New Research for Effective Action

AT PARIS AND BEYOND

Global Climate Policy Conference 2015

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Climate Strategies

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Contents

About the Report

This report contains an overview of the Global Climate Policy Conference (GCPC) 2015, co-convened in New Delhi by the Stanley Foundation and Climate Strategies (supported by the Oak Foundation). GCPC is an annual event convened by Climate Strategies with partners. The first edition of GCPC, held in London in 2014, and the 2015 GCPC, held in New Delhi, offered opportunities to explore areas that are at the core of climate change policy and implementation by using a mix of bottom-up (from the research community) and top-down (from the policy community) approaches.

GCPC 2015 included bottom-up experts, selected through an open and competitive process, who presented ideas to a diverse and influential audience to shed light on multiple issues they believe could move the international process forward with the intent to spark discussions among all conference participants. These ideas were captured by rapporteurs and are included in this report under conference Sessions 1 through 4. The full version of the papers presented in these sessions are found on the conference organizers' Web sites.

The conference then turned to top-down presentations by experts in two parallel sessions (Session 5–Tracks 1 and 2) that were followed by two conference sessions in plenary (Sessions 6 and 7). The top-down presentations were conducted in a panel format and were organized by the conference collaborators in order to advance thinking in clearly predefined areas. The presentations and conference participant discussions were captured by rapporteurs and are summarized in the Sessions Overview.

For more information on GCPC 2015 and for the full conference proceedings that include the papers presented during Sessions 1 through 4, please visit: *www.climatestrategies.org* or *www.stanleyfoundation.org*.

The conference chair, co-chairs for select conference sessions, and the conference rapporteurs prepared this report following the conference. It contains their interpretations of the proceedings and is not merely a descriptive, chronological account. Participants neither reviewed nor approved the report. Therefore, it should not be assumed that every participant subscribes to all recommendations, observations, and conclusions.

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Conference Agenda

DAY 1: April 30, 2015

Welcome and Introduction to the Conference

Keith Porter, The Stanley Foundation
Ambuj Sagar, Indian Institute of Technology & Climate Strategies

Opening Remarks

Ashok Lavasa, Secretary, Ministry of Environment, Forests, & Climate Change, India
Chair for sessions 1 & 2: Keith Porter, The Stanley Foundation

Session 1: Climate and Development

Presentation: **Narasimha D. Rao**, IIASA, Austria
Quantifying Development Needs: An energy centered approach to climate justice
Presentation: **Tim Stumhofer**, Robert Bosch Foundation
Revisiting debt-for-climate swaps as an alternative source of climate finance
Open discussion

Session 2: Adaptation to Climate Change

Presentation: **Dumisani Chirambo**, Brandenburg University of Technology
Tilting the Balance in Favour of Climate Change Adaptation: A Micro finance and Climate Finance Perspective
Presentation: **Shailendra Kumar Mandal**, National Institute of Technology, Patna
Climate Change and Urban Water Resiliency: A Case Study of Patna, India
Open discussion

Session 3: Climate Change and Public-Private Partnerships

Chair for sessions 3 & 4: Gilberto Arias, Former Ambassador of Panama to the United Kingdom

Presentation: **Ahmed Abdel-Latif**, ICTSD, Switzerland
The role of public-private partnerships in enhancing the transfer and diffusion of climate technologies
Presentation: **Mohammad Aatish Khan**, Yale University, USA
Effective Pathways of Public Private Partnership for Adaptation Projects in the Developing Countries
Open discussion

Session 4: Motivating and Enhancing State Action

Presentation: **Sylvia Karlsson-Vinkhuyzen**, Wageningen University, The Netherlands *Paris and then? Holding states to account*
Presentation: **Rasmus Karlsson**, Umeå University, Sweden *Low-Emissions Technology Commitment*
Open discussion

DAY 2: May 1, 2015

Session 5: Track 1

Technology Investment, Finance, and the Roles For Pricing Carbon: Defining the 'Club Good'

Chairs: **Michael Grubb** & **Heleen de Coninck**
Introduction: **Michael Grubb**, UCL & Climate Strategies – *Carbon Pricing Realities and Linkages to Technology*

Part 1: Making Carbon Pricing and Technology Policies Mutually Supportive

Remarks: **Vikram Widge**, Head, Climate and Carbon Finance, Climate Change Group – *Financial dimensions*
Axel Michaelowa, Head of Research, International Climate Policy, University of Zürich, Switzerland – *Carbon pricing and innovation*
Open discussion

Session 5: Track 2

Dealing With Impacts – Adaptation and Loss & Damage

Chairs: **Sonja Klinsky** & **Krishna AchutaRao**, Indian Institute of Technology

Initial comments: **Sonja Klinsky**, Arizona State University

Part 1: Resilience

Remarks: **Indrani Phukan**, GIZ India

John Colvin, Climate Adaptation
Open discussion

Session 5: Track 1 Part 2: A Viable Focus for a "Coalition of Ambition"?

Remarks: **Kasturi Das**, Institute of Management Technology (IMT) – *Trade law and the international politics of pricing and clubs*
Nigel Topping, We Mean Business coalition: the World Bank / We Mean Business partnership on carbon pricing
Heleen de Coninck, Radboud University, Netherlands – *Can technology build a carbon pricing coalition? A discussion of obstacles and opportunities*
Open discussion

Session 5: Track 2 Part 2: Loss and Damage

Remarks: **Friedrike Otto**, Environmental Change Institute, Oxford

Lavanya Rajamani, Center for Policy Research, India
Open discussion

Session 6: New Approaches to Building Capacity

Chair: **Ambuj Sagar**, Indian Institute for Technology
Brief report from parallel tracks
Remarks: **Ajay Mathur**, Bureau of Energy Efficiency India
Open discussion

Session 7: Summary and Conclusion of Both Days Implementation Challenges For Paris and Beyond

Chair: **Maurits Henkemans,** Dutch Ministry of Economic Affairs

Next Steps and Adjourn

Conference Overview

Conference Chair's Summary: Global Climate Policy Conference 2015

Dr. Ambuj Sagar,
Vipula and Mahesh Chaturvedi Professor of Policy Studies,
Indian Institute of Technology

The second Global Climate Policy Conference (GCPC) was co-organized by Climate Strategies (with support from the Oak Foundation) and the Stanley Foundation and held on April 30–May 1, 2015, in New Delhi, India. The conference's thematic title was "New Research for Effective Action at Paris and Beyond: Strengthening the Research-Policy Interface in International Climate Negotiations."

