





A gente se encontra aqui

THE RIO CLIMATE CHALLENGE RIO CLIMA 2013





# THE RIO CLIMATE CHALLENGE (RIO CLIMA) 2013 Rio de Janeiro, October 28-29, 2013

The Rio Climate Challenge (RCC) 2013 meeting, dedicated to low-carbon economy issues, was held on October 28-29, in Rio de Janeiro, with participants from the public and private sectors, academia, NGOs, and multinational organizations. The meeting was organized with the support of the Climate Change and Foreign Affairs and National Defense Commissions of the Brazilian Congress, the city government of Rio de Janeiro, FIRJAN (Federation of Industries of the State of Rio de Janeiro) and OAS.

The RCC is a policy and action-oriented think tank that aims to involve multiple stakeholders to support the UN negotiation process as well as explore other forums in the effort to contain carbon emissions below 450 ppm in 2050 and limit global warming to 2oC by the end of the century. To achieve this target, it is increasingly clear that we will need to go beyond the UN process, complementing policy formulation and commitments through bilateral agreements and involving multiple economic agents in implementation. While most climate change think tanks focus on scientific aspects, the RCC's ambition is to influence the politics of climate change in the dozen or so main greenhouse gas (GHG) emitting nations, including decision makers in the private sector.

The RCC 2012 began as a side event of the Rio+20 Conference and produced five recommendations to promote the transition to a "green economy", complementing the proposals under discussion in the context of the UNFCC/COP process. In 2013, the meeting further developed these recommendations, focusing on three key elements of the transition to a low-carbon economy: the removal of energy subsidies and low-carbon tax reform; the establishment of a new international economic order (a "green New Deal"); and the development of appropriate indicator(s) of economic performance, social well-being and sustainable growth.

During the brainstorming some significant recommendations/suggestions were formulated by the participants. These were not submitted to any kind of deliberation process since this was not the purpose of the meeting and all participants attended as individuals, not representing their institutions or firms. Nevertheless they will be mentioned as contributions to the UNFCCC and other international and national climate change-related decision making processes.

# Session 1 Energy subsidy reform and carbon taxation: Policy design and implementation.

Energy subsidy reform: Lessons and implications

Masahiro Nozaki, Fiscal Affairs Department, International Monetary Fund

The results of a recent report produced by the IMF, covering data from 176 countries, highlight that they are an issue in practically all countries (advanced economies included). Although admittedly difficult to promote subsidy reform, some lessons have been learned in recent years from 28 cases in 22 developing countries. The study considered petroleum products, electricity, natural gas, and coal. Subsidies for renewables were not examined.





Beyond aggravating budget deficits, energy subsidies depress growth and exert pressure on the balance of payments of net energy importing countries; they intensify climate change by pushing energy consumption; and while subsidies benefit mostly the rich (who are the biggest consumers of energy), their removal can have a large impact on the poor (including through inflation).

The magnitude of subsidies is significant. Pre-tax subsidies stand at 0.7% of global GDP and go mostly to petroleum and electricity, with about half occurring in the Middle East and North Africa (MENA) region. As a share of government revenues, pre-tax subsidies are also much higher in MENA than in other regions. Post-tax subsidies take into account externalities and are four times larger than pre-tax subsidies, standing at US\$1.9 trillion or 2.7% of global GDP, with more than a quarter going to coal, and advanced countries accounting for 40% of the global total. However, as a share of government revenues, subsidies are still most significant in MENA and in emerging and developing Asia. Yet, in absolute terms, the top three subsidizers worldwide are the United States, China and Russia, who account jointly for US\$ 897 billion. In all regions, underpricing for externalities accounts for a large share of post-tax subsidies.

Recent experience in developing countries points to six key ingredients for successful subsidy reform:

- a comprehensive reform plan including clear, long-term objectives; assessment of the impacts of reform; and consultation with stakeholders;
- a far-reaching communications strategy, including information to the public on the size of subsidies and the benefits of reform; and transparency in reporting how subsidies are funded and how freed-up revenue resulting from reform might be spent;
- price increases that are phased so as to allow households and enterprises to adjust and governments to build safety nets, and are sequenced differently across products for greater impact;
- improvements in the efficiency of state-owned enterprises to reduce their fiscal burden;
- mitigating measures to protect the poor, preferably through targeted cash transfers;
- depoliticizing price setting, through the use of automatic price mechanisms (with price smoothing) and autonomous bodies to oversee price setting.

