Climate Change and Poverty: Conference Summary

February 9-10, 2015
Washington, DC

OVERVIEW

The Climate Change and Poverty Groups of the World Bank jointly welcomed over 150 participants to a 2-day conference on Climate Change and Poverty February 9-10 2015 in Washington, DC. This conference is part of a larger work program on climate change and poverty and aimed to (i) share and obtain feedback on preliminary analysis and results contributing to an upcoming flagship report on this subject, (ii) hear new perspectives on the issues, and (iii) initiate a wider discussion on the interlinked topics.

A background framework paper for the report has been published, outlining four channels through which climate change impacts poverty – prices, assets, productivity, and opportunities (available here). The conference format mirrored this framework, which is also reflected in this summary.

All presentations from the conference are available on the conference event page (available here). Links to individual presentations are also provided throughout the summary. Should you have any feedback or questions, kindly contact Stephane Hallegatte (shallegatte@worldbank.org), Tamaro Kane (tkane@worldbank.org), or Mook Bangalore (mbangalore@worldbank.org).

Note: This document is a conference summary based on the organizing team's interpretation of the key messages from each session of the conference. This is not an official World Bank Group document nor do the messages represent the perspective or recommendation of the World Bank Group or the presenters and it should not be treated as such.

SESSION 1: REPORT FRAMEWORK

Chaired by **Francisco H.G. Ferreira**, Chief Economist, Africa Region, World Bank
Presentations:
- **Stephane Hallegatte**, Senior Economist, Climate Change Group, World Bank
  Climate Change and Poverty – An Analytical Framework (4 Paths)
- **Julie Rozenberg**, Economist, Climate Change Group, World Bank
  Projecting Household Surveys to Assess the Impact of Future Economic Conditions and Climate Change on the Poor

Discussants:
- **Emmanuel Skoufias**, Lead Economist, Poverty Group, World Bank

IMPACTS

- **Climate change is only one of many determinants of poverty outcomes, but climate impacts will represent an obstacle to the sustained eradication of poverty.** Poverty outcomes depend heavily on many socio-economic conditions, including demographic change and economic growth. Adding to this complex relationship is climate change, which is a threat multiplier. Climate impacts on poverty manifest through four interacting channels – prices, assets, productivity, and opportunities (as is discussed in this note); poor people are generally more exposed and vulnerable to impacts through each channel, and have less capacity and access to support to cope and adapt. When poor people experience a negative shock in multiple channels simultaneously, implications for poverty are magnified. As such impacts will increase over time, climate change will complicate the global goal of sustained poverty eradication.

- **Climate change will add an additional complexity to the already stressful decision processes of poor people. The most visible climate change impacts may be ex-post, but ex-ante impacts on investment decisions are just as important.** The decision-making of poor people, whom are already cognitively taxed, due to the constant worries for food, shelter and health, is heavily reliant on environmental conditions. Decision-making in these settings will be impacted doubly: first by changing absolute environmental conditions and second by changing the variability of environmental conditions. These impacts occur ex-post (e.g. after a shock) but also ex-ante through investment decisions. Particularly for farmers, decisions on what to plant, when to plant, and how to plant will be impacted, and in the absence of better information or targeted support, investment in high-risk but high-reward choices will be sub-optimal. While the interactions between risk and poverty are well-known, climate change will be a game changer, with ex-ante impacts looming large.

DYNAMICS

- **Climate change and poverty both evolve in a dynamic and interlinked process and we need to not only focus on poor people but also those that are vulnerable to fall into poverty.** Climate impacts are expected to worsen in the coming decades. Poverty constantly changes, with groups entering and exiting (monetary) poverty, within a given city, region, or country. Weather shocks in particular, which are expected to increase in frequency and intensity, can also drop vulnerable populations into poverty and lead to poverty traps. Households may be forced to run down some of their productive capital to smooth consumption or even disinvest in the health and education of their children so as to smooth

their assets, which subsequently restricts their exit out of poverty and can result in permanent outcomes. Small changes in these flows in and out of poverty can have large implications on the net changes in poverty. In addition to the monetary definition of poverty, climate change is expected to impact other dimensions – including health, education, and living standards. Along these lines, examining the heterogeneity of impacts – both in terms of dimensions of poverty and sub-groups within poor and vulnerable populations – should be a primary focus.

- **Eradicating poverty will reduce vulnerability and likely have a limited impact on mitigation efforts.** When economies develop and people become wealthier, they are better able to manage risks ex-ante through adaptation and cope with impacts ex-post. Given the same physical impacts, poverty impacts would be much lower in more developed countries. On the mitigation side, the emissions impact of increasing the share of population below $1.25/day to $4.00/day is minimal whereas the reduction in extreme poverty can significantly reduce vulnerability to climate impacts.

- **There is a window of opportunity to reduce poverty now and make the global population less vulnerable to its impacts.** Since poverty and climate change is a two-way street, reductions in poverty now can allow people to better adapt and respond to changing environmental conditions in the future. The climate is changing. We need to change, too. The main challenge is therefore to foster inclusive and sustainable development in the next few decades before the most severe impacts of climate change manifest. If we are not very successful at reducing poverty, and not quick in doing so, impacts will be strongly negative. But if we are successful, then we have a "climate impact dividend".

