Multi-Stakeholder Dialogue VI

Trade, Climate Change & Development
A fresh look at Dilemmas & Reconciliation

IMD, Lausanne, Switzerland
24 – 26 September 2009

Draft Summary Report
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A three-day Multi-Stakeholder Dialogue (MSD) convened by the Evian Group at IMD and the Friedrich Ebert Stiftung warned against the inertia and mistrust that fester multilateral efforts to conclude substantive agreements in the realms of international trade and climate change. With participants from business, labour unions, governments, international organisations, universities and civil society, the meeting emphasised the importance of fostering long-standing sustainable relationships in grappling with trade discriminations and curtailing greenhouse gas emissions. Panellists underlined a failure of leadership and 'political will'. The current global economic crisis – unjust and of considerable distress to many households around the world – is a hiccup compared to the quandaries and potential sources of conflict that await the world in the near future should we remain in a state of myopia, or indeed paralysis.

Perhaps never before has there been such an urgent need for a mobilisation of multiple stakeholders to galvanise awareness and action on the part of the public, and especially that of political leaders. As complex as it may be, it is particularly important that the agendas of trade, development and climate change should develop in synergistic fashion in order to ensure that one is not developed at the expense of the others. The issues we face are fundamental ones of equity, effectiveness and justice.

All stakeholders must answer the question: what kind of planet do we want? What kind of planet do we want to bequeath to our children? While debate is permissible, indeed essential, there is a grave danger that it will degenerate – as is to a certain extent the case already at present – into a blame game, between nations and between constituencies. As is stressed, ultimately the only viable route must be one of multi-stakeholder concerted action. Confidence-building and open discussions such as was held at the MSD on the IMD campus on 24-26 September are a valuable step to that end. A marked feature of this series of meetings is the dynamic mix between different nationalities, different professions and different generations.

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1 – Introduction

At the G20 meeting held in Pittsburgh at the same time as the MSD, the newly upgraded lead-nation grouping committed to the resolution of the WTO Doha Round of trade negotiations in 2010. The G20 issued little more than a vague statement of intention on climate negotiations, although the idea of phasing out fossil fuel subsidies was floated without any specifics. It now seems increasingly obvious that the UNFCCC Copenhagen Summit (COP-15) will not produce an agreement to match either urgency or objectives. That is not to say that Copenhagen will fail, but the risk is that fundamental tensions between the parties could rise in determining the policies for the period that succeeds the Kyoto Protocol in what is arguably the most important multilateral endeavour of our time.

The MSD was befittingly subtitled *A fresh look at dilemmas and reconciliation* as the inescapable reconfiguration of global interactions over energy, technology, trade and finance to counter the anthropogenic climate threat will require a degree of international coordination of unprecedented scale. The shift to low-carbon economies also entails considerable domestic consensus building around core principles of equity, effectiveness and justice. It was broadly agreed at the MSD that value-based change driven at the individual level should pressure our governments and business leaders to understand the expense of their short-sightedness and help them to become far more committed.

This report will summarise some of the key points that arose in the discussions around the trade-development-environment nexus. In the appendix can be found the results of six working groups handed the task of identifying solutions to specific trade and climate challenges, a *cri de coeur* drafted by a young participant at the meeting, and a keynote speech delivered on the first evening of the dialogue. The MSD will convene again in the autumn of next year and intends to monitor the commitments made by our heads of state on trade and climate change in the run-up to the G20 meeting to be held in South Korea in November 2010.

2 – Setting the Scene: Seismic Shocks and Systemic Shifts

The French author Antoine de Saint Exupéry has been attributed an African proverb in which it is said, “We do not inherit planet earth from our ancestors; we borrow it from our children.” Our planet is in peril. The scientific community is more pessimistic than a few years ago. The ramifications are clear. As Nicholas Stern argues in a recent paper on reaching a global deal, “If we fail to act together now and let mistrust and squabbling prevent an agreement on strong action, the consequences will be damage and conflict on a global scale.” He further adds that, “Pessimism and cynicism will be self-fulfilling; we must find a way.” [1] Multi-stakeholder approaches are part of the answer. An important aspect of the challenge is to reach beyond the chorus and enhance public knowledge of the extremely complex issues and trade-offs at stake. One only requires a fleeting overview of public debates, blogs or editorials – even in supposedly first-mover European nations – to realise that there still is a pronounced sense of scepticism and suspicion on the primacy of altering our energy, consumption and production patterns for the sake of seemingly abstract future risks and probabilities.

The global fight against GHG emissions and atmospheric concentrations – mitigation, adaptation, technology and finance – is taking place in a turbulent world context characterised by rapid technological change and radical shifts in political and economic might, coupled

[1] Nicholas Stern, *Managing Climate Change and Overcoming Poverty: Facing the Realities and Building a Global Agreement*, http://www.lse.ac.uk/collections/granthamInstitute/publications.htm

with the fallout from an all-too anthropogenic financial crisis. Many contemporary challenges are non-territorial and difficult to reconcile within a framework of Westphalian sovereignty. The world will no longer be governed in the mould of the past half-century and the beleaguered plights of the COP process and the Doha Development Agenda are partly a manifestation of these syndromes. The geopolitical reality is that climate negotiations cannot be decoupled from broader discussions on institutional reform and the global governance of trade or finance – with implicit trade-offs between these international negotiations, not simply within them. In this sense, the upgrading of the G20 as the body overlooking global economic coordination was broadly welcomed at the MSD, although there are clearly issues of representation and it remains to be seen whether its leaders can move beyond high-level statements of intention. Cracks and doubts are already surfacing subsequent to the incipient 2008 traction ignited at the inaugural Washington Summit by urgent crisis management.

3 – Climate Change and Trade: Positive and Negative Synergies

The main linkages between climate and trade as apposite to WTO norms and rules that were discussed at the meeting were emission trading schemes and their design, border adjustment measures in the form of taxes or permits, and the compatibility of agriculture and mitigation measures with WTO rules. It was suggested that most of these linkages stem from competitiveness concerns in early-mover nations contemplating mitigation policies, and are motivated both by fear of carbon leakage and the desire to pressure developing countries into signing a deal on climate change. As one participant put it in generic terms, if damaging externalities are not internalised in prices, there is no basis to assume that economic liberalisation and free trade will ultimately improve human welfare. Yet the measures for regions to achieve this in the absence of global participation are complex and imperfect.

Multilateral negotiations on these issues are clearly preferable to unilateral actions if we want to avoid a race to the bottom from free emission allocations – themselves a form of subsidy which would have to be assessed on a case by case basis – and border retaliations likely to lead down dark WTO alleys with questionable repercussions on environmental goals. It was suggested that the need to distinguish between investment leakage and operational leakage implies that the focus should be on carbon leakage rather than competitiveness per se. The options include doing nothing (an impossible political sell), conditional free allocation, border adjustments, and sectoral agreements that will realistically take years to achieve in implicated energy-intensive industries. With respect to border adjustment measures, there are two profoundly different discussions taking place: the first seeks to address carbon leakage, while the second hinges on threatening trade measures against countries not taking 'comparable measures'. In short, there are many options that vary greatly according to levels of WTO compatibility, domestic pressure, and ease of implementation – on the appropriateness of which participants at the MSD failed to reach a consensus.[2] Integrating carbon markets was also presented as a regulatory nightmare, compounded by the difficulties of carbon-added accounting, with some of these schemes having a notable impact on future trade flows. An agreement between high-emitting US and China on these trade issues would go a long way towards soothing simmering tensions.

[2] A special presentation from the UK Carbon Trust and Climate Strategies was delivered at the MSD. Their final report *Tackling Leakage in a World of Unequal Carbon Prices* can be downloaded at http://www.climatestrategies.org/our-reports/category/32/153.html. The conclusions of the MSD Working Group 4 deliberations on 'border adjustment measures and carbon leakage' can be found in appendix to this report.