# Carbon taxation: Macro-economic and social implications for Brazil

Emilio La Rovere, Energy Planning Program, Institute for Graduate Studies and Research in Engineering (COPPE), Federal University of Rio de Janeiro

Economic theory posits that carbon pricing is the most effective, least-cost way to influence the behavior of economic agents and promote technological change in the medium-longer term. In conjunction with fiscal reform and appropriate recycling of carbon revenues, it can generate a double dividend ("win-win") solution. In practice, in the short term, it is critical that social, environmental and economic growth trade-offs be addressed. Transparency with respect to revenue recycling is also an issue.

Several recent studies (McKinsey, 2009; World Bank, 2009, 2010; La Rovere et al, 2011) have sought to estimate the potential for GHG emissions reductions in the 2030 horizon for the Brazilian economy. At a mitigation cost of US\$50/tCO2e, the results vary widely depending on the approach used: abatement with respect to 2005 ranges from around 2% (for "top-down", aggregate models) to 40% (for "bottom-up", sector-based models incorporating energy efficiency and technological change).





As a subsidy to climate negotiations, COPPE developed a general equilibrium (input-output) model for the Brazilian economy, reconciling "top down" and "bottom up" approaches so as to explore the impacts of emissions mitigation under different carbon revenue recycling policies for the 2005-2030 period. Focusing on emissions in 19 productive sectors (e.g., six energy sectors, six heavy industry sectors, two transport sectors, in addition to agriculture, light industry, construction, and services) and four institutional segments (households, firms, government and the "rest-of-the-world"), the model assumes sub-optimal, "second best" conditions, such as market imperfections and labor market rigidities. The model is consistent with IPCC projections, localizing these projections for Brazil in line with the IMACLIM/CIRED model (developed originally for France and in the process of adaptation to other countries of Latin America and South Africa).

Assuming a carbon tax varying from zero (the reference scenario) to US\$100/tCO2e, three carbon revenue recycling scenarios were explored:

- abatement of the national fiscal deficit;
- reduction of the fiscal burden associated with labor contracts, thus providing a stimulus to employment generation; and
- increase in household consumption through conversion of carbon revenues into a "green check" for low-income families.

The usual caveats with respect to limitations of data and simplifications of assumptions accepted, the results of the model point clearly to the possibility of "win-win" outcomes in terms of GDP growth (for a carbon tax of up to US\$25/tCO2e) despite pressures on inflation, reduction of public debt (for a tax up to US\$75/tCO2e), in addition to reduction of emissions and increase in employment levels at varied levels for all scenarios.

# **Discussion**

A political economy perspective suggests several challenges to achieving a low-carbon economy:

- There is a disconnect between increased scientific certainty (which points to the global dimensions of climate change and to the need for global collective action) and the willingness to act on the part of mainstream society (which is dominated by "nationalistic", short-term perspectives characteristic of households, firms and politicians).
- Actions to address climate change, including reduction of subsidies, would be better implemented through global governance: however countries are reluctant to cede power to a supra-national instance.
- Among developing countries there is a perception of inequity in the effort required across and within countries.
- The UN, the European Union, and the G-20 all face serious challenges and currently appear to be incapable of pulling off agreements that are in the collective, global interest: the difficulty in building consensus is currently aggravated by the repercussions of the 2008 financial crisis.

In analyzing subsidies it is important to differentiate across the various energy sources, to differentiate between subsidies to production and consumption, and to consider costs and benefits at the margin. Subsidies are not always bad and may be needed to promote policy at given moments, as illustrated by the very positive results of the Brazilian sugar cane ethanol Pro-Alcool Program. In the





global climate context, subsidies for clean energies may be justified in certain contexts, while those for fossil fuels should be eliminated, taking into account the carbon intensity of each fuel, the social and economic impacts of removal, and the mitigation policies that may need to be deployed to avert the negative impacts of subsidy removal. Impacts across income groups are different for different energy sources (e.g., while GLP is relevant for the poor, aviation gasoline affects predominantly the middle-upper income groups).