POLICIES

- **Good climate policies can benefit the poor, but bad policies are damaging: The devil is in the design, and the extent to which polices are accompanied with social protection measures.** Ill-designed climate policies, for example coastal protection and REDD+ policies focused on "high value" land may benefit primarily non-poor populations. On the other hand, well-designed policies that target the most vulnerable and marginalized people, cannot only avoid negative impacts, but also create pro-poor benefits. Policies that replace regressive programs such as energy subsidies with targeted cash transfers can have positive distributional implications. Efficient, low-cost options such as programs to build shelters and provide early warning are available. Access to markets and infrastructure also provide significant benefits. Perhaps most critical is the role of well-targeted, scalable social safety nets which can reduce the worst impacts of shocks on poor households. While the benefits of targeted social protection has been well studied, other important policies such as market access and infrastructure (which are harder to measure) may also be of great importance.

SCENARIOS

- **While the impacts of climate change depend on future development, the drivers of future poverty eradication are uncertain.** However, accurately predicting what poverty will look like in 2030 is an impossible task. But examining future scenarios for both climate change and development can tell us something. By examining the set conditions under which extreme poverty can be eradicated (or persist) by 2030 and beyond, we identify specific conditions (e.g. agricultural productivity, structural change, demography, redistribution) which matter most for poverty eradication. For example, we might find that growth in agricultural productivity, and high redistribution is important to reduce

poverty in one country. Examining these sorts of conditions, we can create a pessimistic and optimistic scenario for each country, and examine how the impact of climate change on poverty would look like in 2030 in these two cases. Preliminary results suggest that under optimistic scenarios (with high agricultural productivity, low population growth, and high redistribution), climate change has a much lower impact on poverty.

SESSION 2: PRICE CHANNEL

Chaired by **Zoubida Allaoua**, Special Adviser, East Asia & Pacific Region, World Bank
Presentations:
- **Petr Havlik**, Research Scholar, Ecosystems Services and Management Program, International Institute for Applied Systems Analysis
  Energy and Food Price Impact on Productivity
- **Maros Ivanic**, Research Economist, Development Economics Group, World Bank
  Food Prices and Poverty
- **Narasimha Rao**, Research Scholar, Energy Program, International Institute for Applied Systems Analysis
  Energy and Poverty

Discussants:
- **Chris Delgado**, Senior Fellow, World Resources Institute
- **Youba Sokona**, Special Advisor, Sustainable Development, South Centre

- **The agricultural context of developing countries makes them inherently more exposed and vulnerable to climate-related changes in the agricultural, forestry, and land-use sectors.** Agriculture plays a key role for rural households. Many poor people with limited market integration depend on subsistence farming for food consumption. Agriculture also provides a major source of income growth and employment for rural populations in low-income countries.

- **Food prices represent a main channel through which poor rural and urban households could be affected.** At the household-level, poor households in all regions spend higher amounts of their budget on food, increasing vulnerability to price rises and volatility. Unabated climate change is expected to significantly reduce crop yields and increase food prices as well as their volatility thus leading to a decrease in overall food security, particularly in sub-Saharan Africa and South Asia. The impacts on poor people depend on their position as net consumers or net producers of food. The time-scale is critical when examining outcomes. In the short-term poor people can be negatively affected, for example the 2008 food price crises may have increased the global poverty headcount by over 100 million. In the long term, there could also be positive impacts for producers of food, due to higher prices. Food prices are an important and complex link in the climate and poverty story.

- **Climate change and policy impacts are only one part of the story. How we develop socio-economically critically determines vulnerability to these price changes.** Under more equal socio-economic development and high growth, climate change impacts are reduced. However, models, especially Integrated Assessment Models tend to overestimate the capacity for households to adapt,

as they assume limited technological barriers and that households are fully responsive to new prices and technologies. In reality, this may not be the case, due to barriers that poor people face to adopt new technologies and investment practices (e.g. lack of financial inclusion, poor infrastructure, low risk information, etc.).

- **In addition to impacts, climate mitigation policies affect food price dynamics and make the story more complex.** In particular, large-scale land-use based mitigation, which can significantly contribute to the 2°C target will increase demand for land and could increase food prices. Regions will be affected heterogeneously, with implications for poverty: high-income regions are only marginally affected compared to low-income regions which are significantly negatively affected.

- **Climate change mitigation policies will also affect other prices and if these polices are not implemented carefully, they may result in potentially worse effects than climate impacts themselves.** In the context of prices, food and fuel subsidies are hard to implement and can be regressive – replacing with a cash transfer is a viable alternative. A major rationale of food and fuel subsidies is that they benefit the poor. However, given losses along the distribution line from corruption and poor infrastructure, and the regressivity of certain fuel subsidies, replacing such a scheme with a cash transfer payment may be a better alternative. Cash transfer schemes have replaced fuel subsidies in a number of contexts, and if designed properly and well targeted, can be progressive and cost less than the policy replaced.

- **In energy, mitigation policies can serve as a significant barrier to the uptake of modern fuels on their own. However, when combined with access policies, the barrier can be greatly reduced and uptake substantially increased.** The percentage of households switching from solid fuel use to modern cooking fuels decreases significantly in the presence of a carbon price, with prices above $10 USD exerting a strongly negative effect. Yet, when climate mitigation policies are combined with access policies (e.g. LPG subsidies), impacts on uptake are significantly reduced (and can be reversed). Use of modern fuels also has the co-benefit of reduced indoor air pollution, which is a large health threat with greatest implications for women and children. It was also noted that energy access, pricing, and reliability also differs in urban and rural areas; thus, policies may need to be adapted to fit the context.

