous health. Health should be understood as a collective commitment that encompasses traditional habitats, water, food and biodiversity. We need to break the prejudices of science in order to promote the right to live and to live well among indigenous and non-indigenous people.

In many parts of the world people do not have the privilege of sharing the sacred vision of water and quality of life from an indigenous perspective. We would like to convey to health professionals the importance of promoting these values for indigenous and non-indigenous people. Rio+20 offers an opportunity to promote a dialogue between the various sciences and seek consensus based on respect for each other’s values.

We do not believe that health problems can be solved with technological medicine alone. Health needs to promote life, the right to laugh and cry, according to the system of “Good Living”. Modern medicine cannot find medicinal resources to make a person laugh and live well.

It is also important that health systems help indigenous people who are currently affected by diseases such as diabetes, cancer and AIDS. We need to share knowledge and practices because modern science can discover medicines in indigenous territories and ecosystems. In Rio+20 we expect to help humanity rediscover traditional values and medicine. We seek to promote a discussion about the quality of life that will help to awaken humanity’s commitment to life and to Mother Earth.

Another important health-related issue refers to the right to eat, which the UN calls “food security.” It is more important to promote healthy eating than to lead indigenous people towards industrialized foods that affect their health. We ask that Rio+20 recognize and support traditional indigenous practices related to agro-ecology and various forms of food production as the basis of food sovereignty, which also helps to protect biodiversity and traditional knowledge as alternatives to unsustainable patterns of industrial food production. The green economy must foster the maintenance of natural resources.

Indigenous societies are essential for good living, collective medicine and intercultural relations. Modernity cannot survive without the economic, social, cultural, and spiritual indigenous values. It is important to reach a compromise between indigenous and non-indigenous science.

Indigenous people can contribute significantly to a new model of sustainable development that takes into account a number of human and cultural rights and the principles of equity. Our participation in Rio+20 continues to be guided by important statements that we have made over the last 20 years and that are directly related to the themes and focus areas to be discussed at the Summit. ■

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<sup>9</sup> The document is available at: <http://www.uncsd2012.org/index.php?menu=100>.

<sup>10</sup> “Ocas” are the traditional indigenous houses in Brazil.

# Seminar 7



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## Globalization and Health Equity towards Sustainable Development

## Globalization and Health Equity towards Sustainable Development

21 March 2012

### Globalization and Health Equity: Towards Sustainable Development?

*Ronald Labonté, Canada Research Chair, Globalization and Health Equity, University of Ottawa, Canada; Chair, Globalization Knowledge Network, WHO Commission on Social Determinants of Health*

Three global phenomena need to be considered in the discussion about globalization, health equity and sustainable development:

- The crisis in global capitalism's financial markets brought on by almost 30 years of inadequate or indifferent regulation;
- The fact that even if governments manage to regulate banking and to rebalance the real economy of production and consumption, as the 2009 UK Commission on Sustainable Development states: "there is as yet no credible, socially just, ecologically sustainable scenario of continually growing incomes for a world of nine billion people;" and
- The economic orthodoxy that emerged in the 1970s and 1980s that unleashed an unprecedented upwards distribution of wealth that is bad for society and for the economy.

Taking this last point first, so stark has become the gap between the 1% and the 99% that new terms have been invented to describe the global oligarchy. "High net worth individuals," refers to the 24 million or so people in the world with income assets between US\$ 1 and US\$ 50 million. "Ultra-high net worth individuals," are the 80,000 or so in the world with income assets exceeding US\$ 50 million. And, finally, the "billionaires," a group of over 1,200 individuals with income assets representing a staggering 77 percent of total global wealth (Credit Suisse, 8 Oct 2010), much of it stashed in offshore financial

centers, also known as tax havens. While the 2008 financial crisis affected the pensions and savings of the world's middle and working classes, the high and ultra-high net worth individuals actually saw their balance sheet increase by over 20%.

The implications of this are rather straightforward; a multiyear study on globalization and social development concluded some years ago (Deacon et al, 2005), that there was an urgent need to pursue national and international policies that would lead to:

- systematic resource **redistribution** between countries and within regions and countries to enable poorer countries to meet human needs;
- effective supranational **regulation** to ensure that there is a social purpose in the global economy; and
- enforceable social **rights** that enable citizens and residents to seek legal redress, or, in effect, to hold our governments accountable.

This policy sentiment is the more urgent when we consider that those who have suffered the most from recent financial and environmental crisis have been the least responsible for creating them.

The world's wealthiest and most powerful nations, who were the source of the 2008 financial meltdown, quickly intervened in an effort to prevent a global recession by committing trillions of dollars to shore up the banking sector and to restart their local economies; yet, many of the policy directions they are now pursuing are counter to those promoted by the WHO Commission on the Social Determinants of Health, and even by most economists. Rather than a progressive increase in social protection, essential for health equity, 70 out of 128 countries recently surveyed by UNICEF reported spending cuts of at least 3% of GDP in 2010, with 91 planning big cuts in 2012. These findings lead UNICEF researchers to caution that the austerity agenda will cause irreversible harm to children's health (Ortiz, Chai, Cummins; 2011).

Such policies can also negatively affect health equity. Greece offers one example, with rates of hospital



admissions, suicides, homicides and reported distress all rising even as funds to cope with these problems are falling (Kentikelenis et al, 2011).

Much of the immediate brunt of the financial crises has been born by poorer groups in Europe and the USA, however, the success of global economic integration over the past 30 years also means that when the debt financed consumption by people in the wealthiest countries contracts, so does the employment for the poor in the poorer nations. The UN Department of Economic and Social Affairs places the worldwide loss of jobs due to the financial crisis at over 64 million (UNDESA, 2010). Others suggested that over 200 million people have joined the ranks of the unemployed since 2008 (ILO, 2011).

The Director General of United Nations Conference of Trade and Development (UNCTAD) 2011 report predicts widespread recession if the austerity agenda persists. The report rather starkly comments that “those who support fiscal tightening argue that it is indispensable for restoring the confidence of financial markets, which is perceived as key to economic recovery. This is despite the almost universal recognition that the crisis was the result of financial market failure in the first place” (UNCTAD, 2011).

Such health-harming contractions also go against agreed upon best practices. The UN has been actively promoting a social protection floor initiative to encourage countries to systematically build up their social protection systems<sup>1</sup>. The initiative highlights the important role that tax-supported social protections systems can play during economic crisis. However, while the Initiative offers countries good technical advice, it does not address the political will needed to implement such schemes.

The Initiative’s most recent report (ILO, 2010) warns that the dramatic cuts now underway under social security spending as a result of the financial market bailout and failure of fiscal policies will “not only directly affect social security beneficiaries and

consequently the standards of living of a large portion of the population but also, through aggregate demand effects, slow down or significantly delay a full economic recovery.”

Despite the World Bank and the International Monetary Fund (IMF) recently restating the importance of governments retaining their social protection programs to cope with the recessionary fallout of the financial crisis, a 2009 survey of conditionalities attached to post-crisis loans to 10 low income countries found that: (1) all recipient governments were expected to cut spending; (2) none were given flexibility to defer debt payments; (3) half were instructed to reduce deficits and introduce wage freezes; and (4) all recipient governments were advised to increase regressive VAT<sup>2</sup> taxes, privatize financial and energy sectors, and deepen their liberalization commitments (Molina-Gallart, 2009). These last three measures are empirically contested and controversial policy choices.

These examples are also in line with almost all IMF agreements signed since the financial crisis broke out. A comprehensive review of 48 agreements negotiated by the IMF and borrowing countries reveals that almost all have been pro-cyclical in nature, meaning that these governments have limited their capacity for governance in order to adequately address the financial crisis (Weisbrot, 2009).

Governments concerned with the social determinants of health need to examine more closely the economic conditionality’s that still seem to dictate many of the decisions of the international financial institutions to which many of our governments contribute.

It is also important to scrutinize critically the empirical justifications for the austerity agenda and recognize that there are many other means of dealing with critical cases of sovereign debt, ranging from structured defaults to greatly strengthened re-regulation of

<sup>1</sup> For more information on the UN Social Protection Floor Initiative consult: <http://www.socialsecurityextension.org/gimi/gess/ShowTheme.do?tid=2485>.

<sup>2</sup> A value added tax (VAT) is a form of consumption tax. From the perspective of the buyer, it is a tax on the purchase price. From that of the seller, it is a tax only on the “value added” to a product, material or service, from an accounting point of view, by this stage of its manufacture or distribution.



financial flows. Financial re-regulation requires tackling the problem of global capital mobility. In 2008, the total annual amount of foreign direct investment going into the real economy of production and consumption was 1.7 trillion dollars (Bech, 2012). This is a substantial sum. Yet, in 2007, the daily amount of currency exchanges, most of it speculative and highly leveraged, was 3.2 trillion dollars. And this amount actually increased after the 2008 financial crisis, to reach 4.7 trillion dollars in Oct 2011 (Bech, 2012).

It is time to revalorize the use of border controls over capital, not only to stop the structurally and speculative in and out flows but also to control capital flight and tax avoidance. This can be done partly by clamping down on the estimated 11 to 18 trillion dollars in personal wealth sitting in un-taxed and offshore financial centers, which are generally operated under British, European and American auspices (Tax Justice Network, 2011). This amount is roughly equal to 10% of the world's total wealth. A globalized economy also calls for a globalized system of taxation. There appears to be some willingness to create such a system, particularly through a financial transaction tax. Such a tax is a simple means to generate considerable revenue for the public good. If a financial transaction tax was applied globally at a very low rate of 0.05% on all foreign exchanges, derivatives and over the counter trades, it would raise 8.6 trillion dollars annually (McCulloch and Pacillo, 2011). That sum would go a tremendously long way to financing many of the economic austerity and environmental crises that we are now facing.

Turning to a more focused discussion on globalization and sustainable development, and to return to the challenge posed by the UK Commission on Sustainable Development that "there is as yet no credible, socially just, ecologically sustainable scenario of continually growing incomes for a world of nine billion people" (UK Sustainable Development Commission, 2009): As governments try to restart their growth engines of moral production and consumption, the inevitable outcome is a rise in energy use and transportation; these are precisely the two sectors of the economy that are contributing the most to climate change (Woodward and Simms, 2006). Yet, the

UN Department of Economic and Social Affairs 2009 Report commented that "the major challenge remains that of economic growth...the idea of freezing the current level of global inequality over the next half century or more (as the world goes about trying to solve the climate problem) is economically, politically and ethically unacceptable." The resolution to this dilemma, according to the report (UN Department of Economic and Social Affairs, 2009), is for the governments of developed countries to place hard taxes on carbon emissions by developing the so-called "carbon markets," however imprecise or controversial that might be, while governments from developing countries emphasize massive investments in new, green technologies.

This is where trade treaties become a complicated factor. In the run-up to Rio+20, there has been a lot of talk about the important role of technology transfers between countries. But a recently completed study by the World Trade Organization and the United Nations Environmental Program (UNEP) concluded that expanding intellectual property rights could impede more environmentally friendly technology transfer by making it unaffordable to low-income countries (WTO and UNEP, 2009). At the same time, rules and subsidies to green technology have come under trade treaty attack. In 2011, the USA succeeded in a trade dispute over China's subsidies for its wind turbine development which was challenged under the WTO trade rules respecting subsidies. The USA is now doing the same with solar energy over China's domination of that global market niche. It is perhaps compelling that in the rush of the counter cyclical spending in the wake of the 2008 financial crisis, China far outstripped the USA in its investment in the green technology future.

Trade rules, even if they are discriminatory, should be subordinated to public policies that promise some hope of sustainable development. This is now an urgent matter that countries must take forward to the WTO and that should become the basis for exclusions in all regional and bilateral trade agreements.

There are, of course, others ways in which our globalized economy imperils sustainable development. Africa, for example, is high on the list of regions in need of agricultural intensification

to improve its food production and exports. But it is also already water scarce and likely to become more so in light of the impact of climate change. Agricultural intensification exacerbates this problem as will the relatively new phenomena known as “land grabbing”<sup>3</sup>. Trade agreements, while not the source of the problem, facilitate land grabbing partly through the protection that investment treaties offer to foreign investors.

Since 2010, international organizations have been promoting a set of principles for responsible agricultural investments as a sort of agricultural win-win. However, civil society groups representing small land-owners have criticized the principles for still failing to prevent what is effectively the foreclosure of arable land for current and future use by peasants or nomadic people around the world. Ethiopia provides a cautionary example. The country has sold leases to 3 million hectares of its best farmland to foreign companies for the production of export crops, yet it relies on 700,000 tons of emergency food aid each year (The Guardian, March 21 2011). A 2012 report on Ethiopia’s land grab issued by Human Rights Watch (2012) describes the forcible relocation in order to accommodate these leases, of tens of thousands of indigenous people to new villages where they lack adequate food, support and access to education facilities.

In total, around eight million hectares around Africa, Asia and Latin America, or almost 4% of the world’s arable land is now held by foreign companies for sovereign wealth funds<sup>4</sup> to grow food no longer intended for those living on that land. On another cautionary note, conservative estimates project the number of environmental refugees seeking food and water beyond their borders to reach 1.8 billion people

by 2025 (von Braun and Meinzen-Dic, 2009; United Nations Secretary-General, 2012). Migration will increasingly be driven by environmental factors.

Returning to the ethical necessity of continuing to grow economies for the world’s poor while also avoiding catastrophic climate change, it is important to ask who ultimately benefits from the revitalized global trade regime. Studies that looked into four different scenarios for outcomes for the (still uncompleted) WTO Doha Round<sup>5</sup> of negotiations found that countries like Bangladesh and those in East and Sub-Saharan Africa will experience considerable income losses, while high income countries will gain (Polasky, 2006).

Our globalized economy, so far, has created an unsustainable paradox in which ever smaller reductions of poverty require ever larger amounts of conspicuous consumption by people who are rich (Simms and Johnson, 2010).

However, it is important to also acknowledge some of globalization’s important health and social benefits. Much of the world’s health improvements in the last half of the past century, particularly those made in developing countries arose from the global diffusion of health knowledge and technology that was often initially developed and financed by the wealthiest countries. This diffusion constitutes a major global public good for health.

Also, some moves have been seen in the health equity direction in many social dimensions, such as a greater global spread of human rights and gender empowerment and until the 2008 crisis, a substantial increase in aid for health with at least some of it related to the social determinants of health.

Finally, there has been an emergence of new health and foreign policy discourse emanating from

<sup>3</sup> Land grabbing is the contentious issue of large-scale land acquisitions; the buying or leasing of large pieces of land in developing countries, by domestic and transnational companies, governments, and individuals. While used broadly throughout history, land grabbing as used today primarily refers to large-scale land acquisitions following the 2007-2008 world food price crisis.

<sup>4</sup> A sovereign wealth fund (SWF) is a state-owned investment fund composed of financial assets such as stocks, bonds, property, precious metals or other financial instruments. Sovereign wealth funds invest globally. Most SWFs are funded by foreign exchange assets. For more information consult: <http://www.swfinstitute.org/what-is-a-swf/>.

<sup>5</sup> The Doha Round is the latest round of trade negotiations among the WTO membership. Its aim is to achieve major reform of the international trading system through the introduction of lower trade barriers and revised trade rules. For more information consult: [http://www.wto.org/english/tratop\\_e/dda\\_e/dda\\_e.htm](http://www.wto.org/english/tratop_e/dda_e/dda_e.htm).

the 2007 Ministerial Declaration issued by seven countries<sup>6</sup> and which proposed aligning health and foreign policies much more closely; although we have not yet seen the great strides so desperately needed in this alignment.

So, what are some of the potential solutions? A short list of economic and social reforms would include the following:

- Radical re-regulation of the financed global economy;
- New forms of global taxation and closure of tax havens;
- More progressive national taxation;
- Comprehensive health and social protection;
- End subsidies to environmentally damaging economic activities (internalize environmental costs);
- Promote subsidies to environmentally protective economic activities;
- Government purchasing to promote environmental and social sustainability;
- Use trade rules to eliminate subsidies for industries that are environmentally unsustainable (e.g. fossil fuel industries) while permitting subsidies for industries that improve sustainable development outcomes, including use of TRIPS flexibilities<sup>7</sup> to permit affordable diffusion of generic equivalents of new green technologies;
- Improve developed/developing world burden sharing of the cost of greenhouse gas reductions and climate change mitigation, through exemptions on reductions for countries where

per capita income is below USD 9,000/year and use of progressive carbon taxes for countries above this threshold; and

- Localize, where possible, capital flows, and water, food and other life resources.

However, two great and fundamental challenges remain:

1. The need to displace the current growth model of our economy with the steady state model<sup>8</sup>. The only way we can preserve our present system is to keep growing it. Studies attempting to model a steady state system showed that it is possible, but only if we are able to radically shorten our work week and to share employment and its economic benefits much more equitably (UK Commission on Sustainable Development, 2009).
2. The need to be vigilant and to protect against the increased control of property and assets, what some have described as a new quasi-Feudal class of the super-rich, who are taking advantage of the recent crises of financial capitalism, ecological limits and rampaging wealth inequalities to purchase and privatize increasing numbers of previously public institutions and resources, while crossing borders without regards for the well-being of those residing in them.

In all of our work moving towards a sustainable future, we have the unavoidable policy imperative of redistribution, regulation and rights, discussed at the beginning of this presentation. In re-instating this imperative, it sets expectations very high for Rio+20. But to quote former UK Prime Minister Margaret Thatcher, who was one of the politicians who helped to launch us onto this dangerous unequal path almost 30 years ago, but with a very different meaning: “There really is no alternative!” ■

<sup>6</sup> The Oslo Ministerial Declaration was signed by the Ministers of Foreign Affairs of Brazil, France, Indonesia, Norway, Senegal, South Africa, and Thailand.

<sup>7</sup> The *Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS)* is an international agreement administered by the World Trade Organization that outlines the standards for a variety of intellectual property regulation. For more information consult: [http://www.wto.org/english/docs\\_e/legal\\_e/27-trips\\_01\\_e.htm](http://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm).

<sup>8</sup> A steady state economy is an economy of relatively stable size. It features stable population and stable consumption that remain at or below carrying capacity. The term typically refers to a national economy, but it can also be applied to the economic system of a city, a region, or the entire planet.

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## Seminar 8



# Road Safety and Public Transportation Towards Sustainable Development: An Agenda for Rio+20

## Road Safety and Public Transportation Towards Sustainable Development: An Agenda for Rio+20

29 March 2012

### Health and Road Safety

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Effective road safety strategies call for integrated approaches and for an in-depth understanding of the determinants of road traffic injuries. Such approaches require good data and surveillance systems as well as an emphasis on prevention and health promotion.

Comprehensive approaches require multisectoral action. It is important to build “positive” coordination with other sectors as well as synergies among the various stakeholders. Multisectoral action can more adequately address issues of inequality within transportation and mobility systems by incorporating a range of individual, family and community perspectives and by more broadly considering the vulnerability of different road traffic users.

As multisectoral action entails close collaboration with the education sector, it could support the building of citizenship and of a culture of legality, as well as encourage participation from civil society. Furthermore, multisectoral action can facilitate the allocation of economic resources for efforts that will ultimately generate benefits for health and well-being .

Prevention and control measures are fundamental components of any comprehensive road safety initiative. The effectiveness of such measures depends on the establishment of a proper legislative framework that adequately addresses risk factors, identifies critical entry points for action such as alcohol and addiction, and creates the necessary links to public health measures. Furthermore, legislative frameworks have to be supplemented with the

appropriate enforcement and control measures in close collaboration with law enforcement groups.

The construction of healthy settings that address issues related to individual and collective mobility, work and recreation, urban areas, and infrastructure remains of key importance to address road traffic injuries. Alliances with key groups and institutions can support these initiatives by maximizing experience and advocacy for health promotion, creating synergies with other sectors, and supporting the development of healthy public policies.

Road safety faces some important challenges. These include the development and strengthening of information systems; addressing risk factors such as alcohol and speed; promoting protective factors such as the use of seatbelts and helmets; establishing adequate legislative and reinforcement frameworks; promoting cultural changes; strengthening health services, services networks (ambulatory and urgent care) and the quality of care; and producing and disseminating relevant evidence to key stakeholders.

Health sector professionals, in particular, need to fully consider how to address issues related to the physical and psychological assistance provided to victims of traffic injuries, both at the individual and community level. One key aspect related to the health sector is the provision of adequate rehabilitation services for victims of traffic injuries.

Currently some key road safety initiatives are taking place worldwide. These include the United Nations Decade of Action for Road Safety 2011-2020<sup>1</sup>; PAHO’s Regional Road Safety Strategy approved by its Directive Council; the Ibero-American Meetings on Traffic and Road Safety organized by the Spanish General Traffic Directorate (Dirección General de Tráfico de España); the Mesoamerican initiative of Road Safety; and the *Road Safety in 10 Countries Initiative* funded by the Bloomberg Family Foundation<sup>2</sup>.

<sup>1</sup> For more information, consult: <http://www.un.org/en/roadsafety/>.

<sup>2</sup> For more information consult: [http://www.who.int/violence\\_injury\\_prevention/road\\_traffic/countrywork/en/index.html](http://www.who.int/violence_injury_prevention/road_traffic/countrywork/en/index.html).

PAHO and WHO provide technical support to Ministries of Health working in all of these initiatives. ■

## Road Safety, Public Transportation and Health

*Andrés Villaveces, Behavioral and Social Sciences Researcher, Health and Infrastructure Safety and Environment Units, RAND Corporation*

A variety of health consequences and benefits arise from the use of different transportation systems. Integrated multi-modal transportation systems that are efficiently designed can contribute to important health benefits.

The development of healthy transportation systems<sup>3</sup> that take into account people's health and well-being, requires a deep understanding of how such systems work, their complexities and that of the places where they are inserted. Also important is to understand the structures of the cities where these transportation systems function as well as the way people behave in them.

While one key component of a healthy transportation system is safety, other elements to be considered in their design include: efficiency, utility, economic value, environmental impact, freedom of individuals to choose modes, and the individual and population benefits generated.

An ideal multimodal transportation system provides a series of interactive transportation mechanisms and offer different alternatives to the population. These systems need to be well connected, integrated and account for a variety of health components that will be further discussed. They also require the existence of an appropriate legal and political framework and economic context; not all interventions are viable due to the economic context. In Latin America, for example, adaptations had to be made to implement

cheaper mass transportation systems in place of more expensive ones in order to address economic concerns, such as replacing metro systems with rapid bus transit systems.

Different types of transportation systems have different health impacts. Obesity remains one of the key concerns. It arises as a consequence of the lack of physical activity, which can result from the way cities are built (cities that are not designed to be walkable), the excessive use of vehicles (or a combination of both) or transportation systems that do not require the population to move.

Obesity and the lack of physical activity lead to many chronic disease consequences, such as diabetes, cardiovascular disease, hypertension and stroke. These are often extremely expensive to treat and reduce the quality of life and the lifespan of individuals and society overall.

Pollution ranks as another major concern. Transportation systems that are densely populated by motor vehicles, as a result, experience more pollution. Latin America showcases very clear examples from cities like Bogota (Colombia), Lima (Peru), Mexico City (Mexico) and many others in Brazil, where the excessive use of automobiles has frequently generated elevated levels of particulate matter pollution, and noxious gases that negatively affect the population (PAHO/WHO, 2010). A study from China found that street policemen who worked in environments with heavy traffic showed increased incidence of upper respiratory infections or problems (PAHO/WHO, 2010).

It has been shown that high density of people and vehicles, vehicle speed, and the overall design of cities' infrastructure lead to, or are associated with, increases of injuries among some users (PAHO/WHO, 2010). In highly motorized places like North America, some European countries, and Australia, motor vehicle injuries are the primary cause of road safety-related injuries and mortality (PAHO/WHO, 2010). In countries where other modes of transportation are more prevalent, such as walking, there is a higher prevalence of road safety injuries related to such modes of transportation (PAHO/WHO, 2010).

<sup>3</sup> A healthy and safe transportation system is one that is based on a legal framework which incorporates multisectoral work for its planning, design, and development; addresses equity at the population level; is affordable, reliable, and efficient; and has a low impact on the physical environment while providing safety to its users (PAHO/WHO, 2010).

Yet, it is the interaction between motor vehicles and different transportation systems available that accounts for injuries. Understanding such interaction is thus critical in order to create healthy transportation systems and reduce injuries in each and every type of user.

Stress and mental health problems are not frequently addressed. In cities characterized by sprawl that are not easily walkable, people tend to be isolated in suburban areas, especially older populations. Several studies from Europe, North America and Asia have linked excessive traffic to stress and increased blood pressure among individuals, with a potential association or worsening of some health conditions (PAHO/WHO, 2010).

Noise stands out as another consequence of excessive traffic in cities. It can be an occupational hazard for people who work on the streets, such as police officers, who have been documented to report significant reductions in their hearing capacity (PAHO/WHO, 2010). Noise has been reported as a determinant of sleep disturbance in many populations (PAHO/WHO, 2010) and to have deleterious effects on children, as some studies conducted among children who attended schools located in noisy environments have concluded (PAHO/WHO, 2010).

Finally, in cities characterized by sprawl and that suffer from lack of appropriate transportation systems, inequalities in health can arise as a result of isolation and lack of access to health care.

Creative strategies are required in order to build healthy transportation systems that will reduce the risk to users. A study conducted in Great Britain in 2004 (PAHO/WHO, 2010) analyzed transportation fatalities by modes of transportation and reported substantial differences in terms of the risk of fatality by transportation mode. Buses ranked as the transportation mode with the lowest risk of mortality per trip. Motorcycles ranked as the highest risk. The study helped to understand risk from the perspective of different users.

It is also important to consider the health implications of those risks. According to the study, walking

or cycling increases the risk of mortality and injury. However, not walking or cycling carries worse health consequences, such as those that result from the lack of physical activity among individuals.

One particular study looked into this problem (Hartog et al, 2010). It analyzed the different stressors that resulted as a consequence of moving or switching from a motor vehicle to a bicycle and tried to determine the impact in terms of life days or months per person. The study considered issues related to exposure to air pollution, traffic accidents and physical activity.

The study concluded that lifetime exposure to air pollution increases with the use of a bicycle, which would reduce 21 days of an individual's life. The risk of being involved in traffic accidents also rises, which would result in a reduction of seven days of an individual's life. However, the physical activity resulting from riding a bicycle would increase a person's life by eight months. So the net effect of being physically active by using a bicycle or being a pedestrian actually represents a gain in lifespan. A similar study conducted in Barcelona arrived at the same conclusion (Rojas-Rueda et. al, 2011).

A study conducted in Arlington County (USA), addressed issues of productivity by evaluating whether the Capital Bike Share Program played a role in relieving congestion on other modes of public transportation (Arlington County, 2012). When asked about what other types of transportation users would take if the Bike Share were not available, sixty one percent of users stated they would have used more active public transportation (bus, Metrorail or walking) over more passive modes (drive personal car, taxis). These results indicated that persons who would otherwise have used public transportation opted for the bike share program. Consequently, the existence of the program can contribute to relieving overcrowding in other modes such as Metrorail. Such results strengthen the argument that integrated, multimodal, well-connected transportation systems lead to important health and economic benefits.