Focusing on the environmental crisis will not suffice to generate support for collective action. The trade-offs between social and environmental policies need to be made explicit. A perception that generating global benefits can result in local benefits is also needed. While there is room for local adjustments independently of global accords (e.g., with respect to non-technical energy losses and fiscal loopholes), energy subsidy reform and carbon taxation is unlikely to succeed in the absence of a global agreement on emission reduction targets and financing for the transition to a low-carbon economy. "Win-win" solutions need to be identified and prioritized.

# Recommendation #1:

Eliminate fossil fuel subsidies gradually in line with specific country context.

Implementation should be sequenced differently across fuels, income groups and sectors, taking into account carbon intensity, and expected social and economic impact. The impact of energy price increases on the most vulnerable, lower income group should be offset through alternative safety net policies. Transparency and effective communications are essential to garner support for reform.

# Recommendation #2:

Introduce carbon taxation reducing other taxes or recycling the carbon revenues targeting low income groups

In most national contexts carbon taxation should be implemented not as an additional burden but as substitute of current taxation, especially on investment and labor or entitlements. The choices and paces of this process have to be meticulously planned and implemented in a politically competent way. Alternative revenue recycling options should be developed and assessed. For each, policy objectives, effectiveness and implications (e.g., winners and losers) need to be clearly understood. An increase in the overall tax burden should be avoided.

# Session 2 Financing a low-carbon economy: A new financial order (a "green New Deal")

# Shifting the current paradigm towards a New "Green" Deal

Suzana Kahn Ribeiro, President of the Scientific Committee of the Brazilian Panel on Climate Change

Achieving a low-carbon economy will require a change in the current economic paradigm, recognizing that:

- depletion of natural resources and constraints in the regeneration capacity of ecosystems are undervalued;
- environmental and financial crises place the adequacy of the current economic system in question;





- 19th century problems coexist with current challenges, posing dilemmas for environmental management across the globe; and
- progress needs to be redefined to reflect well-being, not just growth in GDP per capita.

A shift in the current economic paradigm is urgent and involves, among others, the following dimensions:

- Growth in economic activity must be decoupled from resource use. A low-carbon economy requires increasing efficiency in production and consumption. The key challenge does not lie in developing or deploying new technology (which, for the most part, exists), but in promoting a transition that avoids the risk that firms and countries get "locked in" to older technology due to inaction or inadequate choices.
- What is more importantly lacking is the widespread perception of the risks of climate change and the need for urgent action, and thus support within society for a transition to a low-carbon economy. Heightening perception and support for climate policy requires adequate valuation of natural capital and promoting payment for environmental services.
- It is also important to develop "green" national accounting systems that recognize environmental assets as a component of "wealth" (e.g., by reflecting environmental damages and natural resource depletion in the measurement of stocks), and internalize environmental costs and benefits in the measurement of GDP (e.g., subtracting expenditures in environmental clean-up rather than computing them as "value added", i.e., "productive" activities).
- Better distribution of the benefits of economic growth across social segments is also needed.

It is technically possible to limit global warming to 2oC by 2100, at a marginal abatement cost of between US\$ 50-100/tCO2e. However, financing the transition is a challenge in a context of scarce government budgets. Resources available in international capital markets (e.g., pension funds, sovereign funds), transacting an estimated US\$ 120 trillion daily, could be tapped through development of appropriate financial instruments. This will need to be accompanied by fiscal reform (e.g., removing distortions in subsidy and taxation policies). At the limit, a new Bretton Woods kind of agreement may be required to establish an internationally recognized standard of exchange based on carbon emissions reductions. Such an agreement would entail conversion across mitigation measures taking into account timeliness and volume of effort, and voluntary vs. compulsory action.

Meanwhile, we are seeing successful initiatives at the national and subnational levels. China has launched an emissions trading pilot across five major cities and two provinces, on the basis of which it plans to establish a unified national carbon market that is estimated to generate 0.8-1 billion tCO2e in emissions reduction by 2015, making it the second largest "cap-and-trade" scheme in the world, second only to the European market.