- **The extent and distribution of mitigation-price impacts in energy are mediated substantially by implementing institutions and existing pro-poor policies. Targeted carbon pricing, rather than uniform carbon pricing, can reduce negative impacts on the lowest income groups of the population**. A broader view of energy poverty reveals vulnerabilities to energy pricing beyond household access. Regulatory pricing decisions for industrial and residential use can significantly impact the effectiveness and equity of mitigation policies. Regulators can shield poorer groups from income shocks of rising electricity prices (by a third), mainly by raising industrial rates before residential rates. Such a scheme, which includes a tier-structure for residential prices, plus industrial rates, can also help recover costs.

- **Double trouble: simultaneity matters.** When food price rises occur also in a context of rising energy prices, impacts on poor people will be magnified. While research suggests the largest immediate

impacts come from food price increases, if policy responses are not quick and well-targeted, the double impact of rising commodity prices can have a strongly negative impact on poverty.

- **In a context of climate change, there is a high cost to risk-averse behavior.** Risk is a big part of the equation. Countries can be proactive by building up food stocks to shield against higher prices, or not. Households can diversify into more sources of income and more weather-resistant crops. Policy can help to promote risk-taking, at the macro and micro-level for example through increased insurance, savings, and financial instruments. At present, a miniscule percentage of agricultural budgets go into irrigation and rehabilitation: more is needed. Livestock monitoring can also be a low-cost option. Market integration can provide outlets in the case of domestic supply disruption, although it may also increase exposure to external food price rises. Climate adaptation can contribute though a large financing gap will remain.

- **Countries need to also take a system-wide perspective in their energy-food-water nexus.** In low-income countries, energy is an emerging sector though most economies are highly dependent on agriculture – employing most of the rural population in small-scale farming. Exploration of the possibilities and viabilities of expanding energy and transforming agricultural systems, their costs, and their resilience to climate impacts is needed before we develop strategies to get there. Developing the right systems quickly can shield against climate impacts. The links between agriculture, water and energy cannot be neglected in the long-term. Water determines agricultural and energy production. Agriculture productivity is critically dependent on the type and amount of water and energy available, for example, for irrigation. Supply will also depend on the availability of revenue, and pricing systems.

SESSION 3: ASSETS CHANNEL – DISASTERS

Chaired by **Bernice K. Van Bronkhorst**, Practice Manager, Urban, Rural & Social Development Group, World Bank
Presentations:
- **Hessel Winsemius**, Research Scholar, Deltares
  Global Exposure Analysis on Floods/Drought and Poverty
- **Archana Patankar**, Independent Consultant
  Impacts of Flood on Households in Mumbai
- **Sushenjit Bandyopadhyay**, Environmental Economist, South Asia Region, World Bank
  Rainfall Variability, Occupational Choice, and Welfare in Rural Bangladesh

Discussants:
- **Rick Murnane**, Senior Disaster Risk Management Specialist, Global Facility for Disaster Reduction and Recovery, World Bank
- **Alejandro de la Fuente**, Senior Economist, Poverty Group, World Bank
- **Somik Lall**, Lead Urban Economist, Urban, Rural and Social Development Group, World Bank

- **Natural disasters pose significant human and economic costs globally, with associated impacts increasing in recent decades and expected to worsen due to climatic changes. At the macro-scale, populations in low-income countries are most exposed; at the micro-scale, the urban poor are**

disproportionately exposed, particularly to floods. These trends are likely to continue. Globally, the urban poor in Africa, and countries above the equator, may be more exposed to flood risk. At the city-scale, however, the over-exposure of the poor to floods is clear: due to high urban migration and inadequate housing, poor people typically settle in at-risk areas due to lower land and housing prices. These areas are particularly prone to frequent floods, which reduces poor people's ability to accumulate assets.

- **When poor people are affected by natural hazards, their absolute losses can be smaller than those of wealthier households, but they typically lose a larger fraction of their wealth and income. This result can keep them trapped in a cycle of poverty.** Over-exposure matters for several reasons. First, poor people typically have lower quality housing, which is more vulnerable to disaster impacts. Second, poor people typically have less asset diversification (e.g. a large fraction of wealth is exposed in housing structure rather than safe in a bank account), which means that their savings are more likely to be completely wiped out. Third, poor people rely on assets for income-generation that are directly impacted by disasters, for example ecosystems. Importantly, some households take much longer to recover, perhaps generations. Those who are highly vulnerable to not recovering will have more problems in a future of climate change.

- **Beyond exposure and vulnerability, poor people have less ability to cope with a disaster given low incomes and savings. Poor people currently also have less access to social protection. This will need to change: adaptation must be fostered through better and more social protection, and low-cost infrastructure.** Having a lower capacity to adapt means that impacts of a disaster can have long-lasting consequences. In the absence of social protection, disasters can serve as a barrier to asset accumulation and result in poor people engaging in mal-adaptive strategies after a disaster, for example reducing consumption to maintain an asset base with potential impacts on health and child development. With increased impacts expected, social protection needs to be improved, in terms of targeting, coverage, and ability to scale-up. The ability to respond is also restricted by lacking of training, early warning, and shelters in urban areas such as Mumbai. These low-cost infrastructure options can yield significant benefits and should be expanded, in urban and rural areas.

- **In a number of cities, for example in Africa, Asia, and Latin America, urbanization is happening at a fast pace, but the capital required to support the rising population is lagging.** The gap between the number of people migrating to cities and the ability for institutions to provide public goods, such as access to improved drinking water and sanitation, is enormous and is expected to grow. Without adequate housing, transport, and services, these dynamics of high population density and low capital density lead poorer people (typically migrants from rural areas) to live in flood-prone and other at-risk areas. Distortions in land markets mean these at risk-areas are also cheaper. Poor people tend to trade-off risk and bad housing for access to jobs.