The conference continued with the approach of GCPC 2014 in soliciting innovative proposals from the research community on how to advance action on key issues in the climate arena. Conference organizers received over forty abstracts, out of which Climate Strategies, one of the conference organizers, selected eight that were then grouped into four themes:

- Climate and development.
- Adaptation.
- Public-private partnerships.
- Motivating and enhancing state action.

The first day of the conference centered on these four themes, and the key messages that came out of presentations and subsequent discussions were the importance of fully thinking through the notion of development needs as a way to ensure climate justice; exploring innovative approaches such as public-private partnerships, debt-for-climate swaps, microfinance to enhance climate finance, and ways to better hold states accountable for their climate pledges.

The second day of GCPC 2015 was a set of panel discussions focused on investment, carbon pricing, and technology; adaptation and loss and damage; and capacity building.

These discussions were followed by a summary of the conference, with reflections on the implementation challenges for Paris and beyond. The panels consisted of leading experts from around the world who guided discussions on:

- **Investment, carbon pricing, and technology.** The potential of clubs to enhance climate action through accelerated innovation among a key set of players was perceived as an emerging area in global climate change policy that can deliver significant benefits, yet the uncertainty of its feasibility, effectiveness, and process seemed to warrant deeper analysis and investigation.

- **Adaptation and loss and damage.** Although adaptation and loss and damage are related, their differences led to a bifurcation of the discussion. Within the adaptation area, the importance of defining success for short-term and longer-term, more transformative goals was highlighted, as was the need for developing, from the large range of ongoing projects, a generalizable understanding of adaptation processes. In loss and damage, an increasingly important topic in the climate arena, explorations with new approaches such as probabilistic event attribution and legal avenues may be key to informing climate policy and also possibly translating the loss and damage conversations into practical action.

- **Capacity building.** The central importance of building suitable local capacity to enhance action on the ground in developing countries was illustrated powerfully through a set of Indian experiences with low-carbon technology deployment.

  All in all, these sessions indicated the value of research and analysis to better understand the key issues pertaining to progress on various dimensions of climate policy and action and to the development of innovative approaches to help move humanity toward a safe climate world. Notably, the presentations also catalyzed vigorous and thoughtful discussions among the participants within the meeting rooms as well as outside. The conference organizers received numerous comments from participants afterward expressing their appreciation for the intellectual and organizational aspects of the conference.

The conference could be seen as more than a moderate success in meeting its multiple objectives: providing a platform for innovative ideas (and for creative research) to explore ways to advance climate action, bringing together climate policy researchers and practitioners from around the world, and better understanding how research can contribute to improved climate policy making. These all are useful and positive contributions to the research and climate policy arenas.

Reflections: Investment, Carbon Pricing, and Technology

Michael Grubb,
Professor of International Energy and Climate Change Policy,
Institute of Sustainable Resources, University College of London

Track 1 of Session 5 of the conference focused on mitigation and included four diverse presentations with reflections by Heleen de Coninck, associate professor of Innovations Studies, Climate Strategies, Radboud University that stimulated a wide-ranging discussion that helped inform an ongoing work program by Climate Strategies and the Stanley Foundation.

The first four presentations focused on dimensions of carbon pricing that were built on the recognition of a traditional carbon pricing agenda that has been proved politically problematic and for which expectations for any agreement in this area under the United Nations Framework Convention on Climate Change (UNFCCC) are extremely low.

There is economic rationale for focusing on the linkages between carbon pricing and other elements in mitigation, specifically technology innovation and diffusion. The argument is that the investment and fiscal dimensions of carbon pricing could help to accelerate progress in low-carbon technologies in ways that would help generate a "club good" among cooperating parties.

One of the presenters for this session, Axel Michaelowa, focused on the pricing-innovation linkage from an empirical perspective. After providing a short overview of the development of carbon pricing and what empirical literature said about the impact of different pricing systems such as taxes, emissions trading schemes, and clean development mechanisms on innovative investments, he offered three guiding principles:

1. **Trust in persistence and direction of pricing.** Trust in the long-term direction is crucial if the market impact of pricing is to generate benefits.

2. **Complementary policies for appropriability of innovation benefits and funding.** Complementary policies need to ensure that new innovations have benefits for the innovator(s) without being copied by competitors and that some carbon pricing revenues fund innovation.

3. **Carbon pricing as the "glue" of a coalition.** The necessary condition for carbon pricing to mobilize innovation is a clear, long-term-commitment to price levels

combined with technology-support policies. Under such a condition, carbon pricing would help attract investment and stimulate innovation.

Vikram Widge from the International Finance Corporation summarized the thinking behind the World Bank's Networked Carbon Markets initiative. He stressed that the aim was not simply linking carbon markets in the traditional sense of the idea, but rather understanding and fostering the possibility of multiple carbon pricing systems utilizing tools of risk management, such as rating systems or exchange rates, to create more of a "bottom-up" network that does not require full harmonization or a centralized design. As such, principles that could reflect differential quality of systems could be created to help preserve the integrity of a networked design. He also acknowledged the unease in traditional emissions trading communities but argued that networking emergent systems internationally might be a more realistic, practical, and secure approach to securing some benefits of carbon pricing.

Nigel Topping from We Mean Business (WMB) then underlined the motivations of support for carbon pricing in the business community. He summarized the work of WMB in developing thinking about the need to go beyond generalized rhetoric to more specific analysis and scenarios of the different carbon price levels (required to make change and transformation in energy systems) leading to development of a carbon pricing toolkit that businesses could use for risk evaluation of investments. He reinforced the message about the need for carbon pricing to be seen as part of a suite of policies to drive change in business investments, to accelerate innovation, and to help support business leaders willing to go faster. However, he underlined the importance of governments giving signs to the wider business community because they are not only looking for such signals, but they desire them.