While there are potential clashes between mitigation measures and existing trade rules, amplified by an undercurrent in which the WTO is experiencing a serious crisis of legitimacy and accountability, it was also felt by a number of participants that there are positive synergies the multilateral trade system could bring to the climate policy debate. These include the liberalisation of certain clean technologies, goods and services, a review of existing intellectual property rights to facilitate technology transfer, and improved oversight of subsidies. Domestic fossil fuel subsidies were identified as needing far greater transparency to evaluate their effectiveness in addressing the public policy goals they are officially intended to serve.[3] On intellectual property, the importance of mapping exercises undertaken by WIPO, for example, to pinpoint the exactitude of IP hindrance was underlined – although it was noted that these exercises no longer equate along traditional North-South lines.

4 – North-South Chasms: National Interests and Justice

The key yardstick and legal principle for an international agreement on climate change is the concept of Common but Differentiated Responsibilities. There can be no doubt that the developed world must face up to its responsibilities in terms of equity and historical justice. Above adaptation funding and technology transfer, rich countries must demonstrate that a quality carbon-free society is possible and desirable. And while there is a right to development, fast-growing emerging economies are going to have to do their bit to break the link between emissions and output – without feeling they are being held hostage to newly imposed Western norms. It is essentially their future we are talking about. As we move forward, the chasms will rapidly morph from a binary North-South antinomy to a North-South-South dilemma, with differentiations between developing nations increasingly coming to the fore.

Harking back to a previous point on WTO rules and the implicit trade-off between multinational negotiations, a concern that ran throughout the MSD is that harnessing the necessary level of trust to reconcile broadly divergent mindsets is going to be a Herculean task. Given the extent to which the WTO has been discredited through legal loopholes, broken deadlines and unfulfilled promises on agriculture in particular, it is difficult to see why rational negotiators from developing countries would trust rich countries to honour tough commitments on emission targets. The good news compared to this time last year is that real progress appears to have been made on forestry with Brazil, there have been 180 degree shifts in US and Japanese approaches with the arrival of new administrations, China has recently pledged to reduce its emission intensity per GDP by an unspecified margin by 2020, and India has accentuated its desire through constructive engagement to make real demands of the West based on the moral principle of per capita emissions.

As the intensified droughts in China or the latest cyclone to hit the coastal areas of Bangladesh have demonstrated, the issue at stake is to avoid 'tipping points' and adapt to increased weather variability (sea level rise, salinity, agricultural yields, droughts, etc.). Within a regionalised approach to differentiated impacts around the world, it would seem that the innocent victims of climate change should increasingly care little about North-South chasms. It was suggested at the MSD that on the road to Copenhagen and beyond, LDCs would come to request a rebalancing of responsibilities on adaptation and mitigation between major polluters: they will expect a timeframe with short, medium and long-term commitments, differentiations between developing countries, a refining of measurements on per capita or country bases, a debate on taxation at the level of consumption or production,

[3] The conclusions of Working Group 1 on 'the liberalisation of trade in low-carbon goods and services' and Working Group 3 on 'the reduction of fossil fuel subsidies' are in appendix to this report.

and a separate financing mechanism that deals with these issues. One of the questions to arise from this is whether China, India or Brazil are in a position to be more assertive and take a leadership role, in adaptation or technology transfer for example, within a regional context? [4]

5 – Dilemmas and Trade-Offs: Green Jobs and Sustainable Models

One of the ways out of the above negative synergies and chasms that was discussed at the meeting was the concept of a just transition – democratic rights for workers to have their say about the environment, upholding ILO conventions, aggressive long-term investment in green jobs, investment in the skills and health of the workforce, international R&D centres – as it captures labour concerns within North-South frictions. It is important to remember in the context of the negotiations that certain policies are virtually impossible to get past voters – the edulcorated version of the US Waxman-Markey Bill which includes both border adjustments and free allocations is one such manifestation.

It seems unlikely that we will be able to reach the sort of global cooperation required if rich countries can buy their way out of meaningful reductions in their energy use through complex emission trading schemes, or offset mechanisms, while a sense of domestic sacrifice is eroded. It was nonetheless argued by a number of participants that the institutional structure of existing cap and trade schemes and of the CDM within the Kyoto Protocol, despite going through a serious learning phase, were operating relatively well and could be built upon. One of the great difficulties down the road will be to create a universal carbon price by linking carbon trading schemes such as the EU ETS (Emission Trading System) with other flexibility mechanisms – not to mention regulatory oversight.[5]

Over the past decade or so, quite an astonishing consensus has coalesced around the idea that the private sector and market tools are central to attaining our environmental objectives. In essence: what sort of policy framework do we create to harness the creativity of the business community, while creating scarcity in carbon through cap and trade schemes to spur innovation and generate capital flows. As the price of energy rises, supply chains will probably shorten, and economic interactions will be reframed by consumer demand for environmentally sound products. Technical standards and labelling are part of this approach.[6] One of the implications is that we are going to have to develop our carbon accounting services so that we can manage important daily decisions with an impact on the climate.

Time is neither on the side of business nor policy makers, so the potential weight of public pressure cannot be underestimated. If the carbon sector is driven solely by profit motives and efficiency norms we run the risk of repeating past mistakes. As one participant postulated, creating a positive footprint on this world will partly be contingent on the individual values we bring to the effort. The economic opportunities and job creation possibilities presented to industry and entrepreneurs by the world market for recycling, forestry, efficiency gains or renewable energy are absolutely huge and will hopefully be driven by long-standing sustainable relationships.

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[4] The summary of Working Group 6 on the parallel subject of 'Asian growth models: in search of alternatives' can be found in appendix to this report.

[5] The conclusions of Working Group 5 on 'cap and trade as models for financing' can be found in appendix to this report. It was also felt that special incentives for LDCs, which the CDM is currently not providing, would have to be looked into. Parts of Africa present huge green job opportunities in forestry and renewables, for example, but the big issue to date has been major financier perceptions of governance risk and the absence of capital flows to support these projects.

[6] The conclusions of Working Group 2 on 'technical standards, labelling and green protectionism' can be found in appendix to this report.

6 – Knowledge Creation and Knowledge Diffusion

Innovation can be affected by the signals of price, profit and necessity. The panel discussions on knowledge creation and diffusion concentrated mainly on energy technology rather than knowledge dissemination driven by value-driven individual change. And a large part of the debate pivoted around speed, scale and the need to shift technologies to the areas where they are most needed and effective.

The energy world faces an era of revolutionary transitions. The first attends to changing the way individuals behave, the second to a generation of new technologies and the intensification of their introduction. On both counts, long-term cooperation and partnerships could help ease some truly difficult choices – in the appropriate technology mix for example. One of the problems put forth during the presentation of trade and climate change scenarios[7] at the MSD is that we do not appear to have devised a climate change scenario which correlates oil depletion (in economic terms) with an evolution to a low-carbon future, rather than a world we do not recognise chocking on dirty coal.

If global emissions are to peak by 2020, a framework that speeds up technology diffusion, increases its scale, accelerates follow-up innovation, and boosts its cycle is going to have to be created. The present framework is clearly not fit for purpose and the stormy debate about IP norms, private incentives, and regulatory capture was again brought to the fore. Some of the alternatives to be floated during the discussions, with little convergence amongst participants, included global licensing and information exchanges, open source and web communication, eminent domain, public private partnerships, a social stock exchange with metrics adapted to the energy sector, and patent pooling with the creation of a fund to compensate private sector innovators. One of the criticisms targeted at the TRIPS model of governance was the process through which it came into being. The backroom lobbying and arm-twisting by western multinationals has created a deep backlash in terms of mistrust – to which the present recriminations within the WTO as well as the negotiated obligations under the UNFCCC are not immune – and hence it is not an especially attractive model we should attempt to replicate in establishing future regulatory regimes.

Once governments give clear signals on the direction of climate policy, they will also need to leverage private finance due to the sheer speed and scale of necessary research and investment. Green subsidies will have to be dispatched. Adaptation funds will have to be disbursed. Huge cross-border public private partnerships in R&D also seem unavoidable – although these partnerships do engender issues of accountability. The positive news presented at the MSD is that the potential for renewable and alternative energy will be sufficient by 2050. The problem is that at present, in the absence of carbon internalisation, no single renewable energy can compete with fossil fuels except onshore wind and concentrated solar power – two technologies further burdened by intermittency. The capital intensity of the energy industry and immediate energy demands for development mean that public private partnerships were presented as the only feasible way forward – no single country or corporation can realistically tackle investment and research prerogatives at sufficient scale.