- **In such a sub-optimal system, comprehensive social protection schemes can help build resilient livelihoods. But even without it, basic activities can be undertaken: from information provision to early warning and titling, policies can significantly reduce disaster impacts on poor people.** Increased risk information can be widely distributed to households in flood prone areas, and in addition to better knowledge, the provision of information can also serve as an entry point to a larger

discussion with government authorities. Providing titling in housing can give people certainty that they can invest in their properties and communities, which makes people more resilient to risk in general. Another policy is for governments to provide basic insurance to those who have a bank account, which encourages people to enter the financial system. This also diversifies assets and makes them less vulnerable to a disaster event.

- **In agriculture, variability also matters, and policy-based adaptation is necessary.** In South Asia and elsewhere, farmers in agriculture are adapting ex-ante to rainfall variability. However, adaptation decisions to diversify out of agriculture may reduce productivity, and thus income. Therefore, policy-based adaptation, such as crop insurance and access to markets, is needed to reduce these costs. Subsidies for farmers to adopt flood-resistant technologies can also have large benefits, and in some cases, can increase income by 20-25%.

- **Some places may be considered too dangerous. If relocation is an option for these areas, strategies need to ensure opportunities (e.g. jobs, services, education) are still available and preferences of the population are taken into account. If relocation policies are crudely designed, they run the risk of being ineffectual and in some cases, detrimental.** In certain areas, adaptation within the existing area may not be the best option, for example in areas that get severely flooded every year: in such areas, adaptation may lock-in vulnerability. For this reason, relocation may be considered as a policy response to disasters. However, relocation strategies need to ensure transport is adequate, job opportunities are available, and access to services are not disrupted. Further, social ties must also not be broken. Therefore, coordination across government and planning authorities is key. If these considerations are not met, and if relocation strategies are not tailored to the preferences of the people who are being moved, they risk being reversed, as in Manila, Philippines. In Manila, a year after a badly-designed policy was put in place, people simply moved back to the original site.

SESSION 4: ASSETS CHANNEL – ECOSYSTEM-BASED LIVELIHOODS

Chaired by **James Close**, Director, Climate Change Group, World Bank
Presentations:
- **Sven Wunder**, Economist, Center for International Forestry Research
  Environmental Income, Poverty and Climate Change in Sub-Tropical Forest Landscapes
- **Ed Barbier**, Professor of Economics, University of Washington
  Climate Change Impacts on Rural Poverty in Low-Elevation Coastal Zones
- **Raffaelo Cervigni**, Lead Environmental Economist, Africa Region, World Bank
  Current and Future Vulnerability in the Drylands

Discussants:
- **Richard Damania**, Lead Economist, Environment Group, World Bank
- **Kirk Hamilton**, Visiting Professor, London School of Economics

- **Many of the poor people in rural areas live in marginalized areas (such as drylands, low elevation coastal zones, and tropical forest landscapes) where they depend on common pool resources (open-access lands, such as grazing areas, forests, and fisheries) for their livelihoods, which face increasing**

risks of degradation. Almost three-fourths of poor people living below USD $1.25 still reside in rural spaces. Common pool resources are often one of the few productive assets in rural areas to which poor people have access. Resource extraction can be a last-resort option when other options fail. And due to open access and tenure insecurity, these resources are overused or degraded. A large portion of the world's agricultural land is also becoming highly degraded, reducing the availability and quality of the assets relied upon.

- **This dependency on ecosystem-based livelihoods, makes poor people in rural areas who have little other resources to cope extremely vulnerable to the double-exposure of resource degradation and climate change.** Climate change can add to the existing pressure on common pool resources and often climate impacts cannot be disentangled from the impacts of overuse. There are spatial clusters where climate vulnerability and degradation go hand in hand and where climate change could reinforce the downward spiral of environmental degradation and poverty. More location-specific targeting of pro-poor risks management and adaptation polices are needed.

- **With limited climate change impacts there are coping and adaptation options within ecosystem-based livelihoods, which can strengthen resilience of poor people in rural areas.** In tropical landscapes, environmental incomes (i.e. from non-cultivated resources) may in part substitute for declines in agricultural incomes. In low-elevation coastal zones, fostering community management of coastal resources, and disaster risk reduction including through ecosystem restoration can reduce the vulnerability of coastal populations. In dry-lands, there is potential for expanding irrigation, improving rain-fed farming (including agroforestry) and increased livestock productivity. Social protection is key for enhancing resilience, but ecosystems play a role, too.

- **Creating opportunities that complement ecosystem-based livelihoods is increasingly important in the face of the rising double-exposure of resource degradation and climate impacts.** Most coping and adaptation strategies within these livelihoods are only viable as long as climate risks and resource degradation are limited. However, increasing resource extraction and climate impacts may bring ecosystems close to tipping points, beyond which their functioning will be altered. With climate change we can also expect a shift of vulnerable landscapes (e.g. drylands will expand while tropical forests will recede, sea-level rise will increase vulnerable coastal zones). Therefore, polices have to focus on the generation of new income opportunities including in less risky places, which will allow poor people in rural areas to move out of poverty sustainably.

- **Mitigation policies present both opportunities and challenges, with sectors and regions affected differently.** There is a large expectation of mitigation in the land-use sector, which at present contributes about 30% of emissions; with recent estimates suggesting 13-35% of mitigation to get to the target of 2°C can be achieved through land-use. Balancing the opportunities and challenges of mitigation policies should be a priority; the challenge is to allow poor people to access the opportunities. At present, richer landowners are set to benefit from mitigation policies; without a shift in power dynamics, poor people may suffer from increased climate impacts and benefit less from climate mitigation policies. Targeting payment for carbon sequestration to poor people, and progressively distributing revenue from carbon taxes would be a good starting point.