In summary, the following preventive and health-promoting components should be considered in order to develop healthy transportation systems:



- Promotion of physical activity. This requires addressing issues of design and improving connectivity and multiple use of systems within cities. It also requires addressing the issue of isolation of communities.
- Reduction of private motor vehicle use and promotion of public, well-connected, integrated transportation system. Such system should include public transportation in order to improve air quality. Studies on bus rapid transportation systems in Bogota (the Transmilenio system) documented a substantial reduction in air pollution in areas where the system had been put in place (PAHO/WHO, 2010).
- Implementation of safety measures, in terms of legislation, design and behavior.
- Reduction of social isolation through well-connected transportation systems. A study conducted a few years ago in the US (PAHO/WHO, 2010) documented that cities or neighborhoods that are more walk able are also more cohesive, and have people who have greater knowledge about, and make wider use of, their space, as well as greater communication with their neighbors.
- Noise reductions, which is another documented consequence of some of Latin America's bus rapid transportation systems (PAHO/WHO, 2010).

Lastly, the social and economic benefits of healthy transportation systems should be highlighted. The creation and integration of healthy transportation systems compel people from different socioeconomic backgrounds to use them in a more equitable way, which, in turn, helps to reduce the structural inequalities that are still very common in many Latin American cities. ■

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## Transportation at a Crossroads: Intersecting with Health

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Transportation, health and equity intersect in many ways as we live in a global community and economy.

In the US alone, the cost of health impacts resulting from traffic fatalities, obesity, overweight, physical inactivity, and air pollution add up to a staggering US\$ 478 billion dollars a year (APHA, 2010). Currently, the most used strategies to address these issues involve circulating information and research to help inform policy decisions and better decision-making outcomes from our leaders. However, it is critical to press for further research in this area.

While there are myriad topics within the area of transportation and health (such as distracted driving, motorcycle safety, and sleep disturbances), the ones which typically get the most attention are physical inactivity, safety, air quality, equity and access, and public transportation.

Physical inactivity is a situation that affects most of us on a daily or weekly basis. Car transportation is sedentary and physically inactive. Some very in-



interesting research has emerged on this topic in recent years that highlight some of the connections between transportation systems, physical inactivity and certain diseases and health outcomes such as obesity, diabetes and some kinds of cancer (US DHHS, 2002). In developing nations such as China and India, increasing use of personal vehicles has been linked to increases in obesity rates (Harvard School of Public Health website).

One particular study published in the *Journal of Transportation Policies* (Jacobson et al, 2011) pointed to lower rates of automobile use in Regions that also exhibited lower levels of obesity. According to Jacobson et al (2011), if every licensed driver reduced their travel by one mile per day, in six years the adult obesity rate would be 2.16 percent lower; this means that five million fewer adults would be classified as obese in the US alone. Studies have also shown the health benefits of shifting to more walking and biking for short distances (Grabow et al, 2012).

Safety is one of the few areas in which public health and transportation professionals have converged in the past to conduct research and promote joint action. Motor vehicle crashes are the leading cause of death among persons 1-24 years old. Most public health and transportation professionals would agree that the number of road fatalities and injuries are unacceptably high across the globe, especially when the impact to older adults, children, vulnerable populations and people with disabilities is considered. Of the pedestrians killed in traffic crashes in 2009 in the US, 16% were 65 years or older. In 2009, 490 children were injured daily in crashes in the US<sup>4</sup>. An important question is that of how to adapt different environments so that the conditions remain (being an older adult, or a person with disability) but the vulnerability is removed.

Air quality is another subject area that has gotten the attention of a variety of practitioners and some in-depth and broad amount of research. The research clearly shows an increase in asthma and bronchitis

symptoms in children attending schools near freeways and major roads (Kim et al, 2004). It has also been documented that people living near heavily-trafficked roadways have double the risk of death from heart or lung disease (Hoek et al, 2002). Studies have also found that exposure to traffic-related air pollutants is associated with a 30% greater risk of premature birth (Wilhelm et al, 2011).

A well-documented natural experiment from the 1992 Olympics in Atlanta showed that when the city experienced a 23% reduction in morning traffic, it also experienced a subsequent reduction of 42% of visits to emergency rooms for children suffering asthma attacks (Friedman et al, 2001). Similar studies done a few years ago during the Beijing Olympics in China produced similar findings (Rich et al, 2012).

The connections between equity and access are incredibly complex and deserve special attention given the impact to vulnerable populations. Fast-moving traffic on highways divides communities, especially those with older adults and people with disabilities, and this isolation is associated with higher mortality for older adults (Greenwood et al, 1999). Rural populations have a disproportionately high injury rate with much of it related to motor vehicle crashes (Peek-Asa et al, 2004). And fatalities as percentages of all motor vehicle traffic fatalities have been highest for African American children in the 4–15 age group (NHTSA, 2004).

The issue of access relates to how well our transportation networks connect with goods and services; for example, how well transportation systems connect with healthy foods is one of the hot topics in recent discussions around the issue of food deserts. It also relates to how well it can connect people to doctors and social events so as to promote social cohesion in communities. Lack of access also disproportionately affects specific populations such as rural populations, older adults and children, who often times find themselves disconnected from goods and services. Transportation systems should address these issues in order to reconnect people with the daily functions that they would like to see in their lives.

<sup>4</sup> Data from the U.S. Department of Transportation (<http://www.dot.gov/>).

The connection between public transportation and health is becoming a major topic area with very interesting research and interdisciplinary collaboration. Studies have shown that public transportation produces 95% less carbon monoxide and 45% less carbon dioxide compared to automobiles (APTA, 2002). The fatality rate associated with transportation-related injuries in public transportation is approximately 1/25th that associated with automobiles (APTA, 2007). Studies have also found that men who commute to work on public transportation are 44.6% less likely to be overweight or obese due to increased active commuting (Zheng, 2008).

People understand that public transportation offers a lot of opportunities for improved health outcomes, given that it is less polluting, safer, and provides opportunities for physical activities. Walk to and from the bus stop or to the metro station is sometimes the only physical activity people will get in a day and its importance cannot be downplayed.

Public transportation offers some unique opportunities because it is not one single solution; it offers an array of options such as bus rapid transportation, van and ride sharing, fixed route system, paratransit systems, etc. that can be applied to different budgets and respond to different types of investment.

The connection between transportation, health and equity is one that people can easily connect to. People want to be healthy themselves and to see their communities healthy. It is important to be mindful that it is an issue that is valued and of great interest; as such it offers an array of opportunities to connect with the public. As a result, it is likely that further press and research will emerge in this area.

Global transportation networks involve an incredible amount of complexities. It is an area that clearly requires more interdisciplinary research and collaboration, both across different levels of government and across governments.

Some emerging research has raised questions about the health impact of freight moving across oceans and nations. Also important is to tie issues of

health, transportation and equity to cost in order to understand what investments in transportation systems will be beneficial to health and what some of the potential health cost outcomes may be. These are difficult topics to tackle and require more in-depth research and analysis.

For those who would like to get more involved and learn more about transportation issues, the Transportation Research Board<sup>5</sup> meets in the US but it welcomes international participation. It has a Health and Transportation Subcommittee<sup>6</sup> which offers good opportunities for those wishing to connect with peers working in this area, to participate in discussions, and to keep informed of the latest research coming out on this topic. ■

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<sup>5</sup> For more information consult: <http://www.trb.org/>.

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# Seminar 9



## The Voice and Experience of the Caribbean



## The Voice and Experience of the Caribbean

4 April 2012

### The Experience of the Caribbean in the Lead-up to Rio+20 and the Involvement of Health: Looking Back and Looking Forward

*Henrietta Elizabeth Thompson, Assistant Secretary General to the United Nations and Executive Coordinator for the UN Conference on Sustainable Development (Rio+20)*

Ill health and degraded environments are both a cause and a consequence of poverty not only in the Caribbean but all over the world.

The Rio+20 Conference on Sustainable Development aims to contribute to the eradication of poverty and to the creation of sustainable development globally. It will focus on two main themes: (1) the green economy in the context of poverty eradication and sustainable development and (2) the building of institutional frameworks for sustainable development. The green economy is about investment in human, social and natural capital. In addition, any investment in human and social capital must include investment in education, health and health education.

The specific objectives of the Conference are to:

- Secure renewed political commitment for sustainable development;
- Assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development; and
- Identify and address new and emerging challenges to sustainable development.

A series of landmark events and initiatives have led up to the Rio+20 Conference and are helping to shape its agenda. These have dealt with issues of health from different perspectives. “Agenda 21,”<sup>1</sup> the

<sup>1</sup> For more information consult: <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=52>.

outcome document of the iconic Earth Conference of 1992, addressed health in its Chapter 6, entitled “Protecting and Promoting Human Health.”<sup>2</sup> “The Millennium Development Goals Initiative” (MDG)<sup>3</sup>, launched after the 1992 Earth Summit, also incorporated different dimensions of health in its eight goals,<sup>4</sup> to be achieved by 2015. The concept of sustainable development itself refers to three fundamental pillars – social, environmental and economic – with health falling under the umbrella of all three.

The Caribbean Region faces unique health challenges. Its large aging population means high health-care costs for treating diseases of old age; it also means that the percentage of the population defined as young and from whom governments draw taxes to support national insurance and social protection systems is narrowing. Therefore, while the burden of disease is growing, the cost of health care is being carried by an ever smaller group of people.

Increases in the incidence of chronic noncommunicable diseases with consequential increases in morbidity and mortality in the Caribbean have also resulted in adverse family, social and economic costs, and compromised quality of life. Many families are affected by the loss of their principal breadwinner, or the cost of caring for this breadwinner; this is exacerbated by loss of women and their contribution to the nurturing and care of the family. Recent data placed the Caribbean among the top 20 regions in terms of incidence of NCD worldwide. This reflects a very high per capita ratio of NCDs as compared to other regions.

<sup>2</sup> The chapter focused on the following topics: primary health care in rural areas, control of communicable diseases, protection of vulnerable groups, meeting the urban health challenge, and the reduction of health risks from environmental pollution and hazards.

<sup>3</sup> For more information consult: <http://www.undp.org/content/undp/en/home/mdgoverview.html>.

<sup>4</sup> The eight MDG goals are: (1) to eradicate extreme poverty and hunger, (2) achieve universal primary education, (3) promote gender equality and empower women, (4) reduce child mortality, (5) improve maternal health, (6) combat HIV/AIDS, malaria and other diseases; (7) promote environmental sustainability, and (8) to develop a global partnerships for development.



The Caribbean also suffers disproportionately from diseases related to pollution (allergies, asthma, etc.) and climate change, such as conditions related to extreme weather events and post-disaster situations (hurricane and flooding) of which cholera, dengue fever, and traumatic injuries are some examples.

Young people in the Caribbean, who are in their productive age and who are expected to be contributing to the national insurance systems, are carrying a high disease burden themselves. Some of the countries in the region have some of the highest per capita ratios of HIV/AIDS in the world. Young people are also succumbing to NCDs in unprecedented numbers. There are increasing concerns related to maternal and child health given that the percentage of live births per 100,000 is decreasing, while the percentage of children dying before the age of 5 is increasing.

Finally, the management of healthcare costs remains a critical challenge, especially in the context of shrinking national budgets and government expenditure. The costs related to treating noncommunicable diseases is both staggering and rising, which places a disproportionate burden on health care systems and costs.

These are some of the issues that are expected to be addressed in the Rio+20 Conference. The Caribbean must ensure, as part of its Rio+20 strategy, that issues which are of particular relevance to the Region make it into the Rio+20 outcome document. There are also on-going discussions about the possibility of the Rio+20 process and outcome creating a list of Sustainable Development Goals (SDGs) to complement the MDGs.

It is expected that the Conference will help increase the urgency as well as the policy initiatives and planning related to energy, water, oceans and food security/sovereignty. Some of these matters have clear implications for health, such as the availability of potable water, which is a critical issue for the Caribbean, as some of the countries of the region rank at the same level as Sub Saharan countries in water stress and water scarcity.

Conference discussions will also seek to enlarge the understanding of planetary boundaries and critical thresholds. Some of the topics related to this issue include the diseases of overconsumption, such as over-nutrition.

The issue of the principles for the development of a green economy (within the context of Member-States' national policy and constraints) will be central to the Conference; within these discussions issues related to food security, nutrition and food production are likely to be addressed.

Critical consideration will be given to financial issues and the development of a GDP+ Index. The goal is to help countries better assess their national well-being and state of social, environmental and economic health by taking into account social and environmental indicators, as well as an assessment of their natural resource capital.

Some of the issues that will be discussed in the Rio+20 Conference and are of particular interest to the Caribbean region include:

- A clear definition of the green economy in the context of investments in human, social and natural capital, including health, education, and health education; and of strategies to deal with the elderly and youth and the burden of NCDs affecting both groups. It is also critical to define strategies to improve conflict resolution and tackle the epidemic of violence that affects the Region.
- Investments to strengthen primary health care (prevention, early detection and early intervention).
- Definition of strategies to affect behavioural change in terms of practices and lifestyles in order to tackle NCDs and HIV/AIDS.
- Identification of strategies to deal with:
  - Food security and nutrition (the challenge of both under-nutrition and over-nutrition);
  - Water (water stress and scarcity in the Caribbean, access to potable water and water

for development and for tourism upon which Caribbean economies are so heavily dependent);

- Energy (fuel for life and for development); and,
  - Oceans, as they relate to Caribbean health statistics, protein consumption, jobs and oceans as critical maritime territory.
- Revision of national, regional and international mechanisms and institutions for delivering on the development agenda; this includes defining how to strengthen strategies and mechanisms, and improve regional collaboration at all levels.
  - Incorporation of appropriate language in documents as it relates to issues that affect the Caribbean is a critical negotiating approach.
  - Incorporation of health as one of the SDGs is something for which the region should fight.
  - Establishment of a compendium of commitments by international agencies, businesses, UN agencies, and NGOs to help foster sustainable development.

The successful management of health issues is central to promote sustainable development. In the case of the Caribbean this requires empowering people to make decisions about their own health and to take advantage of opportunities to live a healthier life. It also requires strengthening national policy formulation and delivery, as well as collaboration on cross-regional approaches. It has implications for governments making decisions about managing the cost of health care and not reducing service quality and delivery at a time when people are under financial stress.

Therefore, regardless of the Rio+20 outcomes, the Caribbean approach should be to collaborate where possible and invest in the development of a regional approach to health care policy and delivery. This is pivotal to regional strategy for dealing with issues of health. Improving the health of the people of the Caribbean is absolutely critical for achieving sustainable development. ■

## **The Voice and Experience of St. Kitts & Nevis: Towards Sustainable Development**

*Patrick Martin, Chief Medical Officer, St Kitts & Nevis Ministry of Health*

It is well known that development at all costs without regard for equity and the carrying capacity of the environment is unsustainable, as well as a prescription for social strife and disaster (Ott, 2003).

St. Kitts & Nevis is a small Caribbean island with a land area of 269 km<sup>2</sup> and a population of 52,000. Health policies in the country take into consideration the social determinants of health. This accounts for the significant health improvements the country has experienced over the past few years.

People in small islands are acutely aware of their limits and boundaries. They understand that unplanned economic development imperils the environment, and that lives and livelihoods depend on the interaction between the “three pillars” of sustainable development, namely, social, environmental and economic sustainability.

Some of St. Kitts & Nevis strengths and advantages support the achievement of significant health outcomes. These include clean air, universally accessible potable water, fertile soil, sunny weather, democratic governance, universal health and education, “middle” per capita income, and a poverty rate of 22% (Survey of Living Conditions, 2000).

However, the country faces some critical challenges. It is geographically susceptible and vulnerable to cyclones, tectonic activity and climate change. Its “open economy” means a higher risk of being affected by global fuel, food and financial market crisis. Expenditure on imported fossil fuel energy is high. There is over-reliance on imported food, which is a factor in the high prevalence rates of cardiovascular disorders and diabetes. Lastly, substance use and abuse rates are also relatively high resulting in unacceptable levels of mental illness and violence.

St Kitts & Nevis porous borders pose a national security and public health concern. The relative ease

of trafficking in illicit drugs and humans contributes to the ongoing gang violence. Undocumented movement of humans increases the risk of entry of new and reemerging infections.

Currently there are some important opportunities for sustainable development in St Kitts & Nevis. The government leadership places issues of sustainable development at the highest political level, demonstrated by the fact that the Prime Minister is also Minister responsible for Sustainable Development. Planned development incorporates environmental impact assessment as a matter of policy. The population is young and aware of the latest developments in Information and Communications Technologies (ICT). Following the closure of the 300-year sugar industry in 2005, there are significant tracts of agriculture-ready land. Lastly, there is high interest in exploiting renewable energy (solar, wind, biomass, and geothermal).

Yet, the country faces some potentially disabling threats. It is highly indebted and forced to borrow at market rates for human and infrastructural capital improvement, including projects to repair and restore damages caused by natural phenomenon such as climate change. Given its heavy reliance on tourism, the country has been deeply affected by the prolonged global recession. Issues of land use and coastal zone protection cause continuous tension, related to striking a balance between agriculture, reefs and green spaces, on the one hand, and investments in housing, hotels and golf courses, on the other. Plastic and chemical pollution remains an important concern as well.

It is important to recognize and to capitalize on the cross-cutting and measurable contributions of the health sector in meeting sustainable development goals. The Millennium Development Goals were attained before the year 2000. The country also records a high Human Development Index rating. These measures of progress comprise an important argument for sustained investment in health. Currently there are calls to increase investment in the government health sector from 2.8 to 5% of the country's GDP. It is also key to invest in continuous advocacy for health in all public policies and to balance concerns for economic

viability, environmental carrying capacity and social equity.

As we head towards Rio+20, some key questions come to the forefront of the discussions related to the development of island states. Chief among them is sustaining progress in the midst of a prolonged global recession and ongoing climate change impacts. It is also expected that Rio+20 will seek strategies to address the fact that island states with infinitesimally small carbon footprints are victims of the ecological indiscretions of others. Most importantly, Rio+20 should strive to be a global forum that will result in meaningful development partnerships.

In this regard, a key outcome for Rio+20 is the clear definition of a Performance Monitoring and Evaluation Framework. Technical and financial assistance will be required to assist countries to develop robust surveillance and information systems, as well as evidence-informed response strategies. Richer countries should make commitments to fairness in development assistance on the basis of vulnerability indicators and not macroeconomic indicators.

In summary, Rio+20 should strive to achieve sustainable development that generates equity, protection, solidarity, partnership, investment, performance metrics, and, most importantly, good governance. ■

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## Empowering the Individual Caribbean Islander to Live Sustainably

*Hugh Sealy, Professor, Department of Public Health and Preventive Medicine, St. George's University, Grenada*

Health has been featured prominently in the original Rio Declarations.<sup>5</sup> The word “health” is specifically mentioned in at least three of the 27 Principles (Principles 1, 7 and 14)<sup>6</sup> and alluded to in several others. In addition, health is highlighted in at least five of the eight Millennium Development Goals (MDGs). The public health impacts of climate change, land degradation and biodiversity loss are recognized in the three respective Rio Conventions. So while one can argue that health has been taken into account in the past, the question now is how to maintain the emphasis on public health in the Rio+20 process with its focus on building institutional capacity and green economics.

The Caribbean can play an important role in the creation of a Global Sustainable Development Agenda in 2012. Small islands have little resilience or ability to recover from environmental, economic or social shocks. For example, a small land mass equates to little freshwater storage capacity, making islands highly susceptible to changes in hydrological patterns; also, habitats that cover small areas (e.g. mangroves or near-shore coral reefs) can be irreversibly damaged by one poor planning decision. That means that small islands are forced to make decisions in a prudent matter, with little room for mistakes.

Being small means little inertia. Small, open economies can be quickly transformed onto sustainable development paths with relatively little investment when compared to much larger economies. Islands are also microcosms of larger societies. Interventions on a small island are easily measurable, reportable and verifiable. Small islands can act as showcases for larger countries.

This can be achieved by leapfrogging. The fact that many Caribbean islands are 20 to 30 years behind in technology is an advantage, as they can bypass technologies and practices proven to be unsustainable (such as landline phones, copper wires, fossil fuels, internal combustion engines, incandescent bulbs, etc.). Unfortunately, our region seems to be heading in the opposite direction.

The Caribbean, like the rest of the developing world, is seeking to achieve an unsustainable Western lifestyle. This is resulting in increased per capita energy consumption, per capita waste generation, and demands on freshwater and other finite resources. It is also resulting in our populations starting to exhibit the same prevalence of chronic, noncommunicable diseases that afflicts more developed societies (obesity, diabetes, cardiovascular diseases, and respiratory disorders).<sup>7</sup>

Natural Childhood, a recent publication by naturalist Stephen Moss, published by the National Trust in the UK in 2012,<sup>8</sup> suggests that children in the UK are increasingly suffering from what he refers to as “nature deficit disorder.” Symptoms include childhood depression, attention deficit disorder and obesity, as a result of growing dislocation from nature. It makes us wonder if the same thing is happening to our children in the Caribbean: Are they becoming as disconnected from nature as children in the UK?

It is important that the Rio+20 Conference strives to move away from solely focusing on the macro and policy levels (what States and national organizations can do), and try to address what individuals can do to help support the green economy, fight climate change or arrest biodiversity loss, and promote sustainable development.

While our historical approaches have been mostly driven by the perceived roles of the State and of international organizations, climate change and the other

<sup>5</sup> For more information consult: <http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163>.

<sup>6</sup> For more information consult: <http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163>.

<sup>7</sup> For more information consult: [http://www.caricom.org/jsp/community/chronic\\_non\\_communicable\\_diseases/alarming\\_facts.jsp](http://www.caricom.org/jsp/community/chronic_non_communicable_diseases/alarming_facts.jsp).

<sup>8</sup> For more information consult: <http://www.nationaltrust.org.uk/what-we-do/news/view-page/item788564/>.

pressing environmental disasters in this modern day have resulted from the compounding of individual unsustainable practices. Passing another International Convention may do little to change an individual's consumption and production habits. Therefore, the Rio+20 process should focus more on empowering the individual.

Health professionals can play an important role in the promotion of sustainable development. The same processes that health professionals use to produce behavioral change can be used to promote sustainable development. The social ecological model<sup>9</sup>, which proposes interventions at various levels (individual, interpersonal, communities and organizations), can be applied to sustainable development processes. Changing behaviors as well as consumption and production patterns is a must.

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<sup>9</sup> For more information consult: <http://www.cdc.gov/ViolencePrevention/overview/social-ecologicalmodel.html>.

There are now seven billion of us. The world is more interconnected than ever. Information and communication technologies (ICT) and new social networks could be used to engender change at the individual level. For example, it is estimated that 60 to 70 million people play Farmville daily. The average Farmville player is an educated middle class 43 year-old female. Such technologies could be appropriated by health professionals and institutions such as PAHO to promote behavior change at a global level. For example, a smart phone application that could be created in the Caribbean could allow people to determine his or her individual ecological footprint and compete with others in a game environment to live sustainably. International organizations such as PAHO and others could consider how to make use of such tools and technologies to empower individuals.

It is through such empowerment that we, as individuals and collectively as communities, will be able to live sustainably. ■





# Seminar 10



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## Green Economy and Green Jobs: Health Benefits and Risks

## Green Economy and Green Jobs: Health Benefits and Risks

11 April 2012

### Workers' Health in the Green Economy and Sustainable Development

*Ivan Ivanov Dimov, Team Leader, Occupational Health, WHO*

As we head towards Rio+20, it is important to emphasize some of the arguments to support the focus on green jobs and sustainable development.

People who are healthy are better able to learn, to work and to contribute positively to their societies. Universal health coverage and healthy environments can play a key role in promoting good health among the population. Given that health can act as a proxy for the state of the economic, environmental and social dimensions of a society, health should also be incorporated as an outcome of all policies.

Currently, there is a lack of connection between health and environment priorities. Climate change programs provide an excellent example. Health is included in Article 1 of the United Nations Framework Convention on Climate Change<sup>1</sup> and is also cited as a priority in almost all climate change adaptation programs. However, of these, less than one third incorporate adequate health vulnerability assessments and adaptation plans; the resources provided cover less than 0.5% of the expected health damage costs; and only one out of 13 main economic models informing mitigation decisions, takes health co-benefits into account (WHO, 2009).

“Greening” the economy is expected to create a series of health, economic, social and environmental benefits, such as a reduction of greenhouse gas emissions and a better adaptation to climate change. “Green” economic approaches can make a difference to health, sustainability and equity.

<sup>1</sup> The UN Framework Convention on Climate Change can be consulted at: <http://unfccc.int/resource/docs/convkp/conveng.pdf> (accessed 14 May 2012).

Coal mining, for example, which is considered to be one of the most hazardous industries worldwide, can potentially benefit from “green” approaches. Currently, 14,000 deaths are attributed annually to coal workers’ pneumoconiosis (Driscoll et al, 2005). These workers are also disproportionately affected by occupational injuries, noise-induced hearing loss, vibration disease, muscle-skeletal disorders. Residents of communities located next to coal mines show a 70% increased risk for developing kidney disease, a 64% increased risk for developing chronic obstructive pulmonary disease (COPD), and are 30% more likely to report high blood pressure (Hendryx, 2009). Clean energy production can reduce the burden of Noncommunicable Diseases (NCDs) associated with the coal mining industry.

Another case can be made for the adoption of integrated pest and weed management in order to reduce pesticides poisonings. Currently, it is estimated that 258,000 suicides take place worldwide as a result of pesticide ingestion. Acute pesticide poisonings among agricultural workers affect an estimated 18 to 130 per 100,000 full time workers (Gunnell, 2007). Other chronic effects of pesticides, such as cancer, could be reduced by the use of more green and sustainable agricultural practices.

The health sector can provide leadership on governance for sustainable development by providing evidence on the health impacts of innovations and technologies; ensuring that health is an outcome of sustainable development policies by implementing Health Impact Assessments (HIA); and by setting goals, defining health indicators, and measuring results.

Furthermore, the health sector has a duty to protect children, who do not have a voice, by using existing public health knowledge to inform decisions, ensure the best use of resources (investing where the benefits are greater), and help reduce health inequity through public policies.

Health impact assessments are an important tool for including health in all policies. HIA can:

- Identify policy options that are most favourable for health, including workers;

**Table 1. Indicators for measuring workers' health in sustainable development**

Dimension	Core	Expanded
Health effects – occupational deaths, injuries and disabilities	<ul style="list-style-type: none"> <li>Occupational injury rate (fatal) disaggregated by gender, occupation, employment type (formal and informal), and economic sector;</li> </ul>	<ul style="list-style-type: none"> <li>Occupational injury rate (non-fatal) disaggregated by gender, occupation, employment type (formal and informal), and economic sector;</li> <li>Occupational disease rate disaggregated by gender, employment type (formal and informal), and economic sector;</li> <li>Occupational burden of disease – cancer, asthma and chronic obstructive pulmonary disease, noise-induced hearing loss, low back pain, and depression, disaggregated by gender and economic sector;</li> </ul>
Health risks at the workplace	<ul style="list-style-type: none"> <li>Proportion of workplaces in public and private sectors (formal and informal) that comply with basic national occupational safety and health standards by economic sector;</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of workforce exposed to carcinogens, air pollution, noise, risks of injuries, hazardous chemicals, biological agents, and ergonomic and psychosocial stressors at the workplace, disaggregated by gender and economic sector and type of employment (formal and informal);</li> <li>Proportion of workers covered with policies for smoke-free workplaces by economic sector and type of employment (formal and informal);</li> </ul>
Policies/ processes for improving workers' health protection	<ul style="list-style-type: none"> <li>Ratification of core international labour instruments for occupational safety and health – International Labour Organization (ILO) conventions 155 (Occupational Safety and Health Policy), 161 (Occupational Health Services) and 187 (Promotional Framework for Occupational Safety and Health).</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of companies (public and private) with established health and safety committees, disaggregated by economic sector;</li> <li>Proportion of workers covered by essential interventions and basic occupational health services for prevention of occupational and work-related diseases and injuries including Noncommunicable Diseases (NCDs), disaggregated by gender, occupation, type of employment, and economic sector;</li> <li>Proportion of workers covered with occupational safety and health insurance, disaggregated by gender, occupation, type of employment, and economic sector;</li> </ul>

- Establish a baseline against which to monitor and measure the extent to which policies are contributing to health and development goals;
- Define monitoring and evaluation frameworks; and
- Promote public participation and community engagement in decision-making processes.