The discussion was then further stimulated by de Coninck's reflections, which drew on a presentation by Kasturi Das, associate professor of Economics and Strategy Area at the Institute of Management Technology, the previous day on international trade and the various areas of potential positive interaction between climate and trade agendas. De Coninck offered a proposal for constructing a coalition or club based on the combination of pricing, technology, and trade.

Reflections: Adaptation and Loss and Damage

Dr. Sonja Klinsky,
Senior Sustainability Scientist, Assistant Professor,
Arizona State University

Track 2 on the second day of the GCPC focused on the research-policy interface in the context of addressing climate impacts. During the Track 2 session, two key issues were addressed. First, the presenters revisited the issue of adaptation and resilience and asked what the best understandings currently are of ways to learn from existing pilot studies and actively translate this into more programmatic and wide-reaching support for adaptation. The second group of presenters turned to the question of loss and damage and discussed the most recent science of attribution and the legal landscapes of addressing loss and damage at the international level.

Adaptation and Resilience

As mitigation efforts continue to lag, efforts to manage climate impacts are becoming increasingly important. Supporting, evaluating, and scaling up these efforts is accordingly a pressing issue within the research-policy interface. Due to the breadth of this topic, discussion revolved around two key issues.

1. **Evaluating success.** While there have been diverse adaptation efforts and pilot projects in recent years, few of them have been systematically evaluated and monitored over time. Having definitions of what success and failure might look like, what time frames should be used to evaluate this, and what kinds of metrics and evaluations are needed to develop an evidence base about effective adaptation were key issues that emerged from discussion. This set of needs poses challenges for academics and policymakers. Academically, how should these communities be engaging with adaptation efforts to contribute to evaluation? From a policy perspective, what is needed to help incentivize and support long-term monitoring and evaluation as part of adaptation efforts?

2. **Scaling up.** The sheer diversity of actions involved in adaptation is a challenge to linear models of scaling up. Instead of thinking about replication per se, it was suggested that the conversation shift to focusing on supporting processes of scaling and implementation. This includes actively facilitating learning across contexts and scales; explicitly paying attention to the political and social elements of implementation; and working with communities and organizations as coinnovators and involved participants in the process of building and disseminating capacity.

Loss and Damage

This session juxtaposed legal discussions of loss and damage with new science on attribution and the role of climate change in shaping extreme events.

Within discussions of the legal elements of loss and damage, attention was brought to the ongoing challenges of using legal means to address responsibility for loss both within and beyond the UNFCCC (including through country-to-country cessation and reparation claims, use of human rights law, and use of domestic law). While it was recognized that there are many barriers to using law in this context, it was also acknowledged that these efforts yield knowledge, push the boundaries of international law, and contribute to a larger narrative around loss.

Simultaneously, it was noted that recent scientific advances now mean that probabilistic evidence of the role of climate change in extreme events can be generated using statistical models.

From a research-policy interface perspective:

- To date, attribution studies have been ad hoc and not driven by a systematic global assessment of need or vulnerability. As such, they focus on developed countries and have not sufficiently covered the Global South. There is an explicit need for a scientifically focused research program that broadens the scope of these studies.

- There is ambiguity around how probabilistic event attribution relates to the legal scene. There have been past uses of probabilistic evidence (such as in tobacco legislation) suggesting this could be an area for productive legal enquiry.

- As loss and damage links to climate action, perhaps probabilistic evidence within efforts to use private sector fiduciary responsibility could be a means of pressure for more ambitious mitigation efforts.

This session on climate impacts and the conference participants' responses to them highlighted the challenges of learning and knowledge. An enormous amount of field research on climate impacts is already being undertaken, but to date it remains fragmented, making it difficult for communities and policymakers to benefit from the knowledge gained through these efforts. Perhaps the overarching message of the Track 2 session was a challenge rather than a conclusion. How can researchers, in various capacities, actively support effective learning across contexts and scales to help inform policy decisions?

Sessions Overview

Session 1: Climate and Development

Speakers

Narasimha D. Rao,
Research Scholar, Energy, International Institute for Applied Systems Analysis

Tim Stumhofer,
Climate Finance Fellow, Robert Bosch Foundation

Rapporteur

Jeffrey Swofford,
Ph.D. Student, Arizona State University

Key Findings

- A comprehensive approach to global climate justice requires connecting broader discussions of differentiating countries' mitigation responsibilities with specific metrics and analysis for defining on-the-ground development needs.
- Although political and pragmatic reasons have kept debt-for-climate swaps out of the mainstream climate policy discourse leading up to the 21st Conference of the Parties to the UNFCCC (COP21) in Paris in December, a modern reexamination of debt-for-climate swaps may help to invigorate new ideas surrounding climate finance.
- Political relevance and applicability remain two essential challenges in operationalizing efforts and ideas related to climate and development at the research and policy interface.

Session 1 of the conference consisted of two diverse presentations spanning two critical topics for climate and development: the quantification of development needs and debt-for-climate swaps.

The first presentation reminded conference participants of the need for dealing with equity and incorporating fairness into climate mitigation efforts. In a 2-degree world, can energy truly be allocated on a per capita quotient for basic human development across the globe? In response to this question, the research presented quantified the development needs of people on the basis of energy use. This research leveraged historical trends in human development as a means for projecting future energy requirements for different countries.

The session's second presentation provided insight into debt-for-climate swaps, or national debt relief to unlock funds for climate change mitigation and adaptation, as a form of climate finance. Although developed countries committed to mobilize $100 billion per year, each year, from 2020 onward as part of the Green Climate Fund, this target is not yet actualized. What do we actually mean by mobilize? What finance is eligible and attributable? Although political and pragmatic factors have kept debt-for-climate swaps largely out of the greater climate policy discourse, it is critical to keep reconsidering debt-for-climate swaps given the challenges ahead.

The overall Session 1 discussion focused on the practical policy applications for operationalizing energy equity and a dialog consisting of several accounts for when debt-for-climate swaps played an important role in climate finance programs. It is uncertain how best to use development analyses as negotiating tools to advance policy discourse and how development data can inform greenhouse development rights. Of particular importance were discussions on whether and how to include normative criteria in development analysis and metrics. This remains a contested topic, as living standards continue to change globally, and fundamental ideas of consumption vary greatly across cultures and political regimes. Capturing the normative dimensions of basic human needs remains a challenging area for development research and policy.

