

Key Regional Actors and Sector Opportunities for International Climate Change Cooperation

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The
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LYNDON B. JOHNSON
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Key Regional Actors and Sector Opportunities for International Climate Change Cooperation

Conference Report

Hosted by

The Stanley Foundation

and Dr. Joshua W. Busby

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Executive Summary

The workshop aimed to explore alternative sector-based or thematic approaches to addressing the mitigation challenge and leverage the idea that a few key actors and sectors, working together, can act to have significant impact on greenhouse emissions reductions. Discussions addressed specific sectors like energy production and efficiency, as well as larger concerns of financing and alternative models for cooperation.

Highlights included insights into factors shaping the current and future trajectories of specific sectors, why energy production diversification may be motivated by air-quality issues rather than achieving emissions reductions, and how cooperation on emissions reductions could be integrated into other existing diplomatic conversations. Key ideas are summarized below.

Sector-Related Insights

Diversification of energy production is an imperative. Coal-fired power plants remain a significant source of energy in India and China. However, steps are being taken to diversify energy sources because severe negative externalities (primarily air-quality issues) are providing strong incentives to find viable alternatives.

Leaders in energy efficiency provide useful lessons. Geopolitical issues, namely Russia's intervention in Ukraine, have reignited European interest in improving energy efficiency for reasons of energy security in a way that the mitigation agenda has not been able to. Lessons learned from the European and Japanese experiences should be shared with the rapidly developing countries of China and India.

Stronger monitoring, reporting, and verification practices are needed. Subnational entities are furthering the monitoring, reporting, and verification (MRV) agenda by implementing thorough policies that address the need for external validation of emissions reductions. On a national level, China's emissions are the hardest to monitor and understand, partially because of its reporting practices, and it should be incentivized to adopt clearer and standardized MRV procedures.

Thematic Overviews

Multiple productive models for cooperation exist. Many avenues exist for mutually beneficial cooperation outside of the United Nations Framework Convention on Climate Change process. Whether it be integrating climate issues into trade agreements, elite institutions' membership-ascension requirements, private-public partnerships,

or subnational networks, there was a strong consensus that there are alternative and concrete modes of achieving measurable progress on the mitigation agenda.

Further technology innovation requires adequate financing. Further technology research, development, and deployment hinge on adequate and constant streams of financial support. Venture-capital-type organizations, publicly supported institutions (like the Clean Energy Research Centers), and intellectual-property-sharing alliances (e.g., based on Gavi, the Vaccine Alliance), are all viable models for financing.

Accommodate motivations and future growth of key actors. The climate challenge can be reframed to accommodate the internal motivations of key countries—whether they seek energy access, maintenance or improvement of their quality of life, or returns on their investments. In doing so, actors in international climate policy also need to be cognizant of the future growth trajectories of China and India, countries with large populations and increasing urbanization.

State of Play in Major Actors

Brazil's progress is threatened by domestic political pressures. Recent gains in reduction of emissions from deforestation are under threat as domestic political pressures are blocking the enforcement of land-use laws and may result in an increase in deforestation-related emissions.

China's air-quality concerns are motivating change. The country is actively trying to diversify away from coal-fired power plants in an attempt to improve air-quality levels (which have become a charged political issue). China could learn much from the Japanese and European experiences on energy efficiency.

The European Union could be a useful resource for emerging economies. The European Union (EU) still faces many differences in energy-consumption and production patterns between its western and eastern members. However, its successes on energy efficiency legislation and climate and energy policies will be a useful resource for countries.

India is caught between multiple ambitions. The country's policymakers are caught between implementing mitigation actions and the imperative to "catch up" economically. Issues of energy access, intermittent power, and aging infrastructure have yet to be dealt with.

Japan's recovery is shaping its energy policy. The Fukushima disaster has changed the country's energy production profile and still poses questions for the country's future. However, like the EU, Japan could be a useful resource in imparting knowledge of energy efficiency schemes.

The United States' progress may be affected by political changes. Several bilateral agreements with key actors like China, India, and Brazil have paved the way for investments into clean energy technology research and posit a possible model for financing of such integral activities. The country's action plan hinges on four key topics, heavy duty vehicles, reducing hydrofluorocarbons, power plant emissions,

and methane reductions from landfills. Recent policies, like the Clean Power Plan, may be vulnerable to changes in the political sphere in the near future.

By targeting the biggest emitters (by sector or country), the larger emissions reduction issue can be decomposed into smaller, more manageable actions. Discussions acknowledged the multitude of possibilities for integrating mitigation-related efforts to existing interactions and relationships. For example, membership in elite institutions like the International Energy Agency could be negotiated in return for greater transparency of emissions data. Policies of emerging institutions, like the Asian Infrastructure Investment Bank, could be climate-proofed and require the use of low-carbon technologies where possible. Understanding the internal motivations and political constraints of major actors is integral to designing successful cooperative and financing arrangements that leverage the abilities and ambitions of relevant parties. Ultimately, much scope exists for productive cooperation based on specific sectors, financing and technical assistance, and related MRV goals.

About the Workshop

Over the course of two days, May 27–28, 2015, the Stanley Foundation and Dr. Joshua W. Busby¹ brought together experts from academic, government, policy, and research institutions to discuss ideas and opportunities for alternative but complementary processes and mechanisms to address the mitigation challenge.

Several of the participants were asked to write memos on their area of expertise, ranging from energy production issues in India to efforts to remove fossil-fuel subsidies. These memos provide an in-depth look at the issues considered over the course of the workshop. They can be found online at: <http://tinyurl.com/keyactorsreport>.