The World Health Organization aims to promote the integration of health into development, climate and green economy policies and to support the imple-

mentation of health and health equity safeguards to climate and green economy decisions. It also expects that the health risks and benefits of green economy decisions are identified and properly managed. WHO argues that health is an outcome of sustainable development and therefore its measurement can be useful for monitoring the success of policies across sectors (WHO, 2012a). WHO developed a core and an expanded set of indicators to measure the impact of sustainable development on workers' health (WHO, 2012b).

Currently there are important opportunities for global action on occupational health resulting from sustainable development initiatives. As green jobs are developed, they should be made healthy, safe and decent. It is key to promote a full cost pricing of sustainable development initiatives by including social (occupational health) externalities in the price of energy and products. The development of green technologies also provides opportunities for prevention through better design.

The 2007 World Health Assembly Resolution 60.26 (*Workers' Health: Global Plan of Action*)<sup>2</sup> outlined a number of messages that should be considered in the development of sustainable development policies and strategies, including the following:

- The health of workers is an essential prerequisite for productivity and economic development;
- Member states should work towards access for all workers to essential interventions and basic occupational health services for the prevention of occupational and work-related diseases and injuries; and
- Measures for workers' health should be incorporated into economic development policies, poverty reduction strategies and national plans and programs for sustainable development.

The creation of green jobs is one of the major themes for the upcoming Rio+20 Conference. This offers a great opportunity for the construction sector to advance in the development of sustainable business practices and reporting systems. It also presents a unique opportunity to push for the incorporation of matters related to occupational health, and safety into sustainable development policies and strategies. ■

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<sup>2</sup> The full text of the Resolution is available at: [http://apps.who.int/gb/ebwha/pdf\\_files/WHA60/A60\\_R26-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_R26-en.pdf) (accessed 14 May 2012).



## Green Economy in the Construction Sector: The NIOSH Experience

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The National Institute for Occupational Safety and Health (NIOSH) is the sole federal government organization charged with conducting occupational safety and health research in the United States. Beginning in 2009, NIOSH has incorporated into its work the issue of “green jobs” which was broadly defined as: (1) jobs related to green technologies, processes, outcomes and products; (2) existing jobs with green practices, technologies; and (3) existing jobs that produce green economy products.

While green jobs are expected to create opportunities to help revitalize the economy, it is important to make sure that worker safety and health are not overlooked. Just like other industries, failures can happen in green sectors occupation and jobs as well.

Weatherproofing is one example. Weatherproofing is critical for building integrity and sustainability. Spray polyurethanes foam, is an excellent insulator, and a relatively new product. Spray polyurethane foam is used in a wide variety of applications, including building construction, boats, trucks, and in remodeling. However, exposure to isocyanates in spray polyurethane foam can cause irritation to mucous membranes, gastrointestinal and respiratory tracts; marked skin inflammation; and severe asthma (CDC). Personal protective equipment and administrative controls are not sufficient to protect workers from such exposure. Additional engineering controls are greatly needed.

Wind turbines, an important energy alternative, offer another example. Turbines, built to up to 300 feet above the ground, generate a substantial fall risk. They require crane safety controls implemented throughout the construction and maintenance phases. The hazards created during the production of wind energy also require special attention. In addition, there are concerns related to workers being placed in confined spaces.

The examples above illustrate some of the risks that workers can be exposed to in green jobs. It is important to build that knowledge into our thinking and planning for the development of safe and healthy green jobs.

Green buildings provide substantial savings and environmental benefits. It is estimated that green buildings can reduce energy use by 24 to 50% (Turner and Frankel, 2008; GSA Public Building Service, 2008), carbon dioxide (CO<sub>2</sub>) emissions by 33 to 39% (GSA Public Building Service, 2008; Kats, 2003), water use by 40% (Kats, 2003), and solid waste by 70% (GSA Public Building Service, 2008).

An unprecedented level of government initiatives, heightened residential demand for green construction, and improvements in sustainable materials have resulted in a higher demand for green and sustainable structures. As people in the United States spend approximately 90% of their time indoors (TEAM, 1987), green buildings have become of particular interest, given their better indoor air quality and lighting. Studies have shown an increase of 2% to 16% in productivity among workers and students who occupy green buildings (USGBC, 2010).

Green and sustainability issues are of particular concern for the construction trade, which is characterized by hard physical labor, rapidly changing hazards, extended work hours, and tight production schedules. As Gambatese et al (2007) stated, “a more holistic view of green construction is needed—one that addresses safety and health over the entire life cycle of a constructed building.”<sup>3</sup>

Construction and maintenance workers play a key role in the building lifecycle and face a wide array of hazards such as injuries (falls, struck by, electrocution), illness (exposure to silica, welding, noise, solvents), and musculoskeletal disorders resulting from awkward postures, high exertion and heavy lifting.

<sup>3</sup> The life cycle of a building includes its construction, maintenance, renovation and refurbishing, and potential decommission or demolition.

Construction workers in the United States present the highest fatality rate when compared to any other industry (BLS, 2010). They also experience a high injury rate, with 203/10,000 non-fatal injuries and illnesses with days away from work (BLS, 2010). Safety concerns also need to apply to maintenance workers, who in 2010 suffered a fatality rate of 226 and an injury rate of 307/10,000 non-fatal injuries and illnesses with days away from work (BLS, 2010).

It is important to emphasize that worker safety and health will ultimately improve end-user safety and health as well.

There are several possible paths to integrate sustainable, safe and healthy construction within green design and construction practices. These include developing alternate rating system (to include construction, maintenance and use) and incorporating worker safety and health into LEED<sup>4</sup>.

“Prevention through Design” offers one of the best ways to prevent and control occupational injuries, illnesses, and fatalities through the inclusion of prevention principles in all designs that impact workers. This is done as early as possible throughout the design process in order to minimize risks and injuries in areas such as work processes, work premises and facilities, tools and equipment, work methods and organization, and products.

Studies have shown that many occupational fatalities are linked to design. A study in Australia conducted between 2000 and 2002 found that design contributed significantly to work-related serious injury (NOHSC, 2004): 37% of workplace fatalities involved design-related issues and another 14% of fatalities were suspected to have been affected by design-related issues (NOHSC, 2004).

Accidents in construction have also been linked to design. A study in the states of Oregon, Washington and California found that 22% of 226 injuries in construction projects were partly linked to design (Behm, 2005). Another study in the US that looked into 224 fatalities in the US found that 42% of them were linked to design (Behm, 2005). In 1991 the European Foundation for the Improvement of Living and Working Conditions found that 60% of fatal accidents resulted in part from decisions made before construction site work began. Overall, it is estimated that 63% of all fatalities and injuries could be attributed to design decisions or lack of planning.

Design solutions are absolutely possible. For example, a key issue for the green economy and green sector construction involves making use of as much incident light as possible in order to reduce the need for artificial light. The installation of skylights becomes then an important component of green construction. Yet, the design of skylights should take into account two important features: the ability to withstand the weight of the equipment and of the worker (construction or maintenance), and the installation of anchor points for worker’s harnesses.

Vegetative roofs are another important component of a green and sustainable construction. Installing plants on the roof lowers temperatures and reduces cooling energy needs. In order to address worker’s safety and health concerns, vegetated roofs should guarantee safe access and measures to prevent roof fall hazards to both construction workers who install them and to building maintenance and/or landscaping workers who tend them. These include the installation of anchor points for harnesses and of fall protection measures such as parapets, guard rails, roof-edge fall restraint systems, or horizontal lifeline systems for fall arrest protection.

NIOSH engages in specific efforts in the green construction field. In 2011, the Green Construction Committee of the NORA Construction Sector Council<sup>5</sup> conducted a credit-by-credit review of LEED

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<sup>4</sup> Leadership in Energy and Environmental Design (LEED), developed by the U.S. Green Building Council (USGBC) in 2000, is an internationally recognized mark of excellence. It provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. For more information consult: [www.usgbc.org/](http://www.usgbc.org/).

<sup>5</sup> For more information on the National Occupational Research Agenda (NORA) consult: <http://www.cdc.gov/niosh/nora/default.html>.

2009 New Construction Credits in order to assess where worker protection and safety issues could be implemented. This review examined the construction and maintenance implications of each credit and created three categories:

- **Positive**, defined as those likely activities that if coupled with additional safety design and planning measures, could reduce construction and maintenance worker exposures and risks.
- **Negative**, defined as those likely activities that if not coupled with additional safety design and planning measures, could increase exposures and risks.
- **Neutral**, defined as those activities that appear less likely to either increase or reduce exposures and risks, regardless of safety design and planning measures.

When applying these categories, the review found that seven of the LEED credits seven were “positive,” 11 were “negative,” and 38 were “neutral.” The resulting draft report was shared with the US Green Building Council (publication by NIOSH is pending) and efforts are currently under way to work with governments of other countries in Europe and South America through the relatively new US Green Building Council’s International Roundtable. The International Roundtable may provide an opportunity for PAHO and WHO to work with the US Green Building Council and its overseas entities to more deliberately advance issues of green jobs and workers health and safety worldwide.

Worker’s health and safety are key issues to be discussed in the upcoming Rio+20 Conference. The social pillar of sustainability must consider aspects related to workers. Just as the sustainability of society depends on the environment, the strength of our economy depends on a safe and healthy workforce. ■

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## Green Jobs and the Transition to a Green Economy

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The transition to a green economy implies not only the creation of the so-called “green jobs” but also the “greening” of traditional jobs in specific sectors. These initiatives need to consider the occupational safety and health (OSH) dimension through the incorporation of a series of important measures, such as risk assessment and management, the adoption of a “prevention through design” approach for green jobs’ creation, and the development of specific occupational safety health indicators integrating this dimension into green jobs’ creation policies.

Some of the key sectors for green jobs creation include renewable energy, construction (i.e. energy efficient buildings), transportation (i.e. energy efficient public transport), waste management and recycling, sustainable forestry, and sustainable agriculture. More than the creation of new jobs, some new and traditional sectors require adaptation of their jobs in order to effectively participate in a green economy; these include sectors such as renewable energies, agriculture, mining, green building construction and maintenance, and weather-proofing.

It is expected that a move towards a green economy will support job creation and economic recovery from the current crisis, promote growth and protect the environment. The challenge for sustainable development within this framework is to support economic growth while at the same time improving social equity and promoting human well-being and poverty alleviation.

However, the move towards a green economy faces two major global challenges related to sustainable development: 1) the first one relates to issues of climate change and the deterioration of natural resources; and, 2) the second relates to the so called *green growth paradigm*: appropriately addressing the complex and interrelated economic, ecological and

socio-political dimensions affected by the shift towards a green economy.

Nevertheless, the various decision-makers and stakeholders involved in this movement tend to concentrate their efforts in the economic and environmental dimension of this process, at the expense of the social dimension.

The social dimension directly relates to the world of work. It concerns those who are developing and creating green jobs and are involved in the application of new green technologies. The green jobs sector has greatly expanded since 2006, mainly in emerging and developing countries, but increasingly also in developed countries. This trend is expected to continue and, while it will result in the creation of new jobs, it will cause the elimination, substitution and transformation of others, as some traditional sectors undergo their “greening” transition.

While skill development plays an important role in the greening of the economy, aspects related to gender require special consideration. An important share of green jobs is found in the services sector which employs both men and women.

The transition towards a green economy should also guarantee that green jobs are decent and safe; therefore, it should make sure that while economies move towards sustainability, they also provide workers with adequate wages, safe working conditions, job security, reasonable career prospects and respect for worker’s rights.

A comprehensive approach towards a green economy needs to fully consider environmental protection and occupational safety and health as two sides of a coin. While it is important to consider the impact of work practices on the environment; it remains crucial to consider their impact on worker’s health and safety (i.e. exposure to dangerous substances). It is important to seek that health and safety measures are adopted as an integral part of any green economy initiative by promoting a social dialogue and the participation of employers’ organizations, trade unions and other stakeholders in policy-making processes and governance.

Occupational safety and health standards and good practices should be incorporated into all jobs, not only the “green” ones; they should also be integrated into policies on sustainable development and green jobs’ creation. An integral occupational health and safety strategy calls for increasing awareness on new and emerging risks in green jobs, as well as the adoption of a “prevention through design” approach for green jobs creation. Risk assessment and management from the design and pre-operational phases and in the life-cycle analysis of green jobs can help to protect workers, the environment and communities.

The need to guarantee the safety and health of workers is not a new concept related to the green economy. It remains indispensable for all sectors and jobs, as well as for the establishment of an environmentally sustainable and socially inclusive green economy. ■





# Seminar 11



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## Sustainable Development and Noncommunicable Diseases

## Sustainable Development and Noncommunicable Diseases

18 April 2012

### Sustainable Development and Noncommunicable Diseases

*George Alleyne, Director Emeritus of the Pan American Health Organization*

The term “sustainable development” is well known nowadays. Yet there remains a certain lack of clarity about its meaning: what kind of development do we wish to sustain and how do we hope to sustain it? In order to understand how Noncommunicable Diseases (NCDs) fit within the political, philosophical and epistemological context of sustainable development efforts, it is important to clearly define “sustainable development” and the current thinking embedded in it.

Discussions surrounding the impact of man’s action over nature date to many decades ago. Rachel Carson’s 1962 book “*Silent Spring*” had a tremendous impact on people’s thinking about man’s relationship to nature and the environment. It described in detail the impact of man’s actions on the planet and asserted that “only within the moment of time represented by the present century has one species - man - acquired significant power to alter the nature of his world” (Carson, 1962).

Yet, the term “sustainable development” only surfaced in 1987 in the landmark report of the World Commission on Environment and Development, “*Our Common Future*,” spearheaded by Dr. Gro Harlem Brundtland, former Director-General of the World Health Organization, and colloquially known as the *Brundtland Report* (World Committee on the Environment and Development, 1987). Sustainable development was then defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Nevertheless, this definition characterizes sustainability, not development; it only asserts that development should make sure that our future needs are not compromised.

The “*Our Common Future*” Report went on to state that “the concept of sustainable development does imply limits –not absolute limits, but limitations imposed on environmental resources and by the ability of the biosphere to absorb the effects of human activities.”

Such kind of thinking, focused essentially on environmental concerns, the physical environment and the preservation of nature, shaped the basic direction of the United Nations Conference on Environment and Development that took place in Rio de Janeiro in 1992. The spirit of the conference was captured by the expression “Harmony with Nature”, brought to the fore with the first principle of the Rio Declaration: “Human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.”

Ten years later, the Johannesburg Declaration (UNDESA, 2002), further developed those concepts as it proposed the need for “a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development—economic development, social development and environmental protection—at local, national, regional and global levels.”

For the first time, a description of the three supportive entities of sustainable development emerged at a political level, yet it still did not clearly define what kind of “development” was meant to be sustained.

A few decades ago, in 1973, Dr. Eric William, then Prime Minister of Trinidad and Tobago, said that “development has a face, and that face is the face of man.” This is an important concept as it brings to the front of the debate the notion that development should refer to the development of mankind and that it is necessary to understand what is needed for this development to take place optimally.

If one considers this idea thoroughly, then the concept of sustainable development can not only be about the environment and the preservation of natural resources; it must be characterized as human develop-

ment. And if human development is what we want to sustain, then we must focus on the social, economic and environmental strands represented as being intertwined in the form of a triple helix to sustain it.

While the concept of the three pillars of sustainable development have been represented in various forms, none have clearly demonstrated how closely intertwined the pillars are. More recently, the United Nations Environmental Program has suggested the figure of a triple helix with three strands intertwined; the strands representing the social, economic and environmental domains that support and sustain human development<sup>1</sup>. It is the relationship of the three strands, the extent to which they are woven together, and the cohesion among them that really sustains development, and, most importantly, human development.

Economists have long tended to capture the idea of development as being related to economics. However it goes much beyond that. In the 1990s, Dr. Mahub Ul Haq, a prominent economist, expanded on the notion of human development as “a process of enlarging people’s choices. The most critical ones are to lead a long and healthy life, to be educated and to enjoy a decent standard of living” (UNDP, 1990). By bringing these three factors together - health, education, and decent standard of living – Dr. Ul Haq established the now commonly used Human Development Index (HDI)<sup>2</sup>.

The concept of human development was further articulated by Dr. Amartya Sen, an economist/ philosopher, in his well-known book “Development as Freedom” (Sen, 1999). Dr. Sen understood development as it related to what people wish and are free to do; development, he argued, can be seen as a process of expanding the real freedoms that people enjoy.

Dr. Marta Nussbaum took this concept one step forward by discussing the association between capabilities and human development (Nussbaum, 2011). Freedom, for Nussbaum, related to people’s ability to realize and express their capabilities; she defined capabilities as “what persons are able to be and do-their substantial freedoms.”

The Millennium Gallup Poll (1999)<sup>3</sup>, the largest poll ever conducted worldwide, attempted to answer the question of what people wished to do and be. It asked people all over the world which things they valued most in life. The results clearly indicated it was health and family, with 44% and 38% of respondents, respectively identifying these as the most important things they wished to have in their lives.

Therefore, if human development is what we aim for, and if good health is at the forefront of human’s concerns in life, then it is only logical that health should be the main goal of human development. Health, along with education, is in a unique position of being an end as well as an instrument of human development. Health is also an intrinsic component of the social strand, along with education and political freedom.

Following that line of thought, it becomes clear that NCDs can make human development unsustainable through their negative impact on health as well as on the three strands of sustainable development. Therefore, the control and prevention of NCDs must figure as a central goal of sustainable human development.

A lot has been written about the impact of the social determinants on health and on NCDs. Nowadays it is well accepted that social, economic and environmental conditions impact negatively on NCDs. However, that relationship is not unidirectional. NCDs can also directly and indirectly affect the social and economic foundations of societies.

There is plenty of evidence of this reverse causality. NCDs negatively impact equity through the

<sup>1</sup> For more information: <http://www.unep.org/newscentre/Default.aspx?DocumentID=2640&ArticleID=8740&l=en>.

<sup>2</sup> A Human Development Index (HDI) is based on four indicators (life expectancy at birth, mean years of schooling, expected years of schooling, and gross national income per capita) and three dimensions: health, education, and living standards. For more information: <http://hdr.undp.org/en/statistics/hdi/>.

<sup>3</sup> For more information: <http://www.peace.ca/gallupmillenniumsurvey.htm>.

unfair distribution of life chances and inequities that disproportionately impact the poor. NCDs affect social cohesion through the stigma and discrimination attached to many diseases, as well as through social fraction, as people have to deal with NCDs for a prolonged period of time. There is also a gender dimension to NCDs, for example, as men die early and women become early widows and trapped in the cycle of poverty. In addition, NCDs are also known to negatively impact education.

NCDs also affect economics. The cost of NCDs is tremendous, both at the macro and the micro economic level. It is estimated that 37 trillion dollars will be spent over the next two decades on the prevention and treatment of NCDs (Bloom et al, 2011), which will inevitably impact countries' GDPs. NCDs can throw people into poverty or keep them from escaping the poverty trap. Furthermore, NCDs have important fiscal consequences for countries, as government have to increase their expenditure in healthcare and social protection systems while dealing with a reduced government revenue as people become ill during their productive age.

While it is harder to show the impact of NCDs on the environment, a connection can be made through the effects of NCD's risk factors. Tobacco and unsustainable food production systems have deleterious impact on climate change. For example, livestock production is estimated to be responsible for 18% of global greenhouse gases, surpassing the emissions attributable to transportation (Food and Agriculture Organization, 2006).

Not too long ago, infectious diseases constituted the predominant cause of death in most regions of the world. Nowadays, NCDs not only cause the majority of death worldwide but also account for the greatest impact on disability-adjusted life years (UN General Assembly, 2011). And this trend is expected to continue.

NCDs take a heavy toll in the Americas. In 2009, NCDs were responsible for 4.5 million deaths in the Region (PAHO, 2009). Of those, 45% were caused by cardiovascular disease, 30% by cancer, 10% by

chronic respiratory diseases, 8% by diabetes, and 7% by other NCDs. In most countries of Latin America and the Caribbean, almost half of those with diabetes and one third of those with hypertension are undiagnosed. More than half of those with diagnosed diabetes and one fourth of those with diagnosed hypertension are uncontrolled. And almost one third of those with diagnosed diabetes and half of those with diagnosed hypertension do not take appropriate medication.

The strategies used to prevent and control NCDs are well described. Population-based interventions and primary prevention strategies, such as salt reduction, the provision of walking spaces, and the reduction of risk factors are some of the strategies used to protect the population from NCDs. Clinical interventions and secondary prevention strategies are also available to treat individuals diagnosed with NCDs.

Nevertheless, in order to address the problem at a global level, it is necessary to take advantage of opportunities to focus attention on NCDs. Currently, for those working in the health field, the major upcoming opportunity is Rio+20.

The Political Declaration of the United Nations High Level Meeting (UN HLM) of the General Assembly on the Prevention and Control of Noncommunicable Diseases (September 2011)<sup>4</sup> outlines some of the important commitments that should be reaffirmed during Rio+20. These include:

- Reduction of risk factors;
- Strengthening of policies and health systems;
- Promotion of international cooperation;
- Building of partnerships;
- Investments in research and development;
- Improved monitoring and evaluation; and
- Improved follow-up.

<sup>4</sup> For more information: [http://www.un.org/en/ga/ncdmeeting2011/pdf/NCD\\_draft\\_political\\_declaration.pdf](http://www.un.org/en/ga/ncdmeeting2011/pdf/NCD_draft_political_declaration.pdf).



It is crucial to push forward on these commitments so they will find echo in national plans and to continue putting pressure on decision-makers in order for NCD issues to be taken seriously. “Addressing new and emerging challenges,” has been defined as one of the main objectives of Rio+20. It is essential to ensure that within new and emerging challenges, NCD issues are fully considered and acknowledged as an “emerging challenge.”

Other important outcomes of Rio+20 include the recognition of the outcome of the New York UN HLM as one component for the objectives of Rio+20, and the incorporation into the Declaration of the essentials of the commitments made in the UNHLM for NCDs. ■

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## Seminar 12



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# Economic and Social Aspects of Noncommunicable Diseases (NCDs)

## Economic and Social Aspects of Noncommunicable Diseases (NCDs)

23 April 2012

### Economic and Social Aspects of NCDs

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Noncommunicable Diseases (NCDs) and sustainable development are connected in many different ways. This has important implications for the discussions that will take place in the upcoming Rio+20 Conference. The NCD Alliance<sup>1</sup> has recently published a briefing that describes how NCDs affect sustainable development and highlights the links between NCDs and three of the seven Rio+20 priority areas. The briefing calls for NCD prevention and control to be integrated into sustainable development policies and programs<sup>2</sup>.

The economic and social aspects of NCDs are also closely tied. Currently, there are five key trends that need to be considered:

1. Chronic diseases already pose a substantial economic burden, and this burden will evolve into a staggering one over the next two decades. While there is a great deal of knowledge about the economic burden, there is scarce empirical evidence of it. It is expected that this burden will increase substantially in the Americas.
2. Although high income countries currently bear the biggest economic burden of chronic diseases (due to reasons such as more expensive health care), in developing countries, especially those of middle-income, the proportion of health care expenditures allocated to NCDs is expected to increase as economies and populations grow.

3. The marginal costs for governments of achieving maximal adult survival are rising, in contrast to declines in marginal costs of achieving child survival. In other words, it is increasingly more expensive to prevent adult deaths or to add years to an adult life, than it is to prevent a child's death or to add years to a child's life. One factor is the great deal of improvements in children's health that we have seen in the past few decades through vaccinations and increased attention and care for children's health. This divergence is also a consequence of the lack of sustained investments in new drugs, and the lack of existing infrastructure, strategies and program implementation for chronic diseases.
4. Addressing chronic disease in poor countries requires rethinking developmental assistance and creating new delivery approaches. Development assistance is insufficient to deliver NCD needed care and services. Both recipients and donors should rethink the role of development assistance in addressing NCDs. Chronic Care Management (CCM) and patient-centered approaches are more likely to be effective and sustainable, but need further testing and costing.
5. Selected options available to prevent and control chronic diseases appear to justify themselves in economic terms in the sense that the welfare gains and the economic losses that could be averted by investments that would reduce chronic diseases are considerably larger than those investments. In other words, the benefits exceed the costs in certain NCD investments.

NCDs kill people at a younger age in developing countries when compared to developed countries. This has significant economic implications as NCDs are not affecting people when they are at the end of their lives, ready to retire and no longer producing and supporting their families, as generally is the case in richer countries. Instead, NCDs are affecting people when they are at their peak working and pro-

<sup>1</sup> For more information: [www.ncdalliance.org](http://www.ncdalliance.org).

<sup>2</sup> To access the full report go to: <http://www.ncdalliance.org/news/release-ncd-alliance-briefing-paper-ncds-and-sustainable-development>.

ductive age. Data from WHO (WHO, 2010) showed that while in the UK 100 women of a certain age died of cardiovascular diseases and diabetes, in Burkina Faso, 400 women of the same age died of cardiovascular diseases and diabetes. This kind of data points to the inequity in the risk of mortality at a given age of NCD and to the fact that the number of years of life lost in the poorer countries is greater than the number of years of life lost in the richer countries. The high social and economic implications of these deaths for developing countries comprise a strong argument for investments in NCDs.

The future of aging requires special consideration. Aging is happening across the planet as countries undergo the epidemiological transition. An aging population along with lifestyle changes implies that chronic disease is becoming the main source of mortality in middle- and low-income countries. The goal should then be to postpone mortality as much as possible. We know that death after age 70 years is inevitable; due to successes in improving children's health and maternal mortality, death below age 30 could become rare; so the target should be to prevent people from dying in those middle years of 30 to 69. In all countries, addressing NCDs need to focus on reducing and postponing deaths at this age group.

Some of the economic benefits of preventing mortality during these years include:

- Income growth, as productivity comes from people being able to work;
- Welfare (value of reduced mortality and better quality of life); and
- Poverty reduction, as chronic disease, early mortality and life experience with chronic diseases can lead to poverty.

It is also important to address the unequal burden within and across countries, which can be illustrated in the following examples:

- The Indian “Million Death Study” found that the highest burdens of cancer, stroke, and heart attacks were among the least educated

individuals and in rural areas (Prabhakar, unpublished).

- A study from Huffman et al (Huffman et al, 2011) in four countries found that the median out-of-pocket expenditures for the treatment of heart attack ranged from US\$ 347 (Tanzania) to US\$ 2,914 (India). Additional costs involved declines in functional health and lower productivity. This highlights the fact that health systems are not fully caring for people who are suffering from NCDs; people are bearing the cost of these themselves.
- Cardiovascular disease is leading to greater divergence in health equity across countries (Becker, 2009). Low and middle-income countries are experiencing a greater burden in cardiovascular disease prevalence.