[7] See the FES *Geneva Scenario on Global Economic Governance 2020,* http://library.fes.de/pdf-files/bueros/genf/06597.pdf and http://www.youtube.com/watch?v=V6QikSQ1VOw

7 – Multilateral Solutions for Global Public Policy Issues

The IPCC first assessment report was issued in 1990: we had the knowledge, we knew the risks and we had technology. The one thing that has not changed over the past twenty years is behaviour. Businesses, in order to adapt, need stability and predictability because of their shareholder structured or government imposed short time horizons. Over a thousand companies from across the globe, with every G20 country involved, have signed the Copenhagen Communiqué asking for a strong regulatory framework, yet politicians hold tight to the NIMTO (Not-In-My-Term-Of-Office) adage. The opportunities for multilateralism reside in altering individual behaviour. In spite of a healthy dose of optimism, it is very difficult to see how mindsets and practices are going to change if stale stand-offs along the lines described in this report persevere. We need to make more noise. We need to incentivise business by warranting that there will be returns on investment and governments that they will be elected. These are moral and political questions, not just economic ones. As one participant at the MSD put it, we are living at the foot of a volcano on the verge of eruption and we need to stop engaging in wishful thinking.

One of the many paradoxes to emerge from the multi-stakeholder discussions was the disconnect between analysis and prognosis – on the one hand the ineffectiveness of our global governance institutions was repeatedly emphasised, while on the other there was much discussion about incorporating pieces of the puzzle into a multilateral process. To the question as to whether the trade regime can survive intact if we get an effective climate change agreement, the answer is probably no. But if we do not conclude the Doha Development Agenda – rebalancing the rules of engagement one way or another – it will make it that much more difficult to reach an effective climate change agreement encompassing both mitigation and adaptation. If there is a lack of coherence at the international level, then this is simply a reflection of opacity and the collective 'political will'.

Much of the MSD was about trying to connect the dots between the complexities of trade, development and climate change. This means working hard on sustainable relationships and building capacities within international institutions to communicate and interact. One concrete proposal to emerge from the discussions, which draws on youth, is to link organisations by strategically placing interns and students in two or three international bodies. If we want to achieve the desired impact over time through sound public policies rather than conflict, the fundamental approach is education and communication across institutions and across issue areas. Another proposal, linking into this, is that the MSD be developed at the regional level: take the debates and discuss success stories in terms of green culture and public-private-labour-partnerships to demonstrate this is the future. And finally, we should create a narrative on these extraordinarily complex issues that will induce individuals to change their behaviour in response to the pending hazards we are all facing.

8 – Concluding Remark

This summary paper will unaccustomedly grant its author the privilege of ending on a personal note. The compiler of this report – despairingly attempting to untangle the multilayered intricacies and implications of climate contentions – owns joint French and British citizenship. Two countries corroded in their own ways by deep inequities, nevertheless countries in which most inhabitants enjoy a quality of life beyond the wildest aspirations of many people around the world. When are we going to understand that we have an obligation to fructify this wealth beyond crude consumerism? Protecting our planet and species from our unsustainable compulsions would be a good place to start.

This is not to belittle the difficult dynamics of climate and trade negotiations, nor the broad-based domestic consensus that needs to be built for a low-carbon future, but if comparatively wealthy individuals do not move with decisiveness in a spirit of global solidarity, we have very little chance of succeeding during the follow-up to Copenhagen and we will have no choice but to accept the blame. Should we fail, envisioning a not-so-distant dystopian future conditioned by scarcity, mass migration and conflict – a world in which French and British citizens would probably not be the worst affected – does not require a delirious imagination. The struggle to strengthen the stigmas attached to degrading our habitat starts at home.

Working Group 1

Liberalisation of Trade in Low-Carbon Goods and Services

The working group, which consisted of eight persons, decided to focus first on trade in goods, subsequently on trade in services, and, finally on the benefits that could be expected from either of those. The aim of the group was to arrive at pertinent policy recommendations.

Some initial clarifications were made, e.g. that the integration of the EGS (Environmental Goods and Services) topic into the Doha Round was partially a reaction to the fact that negotiations on further liberalization had not made much progress until Doha. There was hope that the EGS debate would open up a way forward. Moreover, there were strong concerns at that time about the impact of the WTO on environmental policies, leading to an integration of environmental issues into WTO negotiations. However, the negotiations on both goods and services in the WTO have not produced the desired agreement so far.

With regard to goods, the working group focused on tariff measures. In this regard, participants of the working group felt that each of the approaches for liberalization of trade in goods suggested so far suffered from shortcomings. For example, the list approach was problematic with a view to dual-use goods. Moreover, under a request-and-offer-approach there is a risk that important products are left out of the deal, because countries are not willing to make concessions. The working group therefore supported the view that objective criteria, based on the impact of certain goods in terms of contributing towards reduction of GHG emissions, should be developed for inclusion of goods into the list of goods subject to tariff cuts. It was considered desirable that scientific experts rather than negotiators should develop such criteria. The UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) was seen as an appropriate forum.

Participants saw the situation with regard to the liberalization of services as more complex; because environmental services are much more manifold than goods and so are the measures for liberalization. Again, participants considered developing objective criteria for the liberalizations of environmental services useful, without, however being able to come to concrete conclusions in this regard.

Moreover, some of the participants of the working group were sceptical with regard to the benefits that a liberalization of trade in services would bring to developing countries. While one discussant stressed the ineffectiveness of services such as the distribution of water or energy in developing countries and held the view that service liberalization could bring huge gains in efficiency, others did not see what developing countries would gain from making binding commitments in this regard. They would not, the speaker argued, be able to compete on developed countries markets, themselves. However, as someone else pointed out, while developing countries may not gain from liberalisation in the environmental service sector, they can, potentially, use the EGS debates to obtain concessions from developed countries in other sectors, e.g. agriculture.

Working Group 2

Technical Standards, Labelling and Green Protectionism

Working Group 2 (WG) recognised the importance of labelling as a means to educate consumers, but was concerned that carbon and other environmental labelling schemes could become sources of green protectionism. The WG saw the need for government involvement to assure that national and international standards were developed, and recognised the important role that international standardisation organisations (such as the ISO) can play in the development of criteria that could be used as a basis for national labelling schemes. The international sector should take a science-based approach in the development of labelling criteria and labelling schemes. Industry should be consulted. Labelling schemes should be kept simple. Indexes and indexing schemes might offer a good way forward. Rating systems are easier for consumers to understand.

The WG believed that assistance for developing countries is necessary so that their products can qualify for carbon and environmental labels. The assistance should be focused on provisions of and assistance for laboratories, product certification and technology transfer. There is a need to work with the UNFCCC on technology transfer as well as finance issues so that efforts are coherent. There is also a need to "mainstream" industry efforts with those of the UNCCC.

The WG saw international harmonisation of labelling standards as the best way to avoid green protection. Use of international standards is more likely to result in international good will. It will also provide business with incentives to produce environmentally friendlier products, to use labelling as a means to educate consumers about these products, and to let consumers decide based on internationally recognised criteria what to purchase. The present proliferation of private labelling schemes (which resemble marketing schemes) is leading to consumer confusion that may be counter-productive.

We need a strong international push to pressure or influence recalcitrant countries such as the United States and China. The G-20 may be better able to influence these countries through club governance and promotion of international standards.

The international community, in particular the business community, should follow the work of the WTO and other international bodies. The international community must make sure that carbon-labelling schemes do not lead to a trade war. Border tax adjustments may lead to such a trade war if the international community is not attentive. The business community should promote standardisation of labelling schemes and schemes that incorporate indexing.

Labelling has an important role to play in addressing global warming. Activities should focus on consumer education. The consumer's role is at least (if not more) important than the regulator's role. Labelling should focus on commodities and not brands.