The rapporteur, Nisha Krishnan, in collaboration with the chair and organizer, prepared this report following the conference. It contains her interpretation 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.

Considering Alternate Approaches

As the world moves closer to the next round of climate change negotiations at the United Nations Framework Convention on Climate Change's (UNFCCC) Conference of the Parties (COP) in Paris in December 2015, there has been a growing realization that there need to be other simultaneous avenues for cooperation on mitigation action. Actors from across the public and private sectors are involved in small- and large-scale initiatives that are concretely addressing parts of the mitigation challenge. Regardless of the form of agreement reached under the auspices of the UNFCCC, supporting mechanisms that could further facilitate action are needed.

This workshop aimed to address these possibilities for alternative and parallel mechanisms, where incremental progress could be made in the short and long runs. While more than 190 countries and entities are part of the UNFCCC process, only 12 countries and entities are responsible for approximately 75 percent of current emissions,² with a similar story for cumulative emissions. Further, if these emissions contributions are broken down to the individual country and sectoral level, the problem becomes more manageable. Climate policy actors can begin to understand who the critical countries, sectors, and actors are, and focus energies on facilitating their participation and action.³ By investigating other complementary methods of looking at the mitigation problem, climate actors could find new ways of leveraging collective action in more productive ways.

Given recent experiences in international cooperation on climate change, the workshop aims to better understand:

- Which countries and sectors provide the most traction for reductions? What is the political economy of domestic implementation in these major emitting countries? And further, are there some sectors (e.g., energy production) where only a limited number of actors would need to be involved, thus potentially reducing the collective action and enforcement problems?
- What lessons do other processes and efforts offer? How could they be modified or leveraged to address the mitigation challenge? For example, what can the Montreal Protocol and its success in phasing down and out the use of harmful chlorofluorocarbons (CFCs), the possible inclusion of hydrofluorocarbons (HFCs) under the protocol, and the New York Declaration on Forests' efforts in reducing emissions from degradation and deforestation (REDD) teach us? Could similar efforts be created in each of the important sectors?
- What are alternative venues for negotiation and action? Are there "minilateral" processes that could be organized through the G-20, BRICS, or other organizations? Are there selective benefits that could be provided to members in exchange for emissions reductions?

Current and Future Sectoral Approaches

The workshop was designed to understand the best configurations of actors and policies for addressing the mitigation problem. The sessions were loosely organized around the aforementioned questions and sectors that are integral to the challenge. While the workshop was divided into distinct thematic or sectoral sessions, it became quickly apparent that these discussions were intertwined: similar issues of economic development, finance for and innovation of new and existing technologies, and avenues for cooperation all quickly came to the fore across all the sessions. While specific session synopses are provided below, with some details about what was discussed, many of the key takeaways are crosscutting and were mentioned multiple times.

The workshop started with a session on sectors and country profiles where significant progress has already been made, focusing on Brazil's actions to combat deforestation, the wider effort to cut emissions from the forest sector through the New York Declaration on Forests (NYDF), the initiative to reduce emissions of short-lived HFCs, efforts to phase out fossil-fuel subsidies, and efforts to address emissions from cities.

The workshop then discussed three other sectors or areas of action where transnational action might be possible but was not, as yet, as far along as the areas of significant progress. These areas of future potential action are energy production, energy efficiency, and monitoring.

Public-Private Partnerships and Advancing the Climate Mitigation Agenda

- Public private partnerships (PPPs) are alternative forums through which concerted action can be taken toward specific and concrete goals.
- Motivations and incentives to act may often not come from climate-related reasons but rather from other goals (e.g., improved air quality, energy security, economic rebalancing, easing of financial pressures).
- Diverse sets of actors are required: governments, inter- and nongovernmental organizations, and private entities have all been involved in successful PPPs.

PPPs have been touted to be important in motivating large-scale behavioral change in key supply chains and production processes. They provide alternative forums through which concerted action can be taken toward concrete goals. The session's speakers focused on lessons learned from recent successful launches of efforts in several areas for emissions reductions: forests, short-lived climate forcers (specifically HFCs), fossil

fuels, and cities. They highlighted the need to be cognizant of the interplays of domestic and international political and economic pressures, the necessary involvement of a varied set of actors from both the public and private spheres, and the increasingly bottom-up nature of these organizational efforts.

An interesting example of these dynamics comes from Brazil's response to deforestation. While much international pressure has been placed on Brazil to reduce emissions from deforestation, there appears to be reluctance by the government to accept external financial and technical support. That said, internal and external reputational pressures had motivated more internal enforcement of existing laws under former President Lula da Silva, including on illegal logging, resulting in a 75 percent reduction in emissions from the land-use, land-use change, and forestry sector over ten years. However, under the current president, Dilma Rousseff, domestic political and economic pressures have weakened these commitments (e.g., easing of land-use restrictions). Increased exports in the soy and agricultural sectors and a move toward the stronger representation of such interests in the governing coalition are increasingly making it difficult to maintain commitments to deforestation.

The New York Declaration on Forests, like the HFCs phasedown initiative and the C40 Cities Climate Leadership Group, among others, have brought together corporations, nongovernmental organizations (NGOs), and subnational actors to address their respective issues. These initiatives have been mostly bottom-up, relying significantly on businesses and NGOs, with support from interested national and intergovernmental parties (e.g., the Norwegian government, in the case of the NYDF) to coalesce around common ideas and prepare the groundwork and framework for action.