Debt-for-climate swaps have been successful in the past. During the 1980s, debt-for-climate swaps received significant attention, and conference participants discussed several historical examples. More recently, Poland has included debt-for-climate swaps in its programs and is generally considered a successful project example. Additionally, Indonesia has been a proponent of debt-for-climate language in the UNFCCC negotiating text. These examples could perhaps serve as an entry point to climate negotiations. Nevertheless, debt-for-climate swaps remain marginalized in modern climate policy discourses. Can revisiting debt-for-climate swaps help to reinvigorate climate finance conversations at the international level?

Session 1 showcased the importance and challenges associated with enhancing political relevance and applicability in the climate research and policy interface. Equity is embedded throughout many dimensions of climate change, yet the research and policy communities continue to struggle with how best to operationalize concepts of equity into a new international agreement. Likewise, as climate finance seeks to play a critical role in the 2015 Paris agreement, what can we learn from past successes in debt-for-climate swaps?

Session 2:
Adaptation to Climate Change

Speakers

Dumisani Chirambo,
Faculty of Environmental Science and Engineering, Department of Civil and Public Law, Brandenburg University of Technology

Shailendra Kumar Mandal,
National Institute of Technology

Rapporteur

Jeffrey Swofford,
Ph.D. Student, Arizona State University

Key Findings

- Private-sector forms of innovation have the potential to redefine climate finance in adaptation efforts.
- Improving local climate resilience ultimately depends on improving the institutional capacity of resource managers.
- The research-policy interface itself needs to adapt in order to better contribute to climate change adaptation efforts.

Session 2 transitioned the conversation at the conference to climate change adaptation. The first presentation offered a microfinance framework for adaptation. The session's second presentation offered a unique and localized perspective using ideas from urban planning and urban resilience in the context of water.

First, a proposal for a new framework of microfinance for climate adaptation was presented. Ninety-one percent of climate finance flows are for mitigation efforts. Some argue that climate change adaptation must be addressed with the same priority as mitigation. In an effort to increase adaptation efforts, the proposed microfinance framework encourages greater participation from private-sector stakeholders through a variety of incentives.

One objective of the framework is to leverage private-sector forms of innovation in adaptation efforts. Information and communications technology may help to facilitate new forms of innovation. Perhaps the tools and technology are already available; however, they need to be brought together with the right actors in order to create new institutions for effective climate finance for adaptation efforts.

The second presentation of Session 2 provided a unique and localized perspective, drawing from urban planning and urban resilience in the context of water. The city of Patna, India was presented as a case study to highlight the challenges to implementing climate resilience on the ground. There is often disconnect between international efforts and localized forms of knowledge. By examining local case studies, though, a suite of strategies for building resilience can be developed. Improving local climate resilience will ultimately depend on improving the institutional capacity of resource managers.

The discussion surrounding the session's presentations produced a number of insights. First, in connecting research to practice for climate adaptation, both presentations exhibited implications for significant institutional change. However, a discussion emerged regarding how research practice, in kind, needs to change in order to co-create the new kinds of innovation for adaptation. Second, conference participants discussed the difference between general development issues, such as eradicating poverty, and those specific to adaptation as a result of climate change. Is this distinction necessary for effective climate change adaptation? Some argued that adaptation efforts and finance is not meant to address general development. Instead, adaptation efforts should help improve institutions' ability to deal with and identify future climate issues, not just current issues. The discussion was not conclusive.

Session 2 consisted of the two aforementioned presentations that investigated specific cases of climate change adaptation. But the resulting discussion from conference participants called into question the very objectives of climate adaptation. Efforts to tap into new forms of innovation, from areas such as public-private partnerships and localized forms of knowledge, offer a compelling area for future research. Finally, the session provided an opportunity to reflect on how the research-policy interface can itself better adapt to improve contributions made to climate change adaptation efforts.

Session 3:
Climate Change and Public-Private Partnerships

Speakers

Ahmed Abdel Latif,
Senior Programme Manager for Innovation, Technology and Intellectual Property, International Centre for Trade and Sustainable Development

Mohammad Aatish Khan,
Student, Yale School of Forestry & Environmental Studies, Yale University

Rapporteur
Adis Dzebo,
Research Associate, Stockholm Environment Institute

Key Findings

- A "one size fits all" for technology transfer to developing countries is not viable, as countries have different needs and circumstances. Differentiated design and access are key elements in accommodating to diverse needs and circumstances.
- Intellectual property rights (IPR) are a big challenge for a large-scale technology transfer in developing countries.
- The UNFCCC should look toward other conventions and multilateral processes to learn of best practices.
- A functioning market structure is needed in order to increase private financing of adaptation.
- Supply chains and climate proofing are two opportunities for the private sector to engage in adaptation activities.

Session 3 focused on public-private partnerships (PPP) for climate change activities. It included two presentations focusing on technology transfer and adaptation finance.

The first presentation argued that PPPs have not been thoroughly addressed in the context of technology transfer and diffusion. It started by providing the historical context of the technology transfer discourse, which began at the Earth Summit in Rio de Janeiro in 1992. However, it was not until the Conference of the Parties to the UNFCCC in Copenhagen in 2009 that a technology mechanism was decided, and it was established under the UNFCCC a year later.

The mechanism consists of an executive committee and an operational body, the Climate Technology Centre and Network. Both entities have been given a mandate to engage with PPPs and have initiated collaboration with the private sector, nongovernmental organizations and academia. In terms of examples of PPPs in technology transfer, there are both bilateral (the US-China clean energy forum) and multilateral (Global Environment Facility PPP programs). However, there are outstanding challenges for technology transfer PPPs, and the presenter illustrated four:

- Diversity of technologies means there are no one-size-fits-all opportunities.
- Countries have different needs and circumstances, which will lead to challenges of design and access.
- Interface with the multilateral framework creates pressure on the UNFCCC to harness these issues into the negotiation process.
- Specific governance issues can exacerbate the challenges.

The postpresentation discussion brought up several issues. The most contentious was IPR, which is a huge challenge for the developing countries. The question of whether PPPs could solve the IPR issues was deemed critical but was left unanswered.