Working Group 3

Reduction of Fossil Fuel Subsidies

There are over $750 billion worth of subsidies currently reported and made public knowledge. Of this amount, 75% are fossil fuel subsidies. Subsidies are not inherently good or bad, however one of the main problems with subsidies in general is that they falsify the true costs of any given product.

There is a lack of notification of existing subsidies. Germany for example, which is one of the highest reporters, only declares about 11% of its subsidies. This would lead us to understand that the previously quoted amount of $750 billion is grossly understated.

Subsidies very quickly become entitlements. Industries/sectors/products that receive subsidies that may have initially been developed and established for definite periods become continuously renewed and eventually become impossible to lift. Prices/costs of these subsidized products therefore become permanently falsified which reduces the need of producers to improve processes or work towards more efficient production.

Subsidies are easily abused as a political tool to secure electoral votes from particular constituencies. Ensuring farming subsidies remain in place would ensure the votes for the politician supporting these subsidies from farmers. There is a misalignment between subsidies in place and official public policies. If constituents were more aware of existing subsidies and alternatives in terms of ways these public funds could be reallocated the constituents would be able to make a more educated choice more in line with their true needs such as small business loans, training opportunities, etc.

There is very little information regarding the impact of subsides on Climate Change. The dimensions are so great given that the current pattern of fossil fuel subsidies seriously undermines the achievement of climate goals. The subsidies are so trade distorting that only the attention of the WTO through an enforceable action would help. Subsidy disciplines and transparency need to be made more effective with stronger enforcement by the WTO. Stronger and more accurate reporting with comparable data needs to take place under the lead and enforcement responsibility of the WTO.

The working group's conclusions regarding the Reduction of Fossil Fuel Subsidies is as follows:

1. Subsidies are not inherently good or bad.
2. The problem occurs when rent tends to be captured by big business and subsidies become seen as entitlements.
3. When given information on the real alternatives and the true cost of subsidies the consumer would be able to make his/her own choice. There is the successful example of Sweden where constituents were given the choice to remove certain consumer subsidies and also shown where these freed up funds would be applied to enhance constituents' standard of living.
4. There is the need to improve transparency in and increase the reporting of subsidies across all nations instead of keeping it a "voluntary", un-enforced situation. This should be done under the leadership and responsibility of the WTO.
5. It is not production that should be subsidised; but rather subsidise consumption.

6. Subsidies for fossil fuels are an incentive to keep using carbon based energy sources. There is also a need therefore to encourage research into cleaner energy sources and to improving production processes through the use of non-carbon based energy sources.
7. The World Bank, by shifting their subsidies from fossil fuels to project support to transition to more efficient and clean energy sources, should work more closely with the WTO.
8. An international framework is needed for subsidy transparency, reporting, impact studies, promotion of success stories of lifted subsidies and application of lifted funds to projects for domestic excellence, etc.
9. One must be Careful not to victimise the poor and vulnerable even more by lifting consumer subsidies on much needed commodity items simply for the sake of lifting subsidies. Subsidies being offered to big business should be lifted first before marginalised communities and developing nations are targeted. One should go for big wins rather than big losses.

Working Group 4

Border Adjustment Measures and Carbon Leakage

The group felt that border adjustments of all sorts, and free allocation, will be facts of life and that they are here to stay; they have now become a political reality that is impossible to deny (as much as we would like to wish them away). All climate mitigation measures in developed countries that are currently being contemplated include such measures, which appear to be vital for political acceptability.

Border measures and free allocation are being pursued based on the assumption that there will be NO multilateral treaty, and no sectoral climate agreements either.

On sectoral agreements, the group discussed their feasibility, in particular in relation to two sectoral proposals now tabled by the airline and the shipping industries. These proposals were tabled at gunpoint, i.e. out of fear that the EU would unilaterally bring both industries under its ETS, unless they put forward proposals of their own.

The group felt that the airline and shipping industries were unique in that global governance bodies for both sectors existed, i.e. respectively IATA and IMO, and that these organisations are able to coordinate their proposals. No such global governance organisations exist for iron and steel, cement, etc, making sectoral initiatives much more difficult to coordinate.

The effectiveness of border measures in fighting carbon leakage remains to be seen, however, the new study by Climate Strategies and the Carbon Trust showed that border measures must be adapted to the sector (e.g. border measures being more appropriate in fighting leakage in cement for example, than free allocation, and so on).

Effectiveness in fighting leakage would also hinge on improved, and internationally agreed methodologies for measuring embedded carbon. However, it was important to note that it was difficult to "disentangle" the different causes of industrial migration, only one factor for which could be carbon prices.

The developing world would be likely to react negatively to border measures, and could enact border measures of its own. In some sectors the developing world was more energy efficient than the developed world, and could itself do border adjustment – this could deteriorate into a trade war.

The group felt that a number of more constructive alternatives existed to border measures, which include:

1) Green subsidies to trade exposed industries in developed countries, for R&D, access to technology, etc
2) Facilitated access to the CDM by trade exposed industries in developed countries: they could reduce emissions in developing countries, instead of their own emissions, which may be more difficult/costly to reduce
3) A bilateral between China and the US, that would smooth out the border issues
4) A multilateral framework for Bilateral Trade Agreements in the WTO in the climate context, which could be negotiated
5) Consumption accounting for GHG emissions, instead of production accounting, reducing the need for border measures

While none of the proposals garnered complete consensus in the group, they were all proposed for further reflection.

Working Group 5

Cap & Trade as Models for Financing

The project-based mechanisms in the Kyoto Protocol (KP) have contributed to significant levels of emission reductions in developing countries and have stimulated billions of dollars in investment. In 2002-08, the Clean Development Mechanism (CDM) leveraged US$95 billion (€68 billion) of investment in clean energy from $22.2 billion in total CDM credit purchases[*]. The mechanisms also are playing an important role in reducing firms' and governments' costs of complying with emission reduction targets under the KP.

Despite these early successes, the CDM has not yet stimulated investment in large-scale infrastructure projects that will have a significant impact on the climate system. In order to achieve long-term climate protection goals, there is a strong need for the CDM or a successor mechanism to mobilize larger volumes of capital to influence investments in energy infrastructure projects and untapped activities with significant emission reduction potential such as forest sequestration and energy efficiency. It will be difficult for the CDM to influence these types of projects until additionality is applied in a clear and consistent fashion. To date, additionality has been applied on a case-by-case basis, making the outcome of additionality assessments difficult for developers, investors and other stakeholders to predict. While this approach is intended to avoid environmental risk, it creates investor risks that discourage investment and limit the potential of the mechanisms. The continued application of additionality in the current fashion could pose a significant environmental risk – the risk that the mechanisms will fail to influence large-scale infrastructure investments that will determine future emissions and associated atmospheric greenhouse gas (GHG) concentrations long into the 21st century.

In the on-going negotiation to develop a successor agreement to the KP, Parties are discussing ways of reforming the CDM with the goal of stimulating larger volumes of emission reductions. The international community needs to finalize the ways in which the project-based mechanisms could be restructured to reduce barriers to investment and stimulate greater emission reductions. Options should be developed without prejudice to future decisions as to how developing countries participate in the future effort to address climate change. It is necessary for some developing countries that meet certain criteria to remain eligible to earn credits under the CDM or a successor mechanism. For those countries, it will be critical to ensure that the mechanism operates more effectively than it has done in its early years.