The new economic paradigm implies revised roles and responsibilities for economic agents. Public policy must be clear and must rely on a consistent combination of "command and control" and economic instruments, investments and public-private partnerships so as to promote the required changes in current patterns of production and consumption. Firms will need to internalize social and environmental implications of their activities and to incorporate new technologies. NGOs and civil society must intensify and better articulate their dialogue with government and the private sector. The focus of decision making (and measurement of progress) must shift from production-based, financial returns in the short term to well-being and sustainability in the medium and longer term. It will be important to better understand who benefits and who loses in the transition.





# A Low-Carbon Development Facility

Christophe de Gouvello, Energy Sector, Sustainable Development Department, Latin America and the Caribbean Region, The World Bank

A new financial instrument that can accelerate emissions abatement is needed. Low-carbon development in low and middle-income countries will be essential to stabilize GHG concentrations at proposed targets in 2050. Emissions reductions in Annex 1 countries and offsets in non-Annex 1 countries will not suffice. While it is estimated that the reduction potential in the latter is substantial (up to 25 GtCO2e/year), implementation, beyond soft policies, will require substantial investment. The Clean Development Mechanism (CDM), despite counting over 7,000 registered projects since its inception, has touched just the tip of the iceberg.

Brazil is a case in point: it has thus far used only 12% of the available CDM methodologies, although it is the third largest user of CDM funds. The World Bank carried out an inventory of potential low-carbon projects in Brazil, considering five sectors (fossil fuels for industrial use, waste management, electricity, transportation and vehicular fuels, and other industrial inputs). Based on the typology of the CDM portfolio worldwide, over 18,000 potential mitigation projects and sites were identified, two-thirds of which were greenfield projects, mostly in the industry, waste management and electricity sectors. Emissions reductions from these projects were estimated at 450 MtCO2e/year, requiring an investment of US\$1.3 trillion. Assessments in other countries indicate that the untapped abatement potential is huge.

The proposed Low-Carbon Development Facility (LCDF) would build on the CDM structure to unleash the untapped emissions reduction potential. It would share the CDM's monitoring, reporting and verification system, but could include additional methodologies for activities not covered currently under the CDM (e.g., carbon capture and storage). The facility's initial capital (US\$68 billion) is sized to sustain AAA rating and would be provided by Annex 1 countries. Annual financing required thereafter would be US\$100 billion (compared to FDI of US\$600 billion and ODA of US\$75 billion). Low-carbon investments in low-income countries would be financed at concessional rates (Libor + 10 base points on two-thirds of the financing). Under these principles, it is estimated that the LCDF would be capable of promoting the abatement of about 10 GtCO2e/year, one-third of the estimated gap in 2030, increasing progressively thereafter. (It should be noted that the LCDF was designed by a World Bank team of financial, climate and energy specialists but is not an official World Bank proposal.)

Projects applying for LCDF resources will need to open their books for financial due diligence (which the CDM does not require currently). Only projects still unviable after enjoying LCDF financing conditions would be eligible for tradable CERs and, to avoid conflict of interest with carbon markets, projects proposed by LCDF to be eligible for CER issuance would be initially be limited to a 20% of the LCDF portfolio.

# **Discussion**

Discussion of environmental protection and climate change should not be dissociated from macroeconomics and politics. The environment is at the basis of any human activity; its preservation should be central to any political or economic decisions. If the world is to achieve a low-carbon economy, environment, politics and economics must be integrated into decision-making frameworks.

It is possible for developing countries to leapfrog carbon intensive economic models if financial assistance is made available. However, public resources are scarce; engaging markets and private





capital is crucial to enable low-carbon investments. In the design of new financial instruments, synergies with existing mechanisms should be sought and lessons from the CDM experience should be taken into account:

- Carbon credits should be recognized as long-term financial assets.
- Secure returns in the long-term (12-18 years) should be ensured.
- A broad range of financial assets should be admitted.
- Methodologies must be clear and implementation must be transparent.
- Monitoring, reporting and verification (MRV) is essential to enhance confidence in the products and trust among players.

Standards are human conventions and thus can be changed. A new social contract in which GHG emissions reductions constitute a unit of value could be the basis for comparing different mitigation actions undertaken by countries, and for trading these with other low-carbon goods, such as technology transfer, capacity building or technical assistance. However, it should be noted that the challenges are manifold. Examples of success in promoting significant shifts – in monetary standard, and in consumption and production patterns – do not abound.