SESSION 5: ASSETS CHANNEL – HEALTH AND HUMAN CAPITAL

Chaired by **Patricio Marquez**, Lead Health Specialist, Health Group, World Bank
Presentations:
- **Simon Lloyd**, Research Fellow, Department of Social and Environmental Health Research, London School of Hygiene & Tropical Medicine
  Modelling the Relation Between Climate Change and Undernutrition at the Global Level
- **Javier Baez**, Senior Economist, Poverty Group, World Bank
  Gone with the Storm: Rainfall Shocks and Household Well-Being in Guatemala
- **Sailesh Tiwari**, Senior Economist, Poverty Group, World Bank
  Monsoon Babies – Rainfall Shocks and Child Nutrition in Nepal

Discussants:
- **John Balbus**, Senior Advisor for Public Health, National Institute of Health, USA
- **Meera Shekar**, Lead Health Specialist, Health Group, World Bank

- **Climate change impacts through health can significantly and irreversibly reduce the human capital of vulnerable households, specifically for children, further contributing to the intergenerational transmission of poverty.** These impacts can manifest both through shocks and slow-onset changes, with evidence suggesting health impacts significantly reduce future per capita income. Without adaptation to changes and social protection policies to provide support after a shock, human capital investments in children may be sup-optimal, and keep the household trapped in poverty for another generation.

- **Without adaptation, slow-onset changes of environmental conditions will increase stunting and infant mortality, particularly in sub-Saharan Africa and South Asia.** Globally, for a high emissions scenario, increased under-5 mortality due to climate change-attributable stunting is approximately 100,000/yr by 2030, with disproportionate impacts in sub-Saharan Africa and South Asia. Climate change will also impact the prevalence of stunting. Female education, food availability, water access, and disease patterns are the main drivers for stunting: climate-related changes to the labor productivity of women, crop productivity, water quantity/quality, and disease distribution will modify these drivers. While growth does reduce impacts, it is not sufficient: targeting these drivers of stunting is critical.

- **Shocks impact health and human capital, especially through mal-adaptive responses of poor households in post-disaster situations.** In the absence of insurance, poor and vulnerable households may reduce consumption and pull children out of school after a disaster, to protect their asset base. Such impacts have implications for children's human capital, with effects persisting over time. Additionally, some poor households after a disaster may do the opposite – that is, smooth consumption, which can lead to within-generation poverty traps. Further, the impact of cumulative weather shocks as well as the combination of a disaster with a food price shock can heavily impact poor households and magnify this effect.

- **Market access, infrastructure, safety nets, insurance, and social factors modify the relationship between climate change and health outcomes.** Improvements in market access today can protect

poor households in the case of a shock. In addition, the expansion of social safety nets and weather-based insurance, targeted to poor households, can mitigate impacts, in an era of climate change. In many societies, women are responsible for water/fuel collection as well as child care; climate change may alter these responsibilities and impact women's workloads. Incorporating these social dimensions into policy are therefore critically important. Diets and quality of food are also key parts of the story.

SESSION 6: ASSETS CHANNEL – SOCIAL PROTECTION

Chaired by **Jehan Arulpragasam**, Practice Manager, Social Protection Group, World Bank
Presentations:
- **Michael Carter**, Professor, University of California-Davis
  Social Protection in the Face of Climate Change: Targeting and Financing
- **Carlo del Ninno**, Senior Economist, Social Protection Group, World Bank
  Social Protection in Africa
- **Petra Tschakert**, Professor, Penn State University
  Ability of the Poor to Cope

Discussants:
- **Margaret Arnold**, Senior Social Development Specialist, Urban, Rural & Social Development Group, World Bank
- **Ugo Gentilini**, Senior Social Protection Specialist, Social Protection Group, World Bank

- **Weather shocks are a recognized driver of poverty and exert two negative effects: they bring vulnerable populations into poverty and keep asset-poor households trapped in poverty. Climate change will make these shocks more frequent and/or intense, with potentially large poverty impacts.** Weather shocks destroy physical assets, which can bring people just above the poverty line into poverty, and destroy the physical asset accumulation of already-poor people. But physical asset loss is only one impact. Evidence also finds decisions made in the short-term after a shock can have long-term adverse consequences. Given a shock, asset-poor households may refrain from further selling assets (as they fear falling below a level from which they cannot recover), and instead reduce food consumption and take children out of school. These impacts on children have implications for adulthood, as stunted children are found to have lower earnings potential and poorer health outcomes, which can trap a household in poverty. Climate change will increase the intensity and/or frequency of shocks, especially in low-income areas which already experience shocks.

- **Vulnerability to shocks is shaped by not only physical climate change, but also non-climatic stressors and entrenched structural inequalities. It is this convergence of multiple shocks which determines multi-dimensional vulnerability.** In addition to poverty, exclusion in societal participation, social rules, gender, class, race, and other social characteristics determine populations' ability to adapt to changing conditions. Monetary poverty is not everything: these characteristics which are formed by uneven power relations are dimensions of inequality, which all intersect, to create multi-dimensional vulnerability. Marginalized and at-risk people have less capacity and opportunity, and higher multi-

dimensional vulnerability. Political and power processes can deny certain groups the opportunity to adapt, but can also alter and divert processes that aim to overcome vulnerability.