Diversifying Energy Production

- On a per capita basis, India's emissions are closer to those of Nicaragua than to those of China or the United States, and policymakers are caught between the axes of climate actions and economically catching up.
- Coal-fired power plants, both in China and India, are still the primary source of energy, and their use has yet to peak.
- Incentives to diversify the energy production base may come from achieving other goals like improving air quality (e.g., in China) rather than reducing emissions specifically. Therefore, reducing reliance on coal-fired power plants could be framed as a public health issue.
- Financing and technical barriers prevent faster adoption of cleaner technologies. Battery storage technologies and the scaling up of renewable energy are two such areas that could leverage further financing.

Energy production activities remain a significant source of emissions and provide ample opportunities for further emissions reductions. The second session of the workshop provided perspectives on the energy production sector from the American, Chinese, and Indian contexts. In the United States, the Climate Action Plan sets a blueprint for over 75 domestic and international mitigation and adaptation actions; however, many of the results may not be achieved till 2030 or beyond. Four of the main ideas in this

blueprint are finalizing power plant emissions regulations (including the Clean Power Plan that dictates emissions reductions for existing and new power plants); methane reductions from landfills, oil and gas production sites, and coal mines; a phaseout of HFCs; and stricter emissions standards for heavy-duty vehicles.

The Indian and Chinese stories are somewhat different, considering their economic development pathways. On a per capita basis, India's emissions are closer to those of Nicaragua than to those of China or the United States, and policymakers are caught between the axes of climate actions and economically catching up. While policies targeted at improving energy efficiency and rapidly expanding renewables generation capacity have been implemented, coal-fired power plants are still the primary source of energy in China and India, and their use has yet to peak. Financial and technical barriers still exist in adopting cleaner technologies.

China, closer to its peak emissions point than India, has had its coal consumption begin to fall in the last year. The national and provincial governments have introduced coal production caps, incorporated these into their five-year plans, and banned the construction of new coal plants in some parts of the country. Air-quality issues were one of the major reasons for Chinese action on emissions reductions.

Similarly in India, air pollution is becoming more of a political issue, perhaps opening up more room for concrete action, with climate effects potential cobenefits of action intended to improve air quality.

Finally, considering that use of coal and fossil-fueled energy production will still be part of the energy mix in the near future, what other mechanisms exist for incentivizing and supporting further research and development in the energy production sector? Interest in and the feasibility of carbon capture and sequestration projects have waned, given geophysical and financial constraints in Japan, China, and the United States. There has been a shift toward finding other "supporting" technologies, including energy storage, intended to address the intermittency of renewables, and technologies that use carbon dioxide.

Sharing Lessons Learned on Energy Efficiency

- Geopolitical issues, such as those in Russia and Ukraine, have reinvigorated interests in energy efficiency and security in Europe in a way that climate change issues have not been able to.
- In general, the Japanese and European energy efficiency experiences could provide useful lessons for China and India on how best to implement such efforts.
- Specifically, experiences with residential and industrial building codes and appliance-related efficiency standards should be leveraged and shared, perhaps through technical knowledge cooperation efforts, especially in light of significant future growth trajectories in India and China.

Covering the Japanese, European, and American experiences with energy efficiency, the session also provided some fodder for discussion on further international cooperation, especially with China and India. The energy efficiency debates in at least the EU and

Japan are situated in larger economic and geopolitical debates. In the case of the EU, goals and ambitions differ between the eastern and western nations, and energy is used less efficiently in the former communist countries, sometimes complicating internal EU negotiations.

The Japanese and European experiences have shown that instituting strong renewable energy and energy efficiency goals can help spur action. The Japanese are slowly recovering from the Fukushima disaster, which has shaped the energy debate. Further policies could be enacted to support efficiency improvements, including better monitoring of existing financial support, removal of fossil-fuel subsidies, technical standards and regulations for new building construction, as well as monitoring and data-collection educational efforts for households.

While lessons can be drawn on designing building codes for China and India, more efficiency will be gained from better land-use planning, where new cities are more integrated in their transportation, building, and energy use. Further, there was a distinction drawn between upstream interventions, which are necessarily more concentrated, and diffuse household decisions that may be more difficult to influence and change.

Addressing the Need for Monitoring, Reporting, and Verification

- Monitoring, reporting, and verification (MRV) requirements will have to be addressed in any sort of agreement or partnership related to the mitigation agenda.
- Subnational entities play an integral role in furthering and implementing the MRV agenda. But how their emissions-reductions actions are included in national targets is still unclear.
- Alternative incentives for countries to carry out more robust MRV could be provided; for example, membership in certain organizations (such as the International Energy Agency) could be offered in exchange for acceptance of more consistent, standardized, and comprehensive data reporting.

MRV remains an important part of the climate debate, and any global architecture decided on will necessarily have to address this issue, though how it is best addressed is debatable. This session addressed two important aspects: the Chinese resistance to MRV policies and the role of subnational entities and their contributions to larger emissions-reductions goals.

China does not monitor and report on emissions reductions but instead discloses energy intensity reductions and other related metrics. These are not collected holistically or systematically, causing difficulties in understanding the true picture. China could possibly link its greenhouse gas monitoring systems to its air-quality and water-usage measurement systems, which are comprehensively applied at the local, provincial, and national levels. While the Chinese have received external technical assistance in understanding their emissions landscape, they are resistant to externally determined standards for MRV. Alternative incentives, like membership in certain

organizations (such as the International Energy Agency) could be offered in exchange for acceptance of more consistent, standardized, and comprehensive data reporting.