Prevailing financial models are not suited to the "products" that are being offered in the environmental preservation and emissions reduction portfolio. For the most part, they entail risk, uncertainty, long-term returns and other "undesirable" features for those seeking good investment opportunities. This implies overall a preference for (deferred) investment in adaptation over (upfront) investment in mitigation.

Although it is recognized that emissions reduction has thus far been unimpressive, it is also noted that, despite its limitations, multilateralism has made impressive advances on the environmental agenda in the last two decades and remains central to developing a low-carbon world order. Due to global interdependence, no country can undertake the transition to a low-carbon economy alone: it would be either counter-productive or unfair. Multilateralism allows for the broad discussion of the topic and for planning global long-term objectives. It also brings integrity to the regime, since not all unilateral actions can be recognized as legitimate – transparency and MRV are crucial. However, given that multilateral negotiations take time and that stabilizing carbon concentrations is urgent, other negotiating arenas and forums must be involved in the debate, speeding up the process. A G-20 agreement on the topic, for example, could be highly beneficial, and could push the topic in multilateral forums.

Ultimately, for a new economic order to emerge and succeed – be it a New "Green" Deal or any other partial, "lesser" agreement requiring global collective action –, the diversity of human conditions and priorities across and within countries needs to be recognized; the interests of all segments of society must be voiced and incorporated in the policy-making process. This will determine whether or not the world will move in the direction of long-term sustainable development. The politics of climate change (and especially the winners and losers in the trade-offs involved) must be worked out and inform the design of financial mechanisms to support action and promote commitment by countries. Until this happens, progress is likely to be limited.

# Recommendation #3: Establish a low-carbon fund to finance projects form the CDM pipeline.

A financial instrument, funded by multilateral, government and private sector funds, and enjoying AAA rating, is needed to accelerate investment in low-carbon technologies so as to close the current





gap in emission reductions required by 2050. (One such instrument is the proposed LCDF.) The CDM pipeline and methodologies should be tapped and expanded through country inventories and incorporation of an expanded typology of projects (e.g., carbon capture and storage).

# Recommendation #4: Establish a convertible emission reduction currency

Different kinds of direct or indirect actions resulting in emissions reduction adopted by countries on a voluntary basis, ahead of legally binding global commitments that may emerge from the 2015 Paris COP (which would come into force only in 2020), should be rewarded in a carbon-based unit of exchange, a 'currency' convertible to actions generating further reduction. As part of a new low-carbon financial order, this currency would not "buy" the right to emit, as is the case of the current carbon market certificates, but allow access to technology, goods and services for new rounds of GHG reduction while creating jobs and economic dynamism.

# Session 3 Measures of well-being and sustainability

# "Greening" GDP?

José Eli da Veiga, Institute of International Relations, University of São Paulo

The key reference in this discussion is the 2009 report by the Commission on the Measurement of Economic Performance and Social Progress, coordinated by economists Joseph Stiglitz, Amartya Sen e Jean-Paul Fitoussi, at the request of the French Government. The report discusses the adequacy of Gross Domestic Product (GDP) and Gross National Product (GNP) as indicators of a country's economic performance, well-being, and sustainable development.

Created to measure production, the limitations of GDP as a measure of welfare, in fact, were clearly set forth from the start by its proponents, Richard Stone and Simon Kuznets. It is well recognized that various products and services that are counted in GDP as contributing to its growth, in fact represent a reduction in well-being: the production of cigarettes and weapons, the construction of prisons, and traffic accidents and congestion are cases in point. In contrast, several activities that increase well-being, such as car pooling and voluntary community work, are not captured by the measurement of GDP.

The Stiglitz-Sen-Fitoussi report proposes that to assess material well-being the focus should shift from production to consumption, and should take into account distributional aspects. A more relevant indicator of economic performance would be disposable household income (i.e., income that is available for consumption and savings). This is one of the components of GDP and is already measured and published by National Statistical Agencies (NSAs). GDP and disposable household income tend to move in the same direction, albeit differences have increased in some countries as production shifts from manufacturing to services. Factoring in certain public services and unpaid household work would be important adjustments. Both mean and median income are relevant and should be tracked by NSAs, especially as a basis for distribution-oriented policy formulation.