Some of the key priority investments for the control of chronic disease, which are among the WHO Best Buys<sup>3</sup>, and which have shown to be feasible, sustainable and cost-effective, include: (1) reducing tobacco use; (2) salt reduction; and (3) management of acute and chronic vascular diseases through low-cost generic risk pills for vascular disease (pharmacological intervention), and prevention of obesity and diabetes (addressing risk factors).

Recent research has demonstrated that some NCD interventions have a high benefit-cost ratio, that is, the benefits resulting from these interventions exceed the cost if intervening (Prahbat et al, 2012). Taking as example some high priority areas in NCDs, interventions to curb tobacco consumption through taxation resulted in a benefit to cost ratio of 40 to 1, meaning the benefits of the intervention, as measured by lives saved or reduced morbidity, far exceeds the cost of implementing tobacco taxation.

Another example is that of management of acute myocardial infarction with low-cost drugs; such intervention reduces those at risk of heart attacks at a benefit to cost ratio of 25 to one. Finally, very exciting results have been seen in the Americas where coun-

<sup>3</sup> For more information: [http://www.who.int/nmh/publications/best\\_buys\\_summary.pdf](http://www.who.int/nmh/publications/best_buys_summary.pdf).



tries have implemented interventions to reduce salt. Economic analysis shows that the benefit-cost ratio of reducing salt is 20 to 1.

These examples clearly show that there are things that can be done to reduce not only the economic but also the social costs of NCDs. The benefits of taking these actions are well worth it. ■

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## Chronic Emergency: Why NCDs Matter<sup>4</sup>

Irina A. Nikolic, Human Development Network, The World Bank

This is a critical time for dialogue and action on NCDs. The unprecedented attention given to NCDs is encouraging, with the 2011 United Nations High Level Meeting on Noncommunicable Diseases being a clear marker of the global community's recognition that rising NCDs pose a serious challenge. However, it remains to be seen whether that recognition leads to an adequate response.

In addition to their direct impact on human well-being, rising NCDs pose tremendous economic risks. Furthermore, because of the variety of risk factors that contribute to rising NCDs and their broad range of impacts, an effective response requires dialogue among multiple actors – including health and finance ministries and other governmental entities, international organizations, and the private sector and civil society – that results in coordinated action.

Fortunately, an increasing number of efforts to address NCDs, such as the PAHO-led Salt Reduction Initiative, are making investments towards demonstrating the viability of strategic collaboration and action. Yet, keeping up the momentum of these initiatives is not without difficulties. Advocacy, development, and scaling up of effective responses, remain top priorities in addressing the NCD challenge.

<sup>4</sup> The information presented in this discussion is based on the analysis by the speaker in “Chronic Emergency: Why NCDs Matter,” *Health, Nutrition, and Population Discussion Paper*. (2011). Washington DC: World Bank, based on the most recent data available, including WHO Global Burden of Disease estimates and projections and the World Bank data and regional/income country groupings. The World Bank publication “Chronic Emergency: Why NCDs Matter,” prepared for the United Nations High Level Meeting on Noncommunicable Diseases (New York, September 2011), examines the magnitude of the challenge posed by noncommunicable diseases (NCDs) in middle- and low-income countries, and makes the case for elevating the challenge as a priority item to address on the agenda of decision-makers. The document is available through: <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/ChronicEmergencyWhyNCDsMatter.pdf>.

Increased levels of NCDs track in some respects to economic development gains. That does not mean, however, that high levels of NCDs are to be tolerated, and we should find effective ways to both make and measure progress in addressing the challenge of NCDs. The policy goal for NCDs should be to prevent premature mortality and morbidity with an eye to contributing to stronger public finances and private sector development, as well as healthier, longer lives.

What makes the NCD challenge particularly daunting for many developing countries is that, compared to their higher-income counterparts, they will be facing high NCD levels, including amongst their working-age populations, at earlier stages of economic development, and with a much compressed timeline to address the challenge.

NCDs present a rising challenge in all middle- and lower-income country regions and amongst younger and working-age populations. Between 2008 and 2030, NCD-related deaths as a share of total deaths are projected to rise by 1% in high-, 12% in middle-, and 45% in lower-income countries. For the productive age population of 15-59 years of age, high income countries are expected to see a decrease of 5%, but middle- and lower-income countries are expected to see increases of 12% and 32%, respectively.

When disease burden is analyzed in terms of disability adjusted life years (DALYs), a commonly used measure of the number of healthy years lost as a result of the diseases, it is clear that NCDs will be the largest share of disease burden and the leading cause of healthy years lost across all country income groups by 2030 (Nikolic et al, 2011).

It was once thought that NCDs mainly affect wealthy countries and that they were mostly related to personal lifestyle choices enabled by development. We now know that this is not the case. By 2030, NCDs are expected to account for three quarters of the disease burden in middle-income countries, up from two-thirds today and approaching the level of high income countries. In lower-income countries, the NCD share of the disease burden will increase

even more quickly and approach the levels currently found in middle-income countries.

Many of lower- and middle-income countries are on track to face these high NCD levels without experiencing a corresponding increase in economic development, and will lack the healthcare and social welfare infrastructure to deal with the challenge. Many will also continue to deal with high levels of communicable diseases, facing a double-burden of disease.

Indeed, the latest population data shows that countries that need to invest the most in NCD prevention are already suffering the greatest economic development burden. Further, several key NCD risk factors are now more prevalent amongst poorer populations. For example, we now see many countries dealing with malnutrition and obesity concomitantly.

Indeed, by any measure, the cost of NCDs to economies and societies is high and vastly exceeds the direct medical costs of NCDs. As illustrated here, NCDs have a significant impact on economies, health systems, and households and individuals (Nikolic et al, 2011):

- Economies: reduced labor supply; reduced labor outputs (e.g., from increased absenteeism); additional costs to employers (e.g., decreased productivity, higher insurance costs); lower returns on human capital investments; lower tax revenues; and increased public health and social welfare expenditures.
- Health systems: increased consumption of NCD-related healthcare services; high medical treatment costs (per episode and over time); demand for more effective treatments (e.g., cost of technology and innovation); and health system adaptation costs (e.g., organization, service delivery, financing).
- Households and individuals: reduced well-being; increased disabilities; premature deaths; lower household incomes; higher health expenditures (including catastrophic spending); savings and assets loss; and reduced educational and employment opportunities for affected individuals and their families.

Some recent estimates illustrate the size of the burden. A recent World Economic Forum and Harvard University study on the global economic burden of NCDs estimated the lost output due to the four leading NCDs – cardiovascular disease, cancer, diabetes, and chronic respiratory diseases – and mental health conditions to be approximately US\$ 47 trillion from 2011 to 2030. The same study also calculated the staggering global cost of certain illnesses in 2010 to be: US\$ 290 billion for cancer, US\$ 836 billion for cardiovascular diseases, US\$ 2.1 trillion for chronic-obstructive pulmonary diseases, US\$ 500 billion for diabetes, and US\$ 2.5 trillion for mental health (Bloom and Cafiero et al, 2011).

Country-level estimates of the economic burden of NCDs also offer insights into the scale of the problem and importance of taking action. Data from China suggests that reducing cardiovascular disease mortality by 1% per year between 2010-2040 could generate an economic value equivalent to 68% of China's real GDP in 2010 (Rocco et al, 2011). Studies of Egypt indicate that NCDs could be leading to an overall production loss of 12% of the country's GDP (Rocco et al, 2011). It is estimated that "eliminating" NCDs in India would have increased the country's 2004 GDP by 4%-10% (Mahal et al, 2010).

Data on the household burden of NCDs are also alarming. In Egypt, amongst people suffering from NCDs, the probability of being employed is about 25 percentage points lower than the average (Rocco et al, 2011). In China, a study estimated that positive change in adult health status can result in a 16% gain in hours worked and a 20% gain in individual income (World Bank Human Development Unit, 2011). In India, 40% of household NCD treatment expenditures are financed by borrowing and sales of assets. And in South Asia as a whole, the chances of catastrophic hospitalization expenditures are 160% higher for cancer patients and 30% higher for cardiovascular disease patients than those with communicable diseases requiring hospitalization (Engelgau et al, 2011).

Despite the magnitude of the NCD challenge, there is considerable space for action. Countries can decrease NCDs through targeted prevention and treat-

ment interventions that combine action from the health sector and other sectors to address the wide range of risk factors that contribute to higher NCD levels. Low-cost NCD preventive measures as well as diagnostic and treatment measures can also be integrated into the continuum of care of other ongoing initiatives (e.g., improved child and maternal care) without overburdening countries with limited resources.

At the same time, countries should also recognize that even if they invest in prevention and treatment, they will also need to facilitate strategic adaptation measures to mitigate the impact of increased NCD levels on economies, health systems, and households and individuals (Nikolic et al, 2011).

In short, NCDs present an unprecedented challenge, but there is also an opportunity for stakeholders to work together to better understand the problem and develop and implement an intelligent strategy focused on targeted prevention and treatment measures and strategic adaptation. ■

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# Seminar 13



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## Health at the Heart of Sustainable Development

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2 May 2012

### Including Health into Rio+20: Debates and Decisions

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As the deadline for the achievement of the Millennium Development Goals approaches, discussions have started on the development of new sustainable development goals (SDGs) to be used post 2015. Rio+20 will likely influence the new SDGs and these discussions should gain momentum following the event.

While closely linked to the seven critical themes<sup>1</sup> identified for the Rio+20 Conference, health per se was not highlighted as an area in need of priority attention. Health indicators that help to assess the impacts and successes of policies in those critical areas are being developed through expert consultation and are expected to support the mainstreaming of health into the Rio+20 discussions and to contribute to the new SDGs.

Health is an important input to sustainable development; healthy people are better able to learn, work and contribute to their economies and societies. Universal access to health services remains a key input to better health.

Sustainable Development can improve health. Smart strategies for transportation, housing, energy and agriculture can reduce Noncommunicable Diseases (NCDs) and diseases of poverty, as well as enhance health (for example, by promoting physical activity). However, health does not automatically result from sustainable development policies. “Health in the green economy” opportunities have not been fully exploited. The health risks and benefits of dif-

ferent economic development strategies need more explicit consideration.

The health sector has a key role to play, leading with evidence and indicators for sustainable development policies. It can produce evidence on the health impacts of sustainable development strategies and innovations. It can also promote the wider use of Health Impact Assessment (HIA) in order to ensure health as an outcome of all policies. Lastly, the health sector can define health-relevant goals, indicators, and tools for measuring and monitoring results of sustainable development policies.

In preparation for Rio+20, a series of consultations with experts were conducted in order to agree on a framework, rationale and proposed health indicators for the seven critical themes. The framework proposed integrates different approaches and strategies such as the determinants of health; “Health in all Policies”; Driving Force, Pressure, State, Exposure, Effect and Action (DPSEEA)<sup>2</sup>; and Health Impact Assessment<sup>3</sup>. The indicators attempt to highlight how policies and strategies in the critical areas affect health by describing the chain of events and considering how distal and proximal determinants that are under the purview of other sectors can affect health outcomes.

Examples of the linkages between sectoral policies and health abound. Certain types of transportation systems have been shown to affect health through their impact on air quality, accident rates, noise level, and levels of physical activity (Woodcock, 2009)<sup>4</sup>. The use of fossil fuel for heating and cooking has also been linked to chronic respiratory diseases in mothers and children (Rehufuess, 2006).

The UN-Water Global Annual Assessment of Sanitation and Drinking Water (UN Water and WHO, 2010) offers another compelling example of how health can act as a measure of sustainability of poli-

<sup>1</sup> The seven critical issues, as listed in the Conference website are: energy, food, water, jobs, cities, oceans and disasters. For more information consult: <http://www.uncsd2012.org/rio20/7issues.html>.

<sup>2</sup> For more information: [http://www.integrated-assessment.eu/guidebook/dpseea\\_framework](http://www.integrated-assessment.eu/guidebook/dpseea_framework).

<sup>3</sup> For more information: <http://www.who.int/hia/en/>.

<sup>4</sup> For more information: [http://www.who.int/hia/green\\_economy/giz\\_transport\\_report/en/index.html](http://www.who.int/hia/green_economy/giz_transport_report/en/index.html).

cies and investments. The report summarizes the results of a global monitoring framework established for water and sanitation and assesses the sector's investments and policy implementation at the global, regional and national level. It follows issues such as financial flows, sector policies, institutional settings, human resource capacity, use of water supply sources, and use of sanitation facilities. The 2012 report illustrates the striking disparities in sanitation and water access worldwide and clearly highlights the impact of such policies on population health (UN Water and WHO, 2012).

Some of the health indicators for sustainable development that are being proposed for discussion during Rio+20 include:

- Energy: percentage of households using clean fuels/cooking and heating technologies.
- Green jobs: percentage of workplaces/jobs meeting the basic occupational health and safety standards, including air, water, exposure to chemicals and radiation, lighting and ventilation.
- Energy in health care: percentage of health care facilities with access to clean energy and water supplies.
- Governance: percentage of large projects integrating health co-benefits considerations into their planning and implementation, e.g. through a health impact assessment (HIA).

In order to more efficiently advocate for the incorporation of these and other health indicators, one page policy briefs are being prepared for each of the critical areas. These will be disseminated among key stakeholders during the Rio+20 Conference. Each policy brief clearly describes the links between sector policies and health, proposes five health indicators and describes how health can inform on the success in the policies proposed. ■

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## Environmental Health and Inequalities: Building Indicators for Sustainable Development

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A study recently conducted in Brazil (and soon to be published) attempted to link selected social, economic, environmental and health indicators to the social determinants of health and determine their importance in successful sustainable development.

An initial analysis looked at the development of the GINI index<sup>5</sup> from 1960 to 2000. In the 1960, the Brazilian GINI Index ranked as median (0.5). The accelerated and unequal economic growth experienced by the country during the 1970s and 1980s resulted in Brazil being placed among the group of countries of the world having greater inequalities. With the imple-

<sup>5</sup> The Gini coefficient (also known as the Gini index or Gini ratio) is commonly used as a measure of inequality of income or wealth. A Gini coefficient of zero expresses perfect equality where all values are the same (for example, where everyone has an exactly equal income). A Gini coefficient of one (100 on the percentile scale) expresses maximal inequality among values (for example where only one person has all the income) ([www.wikipedia.com](http://www.wikipedia.com)).

mentation of public policies aimed at improving social and environmental conditions between the 1990s and 2000s, the country's GINI Index dropped back to the levels of the 1960s.

Nevertheless, Brazil is still marred by striking inequalities. In 1999, it was estimated that the death rate per 100,000 inhabitants in the northeast region of the country was 8.81. The same rate for the southeast region dropped to 2.24, a difference of almost four times between the two regions (Carneiro et al, 2012).

As part of the study, which was based on data from the 2000 census, a number of municipalities that showed the highest and lowest human development indices (HDI) were selected. The HDI of each municipality was then compared with the HDI of countries worldwide. Further analysis of social, economic and environmental indicators was conducted for the five municipalities with the lowest HDI between 2000 and 2010.

The results pointed to a great variability of HDI among Brazilian states, which indicates a profound inequality. Brazilian overall HDI is placed at 0.77; nevertheless the state's HDI ranged from 0.53 to 0.84 (Carneiro et al, 2012). For example, the Brazilian Federal District (Brasilia) has an HDI of 0.84, which is comparable to the HDI of Argentina. On the other hand, the HDI for the entire Brazilian state of Maranhao stands at 0.63, which is an index comparable to the country of Gabon, in Africa (Carneiro et al, 2012).

When this analysis was conducted at the municipality level, the differences were even more striking. The municipality of Sao Caetano do Sul, in the southeast state of Sao Paulo, presented an HDI of 0.91, which is comparable to Ireland. Yet, the municipality of Manari's HDI, in the northeast state of Pernambuco, dropped to a low 0.46, which is the same as that of Madagascar.

The analysis of the evolution of social, environmental and economic indicators in the period of 2000 to 2010 in the five municipalities with the lowest HDI in Brazil demonstrated a clear improvement in all indicators during the selected timeframe, according to the data available in the country's databases.

The analysis of the economic progress looked at income levels among people who escaped absolute poverty between 2000 and 2010. To assess the progress in environmental matters, the study analyzed levels of access to water and sanitation systems, both public and private. The social indicator considered in the analysis was the level of education among women.

The results revealed an interesting correlation between improvements in social, economic and environmental conditions and reductions in infant mortality. However, this correlation was less evident in relation to environmental indicators. It is hypothesized that the implementation of adequate water and sanitation policies in these municipalities could result in further reduction of infant mortality rates.

The study concluded with some recommendations to advance sustainable development in the country through improvements in the social, economic and environmental conditions. The need to improve the social inclusion process was highlighted. Another conclusion pointed to the limited growth of environmental indicator as it related to the difficulty in understanding sanitation as a right at the national level. Finally, the study emphasized the need to strengthen public policies that integrate the three pillars of sustainability. ■

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## Healthy People 2020: A Foundation for Health Promotion and Disease Prevention

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*Healthy People* is an initiative of the United States Department of Health and Human Services (DHHS) that provides science-based, 10-year national objectives for improving the health of all Americans<sup>6</sup>. For

<sup>6</sup> For more information consult: [www.healthypeople.gov](http://www.healthypeople.gov).



the past three decades, *Healthy People* has established benchmarks and monitored progress over time in order to (1) encourage collaborations across communities and sectors, (2) empower individuals toward making informed health decisions, and (3) measure the impact of prevention activities.

*Healthy People* provides an essential function in the coordination of nationwide health promotion and disease prevention efforts by defining a roadmap with goals and objectives with a 10-year target. It is used as a tool for strategic management by the federal government, states, communities, and many other public- and private-sector partners. In addition, *Healthy People* provides an important model for collaboration at the federal level with its contribution to the:

- DHHS Strategic Plans (National HIV/AIDS Strategy, National Tobacco Control Strategy, Flu Vaccination, Environmental Justice Strategy);
- Policies on subsidies for public health services;
- Healthcare reform (National Prevention Strategy; Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services Measurement and Evaluation Group (ASPE); Government Accountability Office (GAO));
- Accountability measures for the DHHS Office of the Assistant Secretary for Financial Resources (ASFR).

*Healthy People* has grown significantly since its launching in 1990. The number of themes addressed by the initiative increased from 15, in 1990, to the current 42. The number of objectives defined for the initiative also increased in the same time period from 226 to 580.

This is partly a result of technological advancements such as the internet, which helped to increase considerably the Initiative's capacity to deal with the extra workload, as assessed by the Healthy People's Advisory Committee, composed of public health

experts, and the Federal Inter-institutional Working Group. In addition, the greater number of objectives allows for a more in-depth understanding of key elements and factors, as well as to mobilize more actors and stakeholders.

*Healthy People 2020* marks the first time that *Healthy People* have incorporated new elements since its launching; issues such as terrorism, acute respiratory syndrome (SARS), and the H1N1 epidemics have highlighted the critical need to maintain flexibility within the program.

*Healthy People 2020* incorporated a renewed focus on identifying, measuring, tracking, and reducing health disparities through a social determinants of health approach. The Social Determinants of Health topic area within *Healthy People 2020* is designed to identify ways to create social and physical environments that promote good health for all. By working to establish policies that positively influence social and economic conditions and those that support changes in individual behavior, *Healthy People 2020* aims to improve health for large numbers of people in ways that can be sustained over time. This is based on the notion that improving the conditions in which people live, learn, work, and play, as well as the quality of relationships will create a healthier population, society, and workforce<sup>7</sup>.

The incorporation of the social determinants of health approach within the conceptual framework of *Healthy People 2020* emphasizes the program's commitment to reduce population inequities, particularly those related to race, ethnicity, socio-economic condition, gender, age, disabilities, sexual orientation, and geographical location. It also reflects the need to improve public awareness and knowledge about the social determinants of health, diseases, disabilities and opportunities for progress.

<sup>7</sup> For more information consult: U.S. Department of Health and Human Services (DHHS). Office of Disease Prevention and Health Promotion. *Healthy People 2020*. Washington, DC. Available at: <http://www.healthypeople.gov/2020/topicsobjectives2020/> (accessed 22 May 2012).



Besides the social determinants of health, twelve new areas have been incorporated into *Healthy People 2020*<sup>8</sup>. Currently three new areas are being developed by expert Working Groups.

The *Healthy People 2020* framework outlines measurable objectives and goals that can be applied at the national, state and local level. This supports the mobilization of stakeholders and the strengthening of public policies that will lead to the development of best practices guided by the best available evidence and knowledge. It also helps to identify critical issues for research, evaluation, and data collection.

In order to support the implementation of Healthy People 2020, a smaller set of objectives, called Leading Health Indicators (LHIs), has been selected to communicate high-priority health issues and actions that can be taken to address them<sup>9</sup>. The Healthy People 2020 LHIs were selected and organized using a Health Determinants and Health Outcomes by Life Stages conceptual framework<sup>10</sup>.

The process of selecting the Leading Health Indicators was led by the *Healthy People 2020 Federal*

*Interagency Workgroup* that incorporates experts from U.S. Department of Health and Human Services and other Federal departments. Reports by the *Institute of Medicine of the National Academy of Sciences* and the *Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020* provided several recommendations for DHHS to consider in developing the final set of LHIs.

The *Healthy People 2020 Leading Health Indicators* place renewed emphasis on overcoming health challenges and to track progress over the course of the decade. The indicators will be used to assess the health of the Nation, facilitate collaboration across sectors, and motivate action at the national, State, and community levels to improve the health of the U.S. population.

In January 2012, the Office of Health Promotion and Disease Prevention launched the “Who’s Leading the Leading Health Indicators?” series which disseminates information about the LHI topics through monthly bulletins and web seminars. These highlight the most recent data and trends, and showcase states, communities, or organizations that are addressing the LHIs in innovative ways<sup>11</sup>.

Lastly, the *Healthy Border 2020 Initiative* (HB 2020) spearheaded by the *U.S. Mexico Border Health Commission* is using *Healthy People 2020* as a model for the development of the HB 2020 initiative, as well as the health indicators developed under *Mexico’s National Health Program* (“Programa Nacional de Salud”).

<sup>8</sup> The new areas are: adolescent health; blood disorders and blood safety; dementias, including Alzheimer’s disease; early and middle childhood; genomics; global health; healthcare-associated infections; health-related quality of life and wellbeing; lesbian, gay, bisexual, and transgender health; older adults; preparedness; sleep health; and social determinants of health.

<sup>9</sup> For more information on the Healthy People 2020 Leading Health Indicators consult: <http://www.healthypeople.gov/2020/LHI/default.aspx>.

<sup>10</sup> The twelve LHIs topics are: Access to health services; clinical preventive services; environmental quality; violence and injuries; maternal, infant, and child health; mental health; nutrition, physical activity and obesity; oral health; reproductive and sexual health; social determinants of health; substance abuse; tobacco.

<sup>11</sup> For more information on the “Who’s leading the Leading Health Indicators?” Series consult: <http://www.healthypeople.gov/2020/LHI/whosleading.aspx>.

# Seminar 14



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## **Global Sustainable Development and Environmental Health: Joint Discussions with the Institute of Medicine**

## Global Sustainable Development and Environmental Health: Joint Discussions with the Institute of Medicine

9 May 2012

### Putting Health at the Heart of the Green Economy Agenda: Making the Links to Rio+20

*Maria Neira, Director, Public Health and Environment, World Health Organization*

Rio+20 presents an incredible opportunity to demonstrate the relevance of the global public health agenda and to promote the application of the “health in all policies” approach.

Sustainable development and health are strongly linked. It is widely acknowledged that health is an important input to sustainable development since healthy people are better able to learn, work and contribute to their economies and societies. This emphasizes the importance of universal access to health services as a key input to better health.

And the relationship goes both ways as sustainable development can also improve health. Smart strategies for transportation, housing, energy and agriculture can reduce noncommunicable diseases and diseases of poverty, as well as enhance health (for example, by promoting physical activity).

However, sustainable development policies do not automatically benefit health. “Health in green economy” opportunities have not been fully exploited. The health risks and benefits of different economic development strategies require more explicit consideration. Policymakers need to be fully informed in order to prioritize interventions that will generate greater health.

It is in this context that the use of appropriate health indicators becomes critical. Health indicators can measure the success of sustainable development

goals and support better governance. They utilize relevant and interesting metrics that can support measuring sustainable development policies and better inform decision-making processes. Rio+20 offers an excellent opportunity to engage decision makers in this debate.

Many countries showcase examples of how smart policy decisions can protect and promote the health of the people. “Green” urban transportation systems, for example, have been shown to reduce chronic disease, injuries and improve health equity (UNEP, 2012). Safe walking and cycling and rapid transit networks can reduce injury, cardiovascular disease and support healthy physical activity (WHO, 2012). Studies conducted in Shanghai and Copenhagen found that cycling to work reduced premature mortality by 30% among commuter groups (Mathews et al, 2007; Anderson et al, 2000). In addition, rapid transit and non-motorized transportation (NMT) improves access to schools, jobs and services for poor, children, women, elderly and disabled, which improves equity (VTPI, 2012).

Clean energy offers another example. The provision of clean household energy for the world’s poor is central to improving women’s and child health (WHO, 2012). This exemplifies a very clear contribution of sustainable development policies to gender equity. Access to clean household energy could avert one million deaths that occur each year, mostly among women, as a result of chronic-obstructive pulmonary disease (COPD) and cancers (WHO, 2012). It could also halve the rates of childhood pneumonia (WHO, 2012). Furthermore, access to clean household energy could reduce time spent gathering fuel and therefore promote gender equality, as well as reduce deforestation, urban air pollution and climate change emissions of methane, black carbon and CO<sub>2</sub> (WHO, 2012).

The health sector can contribute to these efforts. A study found that 21 to 59% of health clinics in six African countries did not have any electricity. Women were forced to give birth in the dark, by candlelight or by car headlights (World Energy, 2012). Five to twelve percent of the clinics surveyed in the same

six countries lacked access to clean water (defined as water from an “improved” protected well or piped source). The “greening” of health facilities could then expand coverage of maternal, child and emergency services. Small solar panels, for example, generate basic electricity for lights, maintenance of cold chain and vaccines, use of diagnostics equipment, telecommunications, and water pumps. Their installation in health clinics would help to improve access to basic primary health care and generate many health gains.

Health can help to measure the impact of sustainable development policies and strategies. It can act as an indicator of success, and, as such, provide the argument for other sectors to invest in interventions that will generate health. The health sector can lead this movement by building the evidence of the health impact of green economy strategies and innovations and by defining health-relevant goals, indicators, and tools for measuring and monitoring results. The health sector should also promote the wider use of Health Impact Assessments (HIA) in order to ensure that health is considered as an outcome of policies.

In preparation for Rio+20, a series of health indicators are being proposed as a means to measure the advancement of sustainable development. These have been linked to the critical areas defined for Rio+20; they also aim to provide examples of how to apply the “health in all policies approach.” It is expected that the use of these indicators will demonstrate the benefits of prioritizing interventions and policies that can provide major health benefits for all. Examples of such indicators include:

- Sustainable Cities: % of urban population exposed to air pollution above the recommended WHO Air Quality limits;
- Safe and Healthy transport: % of the population with access to (living within 1 km) rapid transit/public transportation; % of urban roadways with dedicated walking and cycling infrastructure;
- Energy: % of households using clean fuels/cooking and heating technologies;

- Green jobs: % of workplaces/jobs meeting basic occupational health and safety standards, including those related to air, water, exposure to chemicals and radiation, lighting and ventilation;
- Water: % of global population with access to climate resilient safe drinking water and improved sanitation;
- Food: % of population with access to healthy foods, % who are undernourished; % who are obese; % with inadequate micronutrients and dietary balance;
- Health care: % of health care facilities with access to clean energy and water supplies;
- Governance: % of large projects integrating health co-benefits considerations into their planning and implementation, e.g. through health impact assessments.