Subnational entities also play an integral role in the MRV process. Rigorous reporting and monitoring frameworks, including mandatory third party verification, are necessary in the Californian cap and trade system. Without such careful reporting, it remains difficult to plan further reductions. How subnational actions fit into the larger national mitigation commitments remain ambiguous. For example, the Under 2 Memorandum of Understanding (Under2MOU) initiative that originated with California and Baden-Württemberg brings together subnational jurisdictions that are committed to deep and lasting reductions in emissions (2 metric tons of CO₂ equivalent emissions per capita by 2050) and are required to submit reports of concrete actions undertaken with quantifications of emissions reductions over time. Yet there is no clear process for how these actions fit into their respective national contexts. Similarly, the UNFCCC's Non-State Actor Zone for Climate Action initiative collects data on emissions reductions by companies, cities, subnational regions, and investors; however, this, too, is not clearly linked to national reporting or accounting systems.

Models for Cooperation

The sessions and consequent discussions highlighted ample opportunities for alternative models for cooperation, primarily outside of the UNFCCC process. While participants acknowledged the intrinsic importance and indispensability of the UNFCCC, it was also apparent that there had to be supplementary efforts to further the agenda and implement concrete actions. Based on recent experiences, the ideas ranged from PPPs targeted at a specific piece of the problem (e.g., the NYDF) to discrete initiatives that could leverage existing bilateral or multilateral arrangements.

Exploring Alternative Diplomatic Avenues

Traditionally, diplomatic efforts, such as the UNFCCC process or bilateral agreements (e.g., those between the United States and China, or the United States and Brazil), have been the most popular modes of cooperation on climate issues. While the UNFCCC's consensus-based approach has posed some challenges given the number of actors involved and their diverse opinions, bilateral agreements have been successful in engaging various levels and aspects of governmental organizations in exchanging ideas and technologies, and instituting policies.

Entities such as the G-20, with its commitment to eliminating fossil-fuel subsidies, provide another example of avenues to pursue. Other regional entities, such as the Association of South East Asian Nations or the Organization of American States, could also provide some traction for these issues.

However, other, unexplored ideas for further cooperation were highlighted during the workshop. These avenues provide alternative ways of engaging key actors by integrating climate into other ongoing conversations and as part of the engagement process, thus providing cover for those who may not want to engage directly on climate issues. Further, tailoring the negotiation space to internal motivations and domestic political situations of countries could yield greater results.

Trade agreements provide a somewhat neutral space within which to address emissions reductions. With several key actors, like Indonesia and the United States, participating in recent trade agreements and others yet to be negotiated, this space could provide opportunities to require more stringent emissions standards or more energy-efficient technologies.

Minilaterals build on one of the premises underlying this workshop—that only several key actors are necessary to achieve major emissions reductions. The fundamental idea would be to develop agreements or initiatives with the participation of these key actors in exchange for selective benefits. These could include reductions in border

tariffs or, conversely, tariffs on nonmembers. Akin to economist William Nordhaus's climate club idea, this could provide concrete and enforceable action on a smaller scale.⁴ However, the equity and legitimacy of these multilaterals have been called into question, especially because of the exclusion of smaller countries (which are less integral to overall reductions but likely affected by climate change).

Multilateral development banks (MDBs), as providers of essential finance to countries, could be another means through which to enforce stricter emissions standards through what they choose to finance and requiring better reporting from recipients. The World Bank's controversial financing of the Medupi coal power plant in South Africa in 2010 could be used as an example of how not to finance future energy access projects. MDBs could require and promote the use of cleaner, alternative technologies instead. The Medupi experience also motivated the World Bank to cease all coal-related financing. Recent events, such as the 2008–2009 financial crisis, have provided avenues for MDBs to demand changes in fossil-fuel subsidy regimes in exchange for assistance. Such crisis points that lie outside of the climate arena can provide the necessary motivation and incentives to make and enforce difficult decisions—and should be taken advantage of.

Other regional multilateral development banks could also be held to the same standards. For example, as the structure, rules, and regulations of the Asian Infrastructure Investment Bank are developed, it would be useful to promote cleaner technology use across the sectors promoted as well as require emissions reporting as part of its environmental assessments. Receipt of finance could be dependent on countries fulfilling these requirements, though this would require the main backers of the bank to agree on this policy orientation.

Membership in elite institutions, such as the International Energy Agency (IEA) or the Organization on Economic Cooperation and Development, are desirable to advancing economies, both by offering status as well as practical benefits. Offering membership could be used as a way to induce better MRV practices by certain countries. As an example, China has been mooted as a possible candidate for IEA membership and could be offered membership in return for more light shed on its internal emissions profile. Such reporting requirements may be harder to negotiate in a multi- or bilateral context and could be more easily required or enforced through membership in existing institutions.

These strategies indicate there is usually room for maneuvering through alternative mechanisms. The emphasis here lies on tailoring the approach for each country/sector combination to the ability, internal motivations, and ambition of the entity.

Some key takeaways from these suggested avenues:

- **Integrate climate issues into other engagement processes.** Engage key actors on the mitigation agenda by integrating these issues into other ongoing diplomatic conversations, like trade partnerships and aid. This could provide some political cover for actors who may not necessarily have traction on acting specifically on the mitigation agenda.
- **Engage based on an understanding of domestic motivations and constraints.** Tailor conversations to accommodate internal domestic motivations (e.g., membership in elite institutions) and political and economic constraints (e.g., need for energy access) of key actors so as to yield greater results.