With regard to quality of life, the Stiglitz-Sen-Fitoussi report recognizes eight key dimensions in addition to material well-being (as measured by income, consumption and wealth): health, education, personal activity (including work), political voice and governance, social connections, environmental conditions, personal insecurity, and economic insecurity. These are clearly less amenable to monetary valuation and involve both quantitative and qualitative assessment. Highlighting the challenges of aggregation over such diverse dimensions and recognizing that the Human Development Index (HDI) already covers the first two dimensions, the report prioritizes measurement by NSAs of the broader set of indicators, for which several approaches are proposed and from which various indices can be constructed.

With regard to sustainability (i.e., whether current levels of well-being can be maintained in the future or not), the report reviews the pros and cons of numerous dashboard (large sets of multiple, usually hybrid) measures and composite (aggregate) indices currently available, noting that they often mix current and future conditions into a single indicator, sending confusing messages to economic agents and policy makers. It also reviews adjusted GDP measures (e.g., Daly's General Progress Indicator, the UN's System of Environmental Economic Accounting) that seek to incorporate additional dimensions into the national economic accounting framework, for instance, deducting depletion of natural resources and degradation of the environment from GDP (as in Daly), or measuring flows and stocks in physical and monetary terms in parallel accounts (as in the SEEA). Finally they review a broad and varied array of approaches (e.g., from ecological footprints to the World Bank's Adjusted National Savings) that focus on measuring the extent to which overconsumption of resources (or underinvestment in their preservation and regeneration) may be occurring.

The authors highlight the need to clearly distinguish between measures of current well-being (which has to do with both economic and non-economic dimensions) and longer term sustainability (which depends on changes in the stocks of natural, physical, human and social capital). They conclude that retrofitting GDP frameworks is undesirable and propose instead the use of a set of non-monetized, stock-based indicators as measures of sustainability; and that, with respect to pressures on the environment's regenerative capacity, the carbon footprint (CO2e emissions) could be used as a good summary indicator, given its clarity and relevance.

Although the Stiglitz-Sen-Fitoussi report was well received in the OECD, it has had little repercussion in other contexts, such as the UN Statistics Division or the IMF. In Brazil, agencies such as IBGE, IPEA and SAE would also need to assess the relevance of the report's proposals and its fit with current and proposed approaches to the measurement of welfare and sustainability.

# Discussion

Despite well-known limitations and frequent misuse, driven by political agendas, GDP still serves its basic purpose of tracking value-added in an economy. Its growth remains desirable and needs to be tracked.

The proposals from the Stiglitz-Sen-Fitoussi report pose various challenges for NSAs.

- Issues of scope and frequency of data collection and publication exist. In Brazil, for instance, information on disposable household income was last published by IBGE in 2009 and does not take into account depreciation or income generated abroad (i.e., it is an indicator of gross income). Similar problems exist in other countries.
- The HDI, though widely used as an alternative to GDP as a measure of welfare, is not endorsed by the UN Statistics Division and is not produced by NSAs. (In Brazil, it





is produced by UNDP and IPEA, rather than by IBGE). This is mostly due to questions regarding its methodology, which has been frequently changed, limiting the use of time series data.

• "Greening" GDP (adding or subtracting "benefits" and "costs") poses numerous conceptual and methodological problems. A more pragmatic approach would be to set up separate, complementary "dashboard" (physical and monetary) accounts, as endorsed by the UN Statistics Division. Even though valuation and aggregation issues will arise, such indicators are critical as an input to policy formulation.

If not an adjusted "green" GDP then what other indicator(s)? The ecological footprint is methodologically dissociated from, but can be used in complementarity with, GDP. It is an indicator of natural resource use and environmental degradation (measured, for instance, in terms of hectares) required by production and consumption in a given country (or region or firm). It has been widely accepted by environmentalists and in some academic circles, but has not often been used by policy makers. One variant, the carbon footprint, though less encompassing than others, is a powerful indicator, especially because it is linked to a critical dimension of global absorptive capacity and reversibility threshold. Others, based on water scarcity and biodiversity loss, can be used alternatively depending on context.