The primary goal in implementing the project-based mechanism is to guard against three main environmental risks that emission reduction projects can impose. These are additionality, over-crediting, and impermanence. In attempting to ensure environmental integrity and mitigate these risks, the current CDM project review process treats all projects similarly, regardless of the specific environmental risk they impose. This one-size-fits-all approach imposes risks on developers and investors that are less understood and often overlooked in policy discussions, with adverse results. This is despite the need to send strong and continued signals to project and technology developers and technology users to support investment in clean technologies. These investor risks include:

[*] World Bank, "State and Trends of the Carbon Market 2009," May 2009

- *Project eligibility risk*: The risk that a project will be deemed ineligible to create offsets, which is exacerbated by rules that do not provide upfront certainty that a project will be eligible to create offsets.
- *Offset eligibility / value risk*: The risk that offsets will not be eligible for compliance use, or will have less value than expected, due to restrictions imposed on their use for compliance – eg quantitative limits on the amount of offsets that covered sources can use to comply with emissions targets; a discount factor imposed on the compliance value of a particular offset activity based upon the geographic location in which it was undertaken or the activity that created it; restrictions that are made contingent on the price of allowances.
- *Offset quantity risk*: The risk that the quantity of offsets a project will be eligible to receive will be different than expected because monitoring and verification (M&V) requirements are not clearly defined at the outset of the activity. This risk is separate and distinct from the risk that a project simply does not operate as planned.
- *Impermanence*: The risk that investors will have to replace offsets for carbon sequestration activities that have been credited and were lost due to fire, for example. While responsibility needs to be assigned at some level for impermanence, there may be approaches to ensure that this risk does not stifle project development and investment.

Policy-makers' efforts to mitigate environmental risks imposed by emission reduction projects should seek to avoid imposing unnecessary investor risks, which adversely impact the economic and environmental effectiveness of these programmes. Investor risks make it more difficult for developers to secure capital necessary to implement projects. They lead to lower levels of project development, thereby sending the wrong signal to technology developers and manufacturers regarding demand for less carbon intensive technologies. They also can impose uncertainty on buyers of GHG emission reductions with respect to the eligibility of projects, the quantity of offsets that a project will be eligible to receive, and the consequences of impermanence. As a result, demand for offsets may decrease, and interest in specific categories of offsets may be limited (e.g. energy efficiency and forest sequestration).

Working Group 6

Asian Growth Models: In Search of Alternatives

BACKGROUND

Before the forthcoming climate negotiation in Copenhagen, there is widespread speculation and confusion regarding the role that will be played by Asian economies especially its key developing countries such as China and India. In the past, the Asian growth model primarily meant an export-driven one coupled with cheap labour. Japan was very successful in this regard after WW II, followed by the so-called Asian Four Tigers – Hong Kong, Singapore, South Korea and Taiwan – between the 1960s and 1990s. Pursuing a similar route, hundreds of millions of Chinese have been lifted from poverty over the past three decades. Nevertheless, the traditional exports-driven growth model in China has come with detrimental environmental impacts especially high carbon footprint. Even so, with the combination of highly technologically competent nations such as Japan and fast growing economies with vast market potential and cheap labour such as China and India, Asia is arguably a region that could grasp the opportunity to leapfrog towards alternative growth paths. Key questions for this Working Group included 1) what are alternatives to current growth models in Asia? 2) how can key developing nations in this region find new paths to reconcile economic development with the global needs for GHG emissions control? and 3) which country can become a role model in this region? Given the short time span available, participants in this session agreed to focus their discussion on China, the world's largest CO_2 emitter since 2007.

CHINA: AN UNSUAL SUSPECT IN SEARCH OF LOWER CARBON EMISSIONS DEVELOPMENT PATHS?

In the recent UN Climate Summit, Chinese president Hu Jintao pledged to reduce China's GHG emission intensity per GDP by a substantial but unspecified margin by 2020. While legally binding cap on GHG emissions committed by key developing nations may be more desirable from the perspective of developed countries, GHG emission intensity target and emission cap are basically the same concept from a mathematical perspective. While the most important aspect of each concept is the percentage of emission reduction commitment, the accommodation of both instruments in the forthcoming Copenhagen negotiation will not only significantly improve the prospect of the consensus building process, but is also arguably consistent with the overarching principle of the *common but differentiated responsibility* for climate change between the developing and developed worlds.

China has recognized that its current export-driven growth model is unsustainable and is trying to stimulate domestic consumption after the recent worldwide economic slowdown. The difficulties encountered so far have offered an important lesson for other developing nations – it is important to build a social security network during the early stage of development. In addition, export-based growth should be coupled with domestic consumption-driven development.

Personal aspirations of Chinese have a major role to play in shaping China's development path. Until now the materialistic, individualistic 'American dream' was the ultimate role model. Japan arguably offers a better example of an energy-efficient and culturally self-conscious society than the US. Japanese efficiency is formulated by historical developments (most noticeably in its response to the 1970s oil shocks). Without any significant energy

resource endowments, Japan followed an investment-intensive path, without recourse to further nuclear expansion, leading to a resource efficient economy. The inter-regional cooperation between China and Japan is not close enough than it should be primarily due to historical antagonisms. Given the recent gesture from the newly elected Japanese premier Hatoyama, there are perhaps better prospects for the transfer of the Japanese experience to the rest of Asia, including China.

A key difference between Japan and China is that while in Japan there is a strong connection between government and industry, Chinese industry is more motivated by profit-seeking enterprises instead of government policy. China has already opened significantly in economic terms, but it is still a family-oriented low-trust society, with rising nationalism. While the Japanese arguably have never really aspired to the American dream, the Chinese have fully adopted it, and thus are more individualistic. In comparison, Japan is more corporatist. This shows the importance of culture in shaping development paths of a given country.

The US followed a completely different route; it started with a vast empty land and seemingly unlimited natural resources. China had to kick-off its industrialisation with a densely populated country and low per capita resource endowments. Because of China's unprecedented scale, it is difficult for the country to find a role model to follow. Instead, China needs, in the words of the late Deng Xiaoping, to feel stone by stone in order to cross the river in search of an alternative path. If China succeeds, it may become a role model for other developing nations to follow.

An interesting question is the role played by the Chinese government during the country's transition from a central planning economy to an increasingly market-oriented one. So what should be the appropriate role for a government in shaping a nation's development path? And what should be left for the market? The unprecedented economic boom in China to date deserves reflection regarding the governance role played by the Chinese government in terms of maintaining the country's social stability and guiding the direction of China's economic advancement.

Regarding the right balance between government and civil society for alternative development paths, an interesting observation is that people look to the government for solutions in China. In comparison, Indians arguably often perceive government officials as oppressors and often feel left behind. Nevertheless, unlike the suffocation of NGOs in China, there is sufficient room left for private sector and civil society in India, as the government allows the existence of all sorts of non-government stakeholders. While a sharp contrast exists between government structures in India and China, a hybrid approach may be more desirable. In other words, the right combination of both private sector and government leadership is in urgent need.

There are limitations for a growth model from any specific country. On certain issues, the United States can be a good example for China especially given the U.S.' comparable sheer size: for example, on the autonomy of the state versus the interest of provinces in energy transmission. In comparison, while Switzerland or Denmark may be environmental champions, it is much more difficult to transfer their experience to key developing countries like China. Similarly, the Chinese model has its own limitations; this model alone may only be applicable to certain types of developing countries with less relevance to smaller economies.

It is interesting to note that Asian developing economies such as India may be more willing to listen to China than to western countries due to historical reasons. Both countries should be interested in each other's development paths, although sharp contrasts often remain. So China arguably has the potential to lead developing countries in search of alternative paths. In addition, China and ASEAN should cooperate more closely, as this will also create more

competition between China and Japan; it is important to engage Japan as a critical partner to East Asian integration.

Though the definition of middle class differs across countries, it is important to nurture the middle class especially for developing economies. It takes government leadership to draw lessons from others countries and implement international best practices on the scale and at the speed required for emerging economies such as China. While penalising bad behaviours sometimes may work, but how could governments incentivise the middle class to spend their disposable income on non-polluting activities may be a more pressing issue. Though incentives are certainly the key, what drives behaviour changes is more relevant.

The sense of security is important for a country to shift toward lower carbon development paths. For instance, the EU and China will always be net importers of energy for decades to come. The EU can rely on North Africa. How about China? Will the international community accommodate China's increasingly higher energy appetites and ease its sense of insecurity? Different answers to the above questions have different implications on China's development trajectory in the years to come.

What technologies can be relied upon to move towards alternative development paths? Currently, only wind turbines can compete with fossil fuel, but there is simply not enough space on earth to satisfy the need for power with wind. Paris would need 14,000 windmills the size of half the Eiffel tower to satisfy its energy needs. Another possibility is solar power (not PV but concentrated solar power). The problem with renewable energy is intermittency and storage.