Leveraging PPPs for Sector-Specific Efforts

Addressing specific reduction targets or developing supplementary technologies or policies often requires the engagement of multiple types of actors, from subnational to international entities, across the private and public spheres. PPPs can successfully bring such actors together provided there are committed facilitators who champion the cause. These initiatives have been shown to facilitate agenda and goal setting, leverage the diverse set of skills and resources of participating entities, and further their respective agendas. Recent sector-specific PPPs, like those described below, provide some insights for establishing such efforts.

Forests. As the most significant cooperative initiative to emerge out of the UN Climate Summit in September 2014, the NYDF is a prime example of how PPPs could be organized. The impetus for the declaration was a strong commitment on the part of corporate actors to reduce emissions in their supply chain, targeting zero net deforestation by 2020 in four commodities (palm oil, soy, paper and pulp, and beef). Further, one of the biggest producers of palm oil, Wilmar Corporation, committed to zero emissions from deforestation in its production. However, while the commitment was a first important step in the right direction, there was also a lack of knowledge as to how to achieve this target. To help facilitate exchange of knowledge and galvanize further action, the World Economic Forum, the UNFCCC secretariat, NGOs, and corporate actors came together to devise pathways to achieve targets, work streams for research, and agendas for action, with forests as a focal area. This process continued, with the involvement of national and subnational government representatives from their ministries of environment and/or finance, and development, and other interested parties, with the declaration being announced during the UN Climate Summit in 2014.

Reducing HFCs in India. The Montreal Protocol has been successful in phasing down and out the use of CFCs, chemicals responsible for creating damaging holes in the ozone layer. More recently, climate advocates have turned their attention to HFCs, chemicals that have been used as alternatives in refrigeration and air conditioning. HFCs are also potent, short-lived climate forcers, with a global warming potential of up to 10,800 times that of carbon dioxide. Advocates, including the United States and the EU, have proposed phasing down HFCs through the Montreal Protocol, which would require an amendment to the treaty.

India, a country where air-conditioning sales are growing at 30 percent per year and are projected to reach almost 200 million units (a ten-fold increase) by 2030,⁵ has until recently been resistant to addressing the problems of HFCs. In April 2015, the Indian government indicated it would be willing to support addressing HFCs through the Montreal Protocol and submitted an amendment. This policy change can be credited to a long-running track-two dialogue that created conditional support in the business community for the proposal. The Institute for Governance and Sustainable Development, with other NGOs and business communities, has been working over a six-year period to lay the foundation for such an announcement. About five companies are responsible for the majority of cooling refrigerant production in India, indicating a highly concentrated space and allowing for overcoming of collective action problems. Further, Godrej and Daikin, two major household appliance makers, are receiving financial support through the Montreal Protocol; and Tata and Maruti-Suzuki motors are actively pursuing HFC substitutes.

From these experiences, several key aspects of PPPs come to the fore:

- **PPPs are best formed around high-level, ambitious, clear, and concise goals.** The primary motivation for the PPP should be clearly defined but broad enough such that multiple parties can coalesce around the leader statement. However, they should guard against encroachment: special interests can sometimes expand the focus of an effort by including pet projects and diluting the level of action devoted to achieving one specific goal. Further, this can also dissuade potential partners from joining and contributing if there is a lack of agreement.
- **Goals should be quantifiable with deadlines.** Without clear and credible commitments that can be tracked, it would be hard to track progress toward the goal. These quantitative targets do not have to be new; rather what has already been discussed in the public sphere could be brought together.
- **Existing actions provide opportunities for leverage.** PPPs should take advantage of existing efforts of partners by allowing them to report on these activities while simultaneously aiming for higher goals. For example, the NYDF had an action agenda that highlighted ongoing work undertaken by partners.
- **Varied but appropriate sets of actors are needed to make a PPP successful.** Not only does the partnership need some representation from government, but it also requires credible commitments from significant private actors—those who have some influence over behavior in and the trajectory of the targeted sector. As one participant pointed out, PPPs are coalitions of the willing. If this coalition excludes key actors and they are not incentivized to join, then the likelihood of concrete and substantial action is reduced. Further, one should not underestimate the central role that nonstate actors like NGOs and policy-oriented think tanks play as instigators of action and facilitators.
- **Agreements can be nonbinding.** Many entities prefer not to be legally bound by specific targets. By creating a “safe space” within which signatories can contribute within their means and by not requiring them to specifically approve of other signatories’ actions, partners may be more prone to participating.

Importance of Transnational Subnational Actions

Increasingly, many of the commitments to and action on emissions-reductions policies are happening at the subnational level. Such actors often have more policy discretion and flexibility than national actors in pledging reductions, legislating such commitments, and enforcing policy. These actors are also useful in pressuring their national counterparts to think more clearly and concretely about how emissions reductions could be achieved. It is important to acknowledge how integral subnational actors are in implementing and achieving national level goals (and in some cases, surpassing the commitments).

In many ways, subnational entities can also be viewed as laboratories, experimenting with different policies and technologies that could be used in lowering the overall emissions profile of their jurisdictions and providing valuable information to other interested parties. They have been instrumental in sharing technical and policy how-tos.

California, for example, regularly hosts national and subnational delegations from Brazil, China, Mexico, and other countries in the interest of exchanging the nuts and bolts of implementing low-carbon policies and the lessons learned. Information has been exchanged on emissions-trading mechanisms, air-quality policies, zero emission vehicles, and designing MRV systems. While these agreements are nonbinding, as one participant pointed out, the binding or nonbinding nature of an agreement appears to have no impact on the implementation or enforcement of policies (the Kyoto Protocol being an example).