The fact that the System of Environmental Economic Accounting (SEEA) has been adopted by the UN as an official standard of reference is a major advance in the direction of evolving towards assessment of sustainability. The framework will tend to be henceforth adopted by NSAs. However, the effort will take time. Meanwhile, different sets of indicators can be established based on the UN SEEA framework and can combine economic, social, environmental and institutional dimensions. In Brazil, the NSA is already involved in adapting the framework, starting with water accounts. In Europe, a set of core Sustainable Development Indicators has been used for policy analysis. Other sets of indicators may be of relevance, depending on context, e.g., the Millennium Development Goals (MDGs), and the Sustainable Development Goals (proposed during the Rio + 20 Conference in 2012 but yet to be developed and agreed upon as a replacement of the MDGs beyond 2015).

Three indicators seem to be critical to advance climate policy and sustainability: carbon emissions per capita, carbon emissions per unit of output (i.e., the carbon intensity of the economy), and population growth (or fertility rate). Population growth, combined with the other two indicators, can predict society's demand for carbon. Carbon pricing, derived from emissions trading transactions, can also send important signals to economic agents and society.

However, as a basis of climate policy negotiations, agreement on the set of indicators will be complicated by considerations of historical responsibility. Countries can be presented in a very different light and will have different interests in the climate discussion depending on how responsibility is computed and taken into account in establishing commitments. While industrialized countries have thus far been responsible for cumulative emissions, developing countries will become the main GHG emitters by 2030. In addition, it can be claimed that historical emissions by the more industrialized countries occurred for the most part when there was no knowledge of their impacts, and that the climate science available today owes a great deal to these same countries. Lastly, effective agreements are hard to establish on the basis of guilt; "tribalism" tends to prevail instead of consensus and cooperation.

In a market economy, the price system is the key instrument for allocation of resources in society and market failures the key rationale for government intervention to correct for externalities leading to the overexploitation or underutilization of resources. The services of ecosystems (resulting





naturally or through human agency) and impacts on their carrying capacity are notable instances where undervaluation typically occurs. Numerous valuation methods have been developed over past decades, of diverse relevance to different contexts and issues. Despite limitations, these should be increasingly incorporated into policy making.

# Recommendation #5:

# Focus on a family revenue as an indicator of development

Governments should measure development through the evolution of family income after fulfilling their basic needs. This indicator would reflect the well-being better than gross national product (GDP).

#### Recommendation #6:

# Use carbon-based indicators and demographic indicators combined to GDP

GDP calculus can also be combined with three indicators: emissions per capita, and emissions per unit output and population growth. These indicators, whether used separately or combined, can give governments sustainability-related figures to consider alongside output-based indicators of their economic performance.

# **Participants**

# **Agostinho Vieira**

# **Brazil**

Journalist, specialized in Environment, Climate Change and Urban Mobility issues at O Globo Newspaper.

# **Alfredo Sirkis**

# Brazil

Federal Congressman, Chairman of the Rio + 20 Subcommission and of the Commission for Foreign Affairs and National Defense. He is a writer with nine books published and a journalist. He was a member of the executive board of both ICLEI and Metropolis and and part of the Brazilian delegation to the Montreal, Bali, Copenhagen and Durban Climate Conferences.

# Ana Toni

# **Brazil**

Representative for the Ford Foundation in Brazil since 2003.

# **Andrea Lopes**

# Brazil

Environmental Specialist at the Federation of Industries of Rio de Janeiro (FIRJAN).

# **Andrea Souza Santos**

# **Brazil**

Executive Secretary of the Brazilian Panel on Climate Changes. Her professional experience encompasses the Environment, Climate Changes, UNFCCC Negotiations and Sustainable Development.





# **Aspasia Camargo**

### Brazil

Specialist in urban issues, State Deputy Aspásia Camargo is currently in her first term at the State Assembly of Rio de Janeiro (Alerj), by the Green Party (PV). She is the President of the Permanent Commission for the Environment and the Commission for Metropolitan Governance at the State Assembly.

# **Carlos Young**

### **Brazil**

Associated Professor at the IE/UFRJ and e Fellow Researcher at the National Institute for Public Policies, Strategies and Development in Science and Technology (INCT/PPED.