Simple solutions exist for many environmental issues such as scrubbers on smoke stacks that reduce acid and particulate emissions, nevertheless, they are often either not installed or not operating at thermal power plants in developing nations, so more sustainable development paths could be as simple as the appropriate deployment of existing technologies.

Advanced techniques are desirable but need to be realistic regarding both their pros and cons. China has the ability to pursue CCS (Carbon Capture and Storage) and nuclear. CCS has enormous potential to allow the country to continuously rely on fossil fuel while curbing its spiking GHG emissions simultaneously, but it is expensive and unproven. Due to the international movement against nuclear 25 years ago, many countries have stopped educating nuclear scientists, and now there is not enough capacity to build nuclear reactors. To speed the technological development, it is important to move any economy away from imitation to innovation. The protection of copyrights is essential. In addition, international cooperation and know-how transfers are also important.

Air and water pollution by the use of coal necessitate fundamental changes. Price externalities should be internalised into fossil fuels, but how will poor countries pay for that is a serious issue. In case of the Chinese economy, the country will have to continuously rely on carbon-intensive fuel in pursuing alternative development paths. As a result, alternative development paths should be flexible. So lower carbon emission economy is arguably a better terminology than low carbon economy.

Where China has failed can also be used as negative examples for other Asian economies – what should not be followed. For instance, China faces enormous environmental challenges, as 70% of its rivers carry undrinkable water, and the costs of environmental damage are 6% of GDP. So it is important to strike an appropriate balance between environment and development.

SUMMARY

What China has achieved, what the country has failed, and what China is trying to improve can offer important lessons for other developing economies in search of alternative growth

paths. Nevertheless, the Chinese growth model has its own limitations and may only be relevant to certain types of economies (e.g. large and densely populated countries). Ideally, a combination of the Chinese experience in what the country excels coupled with international best practices in area of China's weakest aspects (e.g. room for civil society) can better serve the developing world in search of alternative development paths. Finally, the accommodation of the idea of GHG emission intensity (per unit GDP) reduction target proposed by the Chinese president Hu Jintao at the recent UN Climate Summit may be beneficial for the international community in terms of consensus building at the forthcoming Copenhagen climate negotiation and beyond.

Appendix I

Too late to be a Pessimist

Unprompted comments from a young participant
at the Multi-Stakeholder Dialogue

Joachim Monkelbaan
Programme Officer, ICTSD, Switzerland

My conclusion after having attended the VI Roundtable on trade, climate change and development is that I am afraid.

I am afraid because I come from the Netherlands and most of my country lies below the sea level.

And I am afraid that this statement might be too long.

But I am much more afraid of something else.

What is the problem we have been talking about at the Roundtable? It is climate change, and also poverty and development. And what is the solution? Here I heard it is environmental goods and services, energy efficiency, renewable energy, the right investment decisions, cap and trade schemes, changes in consumer behaviour and more international cooperation.

So we know what the technological solutions are. What is the problem then? Why don't we implement the solutions? We heard that a major problem is 'political will'. But do you have a definition of 'political will'?

How long do we need to wait before we mobilise 'political will'? Do we wait until the temperature rises by 2 degrees? Or 4? Or 6?

We live in 1933. In 1933, people thought that the Great Depression was ending, and that the crisis was overcome. A few years later, Germany invaded Poland, which should not have come as a surprise, and the real crisis started: World War II. How surprising will disruptive resource scarcity and climate change be a few years after the current economic crisis?

WWII made the UN and GATT necessary. The next crisis, which will be a resource and environmental crisis, will not just create another institution, but more probably a 'world government'. Again, this will not be for fun, but because it will be necessary to solve global problems of an unprecedented scale. This would be very sad, because it would not be a manifestation of action but, again, only reaction.

Now I get to what I am really afraid of: the fact that we as human beings believe that we are powerless, powerless to make any change beyond what is immediately necessary and in our own self-interest. I believe in the opposite: human beings are capable beyond imagination: we connected all corners of the world and put a man on the moon because we wanted to. So why would we not be able to deal with climate change if we want to? How can we mobilise the will to deal with climate change and other global challenges in a systematic way?

At the Roundtable we heard for example that we should not expect nations to live up to the system of international trade laws and rules in the aftermath of the economic crisis. But I believe that in the long run, there is a set of universal values and principles that can encourage a constructive solution for environmental and other problems, both at a global and local scale.

Currently the main principle and target that most individuals, companies and nations share is economic (GDP) growth, so material growth. This is totally legitimate, especially for developing countries with young, growing populations where growth is simply an issue of survival. But for developed countries, economic growth is only one stage in development. Also, economic growth itself is not bad for sustainability because environmental goods and services are in general expensive and if we buy more of them instead of cheap, dirty goods, the economy in theory will grow. This is a question of the quality of growth.

An example of quality growth is the energy transition for which a recent ILO study shows the economic and social benefits: a $1,000,000 investment in the oil industry creates 5 jobs whereas the same investment in the renewable energy industry creates more than 15 jobs.

But we need more than material growth and monetary gain as a guiding principle to solve a problem at the scale of climate change. Material growth without limit is simply not sustainable. It is time to focus on growth in less tangible things and to extend the range of human inventions and technical development, to increase the productivity of mankind, to the extermination of disease, to the extension of scientific research, to the raising of standards of physical health, to the sharpening and refinement of the human brain, to the exploitation of the unused and unsuspected resources of the planet, to the prolongation of human life, and to the furtherance of any other agency that can stimulate the intellectual, the moral, and spiritual life of the entire human race.

It is impossible to describe in two pages every measure that needs to be taken to cut emissions by 50% by 2050 while global GDP will quintuple (this essentially means an efficiency increase at a greater scale than the industrial revolution). But we can start to describe what lies at the heart of every decision to be made at every level while making the transition to a completely reordered society.

What lies at the heart is finally putting the values and principles that we have known for so long into practice while making difficult decisions on climate change. Climate change is maybe just like trade, not a zero-sum game, but whereas trade is about dividing the pie, climate change is about dividing a rising bill, which is tenfold more difficult while the current climate negotiations are in their infancy.

Laying the groundwork for global civilisation calls for example for the *leadership* to create laws and institutions that are universal in both character and authority. The effort can begin only when the concept of the oneness of humanity has been wholeheartedly embraced by those in whose hands the responsibility for decision making rests, and when the related principles are propagated through both educational systems and the media of mass communication. Once this threshold is crossed, a process will have been set in motion through which the peoples of the world can be drawn into the task of formulating common goals and committing themselves to their attainment.

What for example is the meaning of a value like *democracy* if trade negotiations that are in the interest of the majority of the world's population cannot be finalised because of minority interests? And what does democracy really mean if in the country that promotes itself as the harbinger of democracy in the world, the population trusts its politicians less than second-

hand car salesmen, while in the country that it often calls a 'dictatorial regime', 86% of the population supports its government's policies?

Numbers count. What is the meaning of the *equality of men and women* when a recent survey showed that only 10% of men would change their lifestyle to improve the environment while 70% of women would do so? What does this mean in a world in which women have very little influence?

Women represent the biggest emerging market in the world, more than double the size of the Chinese and Indian markets combined and with higher growth rates. As women get better education and more spending power, their tendency towards more sustainable spending and decreased birthrates will have an unparalleled effect on sustainable development.

I would bluntly like to posit that *cooperation* at every level of society – local, national and global – on a transition to a truly prosperous and sustainable global society is impossible without a shared understanding of values.

How do we want to *cooperate* with other nations on a global scale if within highly developed countries it is almost impossible for different ministries that are engaged in issues such as climate change to find a common ground based on the excuse that "their cultures are so different" and that they have different interests?

Of course it is easy to list some principles. So my question to you is not only which values and principles come to your mind in relation to solutions for global challenges like climate change, but especially how we can implement values and principles practically and without sentimentality? This is important because if we keep on making decisions on the basis of how we win the next elections or how to increase the next quarter's profits, we are in serious trouble.