The Under2MOU brings together subnational actors in seven countries covering over 100 million residents in a concerted and verified effort to reduce emissions so as to emit 2 MtCO₂eq per capita by 2050. Likewise, the C40 initiative connects local leadership in over 75 cities committed to reducing emissions and climate risks. The network facilitates dialogue and creation of appropriate partnerships (within the network) to address specific issues.

These peer-to-peer relationships are another productive cooperative avenue. Compacts, such as the Under2MOU, indicate that concrete action can be taken regardless of national commitments and support. Somewhat freer than their national counterparts, subnational actors are and could be even more constructive in pushing the agenda further and are integral to addressing the mitigation problem.

In summary, subnational actors are important in:

- **Pressuring national counterparts.** Often, subnational actors have more policy discretion and flexibility than their national counterparts and so are able to implement more policies and programs, thus pressuring national governments to act.
- **Experimenting with innovative policies and technologies.** Subnational actors implement different policies and technologies, and often do so at a smaller scale, thus being natural laboratories and providing valuable lessons for other interested entities.
- **Exchanging knowledge.** Subnational actors, through transnational networks or bilateral relationships with interested entities, are integral in exchanging ideas and the nuts and bolts of implementing policies and technologies, furthering the mitigation agenda through concrete actions.

Crosscutting Issues

Throughout the sessions, concerns were repeatedly expressed over access to adequate and consistent finance, technology transfers, and transfers/sharing of intellectual property. Participants also reiterated the opportunities for reframing the mitigation agenda to reflect ancillary benefits, thus gaining traction in policy debates for action. Treating climate mitigation as a cobenefit of policies intended to address other problems such as air pollution would reflect priorities of countries like China and India and provide another productive avenue for indirectly achieving mitigation goals.

Financing for Technology Research, Development, and Deployment

Adequate and constant streams of financing are required to further the mitigation agenda. An issue that repeatedly entered workshop discussions, it plays an integral part in not only the UNFCCC negotiations but also any other agreement or relationship formed around the climate issue. The interplay of financial and technological issues remains one to be addressed in a more concerted way, perhaps outside of the existing UNFCCC processes and with more corporate- and finance-minded parties.

Further research, development, and deployment (RD&D) of supporting technologies (e.g., storage for solar or wind energy, grid interconnection) is required to address gaps in the current technology arsenal as well as improve current practices. In addition, existing and new technologies have yet to be transferred to the areas that perhaps most need to implement these practices. Intellectual property (IP) issues are sometimes barriers to such transfers and would need to be tackled. Private and public entities at all scales of operation (national to subnational) face these financial and logistical constraints—and without additional and/or alternative financing schemes will continue to find it difficult to overcome these barriers.

Cooperative agreements for IP sharing and financing schemes have been successfully implemented to address other global challenges. The Gavi, shepherded by the Bill and Melinda Gates Foundation and the World Health Organization, facilitates the removal of IP restrictions and allows for easier transfer of vaccines in an effort to distribute badly needed medicines at a lower cost. Similar mechanisms could help drive down prices of new and critical technologies, allowing for faster dispersion and adoption.

Similarly, venture-capital-type or competitive-funding schemes have been somewhat successful in supporting and introducing new technologies to the market. The United States' Advanced Research Projects Agency–Energy is an example of a government-sponsored venture-capital-type funding scheme that supports RD&D in energy

research. However, it has been widely acknowledged that public financing alone will not be able to fund the necessary research. Governments and public entities can be ill suited to support the risk taking necessary for RD&D, a trait much more akin to the entrepreneurial nature of private actors. Seed funding could also be solicited from several philanthropic foundations, with the funds run on a venture-capital model, where proposals could be solicited, reviewed, and mentored through the RD&D cycle.

Using the US-China relationship as an example, the Clean Energy Research Center (CERC) was established in 2009 and started with \$150 million in seed funding as a high-level initiative to spur innovation and technology transfer, connecting universities, research institutions, and industry outfits. The CERC specifically focused on three work streams: advanced coal technology, clean vehicles, and building energy efficiency. However, the aim of the program was not only to connect the bigger, more established entities but also to connect entrepreneurs in both countries. The leveraging of such investments can only happen when connections are made not only at the government level but also on a peer-to-peer basis. Such solutions-based approaches could help spur innovation on specific technological roadblocks. Similar relationships have been fostered under the auspices of other bilateral or multilateral cooperative agreements, like the US-India Joint Clean Energy Research and Development Center and the Partnership on Clean Energy, and the recently announced cooperation between the United States and Brazil.

In general, financial support for further technology development will most likely be provided by the private sector. However, this is contingent on providing the right market signals, which can partially be addressed through regulations and legislation. California, as a leader in this area, has an energy-storage requirement, which has in turn spurred investment in research and development for such technologies. Thus while there is ample room for bottom-up innovation and private action, complementary and supporting regulations and seed financing are needed from public actors.

Financial support is necessary to further the development and diffusion of technologies. From the discussions, several key points emerged:

- **RD&D efforts should find ways to facilitate IP sharing.** As one of the major barriers to faster technology adoption, IP rights to existing and new technologies need to be shared. Some lessons could be learned from other global challenges, like vaccines.
- **Private sector risk-taking behavior may be more suited to supporting technology development.** Governmental actors may be ill suited to the risk taking necessary to spur technological development. The private sector's entrepreneurial nature may be more appropriate for such development.
- **Transnational connections must be made on a peer-to-peer level.** While bilateral connections are important, connections must be made between like-minded entities interested in financing, developing, and deploying existing or new technologies. Such interactions should be supported through national bi- or multilateral efforts.
- **Support for state, national, and international policies need to continue.** Private and public actors require enabling policies and legislation that provide clear market signals, thus incentivizing appropriate investment decisions.