- **Go beyond impacts on poor people and move towards an understanding of structural inequalities.** Focusing on the factors that push poor people into exposed areas, and the institutions and policies that keep them vulnerable, is necessary for policies to maximize impact. Tackling dynamics that limit poor people's options to cope with and adapt to shocks, and enhancing their ability to change are necessary. Similarly, fostering enabling conditions for risk management among poor and marginalized people through less skewed social relations is also important.

- **The difficulty with changing power dynamics is that it takes a long time. Transformation to address underlying social vulnerability can be seen as a form of social protection, but only in the long-term.** Such policies include the promotion of minority rights, anti-discrimination policies, and social funds. They transform social relations to combat discrimination underlying social and political vulnerability. Programs shouldn't just consider poor people. Recognizing collective action (and including the risk) to rectify growing imbalance is a necessary step to ameliorating the problem. Other things include mobile, flexible social protection in addition to strong inclusive growth.

- **It's not just the shock that matters – but the response, at the household and government level. Adaptive social protection can protect households after a disaster, and smooth the shock over time and across households.** At present, households are often unable to recover to pre-shock levels before the next crisis hits. In a world without adaptation, the poverty-impact of shocks will exacerbate. Luckily, vulnerability and critically, social protection, are not set in stone. With the asset smoothing and poverty trap story, it's not the shock which directly leads to negative outcomes; rather, it's ex-post behaviors. Social protection and financial instruments, by smoothing the impact of a shock across households and across time, can change these behaviors, to reduce losses and shorten the length of recovery by households. Further, simply knowing that a payment will come is enough to increase better nutrition and higher consumption.

- **Adaptive social protection can also pay off even before a disaster strikes.** In a disaster-prone area, wealth levels may be low to begin with, due to a risky environment. Importantly, social protection can also improve the starting point ex-ante by helping to reduce risks. Adaptive social protection, that protects households before shocks occurs, can incentivize ex-ante investment of typically risk-averse households; it can also be scaled-up to respond to extreme events when they hit. Land titling, in addition to ex-ante social protection, can increase investment today.

- **Adaptive social protection, in addition to safety nets and insurance, can consist of labor programs which support the shift to more productive and alternative livelihoods**. There may be places where more adaptation runs the risk of locking-in existing vulnerability. Thus, transformative labor programs, for example training or off-farm employment, can provide an alternative channel. Importantly, people leaving a particular place will need to leave with some form of asset – either human or physical. Further, it must be considered that some groups may want to be protected in a place that matters for identify, while groups in other locations may like to exit. Labor programs that are tailored towards women, and consist of a local community plan, and provide information, can increase long-term

resilience. Community-scale projects, and bringing in community-led process in a bigger way can empower poor communities. Working in partnership with government, communities can manage, design and inform policy and project design, to better reflect priorities.

- **Social protection that covers poor and vulnerable households in a financially viable and sustainable manner should be a priority in an era of climate change. Further, good targeting and sustainable financing are not mutually exclusive.** Targeting should include vulnerable populations just above the poverty line, to ensure these groups do not fall into poverty, and increase the fiscal strain over the long-term. Good safety nets are also affordable – and typically cost between 1-2% of GDP. Diverting resources from less-efficient humanitarian responses and less-progressive food/fuel subsidies towards adaptive social protection can increase the fiscal base. Connecting social protection, for example with tax reform, can be highly progressive. While financing through premiums may be an option, they are not viable for poor and vulnerable households, and thus substantial government subsides may still be required. Paying incremental year-on-year costs is preferable to large losses when a disaster hits. In a future of climate change, ex-post social protection only may not work if a large percentage of the population becomes vulnerable and shocks happen every year. Therefore, action needs to be taken now to improve adaptive social protection and to reduce the number of vulnerable people.

- **How social protection adapts and evolves will be context-specific, and dependent on how it is designed and implemented.** In Ethiopia, after the 2011 drought, the social protection system increased both coverage and amount delivered to beneficiaries. In the Philippines, following the 2013 hurricane, the system only increased the amount delivered to beneficiaries. Different mechanisms ex-post will be driven by the type of hazard faced (e.g. drought which affects many people, or flood which is more localized), delivery system, urban/rural, distribution of the population, systems in place, and a range of other local conditions. Regardless of location, setting up a trigger mechanism and financing mechanisms, and exactly where and when they will be used, are critical. Further, disaster risk management, humanitarian aid, and development all interact and play different roles to manage risk. DRM can reduce exposure and vulnerability), humanitarian aid provides live-saving relief and basic services during a crises), and development today can make poor people in particular more resilient to shocks tomorrow.

- **Better data is key for adaptability.** For a social protection system to work, information on the distribution of population, poverty levels, livelihoods, hazard data, lifecycle vulnerabilities, and differential exposure to shocks are all needed. Innovation can help. Innovations such as mobile banking, which can be used for cash transfers, but also insurance, information, and early warning, can be a critical part of the process. Program delivery must be innovative to reach underserved and mobile populations, and include strategies to build capacity and investment in early warning. Sharing country experience with data and implementation can help smooth the learning curve.

- **Without trust in institutions, policies will be ineffective.** In the poorest areas of Lagos, Nigeria, an area prone to flooding, households do not respond to early warning, due to a distrust that if a household left, its holdings will be taken by others. This problem exists due in part from lack of trust, but also a lack of land titling policies, a legacy of evictions, and an exclusion from safety nets.