If the basic values and principles are clear to everyone and people understand their importance, people are more likely act on them. Maybe I'm an idealist. Maybe I'm an optimist. This made me sometimes feel ashamed at the Roundtable, while at other moments I got worried that even the experts on climate change do not grasp the scale of the challenge that is awaiting us. In any case I would like to finish by quoting from the documentary 'Home' about the environmental crisis:

It is too late to be a pessimist

Appendix II

Managing the Systemic Challenges of the 21st Century

The Interface between Science and Policy seen with the eyes of tomorrow's leaders, the generation now between 18 and 30

Dinner speech delivered by

Dr. Eberhard von Koerber
Co-President of the Club of Rome

This Conference, as spelt out in the Conference introduction, is to generate ideas, to seek solutions for building sustainable economies in the developing and the industrial countries and to build confidence. However, the confidence levels about the long-term future presently are extremely low, in particular in the 18 – 30 age group. Through my active involvement in the Club of Rome, the World Scout Organisation and the Wittenberg Centre for Global Ethics I am regularly meeting talented and politically interested young people, mainly students and postgraduates, from all over the world. Climate change, financial crises, recession, frustration with only short-term policies from party politicians wanting to be re-elected and many other irritations and concerns have led to substantial angst about their personal future: Will my education give me a job later? Will I have enough income to start a family? What will be the financial consequences of huge government debts we inherit in a country with low birth rates and an aging population? What about my income after retirement in 2050? In which nature, in which society will I live? Is it worthwhile to get old? I am hearing these questions for the first time from a generation which in its active life will experience 2050. There is a dramatic difference between young citizens concerned about their own personal long-term future and a generation concerned about a future in which they will have closed their eyes already! We may well experience worldwide student unrests in the not too distant future, similar to the sixties, and a severe loss of democratic stability. We, the generation in control, have to act and accelerate before we loose control. I say this to explain why we have to look far beyond 2020 now.

A I will now sketch some of the most important critical issues which will determine the future. I present them individually, but they are essentially connected, dynamic and systemic.

1. International Development

- Around 2 billion people today are living on less than $2 per day, with their basic needs for security, employment, energy, health, food and nutrition unmet. World population will increase by 2.3 billion people over the next forty years on this planet. In the absence of effective action, this will aggravate poverty, reduce political stability and accelerate environmental degradation.

- If, as is commonly assumed, it is feasible that the global economy should double in size over the coming 20 years, it is estimated that an additional 2 billion people would attain the living standards of the present middle class, with the corresponding massive increase in consumption and waste.
- For millions of people, the problems are acute already today: escalating demand and increased prices for food and energy have already provoked a food crisis across the world.

2. Climate and Environment

Climate

- Scientists now understand much better the fundamental systems dynamics of the processes which drive climate change. Even if international agreement in Copenhagen and follow-up action could ensure that concentrations of greenhouse gases in the atmosphere are contained at 450 ppm, this does not guarantee that the rise in global average temperature will be limited to 2°C. In fact it offers only a 50% chance, which is not normally considered a secure basis for policy.

- Further, a rise in average global temperature of 2°C implies, in many regions of the world, a rise of 4°C, for example in the Alpine regions of Switzerland and at the Greenland ice sheet with major potential consequences for sea level rise.

- There is growing concern in the scientific and expert community that global warming, induced by anthropogenic emissions, will "trigger" "positive" feedback loops which well then drive "runaway" climate change. These processes, such as the loss of reflecting ice, the degradation of ecosystems, the release of methane in the oceans and from melting permafrost and the effects on plankton of the acidification of oceans are now beginning to operate. Once we pass a tipping point where these positive feedback loops take over, reductions in emissions will be ineffective.

Ecosystems

- Humanity is overusing the biological resources of the planet by some 35%: we are using up our biological capital, and this is unsustainable. This overuse can however be expected to increase as population rises from 6.7 to 9 billion. We are passing on a vast environmental debt to future generations.

  As temperatures rise, rainfall patterns will change, desertification will intensify and water resources will be increasingly stressed. Food production in critical regions will fall while the needs of a growing population will increase. This will intensify competition for vital resources and trigger global migration, instability and violence.

Energy

- The long-term issue can be seen thus: over the period to 2050, global energy demand is set to double, at a time when emissions must be drastically cut to avert irreversible climate change. This dilemma can only be resolved by breakthroughs in science, derived from basic research. And the innovative solutions must be found and deployed soon, not in 2049!

Water

- The impacts of climate change through widening desertification through lack of summer water for China and India from melting snow and ice caps, the contamination of aquifers in coastal areas resulting from sea level rise, the increased variability of rainfall patterns, floods, drought and extreme weather events, will all impact on water security and intensify competition for limited supplies.

So much on climate and environment.

3. The Financial and Economic Order

- The increasing imbalances and vulnerabilities in the global economy and the widening inequalities in the distribution of income, wealth and opportunity had demonstrated already before the present crisis that the path of world economic development was unsustainable. A US current account deficit of $700 billion per year and the transfer of $1.7 trillion annually from oil consumers to oil producers were clearly not sustainable.

- The massive and sudden financial crisis, now coupled with a deep economic recession, has destroyed confidence in long-established policies, relationships and institutional arrangements. This creates an opportunity to advance new ideas.

- Underlying these economic developments, the world is entering a period of transformation in the structure of power and influence and in the underlying concepts, relationships and mechanisms which drive the world economy.

The central dilemma facing humanity in the 21st Century can be framed as follows: economic progress will be essential to generate investment and employment to meet the needs of a growing world population. But sustained growth on the present basis will destroy the global environment on which humanity relies. This dilemma can be resolved only by re-orienting world development onto a sustainable and equitable path. The task therefore ahead is no less than to define a new, sustainable and equitable global economy for the 21st Century. This is an exciting and a positive challenge.

B Global Issues in a Systems Perspective

Let me now briefly assess the challenges we face in a systems perspective. I will try to clarify the content and implications of a systems approach through four illustrative examples.

1. Climate Change

The systems which govern climate are of enormous complexity and no amount of research and analysis can eliminate residual uncertainty. Nevertheless, the IPCC has determined that climate change is occurring and that it is strongly influenced by human activities, particularly by GHG emissions and deforestation.

Let me now outline some of the key issues from a scientific and systems perspective:

- As I have indicated, it is broadly accepted as the goal of the current international negotiations that the rise in global average temperature should not exceed 2°C. And it is assumed that, to achieve this, the concentration of greenhouse gases in the atmosphere should stabilize at not more than 450 ppm.

- However, temperature rise as compared with a pre-industrial baseline at 1750 is already 0.8°C. The inertia of the system, the delay between a rise in emissions and a rise in temperature is such that a further rise of 0.7°C is already inevitable, driven by emissions to date. We are in fact already on the edge, committed to a rise of 1.5°C.

- Further, it is by no means clear that a concentration limit of 450 ppm will ensure a rise of only 2°C. The issue of the sensitivity of the atmosphere to increases in GHG concentrations is complex. There is in fact only a 50% chance that the temperature rise will not exceed 2°C at 450 ppm.

- Also, the rise in temperature triggered by emissions will be uneven across the globe. In particular, it seems clear that a 2°C average rise will imply a 4°C rise in the Alpine region of Switzerland and, most significantly at the Greenland ice sheet, with direct consequences for sea level rise. (Arithmetically, the complete melt of the Greenland ice sheet would lead to a sea level rise of around 7 metres!)

- In spite of all efforts to date, climate change is accelerating, at around 3ppm per year from the present level of around 386 ppm.

- The interconnections between climate, ecosystems, energy and water are of highest importance: the threats in each of these fields cannot be resolved without action in the others. In particular, the degradation of terrestrial and oceans ecosystems, which constitute massive carbon sinks, critically affects the rate of global warming as these ecosystems absorb around 45% of anthropogenic emissions. As ecosystems degrade, warming accelerates, a “positive” feedback loop develops. Thus, climate change cannot be contained in the absence of effective action to preserve and recuperate the ecosystems which are in decline worldwide.