While health may not be considered as a specific topic in the Rio+20 Conference, it is essential that it is incorporated into all discussions. It is key to push for universal access to health services as an essential component for sustainable development. It is also important to make sure that health co-benefits and risks of green economy policies and investments be taken into consideration. Most importantly, it is central to promote the mainstreaming of health indicators as metrics for sustainable development monitoring and evaluation; health indicators can also act as an entry point to motivate other stakeholders to further engage in sustainable development. ■

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### Is an Investment in Health also an Investment in Development?

*Akiko Maeda, Sector Manager; Health, Nutrition and Population; World Bank*

Reducing poverty worldwide is at the core of the World Bank's mission. The World Bank aims to achieve this by providing resources, sharing knowledge, building capacity and forging partnerships in the public and private sectors.

Currently, the World Bank provides financial and technical assistance to some 100 countries in 20 development sectors through a country-driven demand business model. It supports inclusive and sustainable development through good governance, jobs creation, and by enhancing resilience and economic growth. It prioritizes assistance to the world's poorest countries and targets 50% of its international development assistance (IDA) for Sub-Saharan Africa.

While many of the World Bank's sectors incorporate health outcomes into their work, the Health, Nutrition and Population (HNP) Team is the sector dedicated to health issues. As of February 2011, the HNP portfolio included US\$ 10.6 billion committed to a total of 132 projects worldwide. HNP accounts for approximately 7% of the Bank's portfolio in net commitments.

In 2007 the HNP team revisited its strategy for improving its capacity to respond globally and with a country focus to the urgent issues posed by health challenges. The new strategy outlined the following five strategic directions (World Bank, 2007):

1. Renewed focus on HNP results;
2. Increase support for countries to strengthen and sustain their health systems to deliver better HNP results;
3. Ensure synergy between health systems strengthening and priority-disease intervention;
4. Strengthen Bank's support for multisectoral approaches to HNP results; and
5. Increase selectivity, strategic engagement, and reach agreement with global partners on the division of labor in HNP.

This new results-oriented strategy focuses deliberately on health systems and on multisectoral approaches. These are the areas in which the Bank can play a major role and better collaborate with global partner efforts to ensure aid effectiveness. The HNP strategy defines specific indicators to assess the results and successes of the Bank's investments in health system strengthening. These indicators measure results in health outcomes, financial protection, fiscal sustainability and countries' competitiveness.

The HNP strategy aims to help people live healthy and productive lives. As such, the Bank's engagement does not focus exclusively on health outcomes but also on identifying broader strategies for poverty



reduction by seeking ways in which health sector investments can contribute to poverty alleviation, both in terms of financial protection and prevention from poverty due to illnesses.

The HNP strategy also aims to improve financial sustainability in the HNP sector and to contribute to macroeconomic stability, fiscal sustainability and country competitiveness. Given the key role played by human development and poverty reduction in development efforts, the Bank's framework emphasizes investments that can lead to economic development that is both inclusive and sustainable.

Lastly, the HNP strategy incorporates a specific focus on improving governance, accountability, and transparency in the health sector. It is in this aspect that the discussion about measurement and indicators becomes relevant; it is essential to maintain agencies' and Health and Finance ministers' accountability to the Bank's programs.

Improvements in health systems can lead to better health outcomes for the population as a whole, and that in turn leads to a healthier workforce, a more productive economy, and to growth and development. Multisectoral approaches are essential in order to maintain this virtuous cycle in motion.

Health systems can contribute, if not fully, at least in part, to health outcomes. However, inefficient health systems can slow down economic growth. Decisions on how to organize health system financing have implications not only for access and efficiency of health care but on the overall economy. Currently, there is considerable room for improvements in health systems worldwide.

Such improvements require strengthening the linkages between health systems and economic development. Currently, the demographic and epidemiological transitions drive investments in health systems. It is important to ensure efficiency ("value for money") in health services. The cost of health care if not managed efficiently can become a drag on the economy.

There is great potential for the healthcare industry as countries move from primary commodities and agricultural production towards more service industries. The healthcare industry can contribute efficiently to countries' overall economic development. The structure of health systems can also affect worker's health and, consequently, their competitiveness in the labor market.

It is widely accepted that multisectoral factors affect health, environment and behaviors. As efforts to improve health systems focus on multisectoral approaches, it is important to determine how to promote those aspects that contribute to better health outcomes that will in turn contribute to economic development.

The World Bank's multisectoral investments in health adopt a life cycle approach; this implies a focus on investing in interventions that will impact the critical moments in human development that can affect economic development and growth in the long run<sup>1</sup>. For example, research has shown that nutrition in the first 1000 days of life affects learning capacity, labor productivity and risk for chronic disease (World Bank, 2012). Therefore, targeted nutrition intervention at this stage of life can generate great benefits down the line.

Adolescence is another critical transition age that has been receiving more attention recently. It is the stage when important healthy lifestyles and habits are formed and also when the highest occurrence of risky behaviors takes place (road accidents, early pregnancy, etc.) (World Bank, 2012). It is important to understand how school education and curriculum influences knowledge about safe sex, drug abuse and traffic safety. Interventions aimed at this age group require coordinated approaches. Youth unemployment, for example, is a current issue that generates great social unrest.

Those in the adult and working age group are being increasingly affected by largely preventable Noncommunicable Diseases (NCDs) which can lead to loss of income, disability, burden on household incomes, and

<sup>1</sup> The life course approach defines the following stages of human development: infancy, childhood, adolescence, adult life, and elderly age.

poverty. Countries worldwide are increasingly becoming more vulnerable to this phenomenon.

Old age is expected to become an important issue for countries in the years to come as rising health care cost becomes a great burden. It is important to focus on interventions that will promote healthy aging as opposed to focus on treating diseases of old age.

Other areas in which the World Bank is engaging in multisectoral investments for health include:

- Scaling up nutrition: a multi-sectoral approach in food security and agriculture, nutrition interventions, and education;
- Noncommunicable diseases: healthy lifestyles and prevention;
- Road accident and injuries prevention;
- Air pollution and health; and
- Climate change and public health: impact on changing patterns of communicable diseases (e.g., dengue fever).

Global economic growth is stagnating as a consequence of the current deep financial crisis. This situation coupled with a steady increase in health expenditures globally over the past decades has caused great economic concerns over competitiveness, jobs and growth. High income countries and emerging economies struggle to maintain fiscal sustainability and competitiveness while low-income countries face severe difficulties related to the sustainability of development assistance and the need to ensure additional external financing.

One of the greatest challenges in the current context of deep financial crisis is to engage multisectoral collaboration in order to develop strategic and critical ways to manage health care expenses and expand health services with limited resources, while also contributing to economic recovery and to stimulate future growth in a sustainable matter.

Currently, some great opportunities are arising to launch a global dialogue on health and the economy, such as the upcoming Rio+20 Conference. It

is key to take advantage of these opportunities and reposition health as a key contributor to economic development, as well as to deepen the understanding of the relationship between the health sector, health systems, health, and national economic development. The World Bank looks forward to partnering with developed and developing countries for research in these areas and to mark the 20 years of the landmark 1993 World Development Report “Investing in Health” (World Bank, 1993). ■

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## Environmental Health Goals and Indicators for Sustainable Development

*John M. Balbus, Senior Advisor for Public Health, National Institute of Environmental Health Sciences*

The National Institute of Environmental Health Sciences (NIEHS) is one of 27 research institutes and centers that comprise the United States’ National Institutes of Health (NIH) and the US Department of Health and Human Services. The mission of the NIEHS is to reduce the burden of human illness and disability by understanding how the environment influences the development and progression of human disease<sup>2</sup>.

<sup>2</sup> For more information on the NIEHS consult: <http://www.niehs.nih.gov/>.

As a public health institute of the NIH, the NIEHS has a primary focus on disease prevention. Its diverse portfolio highlights a variety of activities and programs supporting the NIEHS mission of promoting sustainable development and environmental health. These include intramural laboratories, clinical research programs, extramural funding programs, the National Toxicology Program, the Worker Training Program and various partnerships in environmental health issues. In addition, the NIEHS supports fundamental research on the health impacts of energy production, transportation and occupational health.

The “Zero Draft of the Outcome Document” prepared for the Rio+20 summit identified seven critical issues in need of priority attention: decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness. Health is not explicitly recognized as a “critical issue” or as a critical prerequisite or outcome measure of sustainable development. Yet, health interacts with each “critical issue” in a variety of ways. Health is the glue that holds the social, environmental and economic pillars of sustainable development together.

As the 2015 deadline for the Millennium Development Goals approaches, countries are looking to Rio+20 for the definition of a way forward. The creation of Sustainable Development Goals (SDG) is expected to be one of the main outcomes of the Rio process. Health and environmental health need to be at the heart of this debate. The definition of health and environmental health goals are essential in order to achieve concrete actions and accountability. Health indicators can play a critical role in informing decision makers and the public about progress in health and the linkages between health and sustainable development.

The goals and indicators adopted by other sectors should be informed by the evidence of the environmental health implications of policies enacted by those sectors. As part of this effort, it is important to develop a clear framework to support the operationalization of a multisectoral approach that will guide sectoral discussions and guarantee that health and environmental health concerns are taken into consid-

eration. The development of effective indicators becomes central in this debate.

Indicators play different and complex roles. They simplify and clarify aggregated information; introduce scientific data into decision-making; define and measure progress toward goals; provide an early warning system, or signal, to prevent setbacks; and foster communication on policies and values.

When properly constructed, indicators can capture the underlying complexity and drivers of the real world and highlight the linkages to the sectors that impact the issues being measured. The information generated can help to explain complex situations to the general public and to inform key decision-makers.

Indicators are utilized at multiple scales and with different purposes at the global, national and local level<sup>3</sup>. The European Union Sustainable Development Indicators (SDIs), which are used to monitor the EU Sustainable Development Strategy, offers an interesting model. It is a set of indicators based on

<sup>3</sup> Examples of current environmental health/sustainable development indicator projects include:

- European Union Sustainable Development Indicators (<http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators>);
- US National Environmental Public Health Tracking Network (<http://ephtracking.cdc.gov/showHome.action>);
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- WHO Children’s EH Indicators (<http://www.who.int/ceh/indicators/en/>);
- Commission for Environmental Cooperation (<http://www.cec.org/>);
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a hierarchical, theme-oriented framework. The ten themes, one of which is health, follow a gradient from the economic, to the social, and then to the environmental and institutional dimensions. Themes are further divided into subthemes to reflect the operational objectives and actions of the Sustainable Development Strategy. New indicators can be added in response to changes in priorities and different levels of SDIs respond to different user needs.

The hierarchical framework is oriented towards responding to user's needs. The higher levels support public communication for countries to describe their progress on important goals while the lower levels address the determinants of the indicator and allow some insight on how to put together programs and projects to achieve specific outcomes.

Eleven "headline indicators" have been identified for the ten SDI themes. These are intended to give an overall picture of whether the European Union has achieved progress towards sustainable development in terms of the objectives and targets defined in the strategy. Headline indicators are widely used with a high communicative and educational value. They are robust and available for most EU Member States, generally for a minimum period of five years.

The National Environmental Public Health Tracking Network, another good example, is a surveillance system of integrated health, exposure, and hazard information and data from a variety of national, state, and city sources for analysis and reporting purposes. The Tracking Network is the most comprehensive set of environmental health indicators in the United States. It tracks 14 areas of environmental impact on health<sup>4</sup> by following two to four outcomes, exposures and/or hazard indicators for each area.

The Tracking Network's framework incorporates measures of health and determinants of health to improve knowledge about the relationships between exposures and health effects. A key function of the Tracking Network is to explicitly communicate with stakeholders about the different aspects of the chain leading from hazard to exposures and to health outcomes. However, the system is not currently embedded in goals and in a programmatic or conceptual framework; it is a system built using a problem-by-problem approach.

The Tracking Network exemplifies the kind of system that can be developed in a society that collects lots of rich and robust environmental data. Unfortunately, this kind of system is not likely reproducible on a global scale because of the amount of environmental data that it requires. Nevertheless, it should serve as a model of how information could be collected and linked to sustainable development.

The Heat Vulnerability Index illustrates how to integrate data from different scientific fields. It is a climate change indicator that incorporates ten different components, four of those related to socio-demographic factors and three related to land use, agriculture and forestry. By incorporating these different components, the Heat Vulnerability Index can demonstrate explicit ties between the issues and different sectors. This kind of data helps to engage other sectors to work more closely with the health sector as well as to strengthen the argument for mainstreaming health goals and indicators into sectoral strategies and policies.

The World Health Organization adapted a DP-SEEA (Driving Force, Pressure, State, Exposure, Effect, Action) model for environmental health that divides impact by exposures and effects and links each to upstream driving forces, such as policies in other sectors, and to pressures and state indicators. The model illustrates what societies can monitor as well as the loop that exists between sectoral action and health (Corvalán et al, 1996).

The building of indicators needs to consider a framework to articulate how they are linked to certain outcomes and how they can be used multisectorially.

<sup>4</sup> The 14 areas of the Tracking Network are: Air quality; Asthma; Biomonitoring; Population exposures; Birth Defects; Cancer; Carbon Monoxide poisoning; Childhood Cancer; Childhood lead poisoning; Climate Change; Community Design; Community Water; Developmental Disabilities; Heart Attack; Homes; Population Characteristics; Reproduction and Birth Outcomes.

The following criteria have been proposed for the construction of effective indicators:

- Easily comprehended: for communication purposes, indicators are more useful if they are understandable and meaningful to people;
- Readily available: they should incorporate data that is collected, that have already established a baseline, and that is not hugely extensive;
- Credible and accurate: based on widely accepted accurate data with known linkage between environment and health;
- Robustly link the determinants to the outcome: with solid evidence that is incorporated into a clearly define framework that can be easily understood by other sectors;
- Linkages can be clearly communicated through a robust framework that will support the integration of health indicators in sectoral policies and strategies; and
- Actionable: related to conditions amenable to adaptive actions.

While the construction of indicators can be complex, it is important to strive for simplicity and clarity in order to be effective not only in countries that are data- and science-rich, but also to foster sustainable development for all of the countries in the world.

As we head towards Rio+20 and reflect on the creation of the SDGs it is important to define what, and how, to communicate to a diverse set of stakeholders. Having an agreement about a conceptual framework that ties all the relevant issues together would be very useful to achieve multisector integration. ■

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# Seminar 15



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## Food Security, Health and Sustainable Development

## Food Security, Health and Sustainable Development

16 May 2012

### The Food and Agriculture Organization Sustainable Crop Production Intensification: Save and Grow

*Mark Davis, Senior Officer, Pesticides Management, Plant Production and Protection Division, Food and Agriculture Organization (FAO)*

“Save and Grow” is a new approach developed by the FAO to address issues related to food security, health and sustainability<sup>1</sup>. The food and agriculture sectors face the challenge of feeding a growing population which, while doing so at a slightly slower rate, will continue to expand over the coming decades. Intensification of crop production remains the only option. However, farmers, particularly small scale farmers, face unprecedented constraints. In order to grow, agriculture must learn to save.

The “Green Revolution”<sup>2</sup>, which led to a quantum leap in food production and boasted food security globally, also (1) did not work everywhere, and (2) generated costs in terms of environmental impact and the use of natural resources that now need to be taken into account. In many countries intense agriculture has depleted the natural agricultural resource base and by doing so has jeopardized future productivity (FAO, 2011). In order to meet the demands projected over the next 40 years, farmers in the developing world must double food production by 2050 (UN General Assembly, 2009). These challenges become even more daunting by the combined effect of climate change and competition for land, water, energy.

FAO’s new paradigm “Save and Grow,” aimed at promoting sustainable crop production and intensification, is based on an ecosystem approach that ad-

vocates for the judicious use of inputs such as land, water, seeds and fertilizer. It emphasizes the need to work with the natural process to support crop cultivation in order to improve production. The adoption of the “Save and Grow” approach is expected to promote sustainable intensification of crop production that will produce more from the same area of land, while at the same time conserving natural resources, reducing the negative effects on the environment, and enhancing natural capital and flow of ecosystem services<sup>3</sup>.

Smallholder farmers comprise “Save and Grow’s” main focus. Currently, 75% of the undernourished population live in rural areas in developing countries and their livelihood depend directly or indirectly on agriculture (FAO, 2011). These include most of the world’s half billion low-income smallholder farmers and their families who produce 80% of food supply in developing countries (FAO, 2011). Together, smallholders manage and use 80% of farmland, and similar proportions of other natural resources in Asia and Africa (FAO, 2011).

Increased crop productivity is the key to increased food production, food security and income. Sustainable intensification of crop production can enhance productivity, reduce costs, build resilience against stress and strengthen farmer’s capacity to manage risk for investment. Without action to improve the productivity of smallholders, it is unlikely that the first Millennium Development Goal<sup>4</sup> could be achieved by 2015.

Farming systems offer a range of productivity, socio-economic and environmental benefits to producers and to society at large, and should be the basis for sustainable intensification of crop production. The ecosystem approach to crop production regenerates and sustains the health of farmlands and conserves agriculture practices. Farming systems foster the use

<sup>1</sup> For more information consult: <http://www.fao.org/ag/save-and-grow/> (accessed 29 May 2012).

<sup>2</sup> The Green Revolution refers to a series of research, development, and technology transfer initiatives, occurring between the 1940s and the late 1970s, that increased agriculture production around the world, beginning most markedly in the late 1960s ([www.wikipedia.com](http://www.wikipedia.com)).

<sup>3</sup> All benefits (direct and indirect) that humans receive from ecosystems. For more information: <http://www.fao.org/es/esa/pesal/aboutPES1.html>.

<sup>4</sup> The MDG 1 is “to eradicate extreme poverty and hunger” and its target 3 is “to reduce by half the proportion of people who suffer from hunger.” For more information consult: <http://www.undp.org/content/undp/en/home/mdgoverview/> (accessed 29 May 2012).

of good seed of high-yielding adapted varieties, not necessarily those that are produced by and imported from other countries, but those that promote local production and delivery systems. Farming systems can improve plant nutrition based on healthy soils, and, to the degree possible, greater dependence on natural degradation and recycling processes (rather than chemical processes), as well as efficient water management. Farming systems also promote the use of integrated pest management, which uses ecological processes rather than chemicals, to the extent possible. Lastly, farming systems promote the integration of crops, pastures, trees, and livestock.

Such systems are knowledge intensive. The policies for sustainable intensification of crop production should build capacities for intensive approaches through farmer field schools and facilitate local production of specialized tools farmer. It is essential to empower farmers with knowledge and to facilitate their direct access to the tools necessary to achieve sustainable intensification of crop production.

Soil health is another key aspect of sustainable intensification of crop production. Agriculture must, literally, return to its roots by rediscovering the importance of healthy soil, drawing on natural sources of plant nutrition, and using mineral fertilizer wisely.

Soils rich in biota and organic matter are the foundation of increased crop productivity. The best yields are achieved with a mix of mineral fertilizers and natural sources. Careful use of mineral fertilizers saves money and draws nutrients that enrich the plant and does not pollute the air, soil, or waterways.

Agricultural policies should encourage conservation agriculture, mixed crop-livestock, and agroforestry that enhance crop fertility. They should also remove incentives that encourage mechanical tillage and the wasteful use of fertilizer, and support farmers to adopt more targeted approaches, such as urea transfer and site-specific nutrient management.

Crops and varieties remain another important focus. Farmers need a genetically diverse portfolio of improved crop varieties that are suited to a

range of agro-ecosystems and farming practices while also being resilient to climate change. Genetically improved seed varieties account for 50% of the yield growth observed over the last two decades (FAO, 2011), and farmers expect the same result in the future. However, delivery systems of such varieties require increased support of genetic resource conservation, collection, and utilization. Funding is also needed in order to revitalize public plant breeding programs. Policies are needed to link formal and farmer-led seed saving systems and to foster emerging local seed businesses.

Sustainable intensification of crop production requires efficient water management through smarter, precision technologies for irrigation and farming practices that use ecosystem approaches to conserve water. Cities and industries are competing intensively with the agricultural sector for the use of water, despite pressures to reduce environmental impacts of irrigation, such as soil salinization and nitrate contamination of aquifers.

Knowledge-based, precision irrigation methods that provide reliable water application, along with reduced practice of traditional, water-intensive irrigation methods and wastewater-reuse, will be a major platform for sustainable intensification of crop production. However, this requires the formulation of policies to eliminate perverse subsidies that encourage farmers to waste water.

In rain-fed areas, climate change threatens millions of small farmers; increased rain-fed productivity will depend on the use improved, drought-resistant varieties and on the implementation of better management practices that allow water conservation.

Pesticides kill pests, but also pests' natural enemies; their overuse can harm farmers, consumers and the environment. The first line of defense is a healthy agro-ecosystem. In well-managed farming systems, crop-damaging insects can be kept to a minimum by deploying resistant varieties, preserving predator species, and managing crop nutrient levels in order to reduce insect reproduction. Some of the recommended measures against plant disease include the elimina-



tion of infected plants and contaminated planting material, as well as crop rotations to suppress pathogens.

Effective weed management entails manual weeding, minimized tillage, and the use of surface residues. When necessary, lower risk synthetic pesticides should be used for targeted control, in the right quantity and at the right time. Integrated pest management could be promoted through farmer field schools, local production of bio-control agents, strict pesticide regulations and elimination of pesticide subsidies.

In order to encourage smallholders to adopt sustainable intensification of crop production, fundamental changes are needed in agricultural development policies and institutions. First, farming needs to be profitable. Small holders must have the opportunity for gainful returns and a guarantee of reasonable prices for their crops. Some countries protect income by setting minimum prices for commodities (FAO, 2011). Other are using “smart subsidies” targeting low-income producers (FAO, 2011).

Policy makers need to devise incentives for small scale farmers to use natural resources wisely, for example, through payments for environmental services. Policies should also be aimed at reducing transaction costs of access to credit, which is urgently needed for investments. A major investment will be needed to rebuild research and to transfer technological capacity in developing countries in order to provide farmers with the latest technologies and to enhance skills through farmer field schools.

As Jacques Diouf, FAO’s Director-General stated, “we all have a stake in saving our planet and ensuring that agriculture is able to grow and meet the challenges ahead.” ■

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## Food Security and Nutrition: Trends in the American Region

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Stunting remains one of the key problems among young children in the Region of the Americas. While great variability exists among countries, the Latin American and the Caribbean Region present a 13.5% prevalence of stunting among children younger than 5 years of age, which is much higher than the prevalence of underweight children in the same age group (PAHO/WHO, 2008; Lutter et al, 2011). This indicates that rather than increases in the quantity of food, action is urgently needed towards improving the quality of young children’s diet.

At same time, the Region experiences an epidemic of overweight and obesity among adults. On average, overweight and obesity affect one in two women of reproductive age in the Region (PAHO/WHO, 2012). While more information is available about how this problem affects women, there are very alarming data on men.

Also problematic is the high incidence of anemia in young children and pregnant women throughout the Region, which is particularly exacerbated among infants 6 to 12 months of age (PAHO/WHO, 2009; PAHO/WHO, 2012). Anemia and iron deficiency at this early age is highly correlated with cognitive development in later ages (PAHO/WHO, 2012).

Stunting, anemia and overweight affects both women and children and present common overlapping risk factors related to diet. Child stunting and anemia are related to non-optimal breastfeeding, poor quality of complementary diet, and high burden of clinical and subclinical infections, particularly those that affect the gastrointestinal system. Maternal overweight and anemia, on the other hand, are related to the lack of physical activity and the consumption of a



diet rich in energy, fat and salt, while also being poor in fruits, vegetables and whole grain.

These risk factors highlight some key points such as the need to improve dietary quality and micronutrient density, and the importance of improving food safety, given that many of the infections that increase the risk for anemia are caused by foodborne diseases in young children. The overlap of risk factors leads to overlapping health consequences and a cycle of overweight generations (children, parents, and grandparents).

Worldwide data show that overweight, obesity and undernutrition not only co-exist, but also affect all economic levels. Anemia and overweight/obesity among women overlap in some low- and middle-income countries. Anemia has been found to affect all population groups, in rural and urban areas. Stunting, however, has a greater impact among the poor. Studies in 36 low- and middle-income countries found that on average 10% of households had both stunted children and overweight mothers. This trend was more exacerbated in Latin America (Garret and Ruel, 2005; Eckhardt et al, 2008).

A variety of factors influences food and nutrition security. One of them is food availability. Data from the Food and Agriculture Organization (FAO) shows a 40% excess of food production and at the same time poor quality of diet. Poverty explains the contradiction; the indigent population cannot afford a basic food basket while the poor face serious constraints in accessing available food in the Region (CEPAL, 2010).

Biological utilization refers to the ability of the organism to absorb the nutrients found in the food. Foodborne diseases plays a role in determining biological utilization; as people become sick, their bodies' ability to biologically use nutrients in an optimal way decreases, particularly among young children.

A combination of measures is needed in order to improve nutrition and food production. While the Region produces a significant quantity of food, this is mostly cash crops geared towards exportation. It is key to increase the production of fruits and vegetables

and to make these available at lower cost and accessible to the population.

Micronutrient fortification of staple foods (iron, iodine, folic acid, B-complex, vitamin A, zinc) is another essential strategy. The Region has experienced some success with iodine fortification; however, closer monitoring and evaluation are necessary in order to identify some important adjustments to these programs. Iron fortification programs are advancing based on improvements of iron compounds in increasing biological utilization. Countries that implemented folic acid fortification programs have shown a marked decline of neural tube defects on newborn. Other vitamins and minerals used in fortification programs have shown positive results as well (WHO and FAO, 2006).

Food production in the Region needs to seriously focus on reducing salt, sugar and fats of poor nutritional quality. It also needs to eliminate trans-fatty acids, which are cheap, however very implicated in the development of noncommunicable diseases (WHO, 2004).

Special attention is needed with regards to highly-processed foods. These are characterized by low nutrient density and little dietary fiber. Highly-processed foods provide excess simple carbohydrates, saturated fats, sodium and trans fats. They are also very energy dense.

Highly-processed foods are usually not consumed with or as part of minimally processed foods, dishes and meals. They are often presented as ready-to-eat and are consumed alone or in combination (savory snacks with soft drinks, bread with burgers). These changes in eating patterns are driving a lot of the problems with obesity.

National policies to address problems in nutrition are urgently needed. Examples of national policies to prevent undernutrition include conditional cash transfers; multi-sectoral policies to improve income, education, water and sanitation, and access to health services; and health sector interventions, such as complementary feeding. Brazil and Mexico, for ex-

ample, have achieved important advances in preventing stunting in relatively short periods of time with the implementation of conditional cash transfer programs (PAHO/WHO, 2010).