SESSION 7: PRODUCTIVITY CHANNEL

Chaired by **Jeffrey Lewis**, Chief Economist, Global Practices, World Bank
Presentations:
- **Jisung Park**, Doctoral Candidate, Harvard University
  Labor Productivity Impacts of Climate Change: Implications for Poverty
- **Anne Biewald**, Potsdam Institute for Climate Impact Research
  Impact of Future Climate Change on Costs of Food at Subnational Scale
- **Emmanuel Skoufias**, Lead Economist, Poverty Group, World Bank
  Distributional Implications of Climate Change in Rural India

Discussants:
- **Kris Ebi**, Professor of Global Health, University of Washington
- **Vikas Choudhary**, Senior Economist, Agriculture Group, World Bank

- **Increased temperatures causally impact the productivity of workers, and this climate damage channel will likely have a disproportionately large effect on poor people in the next decades. Extreme events, rather than shifting means, seem to have the largest impacts.** Higher temperatures have shown to significantly exert a casual impact on labor productivity and related economic outcomes, with short-run damage estimates around -2% per 1°C above room temperature, with impacts above a threshold of 32°C most evident. While these estimates are mainly from developed countries, it is likely that this climate damage channel will have a disproportionately large effect on poor people globally, due to high geographical exposure (e.g. low income countries in tropical areas), high occupational vulnerability (poor households tend to work outdoors and in manual labor), and a low adaptive capacity (poor households have less access to physical and financial capital buffers). Investments to improve working conditions (e.g. through air conditioning) can mitigate this impact, although such a strategy should consider both cost and emissions.

- **Certain areas of sub-Saharan Africa, Middle East and North Africa, and South Asia are expected to experience increases in both the cost of food and severe levels of hunger in 2030 under a pessimistic scenario of high warming and unequal economic development.** These modeled estimates suggest large increases in poverty under a scenario with higher inequality. While the priority in such areas is to foster more inclusive development, adaptive responses may nonetheless be necessary. Some of the response options include an increase in imports and expansion of agricultural land for SSA and SAR, and an expansion of agricultural land in MENA.

- **Distributional impacts of climate change matter. One under-appreciated mechanism through which distributional impacts manifest is through rural wages.** In many areas, warming will likely reduce crop productivity and may also increase food prices. While this effect will be strongly negative on poor people, a consideration of the long-term adjustment of rural wages is also necessary to examine welfare impacts. An analysis of the distributional implications of climate change in India suggest that rural wage adjustments will be a key mechanism for redistributing the potentially substantial costs of climate change from (wealthier) landowners to the rest of the rural economy. Holding wages fixed, poor people bear the biggest brunt of the impacts of climate change. But with flexible wages, the negative impact from climate change is much smaller and more evenly distributed.

- **For adaptation and mitigation policies in general, policymakers should act now based on existing information, but policies should also leave open the possibility for adaptation given increased information in the future**. While more and more information is generated, a policy of "wait-and-see" may not be optimal. Given the dynamic evolution of research and information, policies that are implemented soon but are designed in a way that allows flexibility for revision is critical. This in-built "option value" to adapt policy given new information regarding climate change, poverty, and economic parameters may be hard to design initially, but can pay benefits later on. Further, policies should always consider the institutional context, as it is often the interaction between the institutional context and the climate shock which determines welfare consequences. In particular, the agricultural sector needs to prepare and adapt for a changing climate: in terms of shifting means, tails, and increased uncertainty.

SESSION 8: OPPORTUNITES CHANNEL

Chaired by **Louise Cord**, Practice Manager, Poverty Group, World Bank
Presentations:
- **Andrea Liverani**, Program Leader, Middle East & North Africa, World Bank
Climate, Conflict and Migration
- **Jim Neumann**, Principal, Industrial Economics, Incorporated
Enhancing the Climate Resilience of African Infrastructure
- **Dominique Van Der Mensbrugghe**, Consultant, Energy Group, World Bank
Shared Socio-Economic Pathways

Discussants:
- **Ruth Hill**, Senior Economist, Poverty Group, World Bank
- **Mike Toman**, Research Manager, Development Economics Environment & Energy Group, World Bank

- **One potential response to climate change is environmental migration, which is not a new concept. While weather shocks only explain a small fraction of observed migration today, this will increase in a future of climate change.** Migration to avoid negative environmental conditions in the origin site has been present throughout history, but at present only explains about 10-20% of migration decisions, as evidence from the MENA region suggests. Yet, with climate change expected to increase the frequency and/or intensity of weather shocks, this will gain larger predominance as a migration push factor in decades to come.

- **When poor households do migrate, it is generally internal, towards urban areas, and usually a last-resort choice. Without a policy response in destination sites, migrants may further face risks in cities, or a "migration trap".** When households do migrate, they typically relocate to urban areas within the country. Cities are already expected to increase in size substantially; and climate-induced migration will add to this influx. Poor migrants typically leave without much physical or human capital assets, and therefore the dynamics of cities may place them in risky and hazard-prone areas. Without

policies targeted in cities to improve basic services and provide quality housing, the risks in the destination site may be almost as large as the origin.

- **While forced displacement of an entire household is clearly sub-optimal, planned migration of a single household member can be helpful due to subsequent remittances.** When individuals within a household or community migrate to urban areas for better jobs, they typically send remittances back to the household, which increases diversification and reduces negative impacts of shocks. Evidence suggests that households with remittances are also less likely to resort to mal-adaptive coping strategies, including forced displacement and taking kids out of school. A policy priority is to reduce the actual and perceived costs of individual migration, for example through job placement, transport subsidies, and housing provision.