There was also a discussion on whether good examples from other conventions could be used by the UNFCCC as a hook for additional engagement with PPPs. The general conclusion from this discussion was that good examples and best practices are important and should be given more visibility in the negotiations leading to the Paris agreement.

The second presentation assessed PPPs in finance for adaptation, its scope and gaps, and issues and concerns. The main argument of the presentation was that private finance is generally always backed up with good market mechanisms. However, adaptation often occurs in structures where the market is weak and tracking of private adaptation flows are nonexistent. Therefore, there is a huge adaptation funding gap.

Conversely, private finance accounts for 85 percent of all investments, and 90 percent of people in developing countries depend on the private sector for their income. Thus, private finance offers good opportunities to improve supply chains and enhance climate proofing when it comes to adaptation measures at small- and medium-sized enterprises.

The presentation also discussed instruments available and best practices in agriculture, infrastructure, water, and health—particularly direct instruments (public funds to

incentivize private investment) and indirect instruments (public funds used to create mechanisms for additional leveraging of private finance).

The presentation concluded with lessons learned for innovative approaches, agriculture supply chains, insurance, and regulatory and legal environments. It called for additional policy and research in tracking systems, sector specific approaches and instruments, collaborations, partnerships for resilient technologies and practices, information sharing, and innovative models and successful instruments.

The following discussion focused on the fact that adaptation is today where mitigation was 15 years ago in terms of market mechanisms, so the question is whether it would follow the same trajectory or not. A generally accepted insight of the discussion was that the current tools and mechanisms are not yet thoroughly tested to deem market mechanisms impossible or improbable for adaptation finance.

Another insight echoed by some participants was that the presentation should have included bottom-up, on-the-ground experiences in addition to the top-down approach for collecting data and developing tools and mechanisms for PPPs.

In terms of established market structures, since adaptation today is where mitigation was 15 years ago, there are currently fewer opportunities for the private sector. As shown in the first presentation, there are established mechanisms in the UNFCCC for technology transfer, which has a strong mitigation focus. However, there are still opportunities for PPPs in adaptation, and as the markets mature in developing countries, particularly the least-developed countries, the private sector will find more opportunities to contribute to adaptation.

Session 4:
Motivating and Enhancing State Action

Speakers

Sylvia Karlsson-Vinkhuyzen,
Assistant Professor, Public Administration and
Policy Group, Wageningen University

Rasmus Karlsson,
Senior Letturer, Department of Political Science, Umea University

Rapporteur
Adis Dzebo,
Research Associate, Stockholm Environment Institute

Key Findings

- Transparency, or access to data on government actions, is key for holding states accountable to their promises.
- Internal accountability within states is crucial for external accountability between states.
- To make renewable energy significantly cheaper than fossil-fuel energy, there needs to be a drastic increase in funding for energy research.
- In order to reach a strong agreement in the UNFCCC, the link between reducing emissions and lower growth and economic development needs to be broken.

Session 4 focused on how to encourage states to enhance their action in the climate realm. It included two presentations on how states can better engage with climate policy through accountability and through technology commitments.

The first presentation focused on how to hold states accountable to their nationally determined contributions, but the main question is, to whom are states accountable? That is, who will/can/should/ hold them to account and with what effect? The presenter introduced pathways consisting of three interconnected issues as they relate to other governments, national parliaments, and the public: accountability, effectiveness, and legitimacy.

All three pathways have strengths and weaknesses and all are dependent on transparency, defined as access to data on government actions. Moreover, a good accountability framework is also dependent on long-term acute awareness and knowledge from interested parties that governments are being sensitive to sanctions. Finally, a fourth pathway, internal accountability within states, was mentioned, as was the need for synergies among the issues for strengthening the pathways.

The discussion about the first presentation was intensive and focused on several topics. One topic was transparency and whether it was needed for good accountability. The generally accepted conclusion from that discussion was that transparency is necessary, even if it is not formalized. Another topic discussed was differentiated accountability between weak and powerful states. It was argued that there is greater demand for powerful states to exercise transparency and to be held accountable. In international law, powerful states can easily hold weaker states to account. However, the presenter argued that while the argument is important in relation to transnational accountability, all governments have (to some extent) power and responsibilities toward their own citizens. Citizens should thus hold their governments responsible instead of pointing at other countries.

The second presentation highlighted the need for a significant increase in basic energy research because although renewable energy is thought to be the solution to global decarbonization, it is insufficient and coal consumption is on the rise. The cause of the lack of sufficient research on innovative energy technologies was explained as a result of nearsighted policymakers fearing to make short-term promises they could not keep related to long-term energy research projects. At the same time, the demand for energy is increasing globally.

However, as the presenter pointed out, as long as there is a link between reducing emissions and economic development, there will be a deadlock in the international climate change negotiations. Increased basic energy research was also highlighted as a potential "peacemaker" between the Global North and South. For example, China, because of the desire to move away from its fossil-fuel-driven economic growth problems, was investing large amounts in energy research, something the presenter argued countries in the Global North should also do as an aspect of healthy competition on a race to the top compared to historic interactions of blame and burden sharing.

The presentation generated an intensive and long discussion on the link between economic theory and the laws of physics in driving investment, or lack thereof, in energy research. It was argued by some participants that basic research is not a silver bullet but is one of many nodes in a complex system of future energy supply. Yet,

another argument questioned the presenter's weak belief in the scalability of existing renewable energy systems such as solar photovoltaic or wind. As solar photovoltaic and wind technologies have improved, their demand for them has risen and costs have declined. Concerns of the past that renewable energy costs would remain too high to encourage high growth in demand have now all but dissipated today. Nevertheless, there was a general agreement that renewable energy technologies have not yet been disseminated at the required speed and scale to satisfy growing energy demand globally. There is still room for technology improvements to help this scaling up, but perhaps new types of energy systems could be discovered if there were more research investment. Therefore, investment in research is needed, yet questions remain as to where it should be allocated.

Both discussions generated a heated debate on the role of the state. However, participants were in general agreement that states must enhance their actions toward sustainable development. Moreover, the discrepancy in action, capacity, and economic development between states in the North and states in the South, and their roles and responsibilities toward climate change, are still unresolved issues.