Imperatives for Further Cooperation

Despite increasingly pessimistic authoritative reports on and warnings of the impacts that a business-as-usual emissions scenario could have, neither multilateral negotiations nor domestic policies have adequately made progress in addressing the mitigation problem. The climate regime has concurrently become more complex: informal and formal processes and forums have formed in parallel to the UNFCCC process, partially in order to circumvent some of the process's logistical inefficiencies and roadblocks. While these other venues have helped further the agenda internationally, more can be achieved domestically by reframing the need for mitigation actions as other, more-popular issues.

Unless the underlying needs and ambitions of countries are addressed, adequate progress on the mitigation agenda will be unlikely. Rapidly developing countries and major emitters, like India and China, have yet to reach their peak emissions periods or advanced industrialized stage. For example, India is expected to build approximately 80 percent of its physical assets—infrastructure, commercial and residential buildings, vehicles, and industrial capacity—by 2030.⁶ Emissions from the associated air-conditioning and other electronics use, building materials, and transportation needs all have to be factored into this projected increase. The construction materials to be used in the projected growth in developing countries alone are projected to produce 470 GtCO₂eq of emissions.⁷ As one participant aptly put it, the cities we do not know the names for yet are the ones that we need to be concerned about. While this growth could be viewed as a challenge, it can also be an opportunity to integrate low-carbon/low-emissions development principles at the ground level. As our technical know-how improves, and if financial support is available from the beginning, emissions could be mitigated through more-integrated planning and better material use, among other solutions. Subnational actors could be key in continuing the transfer of such knowledge and should be supported in their efforts.

Gaining Political Traction by Addressing Cobenefits. Recently, the mitigation problem has been divided into and recast as addressing other, more salient issues. By doing this, major countries like China have been able to gain some traction for policies in their domestic arena, despite internal opposition. Casting the problem as one of having to improve air quality, addressing energy security, or easing financial constraints, national actors have been able to regulate point source emissions and close inefficient producers, among other actions. Reducing emissions is seen as a cobenefit and posited as an additional benefit of other policies, whether transportation, air-quality, or public-health related. Recasting the issue also allows for bringing in other partners who may be interested in the larger issue of emissions reductions. California, for example, engages with Chinese and Indian agencies on air-quality, black-carbon, and transportation issues, thus pushing the mitigation agenda forward without it being explicitly framed as such.

Addressing Underlying Needs of Parties. The increasing complexity of the climate regime not only reflects the breadth and depth of the issues at hand but also the number of parties interested and involved. Accommodating the various negotiating positions on integral issues like intergenerational equity, financial and technical transfers, and common but differentiated responsibilities (according to economic status) not only is difficult but also misses the other drivers that are important in achieving emissions reductions. Negotiations and agreements should be structured around solving the

problem and addressing needs. Most countries' interests and negotiating positions can be divided into three sets of drivers:

1. **Access to basic services**, including energy access, is essential and has yet to be adequately addressed. This is especially true for developing countries and continues to be a motivating factor of their positions.
2. **Maintaining or improving quality of life** has increasingly become a theme in the negotiations. Whether this relates to the environment (e.g., improving air quality) or consumer-goods access, this, too, will remain a key aim.
3. **Similar or better returns on investment** are sought by those with capital. For countries or for private actors to invest resources in clean energy or low-carbon development projects, they seek returns comparable to what they could receive with other investments.

Current partnerships are structured around larger discussions (e.g., Clean Energy Ministerial), policies (e.g., Renewable Energy Policy Network for the 21st Century, International Renewable Energy Agency), or regional or local areas (e.g., Regional Center for Renewable Energy in Africa), that often do not address the actual nuts and bolts of implementing agreed-on targets or outcomes. High-level organizations are often unequipped to deal with the practical issues of training and equipping staff or deploying technologies. Restructuring the political economy of climate change to target the above-mentioned drivers and practical issues—whether through partnerships for energy access, energy storage, or addressing IP challenges—may provide more opportunities for progress in the mitigation agenda.

Through our efforts to understand what future concerns and cooperation on the mitigation agenda might look like, these nuggets stood out:

- **Growth is a challenge and an opportunity.** Significant amounts of construction and expansion in India and China are forecast. This should be seen as an avenue for cooperation and opportunity to implement better land-use-planning and low-carbon-growth models.
- **Mitigation actions should be reframed as cobenefits.** Notable progress can be made if emissions-reductions actions are posited as a cobenefit and as an additional benefit of other policies.
- **Agreements should target underlying needs.** The internal motivations of various actors necessary to achieve emissions reductions vary, but in general, they revolve around energy access, quality of life, and investment returns. Reframing the negotiation agenda to address these needs will provide more traction in the long run.

Conclusion

The workshop was designed to understand the opportunities for concrete progress on the mitigation agenda outside of the UNFCCC process. The formal process remains important, even if much action or ambition is not reflected in the final agreement, partially because of its inclusivity of actors. However, given that only a few actors and sectors are responsible for the majority of emissions, could alternative agreements and cooperative arrangements be designed through leveraging other diplomatic avenues? How are private and subnational actors involved in this process?