The Region showcases fewer examples of national policies to prevent overweight and obesity. However, this increasingly significant problem currently occupies a high place in the political agenda, for which reason more policies are expected to be developed. Some of the components that need to be taken into consideration in these policies include food import and trade policies, legislation on marketing food and beverages to children, nutritional labeling, and taxation and price policies. ■

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## Food Security, Health and Sustainable Development: Are the Current Production, Distribution and Use of Food Healthy, Safe, Secure and Sustainable in the Americas?

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Agriculture and nutrition are intrinsically linked to food safety and foodborne diseases. Health-oriented agriculture can ensure safe and nutritious food, maximize diet quantity and quality, minimize the risks of foodborne and zoonotic diseases, and add value to the food chain (Fan and Pandya-Lorch, 2012).

Foodborne diseases are related to the social determinants of food safety. They arise from a complex interaction among intermediate factors, which are more easily controlled, and structural determinants, mainly socio economic status. Three key intermediate factors for foodborne diseases include:

- Modes of food production (agricultural production and practices): These are factors re-

lated to how food is produced and that contribute to foodborne diseases, such as the use of unsafe practices to reduce production costs. Agricultural practices can contaminate fields which in turn contaminate products. Examples include the use of manure as a fertilizer or the lack of hygiene among workers. Irrigation with polluted or waste water can also result in pathogens in raw vegetables and fruit.

- Modes of food handling (poor hygiene, improper practices, inadequate environment, lack of safe water and sanitation): factors in this category are related to hand washing, properly cooked foods, and the use of safe products and adequate measures to prevent cross-contamination and to maintain food (i.e. temperature).
- Modes of food consumption (lifestyle, preferences, behavior, psychological factors): epidemiological studies conducted after the recent European outbreak of E.coli found in sprouts identified women under 30 years of age as the main population group affected (Blas and Kurup, 2010) This example emphasizes how contemporary lifestyle and consumer preferences can make certain population groups more vulnerable to certain foodborne illnesses.

Data from the Event Management System Report utilized by the World Health Organization to monitor compliance to International Health Regulations shows an increased reporting of diseases related to food safety or zoonosis, which emphasizes the importance of foodborne diseases on a global scale.

Latin America and the Caribbean are particularly affected by acute gastrointestinal illnesses (AGI). Data on disease burden in six English-speaking Caribbean countries (Caribbean EcoHealth Program unpublished) reported that the monthly prevalence of AGI related to food ranged between 4% and 10.7%. The incidence of episodes of diarrhea per person per year ranged between 0.56 and 1.4 and the average episode lasted from one to 20 days. Given the impor-

tance of tourism in the Region, the issue of AGI can adversely affect the economy of these countries.

A study conducted in Chile found an incidence of one case of AGI per person per year; in a region of 60 million people, this translates into millions of cases annually (Thomas et al, 2010). Some of the risk factors identified related to age and access to health services and to sanitation infrastructure. Children under 3 years of age were almost three times more likely to be affected than other age groups. People with no insurance, which serves as a proxy for socio-economic status, presented a 1.5 times greater probability of being affected. People who were not served by municipal sewer systems were also four times more likely to have AGI (Thomas et.al, 2010). On a population basis, these risk factors are closely related to the social determinants of foodborne disease.

A study from Cuba highlighted the influence of the environment by comparing cases occurring during the dry and rainy season. The overall proportion of AGI increased up to four times during the rainy season (Pablo et al, 2009).

Pires et al (2011) analyzed data from PAHO Regional Information System for Surveillance of Foodborne Diseases (SIRVETA) on selected outbreaks that occurred between 1993 and 2010 in the Americas. It found a particularly high prevalence of outbreaks related to salmonella and E. coli. These results allowed for the development of models to determine the sources and origins of these pathogens, and as such, the food attribution of such outbreaks. The analysis highlighted the importance of eggs and meat in increasing the risk of exposure to certain pathogens.

A small exercise with data from 13 countries in the Americas (Garcia and Perez, 2010) concluded that the cost of gastroenteritis from foodborne pathogens per person per year in the Region ranged from US\$ 20 to US\$ 600. The model estimated a cost of illness of US\$ 125 billion (US\$ 9 to US\$ 355 billion per year). The calculation considered medical costs (medical care, hospitalization, medications, secondary complications and the economic cost of lost productivity

caused by income lost due to disability) as well as working days lost due to illness.

It is important to clearly define future strategies and actions that take into consideration the variety of factors affecting food safety. Climate change and variability may have an impact on the occurrence of food safety hazards at various stages of the food chain, from primary production to consumption. Possible pathways include changes in temperature and precipitation patterns, increased frequency and intensity of extreme weather events, ocean warming and acidification, and changes in contaminants transport.

The links among agriculture, health, and nutrition are complex. Nutritious and safe food is a responsibility shared by governments, industry and consumers. A strong public-private partnership is needed in order to integrate national governments and communities and to strengthen institutions at all levels. ■

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## Agriculture, Pesticides and Public Health

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Food should cause no sickness or harm to the consumers. However, safe pesticide use policies have been largely insufficient to protect health and the environment from the deleterious effects of toxic pesticides.

The need to guarantee availability of sufficiently nutritional food at the household, community, country, continent and global levels have generated great debate about how to achieve this goal. While some argue for the use of pesticides in order to properly feed the increasing world population, others advocate for agriculture without, or with minimal use, of toxic chemicals as an efficient way to produce healthier food and, on the longer run, also more food.

The adverse effects from pesticides on the health of farmers and their families and on the health of populations living in regions with intensive agriculture are not sufficiently considered in this debate. Nor is the effect of environmental degradation in reducing their livelihood and the socioeconomic consequences of pesticide use taken into account (Tilman et al, 2002; Barraza et. al, 2011).

Currently, the agriculture sector in many parts of the world promotes extensive export monocultures, with markets dominated by multinationals. Agricultural development is generally viewed as modernization of technology implying increasing pesticide use in



developing countries (Pincus et al, 1999), with agricultural credits for small farmers often conditioned upon their acceptance of technological packages that entail heavy chemical use (Thrupp et al, 1990; Pincus et al, 1999, Saleem & Jan, 2011). Free trade policies have led to a decreased numbers of small farmers producing basic food and to an increase of import of basic food in developing countries (Food and Water Watch, 2004)

Costa Rica provides a good example. During the 1960s and 1970s, the country's shade-grown coffee was replaced by coffee varieties not grown in shaded areas and that needed high use of pesticides and fertilizers (Samper, 1999). During the 1980s, under influence of international funding agencies, agricultural development policies favored technological changes with increased use of chemicals and production for export, which led to impoverishment of small farmers (Mora-Alfaro, 1989). The country expanded its banana production during the 1990s (Corrales & Salas, 1997) and its pineapple production during the 2000s (Acuña, 2006). Studies have shown that from 1977 to 2006, importation of pesticides grew up to five times (Ramírez et al, 2009). This increase is attributed especially to the country's reliance on monoculture agriculture. The same trend is observed in other countries in Central America, where the importation of active ingredients for pesticides have increased an estimated 73% between 2006 and 2009 (Bravo et al, 2011).

Pesticide contamination of water sources, soils, air and food produce adverse health, environmental, agricultural and social effects, which in turn impact food safety. Pesticides have been associated with acute, chronic and delayed health effects which can affect current and future generations, including genotoxicity (Bull et al, 2006), cancer (Alavanja & Bonner, 2012), immunotoxicity (Voccia et al, 1999; Li, 2007), endocrine disruption (Colborn et al, 1993; Choi et al, 2004), reproductive effects (Shirangi, 2011; Windham & Fenster, 2008), metabolic disorders (Slotkin, 2011), neurodevelopmental (Colborn, 2006; Eskenazi et al, 2008), neurodegenerative (Parron et al, 2011) and psychiatric effects (London et al, 2005).

Pesticides can poison wildlife and result in the loss of biodiversity (Geiger et al, 2010), contaminate

food with residues (Curl et al, 2003; Schechter et al, 2010) and may affect the nutritional value of food (Winter & Davis, 2006). They have also been associated with the loss of beneficial insects through the elimination of predatory species and the increase of pest resistance (Jacobsen, 1997). Studies have documented the global decline of bee populations caused by neonicotinoid insecticides (Whitehorn et al, 2012). Lastly, the use of pesticides can lead to a loss of traditional knowledge about pest control and the medicinal values of plants, as well as to socioeconomic disruption leading to bankruptcies, migration, and poverty (Castro-Díaz, 2005; McDade et al, 2007).

Studies on the harmful effects of pesticides abound. Two examples of pesticide use in developing countries on an export crop, bananas, highlight the issue of toxic exposures without increased local food production or socioeconomic benefits for the exposed populations but, in contrast, permanent adverse impact on the health and quality of life of tens of thousands of exposed people and their offspring. The use of chlordecone on banana plantations in Martinique and Guadalupe between 1973 and 1993 has caused massive contamination of rivers, soil, and sediments by a substance that remains toxic for centuries and accumulates in the food chain (Coat et al, 2011). The use of DBCP<sup>5</sup> caused sterility of many thousands of banana workers during the 1970s in Latin America, Asia and Africa (Slutsky et al, 1999). Affected workers in Costa Rica have claimed that the neurologic effects are exacerbated by age and also have caused neurologic and behavioral effects in their offspring (unpublished interviews in Feb 2002).

Exposure to environmental residues of organophosphate pesticides from agricultural or household use, as well as in food residues, during peri-conception, pregnancy and early childhood have been shown to produce reproductive and neurodevelopmental effects such as low birth weight, delay in psychomotor and cognitive development, and behavioral disorders such as Attention Deficit Hyperactive Disorder (ADHD) (Eskenazi et al, 2008). Furthermore, there

<sup>5</sup> DBCP refers to dibromochloropropane.



is a demonstrated link between DDT<sup>6</sup> and childhood obesity (Valvi et al, 2012).

Laboratory studies have found that paraquat and maneb act as early promoters and latent triggers of Parkinson's disease (Roede et al, 2011). Changes in gene expression with impacts across generations have been associated with exposure to vinclozolin and methoxychlor (Price et al, 2007).

Pesticides and food safety need to be considered holistically. Pesticides do not necessarily increase food availability and wealth among small producers and subsistence farmers. Their ever increasing use on extensive monocultures generates negative impacts on surrounding populations and their environment. Consumers may also be affected by exposure to multiple residues. Pesticides constitute a public health threat for current and future generations. Food safety and food security are better served by policies that promote sustainable agricultural technologies without the use of toxic agrochemicals. ■

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<sup>6</sup> DDT refers to dichlorodiphenyltrichloroethane.

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# Seminar 16



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## Air Pollution and Sustainable Development

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23 May 2012

### Air Pollution, Health, and Sustainable Energy

*Daniel Greenbaum, President, Health Effects Institute (HEI)*

For over 30 years, the Health Effects Institute (HEI) has provided trusted, impartial, high-quality science on the health effects of air pollution<sup>1</sup>.

The organization is structured to maintain credibility and transparency in often controversial regulatory debates. It strives to create a balance between government and industry funding of its activities. It has also established an Independent Board and Expert Scientific Committees that have no sponsor or affiliation (no perceived “point of view”). All research is competitively selected by the Research Committee and a separate Review Committee conducts a thorough peer review of all results.

To date, HEI has funded over 250 studies in North America, Europe, and Asia that have produced important research to inform decisions on carbon monoxide, air toxics, nitrogen oxides, diesel exhaust, ozone, particulate matter, and other pollutants. All HEI results and data – both positive and negative – are reported. HEI science products strive to be responsive and are widely credible to global leaders.

HEI’s ESCALA study (short for “Estudio de Salud y Contaminación del Aire en Latinoamérica”), used a common analytic framework to examine the association between daily levels of air pollution and mortality in nine Mexican, Brazilian, and Chilean cities, with special attention to the impact of air pollution on breastfeeding infants and young children (results in press, expected July 2012). ESCALA also evaluated whether socio-economic status influences the relation between air pollution and mortality<sup>2</sup>.

<sup>1</sup> For more information consult: <http://www.healtheffects.org/>.

<sup>2</sup> For more information consult: <http://www.healtheffects.org/international.htm#ESCALA>.

ESCALA specifically looked at increases of premature all-cause, all-age mortality as they related to increases in PM<sub>10</sub><sup>3</sup>. The results showed an approximately 0.7% increase in mortality per each increase of 10 µg/m<sup>3</sup>. Multiple studies worldwide using the same coordinated multicity and time-series protocol focusing on PM<sub>10</sub> and gases found similar results. Examples of such studies include:

- North America and Europe: National Morbidity, Mortality, and Air Pollution Study (NMMAPS) conducted in 100 U.S. cities; Air Pollution and Health: a European Approach (APHEA), conducted in 20 European countries; and APHENA conducted in 119 cities in Europe and North America.
- Asia: PAPA (Public health and Air Pollution in Asia) conducted in four cities in Hong Kong, Mainland China, and Thailand; and two studies in Chennai and Delhi, India (all mortality from natural causes, limited adherence to common protocol due to nature of available data).

The worldwide results of these studies on daily changes in PM<sub>10</sub> and daily mortality showed that the effects of pollution are more similar than different. This broad base of data is currently being used to estimate and address health impact on many countries.

ESCALA, for example, estimated the health impact of pollution in three cities (Mexico City, Santiago (Chile), and Sao Paulo (Brazil)) using short time-series and long-term impact studies. It analyzed the health effects that could be avoided if cities met WHO Air Quality Guidelines by 2025.

The study found significant evidence of public health impact; it estimated that over the course of the next 15 years over 100,000 premature deaths and 2,000,000 cases of acute respiratory infections,

<sup>3</sup> “Particulate matter,” also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. For more information consult: <http://www.epa.gov/airquality/particlepollution/>.



which is the number one cause of childhood mortality worldwide, could be avoided if these three cities met WHO Air Quality Guidelines.

Information on the health impact of pollution can be used to inform decisions about sustainable energy choices. As part of the US Energy Policy Act of 2005, the US Congress funded a study aimed at defining and evaluating key external costs and benefits – related to health, environment, security, and infrastructure – that are associated with the production, distribution, and use of energy but not reflected in the market price of energy or fully addressed by current government policy (National Research Council, 2010).

The report concluded that the use of coal for electricity in the US caused very significant damages; it estimated that the aggregate non-climate change related damages related to air pollution resulting from coal-fired power production reached US\$ 62 million in 2005. This estimation was largely based on available data on air pollution impact and their effects on premature mortality (National Research Council, 2010). However, if recurrent plans for improving emissions were to go into effect, the damage cost would drop very significantly by 2030.

Studies conducted in relation to transportation reached similar conclusions; by considering the damages caused by both light-duty and heavy-duty vehicles, the studies estimated that the total aggregate non-climate change related damage (i.e. lives lost and other damages) caused by transportation reached US\$ 56 billion in 2005. This translated into damages per vehicle-mile traveled ranging from US\$ 0.12 to US\$ 0.17, which is the equivalent of US\$ 0.23 to US\$ 0.38 per gallon of gasoline (National Research Council, 2010).

The damage estimates did not vary significantly across fuels and technologies when considering the lifecycle, which includes the development of the vehicle and of the fuel for its operation. Some fuels and technologies such as electric and corn ethanol had higher lifecycle damages, while others, such as cellulosic ethanol and CNG, had lower lifecycle damages (National Research Council, 2010).

All together, the non-climate change related damages from electricity generation and transportation exceeded \$ 120 billion for the year 2005. These damages were principally related to emissions of NO<sub>x</sub>, SO<sub>2</sub>, and PM<sup>4</sup>. However, it is important to consider that this total was a substantial underestimate because it did not include damages related to climate change, health effects of hazardous pollutants, ecosystem effects, or infrastructure and security (National Research Council, 2010).

When it comes to air pollution, much can be done to substantially reduce damages. Examples include reducing emissions, improving energy efficiency, or shifting to cleaner methods of generating electricity. Economists argue that decisions on how much a burden should be reduced should not be based only on the size of the burden but also on the magnitude of such burden and the cost of reducing it (i.e. if the costs far exceed the burden then it may not make sense to act). Data on air pollution and health impact analysis can hopefully help to better inform our energy choices in a sustainable fashion. ■

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### **A National Perspective on Interventions on Urban Air Pollution and Health in Sustainable Development in Mexico**

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The National Institute of Ecology of Mexico has developed two important tools to support decision-making aimed at the development of environmentally sustainable cities. These include (1) a prototype of a set of indicators developed to help local authorities understand where they stand in terms of environmen-

<sup>4</sup> Nitrogen Oxide (NO<sub>x</sub>), Sulfur Dioxide (SO<sub>2</sub>) and particulate matter (PM).

tal performance, and how they can transition toward environmental sustainability; and (2) an adaptation of the methods to estimate the social benefits related to certain air pollution control measures on a national scale.

The objective of the first tool was to produce a comprehensive set of indicators to help evaluate the environmental performance of medium-sized cities<sup>5</sup> and set environmental sustainability goals for the short, medium and long terms. Indicators included eight subject areas: governance, greenhouse gas emissions, air quality, sound management of chemicals, urban mobility, waste management, water management, and land use. Within each subject area, the indicators were analyzed within two conceptual objectives:

- Environmental performance, to evaluate the measurable results of actions undertaken by the city to protect and promote the environment, as well as to prevent, reduce and mitigate the adverse effect that human settlements, productive activities and services exert upon it. This was done by examining the city's policies, regulations, objectives and environmental goals; and,
- Environmental sustainability, to examine how to redesign the strategies that are being used to meet societal needs, that allow consideration of the long-term environmental capacity to withstand the load placed on it.

Two subject areas specifically relate to air pollution: air quality and urban mobility.

The set of indicators related to air quality focused on the so-called criteria pollutants, such as PM<sub>10</sub> and ozone. When computed these indicators allowed the determination of the cities' environmental performance in air quality (where it stood) and their potential for environmental sustainability (where it should tend to go). Based on this information, a strategy was defined in order to achieve the policy direction of reducing air pollutant concentrations to achieve the

levels specified in the National Ambient Air Quality Standards of Mexico and, in the longer term, to meet the WHO Air Quality Standards.

The application of the set of air quality indicators highlighted, for example, that while many cities had air quality monitoring stations, they did not know how to interpret the data collected. This finding emphasized the need to familiarize national authorities with the basic knowledge related to air quality standards in order to support the cities' transition towards more sustainable models.

In the topic of urban mobility, researchers looked into the different types of transportation systems offered by the cities. The aim was to encourage cities to offer more non-motorized mobility modes and high capacity, accessible, clean, safe and efficient public transportation. A comparison of the distribution of trips by transportation modes was conducted with certain European cities in order to show how Mexican cities could improve their sustainability performance. The policy direction proposed aimed to increase the number of trips using non-motorized mobility modes and public transportation, and to reduce the use of private vehicles<sup>6</sup>.

The second tool aimed at supporting the development of the Mexican regulation on fuel emissions standards for light-duty vehicles.

A few years ago, the National Institute of Ecology worked with Petróleos Mexicanos (PEMEX) to assess the health benefits that would be associated with reducing levels of sulfur in gasoline and diesel and adopting the best available vehicular technologies for emissions control. A projection of the health benefits of using low sulfur fuels and new technologies from 2008 to 2040 (combined gasoline and diesel) estimated that 46,000 premature deaths and 279,000 cases of chronic bronchitis would be avoided, generating a total benefit of US\$ 17,232. A cost-benefit analysis found a 2.1 net benefit related to the use of low-sulfur fuels and new vehicular emissions control technologies. Overall, the cost-benefit analysis emphasized much larger benefits for low-sulfur diesel fuels due to diesel's greater con-

<sup>5</sup> Medium-sized cities were defined as cities with more than 500,000 and less than 1.5 million inhabitants.

<sup>6</sup> For more information consult: <http://www.ine.gob.mx/>.

tribution to particle emissions (Instituto Nacional de Ecología-Petróleos Mexicanos, 2006; 2008)

Mexico is currently working on legislation to regulate fuel efficiency and to define standards for CO<sub>2</sub> emissions. Mexico is trying to develop a fuel efficiency standard for light-duty new vehicles that is comparable to that of more developed countries such as the United States and Canada.

While such legislation does not directly affect pollution and the health effects of air pollutants, it offers an important opportunity given the increased worldwide attention on the reduction of CO<sub>2</sub> and greenhouse gas emissions. Fuel economy standards would not only result in the reduction of emissions of greenhouse pollutants, but also would reduce emissions of other pollutants that impact human health. Conceptual models that show how different kinds of pollutants are related to health impacts can help policy makers consider the importance that fuel efficiency standards would have in the health of populations and cities throughout the country.

Regulations to improve light-duty vehicle environmental performance are related to emissions reductions of conventional pollutants, which need to go hand-in-hand with the improvement of fuel quality by reducing sulfur levels. Also, these regulations may target fuel economy improvements of vehicles, which is strongly associated with CO<sub>2</sub> emission reductions. The Mexican government is working on standards related to light- and heavy-duty vehicles. For heavy duty, vehicles health benefits may be expected to be greater, given the relationship with emissions control of particulate matter. ■

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## Urban Transport and Climate Change

*Dinesh Mohan, Volvo Chair Professor Emeritus, Transportation Research and Injury Prevention Program, WHO Collaborating Centre. Indian Institute of Technology Delhi, India*

It is commonly thought that carbon dioxide (CO<sub>2</sub>) emissions are a problem related with high income countries. Carbon dioxide emissions are generally discussed in terms of countries' CO<sub>2</sub> emissions per capita, and by that standard, low-income countries like India rank very low, while high income countries such as Australia, Canada, and the United States, rank high. However, this argument might change if researchers consider CO<sub>2</sub> emission per capita within countries. In India, for example, CO<sub>2</sub> emission produced by the poor people is very low; emissions produced by the Indian middle-class remain comparable to the levels produced by the lower end of European countries; yet, the Indian rich produce as much CO<sub>2</sub> as Western European countries (Mohan, 2010).

Such data highlight the fact that climate change, global warming and CO<sub>2</sub> emission should be understood not only as a country issue but also as a class issue. Worldwide, rich people produce more CO<sub>2</sub> than the poor. Therefore, when defining global strategies to reduce CO<sub>2</sub> emissions, it becomes clear that rich and middle-class people in low- and middle-income countries cannot be excluded based on country averages; they will have to reduce their energy consumption as much as people in high income countries.

The effectiveness of new technologies to reduce CO<sub>2</sub> emission will be affected by the increase in ownership of vehicles due to increases in income. Adopting new technologies and fuels will not be enough to control emissions. These need to be coupled with changes in transportation systems. A study conducted by the London School of Hygiene and Tropical Medicine and Indian Institute of Technology Delhi estimated the per capita carbon dioxide emissions for different types of transport between 2010 and 2030 (Woodcock, J. et al, 2009). The data emphasized that major differences in CO<sub>2</sub> emissions could be achieved by the use of more active travel modes (walking, bicycle and public transport); these benefits could be

maximized by an approach that combined more active travel with the use of new technologies.

Much has been said about the need to develop public and rapid transportation systems for clean air. However, most transportation policies that rely on rapid transit and metros result in positive feedback, that is, they encourage people to travel more and farther. The result is that the net effect of rapid transport, even if it is public transport, is high energy cost (Mohan, 2009).

In order to produce clean air, public transportation systems should be based on shorter trips and provide negative feedback for long trips, such as with fares based on distance and average speed from door-to-door around 15 to 20 km/h. Such systems should also promote the use of less polluting transportation modes (walking, cycling), and public transport that is available close to home and work and that requires minimum infrastructure and uses low-emission vehicles.

When discussing the issue of walking, cycling and public transport, lifecycle costs should be considered. A study from the University of California Berkeley assessed lifecycle emissions for different passenger transportation modes (Chester and Horvath, 2008). It found that in train-based systems (both surface and underground), only 25% of energy cost is produced by movement, while 75% of energy cost is produced by the infrastructure required by these systems (concrete, steel, etc.). Buses, in comparison, produced very low CO<sub>2</sub> emissions due to the lower lifecycle cost of infrastructure required.

When comparing the infrastructure cost of train and well-functioning bus systems, underground metro produced more CO<sub>2</sub> emissions, particularly in systems where electricity came from gas and coal parts produced by power stations. In such systems, while the city may produce lower emission, this is offset by the emissions produced by the power stations which causes a higher environmental impact at the regional, country and international level (Chester and Horvath, 2008).

Very few cities in the world experience low car use. Hong Kong and Tokyo are some of the exceptions. Availability of parking seems to be one of the determinants of car and motorcycle use. The more parking available, the more people are willing to use their cars and motorcycles. Most big cities in the developed world show an average of 50% in private transport use (Mohan, 2008).

Studies conducted in middle-size cities in Europe, however, found that cities that had low personal transit use were those that had high walking and cycling rates (Mohan, 2010). Very efficient transportation systems did not clearly result in less use of private cars and motorcycles; the main factor affecting increased use of public transportation seemed to be the availability of efficient and safe walking and cycling facilities. Such findings lead to the conclusion that people by choice will not use public transport if the walk to the bus stop is not safe in terms of both accidents and crime. This emphasizes the need to invest in safe roads as one of the preconditions for controlling global warming.

These findings lead to the discussion about cities' infrastructure and design. Data has shown that one-way streets produce 30% more CO<sub>2</sub> emissions due to increased travel. Studies from Europe show that the total amount of CO<sub>2</sub> emission in any specific area is directly proportional to its road area (Reckien, D et al, 2007). Therefore, CO<sub>2</sub> emissions could be controlled by controlling road area in a city.

Lifecycle costs of transportation systems point to surface systems as the way for the future. New technology (internet and computer systems etc.) combined with more efficient fuels have the potential to make such systems very effective and optimized, giving people the same mobility and volume than other systems. Solutions to transportation systems need to be health-driven, not contractor- or business-driven.

The latest evidence available indicates that in order to dramatically reduce CO<sub>2</sub> emission, cities need to have restriction on the space dedicated to traffic (Reckien et al, 2007), invest in high density and low speed public transportation systems (Murphy, 2009;



Crozet, 2009), and rethink their urban design with a focus on constructing cities with narrower streets and shorter blocks, which reduces speed, increases safety and promotes the use of public transportation (Mohan, 2008; Zhao et al, 2009). ■

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## The Challenge on Air Pollution and Sustainable Development from the Ministry of Health of Chile

*Victor Berrios, Chief Air Quality Surveillance Network*

Chile enjoys a high human development index (HDI) score of 0.80 and has lowered its unemployment rate to levels below 7%<sup>7</sup>. Wages have been growing about 6% annually, which exceeds inflation by more than 2.5% (Central Bank, 2012). Infant mortality is low for the Region, being comparable to that of more developed countries, and is accompanied by low birth rates (PAHO, 2012).

The Chilean mining industry continues to expand strongly and now accounts for 15% of national GDP, 17% of tax revenues and 60% of exports<sup>8</sup>. Electricity demand is expected to grow in the coming years. As of 2009, the mining industry accounted for 37% of electricity consumption in the country, followed by industrial and residential use, with 28% and 16%, respectively.

Chile is highly dependent on fossil fuel. Over 42% of its energy production is based on crude oil. Considering all energy sources (42.7% crude oil; 20.5% wood; 16% coal; 12% natural gas; 8.7% hydroelectricity; ~1% alternative sources), the sectors with the largest energy consumption are

<sup>7</sup> According to Tomas Flores, Minister of Economy; article published in national newspaper available at: <http://www.latercera.com/noticia/negocios/2012/12/655-500886-9-ministro-s-de-economia-destaca-tasa-de-desempleo-en-medio-de-dificil-escenario.shtml> (cited 22 February 2013).