Session 5: Parallel Track 1 – Technology Investment Finance and the Roles for Pricing Carbon in Defining the Club Good

This sessions' chairs and speakers are noted on the conference agenda portion of this report.

Rapporteur
Dalindyebo Shabalala, Ph.D.,
Assistant Professor, International Economic Law Fellow,
Institute for Globalisation and International Regulation Faculty of Law,
Maastricht University

Key Findings

- A "club" or networked approach to cooperative actions on climate solutions can provide more benefits to members of the group compared to a unilateral approach.
- Carbon-pricing clubs would need to produce linked benefits including technology and innovation through the use of compatible and complementary policies.
- Public-private partnerships are underrated as an aspect to club-like approaches to cooperative action.
- Although formal institutional regimes could support a club through border carbon adjustment, the institutionalization of club elements will need to occur over time.

The prime framing for the discussions in Session 5–Track 1 was the idea of a club good, that is, that some groups of countries may proceed more quickly on implementing climate solutions where there is significant overlap and agreement on core issues. To some extent this reflects the realism that many of the countries now in negotiations are not in a position to commit to significant action in a way that is measurable, reportable, and verifiable and that those countries that are should be able to proceed. The presentations and subsequent discussions were concerned with whether and how a club good could be formed and what would be the elements for participation, incentives for becoming club members, and disincentives for remaining outside of the club. What seemed clear from broader discussions within the conference is that technology cooperation would have to be part of any club framework. Any effective club would have to include commitments and benefits in ways that they will not or cannot in the context of the current multilateral framework. The broader discussion also acknowledged the high price that some club members, such as the European Union, would have to pay in finance and technology support to induce China and India to participate in a club that excludes the United States. One way around this would be to look at subtopical club regimes, such as a carbon pricing regime (e.g., carbon trading), that could function as clubs. Participants discussed how to define the kinds of policy areas that would be susceptible to club good agreements and that could contribute to increasing the ambition of climate action.

The first key issue was to reconsider the role of carbon pricing and examine when and how it has succeeded as a policy option and as something that can realistically be taken up by countries within the club goods approach. This was driven by the realization that any such pricing mechanism would have to include the complementary policies in technology generation and technology transfer. The traditional link between proper carbon pricing and incentives for technology markets is needed to address global emissions reductions, but there were questions regarding the extent to which the club good framework could address the burden-sharing element of investment in creating and distributing technologies. Some participants expressed skepticism about the ability of such pricing to enable radical innovation.

The group had a very vibrant discussion around Vikram Widge's technical and thought-provoking presentation on linkage between carbon pricing regimes. It was a practical approach to how a club could be formed across differentiated carbon pricing regimes. The presentation was essentially a demonstration of an alternative to a unitary global pricing regime, but questions were raised about comparability across regimes, as well as fungibility. While there was agreement that it presented an elegant solution to a "wicked" problem, it was unclear whether it presented new complexities that were comparable to the existing problems in the multilateral negotiations in setting a global price on carbon.

The group was largely in consensus that while carbon pricing through whatever mechanism was a necessity, it really could not be implemented without also ensuring equitable energy access. To that point, Narasimha Rao's, research scholar, Energy, International Institute for Applied Systems Analysis, presentation argued that in getting around the use of weak proxies for carbon space such as per capita emissions, researchers and policymakers should focus directly on the core of the equity issue, which is energy access. He argued that any regime imposing emissions-reductions obligations, especially through carbon pricing, would have to ensure that energy use and energy access were equitably distributed to those most in need. He argued that

this could allow emissions obligations to be somewhat delinked from increased energy use, provided that benefits from energy efficiency in production and use flowed to those most in need of energy, rather than simply being reappropriated by the middle and upper classes. Again, as a means to get around the existing limits of the carbon budget discussion, this seemed to point to a way for a club to form that does not present such a zero-sum game between developed and developing countries.

Kasturi Das, associate professor of Economics and Strategy Area, Institute of Management Technology, provided a succinct analysis of how much room there was in international trade law and international economic law to impose differential treatment to non-club members, such as through the use of border carbon adjustments (BCAs). She concluded that there is significant gray area, especially with the concept of BCAs. There was agreement from the floor that trade experts were far more sanguine about the possibilities and that World Trade Organization compatibility was a design issue rather than a legal barrier.

Ahmed Abdel Latif, senior programme manager for Innovation, Technology and Intellectual Property, International Centre for Trade and Sustainable Development , presented on the role of PPPs in technology transfer. He pointed to several challenges for PPPs, but especially the interface with the multilateral framework and whether such PPPs may best be formed at the national level or at the international level. It seemed clear that for successful technology transfer, these must be international and will require provisions that ensure broad deployment of technologies. In a sense, PPPs, if broadly constructed, are a form of club and capable of generating club goods either co-extensively with a broader club agreement or as a subelement of a broader club agreement. PPPs make sense in that they allow governments to provide missing capital or other infrastructure to enable innovations to get through the technology valley of death that prevents proper commercialization of technologies, while ensuring positive public policy outcomes in terms of deployment and distribution.

The discussion was recapped and reframed by Heleen de Coninck's proposal for what a club good approach would look like. This would involve three main elements: a commitment to some level of carbon pricing, a commitment to funding technology research development and dissemination, and use of border carbon adjustments. The questions she raised regarding club design were: Which countries? Which institutional structure? Comments from the rest of the group addressed whether the political conditions for use of BCAs existed, referencing the EU emissions trading scheme around aviation emissions. In particular, what carrots could be made available to get India and China into the club? One commenter noted that existing negotiating groups could be the basis of club formation, although these did not cut across the developed and developing country divide. The group considered that while presenting real opportunities for increasing ambition, formulating the institutional structures would be complex, and it remains unclear whether they would be less complex than the current negotiating framework.

Session 5: Parallel Track 2 – Dealing with Impacts on Adaptation and Loss and Damage

This sessions' chairs and speakers are noted on the conference agenda portion of this report.

Rapporteur
Radhika Mittal, Ph.D.,
Media Sociologist and Public Discourse Analyst

Key Findings on Adaptation

- An attempt to inject some structure in participatory and monitoring processes will go a long way in the establishment of learning and sharing platforms and a feedback mechanism that could involve policymakers and on-the-ground actors.