- The rate of change in temperature has crucial consequences for the survival of species and ecosystems. According to IPCC, a 0.1°C rise in a decade puts 15% of the relevant species at risk. In addition, warming and rising acidification threaten the ecosystems in the oceans which contain 90% of life on this planet.

- Understanding of the systems dynamics of climate change is advancing fast. The central threat can be sketched as follows: as the climate grows warmer, this is already triggering a number of positive feedback loops which are in turn contributing to further climate change. Scientists are increasingly concerned that, beyond a certain threshold, these positive feedback processes will take over, leading to runaway climate change. Subsequent reductions in emissions will be ineffective in stopping this process. Thus, the critical policy priority must be to avert any risk of crossing the tipping point to trigger catastrophic climate change.

- The climate system is also of course intimately linked to the global energy system and to economic systems and activities. It follows that climate issues cannot be resolved through environmental measures alone, but only by explicit strategies to guide socio-economic progress onto a different path. This insight has been accepted by the leadership of China in the Xiao Kang programme for the reorientation of the national economy.

This brief outline demonstrates some of the critical systemic issues associated with climate change. Thus, a critical issue for the future is to convey the realities and risks of climate change across the interface between science and policy. The Club of Rome, through its cooperation with world leading research institutes and universities will be the platform for the interface between science and policy, i.e. governments and parliamentarians.

I will now briefly show the relevance of systems concepts to three other issues: demographics, the food crisis and finance.

2. Demographics

A simple fact, which should be startling, is that we can expect around an additional 2.3 billion people to arrive on this planet by 2050 if present trends continue. This figure can be influenced through proven policies but the inertia of the population system and the lead time between action and results are such that the trend can only be influenced to a limited extent within this timeframe. Why are we not deeply concerned? Principally, because population has grown in the past and we therefore implicitly assume that population growth can continue without dramatic consequences.

However, from a systems perspective we know that changing scale can have dramatic effects. In this case, the additional load on the environment, on water and other resources call in question the survivability of the ecological systems on which we depend.

We are thus again facing the prospect of non-linear effects: we cannot assume, because population has grown to the present level of 6.8 billion, that a further increase in scale to 9 billion can occur without devastating consequences.

3. The Food Crisis

In reality, the conditions for producing food at the most basic level of the farm or smallholding are fully integrated. Local understanding, cultures and methods are adapted to meet these local conditions and realities.

However, the "modern" reductionist scientific approach insists on disaggregating this integrated reality into distinct and specialised interventions. Thus the complex systems which have operated successfully at the local level for centuries become distorted and unbalanced as a result of external interventions. This approach is perpetuated by disciplinary and sectoral barriers, such as the framework of national ministries and the Specialised Agencies of the UN.

And these basic activities, ranging from the smallholder farmer to the massive multinational corporation, must fit within a complex world food system which seeks to balance diverse and unstable sources of supply with the demand of the ultimate consumers across the world.

A systems approach is needed to recognise, to understand and to respect the subtle and complex linkages and factors on which sustainable food production and food security depend under the conditions of each locality. And this local reality must be linked coherently to the hierarchy of systems which range from the farm through the national to the global agricultural systems.

4. Finance

Following the disaster of the financial crisis, it seems that we are rapidly returning to business as usual: ethics and logic are overwhelmed by special interests, influence and power. President Obama's announced switch from Wall Street to Main Street does not materialise. Wall Street through its tentacles into Washington is defending its position tooth and nail. The same is true in London where the Labour Government is protecting the 450 hedge funds managing 80 % of the hedge funds' assets in Europe.

Here again, in financial markets the effects of scale are fundamental. In 1985, a group of seven major countries could gather in the Plaza Hotel in New York with the prospect of taking coordinated action to influence currency markets. Now, with over $3 trillion moving each day in international currency markets, the system has moved beyond control. It has been estimated that some $30 trillion in wealth has been wiped out by the financial crisis in 2008 and 2009: a figure which two years ago would have been incomprehensible.

These scale effects are compounded by the rapid rate of change and by financial movements accelerated by computer trading and advanced Information and Communication Technology (ICT). And the complexity of financial operations and of the truly global financial system is now escaping our comprehension. To reverse these uncontrollable trading and arbitrage volumes the Tobin Tax is now back on the agenda and supported by several governments, including Germany.

I hope that these four examples – climate, demographics, food and finance – have illustrated some critical aspects of a systems perspective. I could of course have chosen other issues, such as energy, health, the oceans or natural resources with equal effect.

C The Root Causes of the Present Crises – Redefining Growth

I will now suggest how a systems perspective can transform our understanding of growth. First, what do we mean when we say that national GDP has grown by 2%? The answer depends on what we consider to be the boundary conditions of the economic system. In other words, what factors are included in the economic model and analysis which define GDP and thus the rate of growth. We can see that many critical aspects are not included, such as the costs of deteriorating infrastructure, of environmental damage, of the use and degradation of natural capital, and rising levels of individual and national indebtedness. In the case of China, if the costs of environmental degradation and health effects are at least 6% of GDP, what does it mean to say China has grown by 9%?

New concepts of green growth, human development, ethical investment, sustainable development and corporate social responsibility are emerging in response to the perception that new models of growth and development are needed to integrate the vital facets of increasing welfare, environmental responsibility and inclusive development.

Briefly, the current model of growth, heavily influenced by economic and financial considerations and pressures, must be adapted in four key respects:

- The narrow definition of economic growth must be broadened to achieve a concept of human progress in which the human, environmental and economic dimensions are integrated. The boundary conditions of the economic system must be properly recognised and extended to include vital issues presently considered to be externalities, and a wider range of variables and linkages must be taken into account.

- The treatment of poverty, inequity and exclusion must become an integral part of policies to guide both national and international economic systems, not a residual, separate issue to be resolved by "trickle down" through government action as growth proceeds.
- The vital systems which provide public goods, such as the oceans, the atmosphere, rivers and ecosystems must be preserved and restored against the onslaught of individual national and corporate interests.

- The interests of future generations must be safeguarded. At present short term interests overwhelm longer-term considerations. The system is effectively controlled to achieve short term efficiency, regardless of long term sustainability. This implies that the performance of the economic system must be changed and optimized not only to provide short term advantages for some but to provide for the immediate and the longer-term interests of the many. Unfortunately this process is mostly driven by NGO's and much less by the economists.

D Systems Management at Global Scale

If we are able to define a coherent vision of the future and to formulate models and strategies to achieve sustainable and inclusive world development, the issue arises of how the global and national systems can be guided to achieve the desired goals. In systems terms, this takes us into the fields of control theory and cybernetic or learning systems. I can make only a few observations here.

In the conditions of each society and national economic system we must find a productive balance between the dynamics of private enterprise and the responsibilities of government as custodian of the common interest. And we must find a more successful balance between the forces of globalisation and the needs and identities of the nation state, by redefining the boundary conditions between the national and international facets of policy.

In considering the management of the systemic challenges of the 21st century, the topic of this talk, the central question which emerges from this brief overview is: How are we conducting this change process in a globalised world as a global change process? This raises profound issues of global and national governance and of the structure of power, influence and cooperation in a world system in vicious transformation.

This is a major issue behind the agenda of the G20 Pittsburgh Summit. No major country will cede sovereignty on core economic decisions! What will be the future global structure, if not to enforce but at least to guide and pressure nation status into global cooperation and solidarity? A new model of cooperative world policy? Annual peer reviews under the umbrella of the IMF? US and China to agree and "the rest" de facto to follow? Apart from the

G20, what about the other 172 or so states? Some new process, but probably no new institutions, will develop. Questions over questions which need fast answers to meet the challenges for the future now. The Club of Rome has recently decided to give this global governance issue priority attention, together with scientists and experts from around the world in order to reach out to governments, parliaments and the public.

Finally, let me please with a signal of hope stress that humanity does have enormous capability to manage the major challenges ahead. The issue is not therefore whether we can solve our problems but whether we can generate the will, the cooperation and the organisation to achieve a path of world development which is equitable, inclusive and environmentally sustainable, so as to preserve a decent future for the youth I referred to at the beginning of my talk.