- **From a policy perspective, adaptation policies to promote migration can go hand-in-hand with social protection policies.** Social protection policies to reduce impacts of weather shocks can reduce the need for household migration, which is typically a sub-optimal response. But the balance between social protection and leveraging migration for adaptation will be context-specific, and depend on characteristics such as the frequency/intensity of hazards, coping capacity, available options, and government fiscal space. For example, it is possible that social protection in a particularly risky area may provide perverse incentives, where livelihoods become extremely exposed; in such an area, migration may be fostered. Further, policy responses will need to be taken in both cities and the area of origin. Without considering both the origin and destination, and the choices available to affected households, there may be a perceived trade-off between building resilience in rural areas and improving conditions in destination sites. While cash and services are clearly important, fostering an environment for households to take informed choices is critically important.

- **Infrastructure can increase the available opportunities and is central to poverty reduction. In many parts of Africa and Asia, the infrastructure of the future, in particular for water and energy, is yet to be built. Ignoring climate change and all its uncertainty may lead to significant regrets.** Climate change will have large effects on the performance of infrastructure, as large-scale water and power investments are long-lived, and climate impacts are expected to increase in the next decades. These climate impacts will not only affect physical performance, but also economic performance and costs for consumers. Further, in the case of missing markets, uncertainty can further influence decision-making.

- **Despite uncertainty, it is possible to plan: integrating climate change into infrastructure planning can enhance investment readiness and reduce regrets. While climate resilience is a challenge, it is manageable.** While there is large uncertainty on the temperature and precipitation, it is possible to plan infrastructure development to reduce regrets. Thinking long-term, assessing impacts, examining adaptation options, and prioritizing robust adaptation options can improve resilience of long-lived infrastructure. While the costs of planning may be higher immediately, the benefits in terms of better managing risk can more than offset short-term costs. The key challenge is to integrate this type of robust thinking to the policy process, and communicate models to policy makers.

- **Different socio-economic pathways taken will determine how income is distributed globally: in some scenarios, income is more concentrated, in others it is more equally shared.** This has implications for both global poverty and global inequality. While global poverty is expected to decrease over a range of socio-economic scenarios, the goal of reducing poverty to below 3% by 2030 remains a challenge. For inequality, globally it will decrease, but within-regional inequality will considerably increase. While the socio-economic pathways project different futures, policy mixes can encourage more environmentally sustainable and equitable economic growth.

- **Mitigation policies can provide opportunities for new demands for biomass, payments for carbon sequestration, and higher producer prices.** However, challenges include higher production costs, sector restructuring, and higher prices for consumers. Generally, targeting opportunities towards poor people remains the primary challenge.

SESSION 9: CLOSING – POLICY IMPLICATIONS

Chaired by **Marianne Fay**, Chief Economist, Climate Change Group, World Bank
Panelists:
- **Ana Revenga**, Senior Director, Poverty Group, World Bank
- **Arup Banerji**, Senior Director, Social Protection Group, World Bank
- **Paula Caballero**, Senior Director, Environment Group, World Bank
- **Ede Jorge Ijjasz-Vasquez,** Senior Director, Urban, Rural & Social Development Group, World Bank
- **Charles Feinstein,** Director, Energy & Extractives Group, World Bank

- **Climate change can make it even more difficult to achieve poverty eradication in a sustainable manner and adds to the need for long-term planning.** Some of the conventional solutions are hard to implement anyway, but climate change can make this even harder. In the face of increasing risks and dependence of poor people on climate-sensitive areas and activities, it could become very difficult to eradicate poverty without better ex-ante preparation to shocks and ex-post coping. It is also important to protect vulnerable people from falling back into poverty, even though identifying vulnerable people is often difficult. Whereas it is possible to eradicate poverty by 2030, the real challenge is to sustain such progress. Climate change helps to focus on a planet-based agenda, which aligns short-term and long-term planning. The WBG's Systematic Country Diagnostic are an important analytical tool to help countries identify short- and long-term risks to achieve poverty eradication and shared prosperity.

- **Whereas climate change makes things more difficult, opportunities exist to reduce poverty and emissions at the same time.** Although many low-carbon energy solutions cannot yet be supplied at low cost and large scale, providing energy access to the unserved may not add much to emissions. Development funds, such as through the World Bank Group's International Development Assistance, provide an opportunity to address energy poverty while providing secure access to modern energy services. Carbon pricing could make all forms of energy less affordable to poor people but when

combined with social safety nets, these negative impacts can be mediated. The biggest sustainability and mitigation challenge is the rising expectations and the demands by an emerging middle-class, which will require sustainable production and consumption patterns.

- **Addressing climate change and poverty will require a set of complementary, cross-sectoral polices that address non-climate related challenges which exacerbate the impacts on poor and vulnerable people.** It was highlighted that slow gradual climatic changes are often interlinked with environmental degradation. Sustainable management of natural resources can generate long-term, sustained benefits for people and facilitate adaptation. Reducing climate risks requires tackling bad polices, such as weak institutions or bad urban planning (e.g. providing housing subsidies in places without transport connections). Safety nets are extremely important in urban places where a large number of poor and vulnerable people are concentrated in high risk areas. Reducing climate risks will not only require an expansion of social protection, but also a different design of these polices that moves away from ex-post humanitarian aid. In many countries, it is important to secure the provision of every-day social services and systems (e.g. registries) upon which social protection can build in case of a shock, Social protection also plays an important role to overcome the political economy constraints of implementing energy subsidy reform and allowing a long-term transition of energy systems. It can provide compensation to the affected during the transition phase can be used to help poor people. Overall, climate change will require solutions that are coordinated across many sectors.