# Claudio Loureiro

#### Brazil

General Manager for South America of the Canadian Solar.

# Christophe de Gouvello

# **World Bank**

World Bank. Since August 2013, coordinates the Climate Change agenda for the World Bank in Brazil and manages the projects portfolio in the energy sector.

#### **Daniel Cohn-Bendit**

# **European Parliament**

Co-President of the Greens-EFA group in the European Parliament since 2002.

# **Eduardo Viola**

# Brazil

Professor at University of Brasilia. Member of the Board of the Brazilian Association of International Relations and the Brazilian Association of Research and Post-graduate Studies in Social Sciences.

# **Emilio Lèbre La Rovere**

# Brazil

Coordinator of the Multidisciplinary Environment Laboratory and of the Centroclima – Integrated Studies on Environment and Climate Change (COPPE/UFRJ).

# Fabio Feldmann

# **Brazil**

Former Executive Secretary of the Brazilian Forum on Climate Change and Executive Secretary of the Forum Paulista on Global Climate Change and Biodiversity.

# Suzana Khan Ribeiro

# Brazil

Suzana Khan Ribeiro - former Under-Secretary for the Green Economy of the State of Rio de Janeiro and Member of the Intergovernmental Panel on Climate Change (IPCC).

# Ministro Everton de Lucero

# Brazil

Chair of the Climate, Ozone and Climate Security Department of the Foreign Affairs Ministry in Brasilia, Brazil.





# José Eli da Veiga

# **Brazil**

José Eli da Veiga, 64, is a Professor at the post graduation programs at the Foreign Relations Institute of the São Paulo University, and also teaches at the Ecological Research Institute (IPÊ).

#### Larissa Basso

#### Brazil

Assistant researcher in the "Global Energy Governance and the Climate Leaders", under Prof. Eduardo Viola's supervision, at the University of Brasilia.

# Laura Valente

### **Brazil**

Senior Consultant in Policies and Sustainable Management for World Resources Institute and Embarg Brasil.

### Linda Murasawa

#### Brazi

Executive Superintendent of Solutions for Sustainability at the Santander Bank.

# Luiz Pinguelli Rosa

#### Brazil

Chairman of the Brazilian Forum for Climate Change. He has been a Director of COPPE/ UFRJ for four terms, and is a former president of Eletrobras.

# Márcio Macedo Costa

# Brazil

BNDES (Social and Economic Development Bank of Brazil) Environment Manager.

# Masahiro Nozaki

# **IMF**

Expenditure Policy Division of the Fiscal Affairs Department of the International Monetary Fund (IMF).

# Rogério Studart

# World Bank

Alternate Executive Director to the World Bank Group, representing Brazil, Colombia, Dominican Republic, Ecuador, Haiti, Panama, Philippines, Suriname and Trinidad & Tobago.

# Paulo Mibieli

# **Brazil**

President of the Brazilian Society for Ecological Economy (ECOECO).

# **Pedro Moura Costa**

# Brazil

Pedro Moura Costa is co-founder and President of BVRio, environmental stock market in Rio de Janeiro.

# Rafael Kelman

# **Brazil**

Senior Consultant to the World Bank, IDB and other multilateral institutions.





# Sergio Besserman Vianna

#### **Brazil**

Chair of the Technical Chamber of Sustainable Development of the City of Rio de Janeiro and full professor at the Economics Department of PUC/Rio.

# Sergio Margulis

# **Brazil**

Sustainable Development Secretary of the Strategic Affairs Office at the Brazilian Presidency-SAE.

# Serhan Suzer

# **Turkey**

Solar Entrepreneur in Turkey.

# Suzana Khan Ribeiro

### **Brazil**

Suzana Khan Ribeiro - former Under-Secretary for the Green Economy of the State of Rio de Janeiro, Professor of the Transportation Engineering Program (COPPE / UFRJ) and Member of the Intergovernmental Panel on Climate Change (IPCC).

# Teresa Serra

#### Brazil

Senior Consultant and Advisor for Sustainable Development issues at Serra Associates.

# Disclaimer

All views expressed were by individuals in their private capacities, and the group conclusions in the output do not necessarily represent the opinions of any single individual.

The list of individuals who have signed their names to the conclusions will be included in the report when it is published.