- We need to continually assess and examine the way we frame adaptation and resilience as researchers and practitioners. This will be key to developing socioecological resilience and work toward reducing vulnerability and strengthening capacity.

- It is essential to listen to what the research and scientific communities are outlining for adaptation discourse, to identify the role of knowledge brokers and international organizations, and to identify and welcome the contribution of less-powerful actors in the framing of adaptation practices.

- The task ahead is to develop climate resilient pathways that incorporate sustainable development, climate adaptation, and methods for working within planetary boundaries, incorporating a bouquet of responses from across stakeholders and sectors (including governance, science, finance, and monitoring processes).

- Researchers and policymakers need to recognize adaptation is a genre (a paradigm in discourse) and process, and ask what it means on the ground before enacting it. For instance, adaptation involves working through issues, from sustainable agriculture to gender to biodiversity conservation to sustainable livelihoods to building capacity for water resource management.

- Adaptation cuts across boundaries of knowledge brokerage and policy engagement. It involves developed knowledge and management pathways as well as transdisciplinary research. Within the policy-research interface, future directions for adaptation need to move from being linear to collaborative, from being information intermediaries to innovative brokers and co-creators of knowledge, from being mere producers of information to becoming more-involved participants.

- Scaling up, not adaptation, is a large conceptual and practical challenge for which a theory of change approach might need to be crafted where pathways and actors may vary but capacity, templates, and mechanisms can be enabled in a flexible manner to be applied across the board for the long term.

Key Findings on Loss and Damage

- Focusing on recent, budding research might help speed up some aspects of probabilistic event attribution, enabling better management of any future disaster. Applying and replicating probabilistic event attribution to data in other parts of the world will also have comparative value for future research.

- A research agenda that looks at compensation-fund options and models for loss and damage, say, for instance, in the case of small island nations, is the need of the hour. Other interdisciplinary research could look at attribution of responsibility to particular actors and then involve them in the compensation process, for example, oil corporations and other natural-resource-intensive firms.

- Key questions that need to be addressed around loss and damage include:

    - Are they part of or separate from adaptation?

    - Is the Warsaw International Mechanism sufficient, or does it need to be strengthened?

    - How will a new instrument, if required, be different?

    - Within the compensation process, who will be the beneficiaries, and who will provide funding and support?

- Any solution requires solidarity and collective responsibility on the part of the various actors.

- A stronger, richer, more-nuanced narrative is required to generate more-meaningful discussion around climate change related to loss and damage.

- Inventories of understanding what exactly loss and damage are would be valuable for communication, log keeping, and enabling better future action and knowledge sharing (within the UNFCCC framework).

Session 5–Track 2 brought to the fore deeper issues in managing the gamut of concerns that researchers, policymakers, and practitioners grapple with in practically operationalizing climate change adaptation. In two parts, one on adaptation (and resilience) and the other on loss and damage, experts examined and presented work on the ground that has value across communities and organizations. They questioned notions of what it means to adapt, to build long-lasting value for adaptation, to manage loss, and to assess both damage and risk in legal, scientific, and social terms.

The session on adaptation dealt with adaptation to climate change at the local level and the challenges it brings with it, from capacity sharing and institutional responses to bridging the gap between actors across adaptation networks. Case studies from Ethiopia to northeastern India helped relate and contextualize field experiences on routine adaptation practices. Overarching themes on adaptation and resilience dealt with distilling and bettering the research policy interface, preparing for vulnerability, developing capacity and pathways to resilience, and scaling up, not only transdisciplinary, participative work but also transformational, development-oriented adaptation to climate change.

The presentations provided detailed insights into the roles that diverse actors play in the adaptation process and the capacity for institutional responses that would allow for the movement of actors from being simply intermediaries or translators of knowledge to becoming knowledge brokers, co-innovators, and involved participants in the process of building and disseminating capacity. Scaling up adaptation came to be seen not as a linear process but instead a conceptual and practical challenge, dependent on engagement and monitoring across policymakers, scientists, financers, and other stakeholders, particularly pathfinders or pilot runners working on the ground. Scenarios from the field and on-the-ground experiences helped demonstrate the need for learning-sharing platforms and the diverse involvements necessary at the level of technological know-how, business development, and rehabilitation work.

The session on loss and damage delved into the probabilistic nature of science, nuances of modeling extreme weather events, and the uncertain legal arena of assessing and compensating loss and damages. Scientific evidence and widespread agreement in the area of probabilistic event attribution are key to strengthening concepts around loss and damage and formulating policy around extreme weather events. Legally, loss and damage are largely understood under the arena of adaptation to climate change and not independently. While states agree on expected action in the event of any loss and damage, they have not clarified instruments, modes, compensation regimes, and lines of differentiation (to identify climate-change-related compensation).

Presentations helped dispel common assumptions in attributing extreme weather events directly to climate change. They outlined the longitudinal, intensive, repetitive, statistically valid science required to attribute even a single event to anthropogenic climate change. Probabilistic event attribution requires simulations and observations over many events and taking into consideration many other factors: geographical, atmospheric, and computational. Immediate, robust answers may not be forthcoming. Attribution instantly has social and policy implications and raises concerns and/or directions for adaptation. The lack of clear conceptualizations around loss and damage make connecting the dots a tough process. In the absence of a clear definition and a succinct action agenda, and given the ambiguity around responsibility and binding resolutions, there are risks. The areas of risk include the management of

human mobility, noneconomic losses, compensation and liability, instrumentation and enacting, support, funding, and the identification of beneficiaries.

Some specific research agendas that can be identified here include developing mechanisms to listen to what the research community is telling the public and policymakers about adaptation and resilience, and structuring these insights to develop templates. There is a need for the academic community to help close the feedback loops and bridge gaps between formulation, outcome, and delivery structures. Other concerns include thinking about how local challenges will be integrated vis-a-vis development. Merging local, on-the-ground efforts with state action plans and governance measures is key, and scaling up adaptation needs to be expanded.

It is important to ask how we plan to measure capacity building and resilience, and then think about lessons learned accordingly. With such multifaceted aspects to climate change impacts, the challenge remains to break down each thread and unpack essential, concentrated research efforts and policy recommendations.