<sup>8</sup> See Presidential message at: [http://www.gob.cl/media/2012/05/Mensaje-Presidencial\\_2012\\_OK.pdf](http://www.gob.cl/media/2012/05/Mensaje-Presidencial_2012_OK.pdf)  
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transportation (35%) and industry (21%)<sup>9</sup>. Forty-one percent of vehicular transport is concentrated in the metropolitan area of Santiago<sup>10</sup>.

Chile has established legal frameworks and norms to support development and environmental health. This includes a National Health Plan for 2011 to 2020 and Chilean Air Quality Standards, among other environmental health standards.

The *Red Oficial de Monitoreo de Calidad del Aire de la Region Metropolitana* (Official Network for Monitoring Air Quality of the Metropolitan Region), reinforces compliance with environmental health standards in the metropolitan area of Santiago. Data collected in 2011 indicated a decrease in air pollution in the metropolitan region; however, levels have not yet reached the established PM<sub>2.5</sub> standard. The number of days per year with critical levels of PM<sub>10</sub> in Santiago has decreased sharply, dropping from 79 in 1997 to 13 in 2010. No critical emergency event has occurred in Santiago since 2010 (SEREMI, 2010).

While health indicators have shown a decrease in the incidence of respiratory illnesses between 1990 and 2009, deaths related to tumors have increased significantly; this is very concerning given that these events can be related to air pollution (Ministry of Health of Chile, 2011.)

Since the 1992 Earth Summit in Rio de Janeiro, Chile has engaged in a variety of initiatives aimed at implementing broader institutional and representative citizen participation in decision-making processes. It established a Sustainable Development Council that has greatly contributed over the years to the generation of agreements and consensus at high political levels over social, political and environmental matters. The Sustainable Development Council spearheaded the consolidation of Chile's sustainable development model which was developed in close collaboration with organized citizens

in order to allow public policies to achieve a high degree of social legitimacy.

However, Chile still faces important challenges in the control of air pollution and promotion of sustainable development. Some of the health-related challenges include the need to reduce mortality from acute respiratory infections, promote health protective factors, and prevent and reduce risk factors. Health policies aim to address the underlying social and economic determinants of health and to promote a healthier environment in order to address the root causes of environmental threats to health. Investments are being made to improve institutions by strengthening governance, financing, staffing, information, infrastructure and management. Efforts are also being put in place to reduce the health consequences of emergencies, disasters, crises and conflicts, and to minimize their social and economic impact.

In parallel, initiatives are being developed in the economic and environmental sector to address the issue of pollution in Chile. These include investments in the workforce and in clean technology innovations, development of stricter standards, and strengthening Regional partnership and collaboration in energy-related issues.

The recovery of air quality in urban centers is one of the major challenges to be assumed by the newly established Ministry of Environment. The main line of actions defined to tackle this challenge includes the development and implementation of the "Clean Air Program", aimed at improving air quality in cities by focusing on the reduction of PM<sub>2.5</sub> through a combination of strategies that include decontamination plans, implementation of control measures, technology and equipment replacement programs, environmental awareness campaigns, and establishment of incentives for low and zero emission vehicles. ■

<sup>9</sup> Cited by presenter: Elaboration of information published by the National Energy Commission (CNE), 2010: [http://antiguo.minenergia.cl/minwww/opencms/14\\_portal\\_informacion/06\\_Estadisticas/Balances\\_Energ.html](http://antiguo.minenergia.cl/minwww/opencms/14_portal_informacion/06_Estadisticas/Balances_Energ.html).

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### Estimating the Health Cost of Environmental Pollution

*Juan Carlos Belaustenguigoitia, World Bank Environmental Economist*

Since the 1970s, environmental economics has grown to become one of the most important branches of economics. It combines traditional welfare economics and the theory of economic growth with more recent perspectives on political economy and sustainable development. Its central tenets are that environmental problems are caused by the failure of economic systems to maximize human welfare, that environmental quality is important for human welfare and that the traditional objectives of economic growth can be reached with suitable policy interventions.

In order to define the World Bank's support to countries in issues related to the environment and

management of natural resources, between 2005 and 2010, a series of Country Environmental Analysis<sup>11</sup> were conducted in Colombia, El Salvador, Guatemala, Peru, Honduras, Nicaragua and Ecuador. The analyses provided useful information to help identify policy priorities (by establish common measurement units) to support a better allocation of government efforts.

In terms of health costs, the Country Environmental Analysis examined health damages caused by air (both indoor and outdoor) and water pollution. The costs were calculated using data related to mortality, morbidity, and avertive costs. The costs of health-related damages caused by these three forms of pollution were calculated as percentages of each country's Gross Domestic Product (GDP). The results indicated, for example, that the health-related cost of air pollution was equivalent to 0.80% of Colombia's GDP, 0.90% of El Salvador's, 0.95% of Guatemala's, and 0.90% of Peru's. Particulate matter (PM) had the largest health impacts, both due to the costs of associated mortality and associated morbidity

The World Health Organization (WHO) estimates that 1.7 million deaths and 4.4 billion cases of diarrheal illness occur each year (Lopez et al 2006); 90% of diarrheal illnesses are caused by inadequate access to water and sanitation and lack of hygiene (Lopez et al 2006). According to the Country Environmental Analysis, the health costs<sup>12</sup> related to inadequate access to water and sanitation and lack of hygiene as percentages of countries' GDPs stood at 1% for

<sup>11</sup> Country Environmental Analysis (CEA) is a diagnostic analytical tool that helps to evaluate systematically the environmental priorities of client countries, the environmental implications of key government policies, and countries' capacity to address their environmental priorities. The aim of CEA is to provide the analytical underpinning for sustainable development assistance. It has the potential of bringing together the results of environmental, economic, and sectoral work and facilitate dialogue, both within a country and among development partners. For more information consult: [www.worldbank.org](http://www.worldbank.org).

<sup>12</sup> These costs were calculated based on: diarrheal mortality in children under-5 years; diarrheal morbidity in children and adults; avertive behavior (based on bottled water consumption, water boiling cost, and water filtering cost).

Colombia<sup>13</sup>, 1% for El Salvador<sup>14</sup>, 1.6% for Guatemala<sup>15</sup>, and 1.1% for Peru<sup>16</sup>.

While Latin America and the Caribbean is a highly urbanized area, millions of people still live in rural communities that are deeply affected by indoor air pollution resulting from the use of solid fuels, such as wood, charcoal or coal, for indoor cooking and heating, inefficient stoves and bad ventilation. The WHO estimates that indoor air pollution causes approximately two million deaths each year worldwide<sup>17</sup>. In terms of percentages of GDPs, the Country Environmental Analysis estimated that the health-related cost

of indoor air pollution<sup>18</sup> remained at 0.20% in Colombia's, 0.85% in El Salvador, 0.95% in Guatemala, and 0.40% in Peru.

Finally, the Country Environmental Analyses also ranked by cost different policy interventions to manage the three forms of pollution. Estimating the cost of health damages caused by environmental pollution and evaluating policy interventions is essential to establish environmental policy priorities. In addition, this work may be useful to convince Treasury officials of the economic importance of addressing pollution problems. ■

<sup>13</sup> For more information: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20951827~pagePK:148956~piPK:216618~theSitePK:244381~isCURL:Y,00.html>.

<sup>14</sup> For more information: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:22148372~pagePK:148956~piPK:216618~theSitePK:244381~isCURL:Y,00.html>.

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<sup>18</sup> These costs were calculated based on population using solid fuels; odds ratios - the ratio of the odds of disease for those with some exposure to the odds of disease for those without the exposure; baseline for Chronic-obstructive pulmonary disease (COPD) and acute respiratory infection (ARI) incidence.

# Seminar 17



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## Sustainable Development and Health Promotion



## Sustainable Development and Health Promotion

30 May 2012

### Sustainable Development and Health Promotion: Towards the Eighth World Conference on Health Promotion in Helsinki, June 2013

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Public health issues are increasingly affecting sustainable development. The Rio+20 Conference offers an excellent opportunity to catalyze action that will benefit both public health and sustainable development.

Global public health is rapidly transitioning worldwide. Chronic diseases, particularly cardiovascular diseases (CVD), are the leading health problem in industrialized countries. They are increasingly becoming the main killers among developing countries as well.

Data on the global burden of diseases highlights the overwhelming role of four major Noncommunicable Diseases (NCDs) – cardiovascular disease, cancer, chronic respiratory disease, and diabetes – as the major causes of deaths around the world. While the world still faces critical challenges related to other health problems such as HIV/AIDS, tuberculosis, and malaria, NCDs account for more than 60% of worldwide mortality nowadays. They affect people in all classes in low-, middle-, and high income countries, and constitute a growing social and public health problem (WHO, 2005).

To a great extent, the emerging global epidemic of NCDs arises as a consequence of lifestyle changes related to diets, declining physical activity and increased tobacco use. The determinants of these changes include urbanization, changes in occupations, population ageing and other global influences. Of particular concern is the fact that these risks in-

creasingly affect lower socio-economic groups of the population, which adds to problems of poverty and suffering.

Extensive scientific research conducted in the last decades has shown that, from a medical point of view, NCDs are to a great extent preventable (WHO, 2011a). Much can be done to prevent lifestyle-related risk factors (in the areas of tobacco, diet, physical activity, and alcohol). Lifestyles are greatly influenced by the social, economic and physical environment and these in turn are amenable to policy changes.

From a public health perspective, NCD prevention pays off. At the individual level, successful prevention means avoidance of diseases and related costs, promotion of health and well-being, and healthy ageing. For the society and the nation, prevention can result in reduced disease burden, control of health care costs, increased productivity and a promotion of sustainable and favorable socio-economic development. Globally, preventive action allows for greater and far-reach action to improve public health in low- and middle-income countries, especially through primary health care.

Finland offers a great example of the preventive potential of timely public health action. Like other European countries, Finland experienced tremendous war- and postwar-related hardships. While the population enjoyed a relative increase in living standards, these were accompanied by major increases in CVD with extremely high CVD mortality (Puska, 2002).

In 1972, a pioneer community-based preventive program was launched in the North Karelia region, which was the most affected by the great burden of CVD in the country. Risk factors identified by prospective studies closely linked certain behaviors to the health problems experienced by the population (Puska, 2002). These were deeply enrooted in the community and society, which pointed to the need to build community interventions through the establishment of community structures and the promotion of community organization and changes (Puska, 2002). The project later moved on to promote national action and policy changes.



The North Karelia project and others similar projects implemented in Finland demonstrated that lifestyles, risk factors and NCD rates can change through sustained, preventive public health action. In the early 1970, Finland's diet was heavily based on saturated fats, such as butter, and salt, with low consumption of vegetables. Data from Finland's National Institute for Health and Welfare shows that between 1972 and 2002, consumption of butter fell sharply. This was mostly achieved by promoting the substitution of butter for margarine. This trend was also observed at the national level, with per capita consumption of butter declining from about 16 kg/person/year in 1955 to close to 2 kg/person/year by 2005 (Puska, 2009).

Sustained and comprehensive health promotion initiatives and policies are credited to generating important health benefits to the Finland population over the last four decades. Data from 1960 estimated that close to 60% of the adult male population in Finland smoked (Finland National Institute for Health and Welfare, 1986). Currently, tobacco consumption in Finland stands among the lowest in Europe.

Between the 1970s and 2005, the country experienced an 80% decreased incidence of premature mortality from coronary heart disease among males aged 35-64 (Puska, 2009). The same data points to reductions of 56% in all-cause mortality, 75% in all cardiovascular mortality and 53% in all cancers. It is estimated that these results contributed to a gain of 10 healthy years among the Finnish population.

Public health action at the national level has gone far beyond the reorientation of health services. An emphasis on intersectoral collaboration and in the incorporation of a "health in all policies" approach has resulted in the development of key agricultural and nutrition policies. Examples include subsidies for the development of the Finnish rapeseed oil and changes in subsidies rules to promote the reduction of the fat content in cow's milk (Puska, 2009).

Industries and the private sector responded accordingly to these policy changes. A leading Finnish biscuit manufacturer has considerably reduced the fat content of its product by eliminating all trans-

fats and substituting others for rapeseed oil (Puska, 2009). Another important Finnish meat company has, since 2007, agreed to greatly reduce the use of salt and saturated fat in their products. Such changes have resulted in great dietary improvements for the population as a whole and mark a major achievement for public health.

Prevention targets the most important risk factors at the population level in order to address the root cause of risky lifestyles for NCD. According to WHO, the four main types of NCDs (CVD, cancer, diabetes and chronic lung disease) are largely preventable by means of effective interventions that tackle modifiable risk factors such as diet, physical activity, alcohol and tobacco (WHO, 2011b). This indicates that instead of vertical disease program, public health action should target these major behavior risk factors and their determinants in order to impact population health.

Worldwide attention to NCD has increasingly gained attention in the past few years. The WHO has emphasized NCD as one of its priorities and has developed a plan of action and an integrated, preventive approach to decrease NCD incidence. The cornerstones of the WHO Global Strategy for NCD prevention and control includes: (1) attention to behavioral risk factors (tobacco use, unhealthy diet, physical inactivity, harmful use of alcohol); (2) monitoring and surveillance of risk factors and diseases, and preventive actions; and (3) redirection of health services towards prevention and chronic care model (WHO, 2011b).

Comprehensive action is needed at all levels. Governments have a basic responsibility for public health and should strive for constructive partnerships for NCD prevention with health services, local governments, civil society (NGOs), the private sector, the media, and international stakeholders.

Many entry points for NCD prevention have been identified (diseases, risk factors/lifestyles, determinants). During the last few years a great number of strategies and plans for evidence-based, effective prevention and health promotion have been produced. It

is time to focus on the implementation of integrated and multi-level approaches that will generate sustainable public health development.

New evidence has demonstrated the effectiveness of global instruments for influencing NCD-related lifestyles and for counteracting the negative social consequences of globalization. Examples of global instruments include the 2003 WHO Framework Convention on Tobacco Control (FCTC)<sup>1</sup>; 2004 WHO Global Strategy on Diet, Physical Activity and Health<sup>2</sup>; and the 2010 WHO Global Strategy to Reduce the Harmful Use of Alcohol<sup>3</sup>.

Low -and middle-income countries deserve special attention and coordinated global action to reverse negative trends and to take effective action for NCD prevention and control. Major issues for supporting positive and sustainable socioeconomic development include advocacy, the development of global instruments and global agreements, agreements on global financial decisions, and the establishment of effective monitoring and reporting systems.

Health is an essential part of sustainable social development. Public health interventions can help break the vicious cycle of disease and poverty and support the reduction of inequities within and between populations. It is important to build societies with strong economies and good public health; this requires going beyond the control of health costs and addressing issues related to the availability and capacity of the workforce and the functional capacity of a growing elderly population.

Many favorable developments have taken place in the field of NCD lately. In April 2011, the WHO held the First Global Ministerial Conference on Healthy Lifestyles and Noncommunicable Disease Control in Moscow, which resulted in an important resolution

for necessary actions on NCDs<sup>4</sup>. The United Nations High Level Summit on NCDs in New York (September, 2011), represented an unprecedented opportunity for high level political support and action on global NCD prevention and control<sup>5</sup>. These set the platform for major action on NCD prevention and global health in the years to come.

The WHO leadership is key to mobilize global partners. It is essential to strengthen global instruments as well as national and global monitoring systems. The need to allocate development resources for NCD prevention cannot be overlooked.

These and other key issues will be discussed during the 8<sup>th</sup> Global WHO Conference on Health Promotion, which will be co-hosted by WHO and the Ministry of Social Affairs and Health of Finland, and held in Helsinki, Finland, on June 2013<sup>6</sup>. While the theme of the conference is “Health in All Policies,” discussions will emphasize the “how” and will seek to build on the New York Political Declaration on NCD and the Rio Declaration on the Social Determinants of Health<sup>7</sup>.

It is expected the presence of 800 invited participants representing different levels of Member State governments, UN and international organizations, civil society and international financial institutions and foundations. Representatives from health and other sectors relevant for health determinants, such as education, environment, employment, agriculture, trade, transportation, housing, finance, foreign and development policy, will also be invited.

<sup>1</sup> For more information: <http://www.who.int/fctc/about/en/> (accessed 7 June 2012).

<sup>2</sup> For more information: [http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy\\_english\\_web.pdf](http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf) (accessed 7 June 2012).

<sup>3</sup> For more information: [http://www.who.int/substance\\_abuse/activities/gsrhua/en/index.html](http://www.who.int/substance_abuse/activities/gsrhua/en/index.html) (accessed 7 June 2012).

<sup>4</sup> The Moscow Declaration can be downloaded from: [http://www.who.int/nmh/events/moscow\\_ncds\\_2011/conference\\_documents/moscow\\_declaration\\_en.pdf](http://www.who.int/nmh/events/moscow_ncds_2011/conference_documents/moscow_declaration_en.pdf) (accessed 7 June 2012).

<sup>5</sup> The Political Declaration can be downloaded from: [http://www.who.int/nmh/events/un\\_ncd\\_summit2011/political\\_declaration\\_en.pdf](http://www.who.int/nmh/events/un_ncd_summit2011/political_declaration_en.pdf) (accessed 7 June 2012).

<sup>6</sup> For more information: [http://www.stm.fi/en/ministry/international\\_cooperation/who/healthpromotion2013](http://www.stm.fi/en/ministry/international_cooperation/who/healthpromotion2013) (accessed 7 June 2012).

<sup>7</sup> For more information: [http://www.who.int/sdhconference/declaration/Rio\\_political\\_declaration.pdf](http://www.who.int/sdhconference/declaration/Rio_political_declaration.pdf) (accessed 7 June 2012).

Good health promotion and public health work are essential for sustainable health development, which in turn, is essential for sustainable development for all. ■

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## Health Promotion Meets Sustainability: The (Healthy Public) Policy of Food

*Ilona Kickbusch, Director of Global Health Program, Graduate Institute of International Studies and Development (IHEID); Chairman, Global Health Europe*

In the 21<sup>st</sup> century, the goal of governance should be to achieve healthy and sustainable development. This requires moving away from a “silo” approach towards a “sustainable systems” approach. In many cases, the best choices for health are also the best choices for the planet; and the most ethical and environmental choices are also good for health. Nevertheless, building a bridge between the health promotion and the sustainable development agenda remains an important challenge.

Sustainable development has been defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987). The definition incorporates two key concepts: (1) the concept of “needs,” in particular the essential needs of the world’s poor, to which overriding priority should be given; and (2) the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

Health promotion, on the other hand, has been defined as “the process of enabling people to increase control over, and to improve, their health.” It proposes that health is created in the context of everyday life; that means that health is part of the social dynamics of social organization, lifestyles and patterns of consumption, but also (and this is frequently neglected) part of the interaction with the bio-physical environment. Health promotion focuses particularly on the social determinants of health and the capabilities and empowerment for health (WHO, 1986).

Both concepts share important similarities: a commitment to equity within and between societies and between generations, the responsible use of natural and societal resources, and policy approaches that recognize the interdependence between sectors with accountability for impact.

Moreover, health promotion and sustainable development are both normative concepts which aim to bring about a significant paradigm shift in how societal development is understood; they aim at nothing less than to redefine the interface of society with biological and ecological systems. Both concepts also aim for achieving transformative change in society and propose new governance mechanisms and future orientation.

The concept of sustainable development incorporates three main pillars, namely, the social, economic, and environmental pillars. How to establish the link between these three pillars and public health has been the subject of very active discussions among public health agencies worldwide. The Public Health Agency of Canada (PHAC) has developed an interesting model that places human beings and communities at the center of the intersection and as the basis for health and sustainable development action (PHAC, 2006).

This notion of sustainable health development based on humans and communities is a powerful one at a time in which the world experiences important unsustainable processes. These include the ageing of societies without real health gains, the rise of the first generation of children with a lower health and life expectancy than their parents (Olshankly, 2005), dysfunctional health systems organizations and financing mechanisms, the threat of global infectious disease and pandemics, and increasing health inequalities.

The issue of food and nutrition offer an excellent example of the systemic nature of the challenge. Food and nutrition refers not only to behavior and eating, but also to the overall structure of food systems. An unsustainable system of consumption and production has led to a global health crisis with two dimensions: a growing epidemic of obesity concomitant with persistent problems of poverty and hunger (The Lancet, 2012).

The promotion of a more sustainable, healthier, and more equitable food system is a primary public health goal and key to the environmental agenda. From a public health and health promotion perspective, the long standing concern with nutrition and diet must be widened to an approach that is concerned with the food system in its many dimensions (FAO, 2012a), from food production to distribution and waste management. It is key to look into ways to re-establish equity through policies and sustainable food systems.

On those lines, the American Public Health Association (APHA) proposed an interesting concept of “sustainable food systems,” defined as one that “provides healthy food to meet current food needs while maintaining healthy ecosystems that can also provide food for generations to come with minimal negative impact to the environment.” According to the APHA, “a sustainable food system also encourages local production and distribution infrastructures and makes nutritious food available, accessible, and affordable to all. Further, it is humane and just, protecting farmers and other workers, consumers, and communities” (APHA, 2007). This definition incorporates a long-term view of food systems that is critical for health promotion.

The present food economy does not deliver enough food to major parts of the growing world population and the number of people lacking access to food has risen (FAO, 2009). For many people in the developing world, food and water are not safe (FAO, 2012b). Undernutrition is responsible for more than a third of all deaths of children under the age of 5 and there is an increase in child poverty in the developed nations (FAO, 2012a). Climate change is also expected to hit the poorest countries hardest (WHO, 2009).

The current food system promote increased food intake, non-healthy foods, and together with physical inactivity have led to “*obesogenic societies*”. Furthermore, it creates the paradox in which malnutrition and obesity often exist side-by-side.

The present food system delivers low cost food at a high cost to the environment and to human and animal health. Today, the entire food system is highly vulnerable to global fossil fuel depletion resulting from the industrialization of agriculture. The envi-



ronmental effects of different dietary patterns are significant. Meat production is a powerful contributor to negative environmental impacts, particularly in relation to the use of energy and water. Healthier diets could save millions of lives every year and support the environment (Kickbusch, 2006).

A healthier food system requires changes in the way food is produced and consumed. The governance for sustainable food systems require:

- Value-base and ethics: a commitment to human rights, equity and sustainability;
- Horizontal governance: multi-level interactions (i.e. local/national/ international/global) and multi-actor involvement - both formal and informal – based on an accepted set of rules, procedures, processes, and widely-accepted behavior; and
- Integrated policy approaches: the formulation and implementation of policies in response to issues related to food, health and the environment.

Nevertheless, in health as in the environmental debate there is a tendency to individualize the issues at stake and policies tend to focus on changing individual's behavior. At the same time, in a market economy, people are constantly being encouraged to consume more, making behavior changes difficult. It is important to make the healthy/green choice also the easier choice. This requires working concomitantly at various fronts: public policy, market mechanisms and consumer empowerment. It also requires a better understanding of how governments can protect the population and of the role of the private sector in pushing society into this increased consumption (Barber, 2007).

Health promotion must make the promotion of healthy and sustainable food systems a priority so that healthy and sustainable diets become possible. Governments need to develop an “overarching vision” for food which identifies the roles of all players in the food chain and provides detail of what changes are expected, and how success will be measured. Cross-government strategies for food with both the health and sustainability aspects identified are also essential.

A recent study by the Sustainable Development Commission (SDC, 2009) highlighted the changes that were more likely to have the most significant and immediate impact on making diets more sustainable, in which health, environmental, economic and social impacts were more likely to complement each other. These were reducing consumption of meat and dairy products, reducing consumption of food and drink of low nutritional value (i.e. fatty and sugary foods) and reducing food waste. All imply significant societal, environmental and economic challenges and significant conflicts, particularly with producers.

Some countries offer good models of sustainable food policies. A recently enacted food policy in the United Kingdom specifically focuses on the need to define an environmentally sustainable diet, the need for the government to set an example via public procurement and the need for a strategy to increase production of fruit and vegetables. It includes provisions to guarantee that consumers are provided with more information on the environmental and social impacts of their food purchases and reinforces that the government should design a sustainable diet based on evidence from health, economic and environmental sources.

Another great example is that of the Swedish National Food Administration's policy for “Environmentally-smart Food Choices.” The Swedish National Food Administration was the first national food agency to build a new set of guidelines that considers the environmental aspects of human food choices alongside individual health matters. It specifically states that “Meat – beef, lamb, pork and chicken – is the foodstuff with the greatest impact on the environment.” On cooking fat, the policy advises to reduce palm oil which has the greatest impact on the environment, and to opt for more olive oil and rape oil. It also encourages the consumption of fish and shellfish from stable stocks, and that has shown to have been fished or farmed sustainably. Nevertheless, the European Commission has asked for a revision of the policy because the recommendations to eat locally produced food were found to contravene principles of free movement of goods with the European Union internal market (USDA, 2009).

It is important that consumers become aware of how certain types of products and eating traditions can



contribute to unsustainable environments. A study conducted by Scientific American (2009) compared the CO<sub>2</sub>-equivalent emissions of producing certain food to the amount of CO<sub>2</sub> emission produced from driving. It found, for example, that the production of half pound of potatoes produced as much CO<sub>2</sub> as a car driving for 0.17 miles while the production of the same amount of beef resulted in emissions equivalent to a 9.81 mile drive. The study concluded that industrial animal production consumes especially large amounts of energy, requiring 35 calories of fossil fuel to produce one calorie of food energy—not counting the energy required for processing, packaging, cold storage, and transportation of meat (Scientific American, 2009). As such, meat production contributes to global warming.

A relatively recent movement promotes the implementation of taxes on low nutrition food as a healthy public policy strategy. Examples include the “fat tax”<sup>8</sup> and taxing higher sugar value. This new area of action is building on the experience of taxing tobacco products.

Reducing waste is another essential area of action for health promotion. It is key to focus not only on what people eat but what they do with food. In the US, for instance, as much as 30 percent of food, worth some USD 48.3 billion, is thrown away each year (Lundqvist, J., C. de Fraiture and D. Molden, 2008). In 2007, the city of San Francisco prohibited city departments and agencies from purchasing single service bottles of water and required that they switch from large bottle dispensers to bottle-less dispensers that use the city’s tap water. The directive highlights the wastefulness and unnecessary drain of environmental resources caused by the production, transport and disposal of bottled water.

Local authorities have increasingly engaged in the development and strengthening of local food policies. The Chicago Food Policy Advisory Council<sup>9</sup>, for example, oversees municipal regulation, monitors progress and provides oversight in areas such as urban agriculture, nutritional standards, food business, food security, among other food policy-related areas for

the city. Such initiatives help to establish the links between health and the environment and support the development of a strong Healthy Cities movement.

Food policy could well be the next frontier of global politics championed by the international civil society. As Professor Jules Pretty of University of Essex (UK) once stated, “the most political act we do on a daily basis is choosing what to eat.” Eating habits and actions that support unsustainable consumption make people go hungry. Unhealthy behavior, malnutrition and hunger in unsustainable agriculture need to be addressed.

Health promotion needs to address important challenges. One relates to how to develop policy goals that can contribute to addressing the major challenges facing humankind such as food, water, fuel, changing consumption patterns, climate change and the environment. Health promotion also needs to identify which strategies can help to achieve a high level of complementarity and integration between health and the environmental, economic and social impacts. Lastly, it is key to develop a conceptual framing and common language to help move a shared agenda forward. ■

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# Seminar 18



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## Agenda for Social Determinants of Health

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6 June 2012

### Health, Social Justice and Sustainability

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While the three pillars of sustainable development have been identified as the economic, environmental, and social context, throughout the years, greater emphasis has been placed on the first two pillars, especially when it comes to addressing issues such as climate change. Nevertheless, the social determinants and health equity remain vital to the sustainability agenda.