Over the course of two days, several viable forms for cooperation were discussed, including sectoral PPPs (like those focusing on forests and HFCs), access to elite institutions in exchange for concessions on MRV practices or other reductions, technical cooperation and financing through clean technology research and development centers, and the integral role of subnational actors in furthering the mitigation agenda. Plausible models for addressing key challenges, including financing and intellectual property rights, were discussed. From the ideas and scenarios discussed, there appears to be significant traction for action on the mitigation agenda, whether it is through alternative agreements specifically on sectoral mitigation issues or through the integration of climate issues into entirely other political-economy issues like trade. However, discussions frequently returned to how these alternative regimes could fit in with the formal UNFCCC process. Many of the suggestions put forth through this workshop involve a finite number of integral actors; however, the climate change issue writ large encompasses many subtopics, including adaptation and disaster-risk management. The ideas suggested here are intended to be complementary to rather than substitutive for the UNFCCC process.

Several common characteristics were highlighted as useful for successful partnerships and agreements. First, any type of cooperative agreement should be flexible and allow room for partners to maneuver. It should also be tailored to the country/partner's internal constraints and dynamics, allowing it some ability to uphold its commitments. Third, it often is useful to present the mitigation agenda as a cobenefit of other commonsense policies that improve air quality and energy efficiency (or any other policy that may be appropriate). Actors should be encouraged to coalesce around larger themes (e.g., intellectual property sharing) and smaller, more specific topics (e.g., battery storage).

The examples of cooperation and ideas for alternative avenues for action discussed in this report indicate that much of the groundwork for furthering the mitigation agenda will have to happen outside of the UNFCCC process. Even if a successful agreement is reached in Paris in 2015, many challenges, such as energy storage, will require other venues and processes for subsequent action. As was reiterated throughout the workshop, opportunities for concrete action and cooperation are present at every scale of the private and public spheres and all sectors, and such possibilities are being leveraged, but not yet to their full potential.

Endnotes

- ¹ Joshua W. Busby, associate professor, Lyndon B. Johnson School of Public Policy at the University of Texas at Austin.
- ² Analysis performed on greenhouse gas emissions data from the Climate Analysis Indicator Tool provided by the World Resources Institute, www.cait.wri.org.
- ³ Sectors are loosely defined as broad categories of emissions sources. For example, they could be as broad as energy production or more narrowly classified, such as the cement industry. They also refer to individual climate forcers (such as hydrofluorocarbons or soot).
- ⁴ W. Nordhaus, "Climate Clubs: Overcoming Free-Riding in International Climate Policy," *American Economic Review*, Vol. 105, No. 4, 2015, pp. 1339–1370.
- ⁵ A. Jaiswal, B. Deol, and S. Diley, "India's Challenges of an HFC Phase Down," memorandum prepared for this workshop, May 2015.
- ⁶ R. Gupta, S. Mantry, and G. Srinivasan, "India: Taking on the Green-Growth Challenge," *McKinsey on Sustainability and Resource Productivity*, summer 2012, pp. 64–75.
- ⁷ A. Zomer, and A. Hsu, "Cities and Climate Change: Examining the Potential of Cities to Mitigate Global Climate Change," memo prepared for this workshop, June 2015.

Participant List

Organizer

Rei Tang, Associate Program Officer, The Stanley Foundation, USA

Chair

Joshua W. Busby, Associate Professor of Public Affairs, Lyndon B. Johnson School of Public Affairs, University of Texas at Austin, USA

Rapporteur

Nisha Krishnan, Research Assistant and Doctoral Student, Lyndon B. Johnson School of Public Affairs, University of Texas at Austin, USA

Participants

Aimee Barnes, Deputy Secretary for Border and Intergovernmental Relations, California Environmental Protection Agency, USA

Luan Jonathan Dong, Natural Resources Defense Council, China

Todd Edwards, Program Officer, The Stanley Foundation, USA

Donovan Escalante, Analyst, Climate Policy Initiative, USA

Ivetta Gerasimchuk, Senior Researcher, International Institute for Sustainable Development, Global Subsidies Initiative, Switzerland (via Skype)

Arunabha Ghosh, Chief Executive Officer, Council on Energy, Environment and Water, India

Angel Hsu, Associate Research Scientist and Lecturer, School of Forestry and Environmental Studies, Yale Center for Environmental Law and Policy, USA

Anjali Jaiswal, Director, India Initiative, International Program, Natural Resources Defense Council, India

Yasuko Kameyama, Head, Center for Social and Environmental Systems Research, National Institute for Environmental Studies, Japan

Damien Ma, Fellow, Paulson Institute, USA

Austin Igomu Sadiq Okoh, Chief Executive Officer, CarbonFree Network, Nigeria

Vivan Sharan, Consultant, Observer Research Foundation, India

Sarang Shidore, Independent Consulting and Visiting Scholar, University of Texas at Austin, USA

Taiya M. Smith, Managing Partner, Garnet Strategies, USA

Fabiano Toni, Coordinator, Graduate Program in Sustainable Development, University of Brasilia, Brazil

Michael Tubman, Senior Fellow, Center for Climate and Energy Solutions, USA

Stacy D. VanDeveer, Chair, Department of Political Science, University of New Hampshire, USA (via Skype)

Michael Wolosin, Managing Director of Research and Policy, Climate Advisers, USA (via Skype)

Alisa Zomer, Conference of the Parties Fellow, Climate and Energy Institute, Yale University, USA

Stanley Foundation Staff

Patty Papke, Director of Production and Events, The Stanley Foundation, USA

Affiliations are listed for identification purposes only. Participants attended as individuals rather than as representatives of their governments or organizations.

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The Stanley Foundation
209 Iowa Avenue
Muscatine, IA 52761 USA
563-264-1500
563-264-0864 fax
info@stanleyfoundation.org