Session 6:
New Approaches to Building Capacity

This sessions' chair and speakers are noted on the conference agenda portion of this report.

Rapporteurs
Adis Dzebo,
Research Associate, Stockholm Environment Institute

Jeffrey Swofford,
Ph.D. Student, Arizona State University

Key Findings

- Disseminating technologies requires building capacity through advocacy, technology development, pilot studies, and strong policy.

- Markets alone will not build capacity in the short time that is required for climate action. Therefore, there is a role for the state and civil society to accelerate and strengthen the process of capacity building.

The topic of Session 6 was how best to leverage new approaches in the research-policy interface in order to build capacity and achieve change. The session started with a presentation on building capacity in institutions. When examining how to identify and implement innovative climate change action, successful capacity building takes place across several distinct and consistent phases. Using energy efficient lighting in India as a case study, the presentation examined these different phases of capacity building. The first phase of an innovative climate-related action is advocacy. For the example of scaling-up the use of light-emitting diode (LED) lamps in India, early adopters both in manufacturing (supply) and consumption (demand) were necessary to pave the way before these products were well known and well established. Yet achieving the scaled-up supply and demand required building capacity.

As LED lighting was becoming more wide known as a low energy-intensive technology, an adequate number of people saw the technology as a business opportunity and money was invested. However, LED lamps were not practical as a mainstream lighting technology because the initial consumer price point was marginally greater than the perceived benefit. Therefore, pilot studies were developed that focused on creating standards and laboratory protocols and improving the overall quality in production. These efforts eventually led to lower prices. The final stage of innovative climate-related action revolves around market transformation. In this stage, results and progress of the previous two phases were aggregated and assessed across multiple institutions. For LED lighting in India, it was vital to acknowledge that varying disciplinary languages were used among the different stakeholders involved. Soon after overcoming some of the challenges to reduce the marginal manufacturing cost, a state-controlled company was created to disseminate the lamps. Large bulk procurements spurred the market demand that led to a near-fifty percent reduction in prices, which kept dropping for every bulk procurement. In total, LED lighting prices were lowered by 72 percent over the course of one year.

Capacity building for an innovative climate-related action includes the following steps:

1. **Advocacy.** Public engagement and advocacy organizations lead to early adopters.

2. **Technology and pilot programs.** Producers need to have access to technology and build capacity in standards and labs; thus, technology institutions are key players.

3. **Market transformation and policy.** Multistakeholder engagement should encourage finance institutions and equity holders to build capacity in multiple companies to avoid monopolization.

It was noted during the presentation that building of capacity needs to relate to the steps described above. Different capacities are needed at different points of time, and there is a need for structuring and institutionalization.

The discussion that followed the presentation focused on how to enhance market adoption in the early stages of the dissemination process. Another discussion focused on the role of the markets. It was argued that markets should be left alone to deliver the most-efficient outcome. However, while many conference participants agreed on this, others argued that markets are too slow in contributing to sustainable development due to risk aversion among actors. There is a need to accelerate the process through nudging.

Additional discussion took place on the specific national context in India and how it relates to other countries. The LED lighting example was adapted to a business model that works in India and Indian energy infrastructure. However, conference participants recognized the complexity involved in dealing with these issues, and that capacity needs to be case-study specific. However, this framework worked well for India.

Capacity is built through transactions, and these transactions do not occur in a single venue but are connected globally through multiple venues and conversations. One transaction leads to another and another. By applying the steps above to improve the efficacy of the transactions, capacity can be established and maintained.

Session 7:
Implementation Challenges for Paris and Beyond

This sessions' chair and speakers are noted on the conference agenda portion of this report.

Rapporteurs
Adis Dzebo,
Research Associate, Stockholm Environment Institute

Jeffrey Swofford,
Ph.D. Student, Arizona State University

Key Findings

- Basic energy research is an essential topic and should receive more attention in the research-policy community.

- Although new energy resources are necessary for achieving a low-carbon economy, researchers and policymakers must not forget to increase efforts on demand-side initiatives. There is basic, fundamental overconsumption in many parts of the world.

- The research-policy interface goes beyond merely assessing intended nationally determined contributions (INDCs). Research can make contributions in such areas as implementation, accountability, technology, resilience, finance, and others, all of which are necessary.

The last session summarized the conference and discussed what can be derived from the discussions and presentations that will be relevant for the Paris agreement and implementation beyond Paris. The chair of the conference's final session, Maurits Henkemans, senior policymaker, Directorate General for Energy, Telecommunications and Competition, Ministry of Economic Affaris provided summary remarks reflecting on each of the conference's sessions. It is clear that contributions from the research-policy interface are strong, as exhibited by the lively discussion and debate sparked by the many conference themes and questions. Henkemans observed a shift in discourse in Europe from climate to energy in recent years, which was reflected in many of the conference presentations from both days. In particular, the energy technology and research-and-development debate was quite controversial during the second half of day 1. It is clear that technology development is a key issue for the energy sector. Basic energy research is an essential topic and should receive more attention in the research-policy community. Technology development can be a profitable venture for both developed and developing nations.

The four rapporteurs were called on to provide summary remarks on each of the conference's sessions.

To conclude the session, a conference participant was asked to make remarks regarding his reflections of the conference. Several key themes emerging from the conference were discussed. First, the time has come to hold states to account for their intentions to act with the highest level of ambition for implementing climate action. Whether or not INDCs are sufficient was called into question during the discussion. A second theme emerged concerning action and ambition, and the fact that states need to develop metrics for the two. Third, although public-private partnerships are integral, they do not absolve stakeholders from their responsibility and accountability to climate change. Fourth, equity within national borders is critical, while equity across borders is much more difficult to achieve. People need basic access to energy in a warming world. Fifth, conference participants were reminded of the importance of demand-side issues. Emissions are not caused by production; they result from consumption. There is basic, fundamental overconsumption in many parts of the world.

As the conference concluded, several other participants made brief, closing statements. At GCPC 2015, space was created to discuss problem-driven research and policy efforts, rather than research endeavors for theoretical or purely academic reasons. The conference discussion did not focus on INDCs, which was noted as refreshing. Instead, discussions centered on implementation, accountability, technology, resilience, finance, and other topics. Research can make contributions in these areas.

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