Health inequities, namely systematic and largely avoidable inequalities in health, exist within and between countries. Within countries these health differences run from top to bottom of the socioeconomic spectrum, that is, the lower an individual's socioeconomic position the worse their health; this is commonly referred to as the social gradient in health. This global phenomenon is observed in low-, middle- and high income countries. The social gradient in health means that health inequities affect everyone.

A between country comparison of trends in life expectancy highlights how investments in social and educational policies can result in remarkable changes in population health. In the early 1950's life expectancy in Vietnam and Zambia were very low, ranging between 40 and 45 years of age for both sexes. By 2005, as a result of sustained investments in social and education programs, Vietnam experienced a significant increase in life expectancy, which now reaches 75 years of age, while the situation has remained the same in Zambia during this same time period. Costa Rica showcases another notable example; there, a focus on social and educational policies has been associated with an increase in life expectancy from 55 to 77 years of age between 1955 to 2005 (UN DoEaSA 2011).

Despite health improvements seen in many countries, health inequities persist. One implication of the social gradient is that action should be taken across the whole of society, not only on the worst off. A comparison of data on under five mortality per 1,000 live births by wealth quintile across countries, for example, showed that the bottom quintile in India had lower child mortality than the four bottom quintiles in Uganda (Dwatkin, 2007). If actions to tackle health inequalities focused only on the poorest of the poor, what about the second top quintile in Uganda? Actions should aim to improve everybody's health, not only the worst off. The goal should be that under five mortality rates throughout the world are comparable to that of high income countries, among which the average stands at 7/1000 live births.

The social gradient applies to all major causes of death, not only to those related to degrees of destitution as is the case with under five mortality. Non-communicable diseases offer one example. A study on cardiovascular deaths in Porto Alegre, Brazil, reported that premature mortality (deaths below the age of 65) was 2.6 times higher in lower compared to higher districts classified by socioeconomic factors (Bassanesi et al, 2008). The distribution of premature deaths in Porto Alegre followed a gradient, with people of working age in poorer districts more affected by cardiovascular disease.

Another example is that of Argentina, a middle-income country, where Fleischer et al. (Fleischer et al, 2008) used cross-sectional data from a 2005 national risk factor survey to investigate the associations of individual- and area-level socio-economic status with chronic disease risk factors (body mass index (BMI), hypertension, and diabetes) among residents of Buenos Aires. BMI and obesity were inversely associated with education and income for women. Low education and income were also associated with increased odds of hypertension diagnosis in all adults. Area-level education also showed an inverse relationship with BMI and obesity.

These studies point to a global trend toward concentration of risk factors in poorer populations. They highlight the urgent need to incorporate the social



determinants of health (SDH) into the noncommunicable disease agenda. Progress on tackling risk factors such as obesity, alcohol, and smoking can only be achieved by direct action on the social determinants of health and social inequalities.

Stark health inequities are not biologically determined. The final report of the WHO Commission on the Social Determinants of Health outlines the main actions that need to be taken in order to close the health equity gap in one generation: address social justice, empower people, and create the conditions for people to take control of their lives (Commission on Social Determinants of Health, 2008).

Climate change adds urgency to take action on the SDH. It is estimated that by 2030 the world's population will rise from over six billion to eight billion, demand for food will increase by 50%, for water will rise by 30%, and for energy will increase by 50% (Beddington, 2009).

A recent report on the future development of a strategy to tackle health inequalities in England (UK Sustainable Development Commission, 2010) highlighted substantial evidence that unsustainable development is damaging the natural environment which increases risks to health for all social groups, with low-income groups being most vulnerable to its detrimental effects. According to the report, "if we are to reduce health inequalities and tackle climate change, we need a new political approach, built around the insights of sustainable development, in which everybody has equal chances to flourish, within the bounds of finite ecological resources and an expanding global population" (UK Sustainable Development Commission, 2010).

Progress towards the Millennium Development Goals can point to the direction we need to go in order to effectively address the social gradient in the post-2015 agenda. Trends in the use of improved drinking-water sources between 1990 and 2010 as well as projected to 2015, indicate great improvements in access to drinking water globally (UNICEF and WHO, 2012). However, quality and safety of drinking water sources is still an issue.

A closer look at data from sub Saharan Africa shows that the region has achieved only 61% coverage in access to safe drinking water (UNICEF WHO, 2012). Information on the access to piped drinking water coverage in sub Saharan Africa broken down by wealth quintiles and urban or rural areas uncovers striking socioeconomic and urban/rural inequities. Furthermore, issues of water and sanitation are closely linked to issues of gender. Water collection still remains a burden of women, particularly in Africa (UNICEF WHO, 2012). Piped water supply could make a huge difference to women's lives. These issues cannot be addressed solely as engineering or economic problems; they are social and political problems, and as such require political will in order to be properly addressed.

The Globalization Knowledge Network of the WHO Commission on Social Determinants of Health examined issues of equity, for example, by looking at water pricing in Johannesburg, South Africa (GKN, 2007). It found that the existing subsidy structure favored richer consumers and allowed overuse. Such findings point to the need to review economic incentives in the direction of equity. In the case of Johannesburg, the ideal tariff structure should favor adequate subsidized supply to poorer consumers with disincentives for higher use (GKN, 2007).

Women's empowerment is critical in order to improve the social and economic determinants of health. The Self-Employed Women's Association (SEWA)<sup>1</sup> represents the poorest and marginalized women in India who make a living on US\$ 1 to US\$ 2/day and who live in informal settlements, slums and shantytowns. SEWA spearheaded a community developed initiative aimed at improving the housing and infrastructure conditions and overall living environment of SEWA members (South East Asia Regional office WHO, 2008). The Parivartan Program focused on improving the basic physical infrastructure within the slums and in the homes; promoting community development; and mobilizing city-level organization for environmental upgrading of the slums.

<sup>1</sup> For more information consult: <http://www.sewa.org/>.

The investment in slum upgrading resulted in important health benefits such as a marked decline in waterborne disease. In addition, as a result of the program children started going to school, and women were able to take paid work, no longer having to stand in long lines to collect water. This was achieved at a cost of only US\$ 500 per household, of which community contributions amounted to US\$ 50 per household.

The Final Report of the WHO Commission on the Social Determinants of Health (Commission on Social Determinants of Health, 2008) placed the global cost of slum upgrading at less than US\$ 100 billion. This could be financed on a shared basis by international agencies and donors, national and local governments, and household themselves helped by micro-credit schemes. Although high, this is not an unachievable amount. Countries worldwide have managed to mobilize an estimated US\$ 9 trillion to bail out the banks in the recent financial crisis. Such amount could have provided clean water and housing to millions of people around the world. The challenges related to mobilizing the resources to address health equity issues highlight the socio-political nature of the problem.

Social empowerment remains key for sustainable development. Community empowerment is instrumental in and of itself, as it promotes the empowerment of individuals and families to have control over and to lead a flourishing life. In addition, it enables and supports monitoring of progress at a local level.

The sustainability agenda also needs to address neglected tropical diseases by (1) addressing water, sanitation and household-related factors; (2) reducing environmental risk factors; (3) improving health of migrating populations; (4) reducing inequity due to socio-cultural factors and gender; (5) reducing poverty; and (6) setting up risk assessment and surveillance systems (Aagaard-Hansen and Chaignat, 2010).

There is considerable overlapping of risk factors among communicable, noncommunicable diseases, and other priority health issues affecting populations across the world. Such overlapping reinforces the argument for combining agendas for action. This can

be illustrated by a study that looked into the relative risk, prevalence and population attributable fraction of selected downstream risk factors for tuberculosis in 22 high burden tuberculosis countries (Lönnroth et al, 2010). The study found that a sizeable proportion of tuberculosis cases in these countries were associated with malnutrition, diabetes, alcohol use and active smoking. These same risk factors are also variously associated with noncommunicable diseases and child mortality.

Data show that countries with similar levels of national wealth (GNP per capita) can have very different rates of child stunting (UNESCO, 2011). Under-nutrition in children is associated with cognitive deficits (Walker et al, 2007) and stunted children are at risk of not achieving their full development potential (Grantham-McGregor et al, 2007). Stunting rates can also vary dramatically within countries. Prevalence of moderate or severe wasting, underweight and stunting in children 0-59 months in India differ greatly when comparing the most deprived with the best-off districts (Naandi Foundation, 2011).

While reduction of social and income inequalities can help to improve health equity, this may not happen fast enough. A second, more direct strategy is to break the link between low social position and poor health by intervening directly on the most vulnerable population. Some Eastern European countries that have low GNP and low stunting rates are examples of the potential of such targeted strategies (UNESCO, 2011).

Indigenous groups have worse health and lower life expectancy than the general population in all countries where data exist (CSDH 2007). Australia, for example, currently ranks as the 3<sup>rd</sup> country in the world in the Human Development Index (HDI), however, if the Australian aboriginal population were to be considered as a separate country, they would rank at 102<sup>nd</sup> in the HDI. Life expectancy at birth for Indigenous men in Australia stands at 67.2 years, which is 11.5 years less than the current life expectancy for non-indigenous men; the life expectancy for Indigenous women of 72.9 years is 9.7 years less than that for non-indigenous women in Australia (Australian

Institute of Health and Welfare, 2011). In Canada and New Zealand, Indigenous people also experience lower life expectancy than the non-indigenous population, although the life expectancy gap for indigenous people in Canada and in New Zealand is less than in Australia (Australian Institute of Health and Welfare, 2011).

Health inequities affect populations in all countries, regardless of income level. Analysis of age-standardized mortality rates for broad cause groups by sub-district in Cape Town (Groenwald et al 2008; Mayosi et al 2009) found that injuries and NCD, from a numerical point of view, were much more important than HIV/AIDS and other communicable diseases in overall mortality, in all districts.

A multi-country comparison of women's obesity rates (Monteiro et al, 2004) looked at the social distribution of women's obesity by years of education in developing countries according to level of economic development. The study found that for most upper-middle income economies and a number of the lower-middle income economies, obesity among adult women was more prevalent among women with fewer years of education, in effect fueling health inequities. Concerted national public action to prevent obesity is necessary in an ever expanding list of developing countries, as well as in high income countries.

Women's education seems to play a key role in improving health equity. The Kerala region in India, where sustained efforts have been put in place to improve women's education and nutrition, presents much lower rates of child mortality and stunting when compared to other regions of the country (IIPS, 2007). This is one example of how women's empowerment can make an enormous difference in the health of future generations.

Health and the distribution of health are markers of a societal well-being. Health inequities cannot be properly addressed without concerted economic, social and political action. This implies collective action on a variety of areas such as health, education, employment, trade, transport, environment, housing, and welfare, among others.

Addressing the three pillars of sustainable development (economic, social and environmental context) and incorporating health in all policies have been emphasized as key approaches to improve health equity. However, that might not be enough if the issue of wealth distribution is not properly addressed. Nowadays, countries including Greece and Spain are pursuing austerity policies that do not fully consider the negative social, economic and health effects of unemployment.

Unemployment has been associated with poor mental and physical health, particularly among people in a lower socio-economic position. A study from England conducted in the aftermath of the economic downturn of the 1980s that looked into the relationship between unemployment and mortality identified the social gradient of mortality among unemployed men aged 16-64: those in lower classes presented higher mortality rates (Moser et al, 1990; Bethune, 1997).

Studies in Europe have made important contributions to understanding the effects of economic changes on health. Analysis by Stuckler et al (Stuckler et al, 2009) of the associations between changes in employment and mortality, and how government social spending modified these associations across 26 European Union countries between 1970 and 2007 showed that a 1% rise in unemployment was associated with a 0.8% increase in suicides at ages under 65 years, a 0.8% increase in homicide, and a 1.4% decrease in road traffic deaths. The study reported no effect on all-cause mortality.

Government policies can mitigate the adverse effects of unemployment on mental health. Stuckler et al (Stuckler et al, 2009) found that each extra US\$ 100 per capita on social spending reduced the effect on suicides by 0.38% through active labor market programs, by 0.23% through family support, by 0.07% through improved healthcare, and by 0.09% through unemployment benefits.

Thinking about health inequities and sustainable development has highlighted the importance of preventing the perpetuation of health inequities from one generation to the next. The WHO Commission on the

Social Determinants of Health has strongly emphasized the need to invest in intra-generational equity; however, it is now clear that what happens in this generation has a dramatic impact on the next generation.

Kelly et al (Kelly et al, 2011) used data from the UK's Millennium birth cohort study to look into the socio-emotional difficulties affecting children at ages 3 and 5 years according to the socio-economic status of the parents. The social gradient was clearly seen in this analysis, with the children of parents of lower SES presenting higher socio-emotional difficulties. However, the study went one step forward and calculated a "parenting score" which combined a series of measures related to the parent-child relationship, parenting competencies and skills and family rules: the "parenting score" accounted for half of the social gradient (Kelly et al, 2011.)

Such findings emphasize the need to reduce society's inequities in order to address early childhood inequities as well as to break the link between socio-economic inequities in one generation and inequities in the next generation. Progress may be achieved, for example, by increasing spending on preschools and early childhood and parent support programs.

The Institute of Health Equity reported indicators for health and social inequalities in England, based on a ranking of local authorities according to an index of deprivation (Institute of Health Equity, 2012). According to these data an average of only 59 percent of children in England were reaching a good level of development at age five.

Countries that ranked highly on UNICEF's Report Card on Equality in Child Well-being (UNICEF, 2010) were those that have a clear concern with the quality of early childhood development. Ensuring conditions for good child development across all parts of society is key to sustainable development.

Brazil has experienced improvements in health and social conditions in recent years. Victoria et al, (Victoria et al, 2011) reported a decrease in childhood stunting prevalence in Brazil across all family income quintiles since 1974 and a flattening of the social gra-

dient in stunting prevalence. The decline in stunting prevalence from 1996 to 2006/7 was explained by increased maternal education, increased spending power among the poorest, expansion in maternal and child health services and improvements in water supply and sanitation.(Victoria et al, 2011) These results emphasize how a commitment to action can create great improvements in short periods of time. Brazil set a notable example with the establishment of a National Commission on the Social Determinants of Health<sup>2</sup> which had a clear commitment to take action on improving health and equity.

Similar initiatives can happen at all levels – local, national and regional. And taking action on the social determinants of health is a matter of social justice.

The main principles for action on the social determinants of health include: (1) adoption of values that incorporate social justice, sustainability, and health equity; (2) political will at highest level of government; (3) working with partners across sectors; (4) empowerment of individuals and communities; (5) community participation; and (6) monitoring progress.

Rio+20 offers an important opportunity to feed into the discussion on what the MDGs will look like after 2015. The Millennium Development Goals do not address noncommunicable diseases or the social determinants of health. By considering mostly country averages, the MDGS also do not tackle issues of distribution and disparities. It is key to incorporate these aspects into the discussion in order to firmly plant the idea that health equity is also a development outcome. ■

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*late adolescence and effects are reduced by psychosocial stimulation*. *J Nutr* 2007;137(11):2464-9.

### **The Brazilian Perspective on Rio+20 and its Link to the World Conference on Social Determinants of Health**

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Two important world events have helped to set the platform for the Rio+20 Conference: the World Conference on the Social Determinants of Health<sup>3</sup> (Rio de Janeiro, October 2011) and the 65<sup>th</sup> World Health Assembly (WHA) (Geneva, May 2012)<sup>4</sup>.

The World Conference on the Social Determinants of Health convened more than 1,200 people who represented 130 countries and all WHO Regions. Ministers of Health from 65 countries, along with a diverse set of stakeholders from social and economic sectors, came together to build support for the implementation of action on social determinants of health. The landmark event resulted in the adoption by participating Member States of the Rio Political Declaration on Social Determinants of Health<sup>5</sup>.

The Sixty-fifth session of the World Health Assembly discussed a number of public health issues such as universal health coverage, noncommunicable diseases, mental disorders, nutrition, the Millennium Development Goals, adolescent pregnancy, polio eradication, financing of research and development, International Health Regulations, and the WHO re-

<sup>3</sup> or more information consult: <http://www.who.int/sdhconference/en/> (accessed 18 June 2012).

<sup>4</sup> Social determinants of health: Outcome of the World Conference on SDH (Rio de Janeiro, Brazil, October 2011). Available at: [http://apps.who.int/gb/ebwha/pdf\\_files/WHA65/A65\\_16-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA65/A65_16-en.pdf) (accessed 15 July 2012).

<sup>5</sup> The Rio Political Declaration on Social Determinants of Health expresses global political commitment for the implementation of a social determinants of health approach to reduce health inequities and to achieve other global priorities. It is expected that the Declaration will help to build momentum within countries for the development of dedicated national action plans and strategies. For more information consult: [http://www.who.int/sdhconference/declaration/Rio\\_political\\_declaration.pdf](http://www.who.int/sdhconference/declaration/Rio_political_declaration.pdf) (accessed 18 June 2012).

form process. Member states highlighted universal health coverage as the most important aspect of equity. Following the recommendation of the WHO Executive Board, the 65<sup>th</sup> WHA endorsed the Rio Political Declaration on social determinants of health.

These two events along with the Final Report of the WHO Commission on the Social Determinants of Health (CSDH, 2008) established the proper global platform for dialogue on how the recommendations of the WHO Commission on Social Determinants of Health (2008) could be taken forward.

The current WHO Reform for a Healthy Future<sup>6</sup> further contributes to efforts to improve equity and advance the social determinants of health agenda. The WHO Reform focuses on implementing changes in three main areas of the organization's work: programs and priority setting, governance, and management. It also established five categories of work: communicable diseases; noncommunicable diseases; health through the life-course; health systems; and preparedness, surveillance and response.

Member States emphasized the need for WHO to increase attention to the social, economic and environmental determinants of health and requested the Secretariat to demonstrate how these will be given priority in the next draft of the Organization's XII General Program of Work 2014-2019 which will be reviewed at the year's Regional Committee Meeting, and submitted for final approval to the 66<sup>th</sup> WHA (2013).

Brazil released a statement during the 65<sup>th</sup> WHA on the WHO Reform. The statement emphasized that the process must be guided by a strategic vision for

WHO and noted that "the health and well-being of all peoples must be the driving force, not disease." Brazil remarked its concern with the weakening of "health and development" as a strategic objective within the Organization. It highlighted the importance of the relationship between health and sustainable development, as well as WHO's critical role in this area.

The current draft of the WHO General Program of Work (GPW) includes equity, social justice, human rights and the determinants of health as general principles and values. While important, this is not enough. The pursuit of equity cannot be only rhetoric.

Brazil proposed the creation of a new category on the draft GPW entitled "Health, Determinants and Sustainable Development." Within this category, guidelines and activities would be established in order to address, support and provide guidance on these topics to the various WHO areas, other UN agencies and to Member States; monitor trends and evidence; and engage with the academia.

WHO needs adequate human and financial resources as well as an appropriate institutional framework to pursue this important and strategic task. Strengthening the issue of "health, determinants and sustainable development" within the institution is even more relevant as we approach 2015 and decisions are made as to how to follow-up on the MDGs and on the development of the Sustainable Development Goals (SDG).

The SDH, MDGs and SDGs are intrinsically linked and complementary. The SDH approach implies the reduction of socio-sanitary inequities through inter-sectoral action. The MDG offer a valuable but only partial approach to address the SDH. The SDG, on the other hand, tend to address only the environmental pillar of sustainable development.

Some of the current challenges of working with these approaches in an effective manner include (1) how to conclude the MDG in a successful way; (2) how to connect the MDG and the SDG; and (3) how to take the SDH into consideration in the new set of SDG.

<sup>6</sup> The WHO Reform for a Healthy Future aims to be better equipping the Organization to address the increasingly complex challenges of the health of populations in the 21st century, from persisting problems to new and emerging public health threats. The Reform process is Member State-driven and inclusive. It aims to improved health outcomes, with an emphasis on: (1) refocusing core business to address the 21st century health challenges facing countries; (2) reforming the financing and management of WHO to address health challenges more effectively; and (3) transforming governance to strengthen global health. For more information consult: <http://www.who.int/dg/reform/en/index.html>.

The United Nations is working on a new global agreement on the MDG and the SDG for implementation post 2015. Within this framework, it is concerning that the current WHO's GPW 2014-2019 does not include a discussion on "SDH, Health and Development." In order to adequately align the MDG and the SDG it remains central to develop health objectives that are related to development and social equity as well as to establish the proper conceptual and methodological framework.

It is also key to combine political, technical and advocacy actions at the global level, to mobilize civil society and to reinforce health and the social pillar within sustainable development during the Rio+20 discussions.

In 2006, Brazil established its National Commission on the Social Determinants of Health, which supported actions on health equity at the national level<sup>7</sup>. Currently, the FIOCRUZ National School of Public Health's Center for Studies, Policies and Information on SDH supports government and civil society activities for promotion of health equity through the production and dissemination of knowledge and information, and personnel training and evaluation of policies and programs of action on SDH.

Brazil has experienced important economic and health advances in the past decades, which can be attributable to the establishment of public policies aimed at addressing inequalities. Brazilian Gross Domestic Product (GDP) has doubled between 1990 and 2011 and its GINI coefficient, while still among the world's highest, fell from 0.637 to 0.519 (Neri, 2012). Poverty rates decreased from 68% (1970) to 16% (2011), partly due to the Social Security Welfare System, increases in minimum wage, and the "*Bolsa Família*" conditional cash transfer program which attended to 13.3 million families during 2011 (Neri, 2012).

Brazil has also greatly improved housing, water and sanitation access and infrastructure. The country's Universal Health Coverage provides health care and

primary health care free of charge to all. Important family health strategies have also been implemented.

There have also been some important advances in the area of environmental health. Brazil has reduced its deforestation rate, has improved its strategies to maintain biodiversity and is making key investments in the development of biomass and hydroelectricity. The *Bolsa Verde* program currently provides cash transfer to poor families living in fragile environments (Amazon forest and other).

However, some important challenges remain. These include a still strong dependence on fossil fuels, insufficient development of wind energy, inadequate control of waste industry, air pollution in big cities, and the use of pesticides that affect worker's health and the quality of the food.

It is key for Brazil to more effectively coordinate national and sub-national governance for sustainable development, environment and health. It is important to build on the successes of economic and social policies that have been put in place and that have been proven effective to address the SDH. Policies and social movements should be coordinated to avoid the current fragmentation of efforts. Another important effort relates to the implementation of better control measures and restructuring of health services. Lastly, it is central to implement stronger health regulations related to environmental hazards such as air pollution, water and sanitation, and pesticides. ■

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WHO Commission on the Social Determinants of Health (CSDH). (2008). Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva, World Health Organization. Available at: [http://whqlibdoc.who.int/publications/2008/9789241563703\\_eng.pdf](http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf) (accessed 16 June 2012).

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<sup>7</sup> For more information consult: [www.dssbr.org](http://www.dssbr.org) (accessed 18 June 2012).

# Annexes



## I. Toolkit Rio+20

## II. The Making of the SDE Seminar Series Towards Rio+20



# Annex I

## TOOLKIT RIO+20

The Toolkit Rio+20 is a tool that selects products and services from the VHL information network to form a historical basis of scientific evidence, to articulate social networks to support the production, exchange and dissemination of information, and adds new information and knowledge to the network through the organization of thematic seminars relevant to the United Nations Conference on Sustainable Development (UNCDS), Rio+20. The Toolkit continues to be updated with topics related to the implementation of the Rio Declaration on Sustainable Development, “The future we want,” and the discussion about the sustainable development goals and indicators.





**METHODOLOGY**

The methodology used to build the Rio+20 Toolkit was shaped by three main components: (1) a content network, which includes a literature review on issues of Agenda 21 and the organization of the framework documents by timeline, (2) the dissemination of information with a web site, positioning in social networks, and the generation of the Rio+20sd@listserv.paho.org listserv; and (3) the organization of a series of seminars that generates content for the web site and expands and strengthens social networks in support of the Sustainable Development agenda.

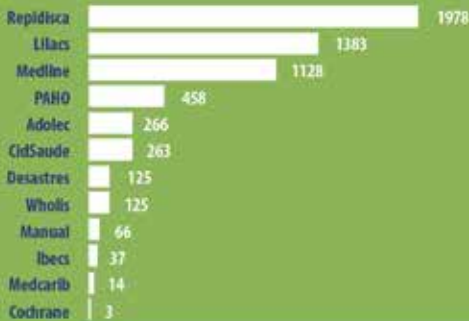
**CONCLUSIONS**

The Rio+20 Toolkit is a model that adds value to the processes of building collective knowledge. This model has strengthened ties between SDE and all PAHO working Areas, with PAHO/WHO Collaborating Centers, and with major stakeholders in the area of sustainable development and health, and has contributed to the informed participation of the decision-makers of the countries in the Region of the Americas and the Caribbean in the Rio+20 Conference.

EDITION OF COUNTRY EVIDENCE



EVIDENCE IDENTIFIED BY DATABASES



TAGS TOOLKIT TOPICS



SOCIAL NETWORKS AND DISSEMINATION



# Annex II

## THE MAKING OF THE SDE SEMINAR SERIES TOWARDS RIO+20

Creativity and virtual collaboration played a very important role in the development and dissemination of the PAHO Seminar Series in preparation for the UN Sustainable Development Conference - Rio+20. Blackboard Collaborate, a web-based conferencing platform, previously known as Elluminate Live, served in these occasions not only to facilitate the broadcasting of the entire series but, also to allow remote simultaneous interpretation services in English and Spanish.

The virtual communication platform allows telephony integration that enables to conduct audio with other participants by a combination of Voice over IP (VoIP) or telephony conferencing, while continuing to use the computer for all other features, or just to participate in the audio portion of the sessions. When the speakers preferred, or could only participate, via telephony conference, or teleconference, due to problems accessing the Internet, they were still fully integrated into the sessions and their participation was also captured in the recordings.

This feature was also used for the simultaneous interpretation services. The seminars included a moderator and some participants situated at PAHO Headquarters in Washington, D.C., while the interpreters were located in El Paso, Texas and some of the guest speakers in different parts of the world. For every seminar, there were two virtual sessions established on the Blackboard Collaborate platform, one session

for each language, English and Spanish. Simultaneously, there were two calls generated at the PAHO's teleconference system, each of them integrated into the corresponding Blackboard Collaborate session.

The technique permitted to connect an interpreter to a Blackboard session of one language, and to the teleconference call of the other. While listening and watching what was being presented in one language via Blackboard Collaborate, the interpreter translated into the other language, transmitting via teleconference. This permitted participants to attend the sessions in the language of their choice.

First thought as an experiment, this method is now embodied in PAHO's general practice for knowledge sharing and communications, being used constantly by different areas and for different purposes. The costs are relatively low compared to alternatives, and there is less pressure related to the participation of eminent speakers, as the seminars were short, and their commitment did not involve any travelling or great changes in their agenda. The implementation did require some hands-on practice and synchronization between the organizing and facilitating entities, and in general, prior communication testing with the speakers. The availability of the recorded seminars on the PAHO Toolkit Rio+20 is an added value because it amplifies the impact of the seminars, as they remain available as an indexed resource for anyone with access to Internet.



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