

Future U.S.-China Cooperation on Climate Change: Working Towards a Green New Deal

Angel Hsu, Assistant Professor, Yale-NUS College
Deborah Seligsohn, Assistant Professor, Villanova University

Comprising 40 percent of global greenhouse gas emissions, the United States and China were critical to securing the Paris Climate Agreement in 2015. The following year, however, the U.S. national administration's shift away from international engagement in climate governance not only left a void in leadership but stalled bilateral engagement with China on a range of key climate and energy-related programs. With the window to keep global climate goals of containing temperature rise within 1.5 degrees rapidly narrowing, this memo argues reigniting the U.S.-China bilateral climate relationship is essential for avoiding the most dangerous effects of global warming. If there is a new administration in 2021, it seems likely that at a bare minimum it will immediately reengage in the Paris Agreement. A "first-best" policy option would be to have an immediate bold national policy, as well, and that is envisioned in Biden-Harris's proposals that are aimed at creating green jobs and building sustainable infrastructure and clean energy. However, they also want to reengage with China, and given how challenging it is to adopt national policy, it is worth thinking about steps that can be taken to restore both the relationship with China and the international community's confidence in the United States' concern and commitment to greenhouse gas mitigation and climate response. To build international relationships and national support, we recommend a "Green New Deal (GND)" approach that focuses on developing winning coalitions that focus on industrial standards and economic incentives could bring the two countries back to the negotiating table. Subnational and private actors in both countries have been and continue to demonstrate the potential for these approaches. Particularly as both countries grapple with the need to further shrink their reliance on coal as a power source, a GND-style approach to climate and post-COVID recovery would generate win-win solutions for both countries. If, on the other hand, the Trump administration continues in office, it becomes even more important to focus on what private and subnational actors can do. We have very little time to avoid truly catastrophic climate change, and thus regardless of administration, the next four years require urgent action.

The United States and China enjoyed a robust collaborative relationship on climate change during the Obama administration, and it is tempting to think that the relationship could simply be resumed under a potential future Democratic presidency. But it is important to realize that from the Chinese point of view that relationship never delivered one of its most critical elements—true U.S. leadership in cutting carbon emissions of the type envisioned early in the

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Obama administration had the 2009 Waxman-Markey Bill passed. Moreover, across the board the two countries are in very different positions than they were five years ago. Not only has bilateral hostility on both trade and security increased dramatically, but U.S. credibility not just for meeting obligations, but in fundamental effectiveness, has been badly damaged by the federal government's weakness in the face of the COVID-19 pandemic.

The U.S.-China climate relationship during the Obama administration's greatest achievement was creating a favorable environment for the Paris Climate Agreement. After a rocky international start at the watershed 2009 Copenhagen Climate Summit where China largely took the blame for the "failure" of the negotiations,¹ the two sides learned to work together and build trust through collaborative projects in carbon mitigation and climate science. These cooperative projects all had value in and of themselves, but they were not large. Their fundamental role was diplomatic in building needed trust for bilateral cooperation that would be critical for securing the 2015 Paris Agreement.

The structure of the Paris Agreement is now in place—one that asks countries to generate their own ambition instead of a top-down framework imposed by the Kyoto Protocol—the only legally binding global climate agreement. China has remained a party to the Paris Agreement, and a Democratic administration seems likely to reenter. Now the question is how to strengthen country-level commitments in both countries to increase ambition and make it possible to limit emissions to either the Paris-agreed 2°C or the 1.5°C that more recent research suggests is needed to avoid the most dangerous consequences of climate change.²

¹ Mark Lynas, "How do I know China wrecked the Copenhagen deal? I was in the room," *The Guardian*, December 22, 2009, <https://www.theguardian.com/environment/2009/dec/22/copenhagen-climate-change-mark-lynas>.

² IPCC, "Summary for Policymakers," In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W.

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Neither country is on track for these types of emissions reductions. China has made progress over the past four years, with its focus on low-carbon development, capping coal consumption, and increasing renewable energy. Pre-COVID-19 analysis by the Climate Action Tracker (CAT) shows China to be on track to meet its 2020 pledge and NDC targets, although this still represents a rise in GHG emissions levels to 13.7–14.7 GtCO₂e/yr in 2030, a 7–15 percent increase above 2015 levels. The U.S., on the other hand, has rolled back on key climate policies, including the Corporate Average Fuel Economy (CAFE) standards and the Clean Power Plan. This weakening of climate action by the Trump administration has resulted in projections of 6.4-6.5 GtCO₂e/year by 2025, which is only 11–13 percent below 2005 levels—far below the 26-28 percent below 2005 levels the U.S. pledged. According to CAT, the pledges and progress of both China and the U.S. remain inconsistent with limiting warming to below 2°C, much less 1.5°C.

In the backdrop of these policy shortcomings, COVID-19 has created an unusual hiatus in economic activity and carbon emissions, where it is estimated that global emissions will fall between 4 and 11 percent by the end of this year in what may be the greatest recorded drop in annual emissions. Once economies reopen and recovery strategies are put in place, however, it is likely that emissions will rebound and erase gains that were achieved due to lapses in industrial activity and transportation. Emissions data show that after several months of nationwide lockdowns, CO₂ emissions in China dropped an unprecedented 25 percent, only to rebound to 4 to 5 percent higher year-on-year in May, largely due to coal-fired power, cement, and heavy

Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], 2018.

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industries that bounced back faster than other less CO₂-intensive sectors.³ Because of this rebound, and likely emissions scenarios to occur in the United States and other countries post-COVID, it is critical to secure low-carbon cooperation from the U.S. and China—the two largest global emitters of greenhouse gases—to reroute the global trajectory towards the 1.5-2-degrees Celsius goals.

A silver lining in an otherwise cloudy global situation is the inevitable postponement of the next meeting of the United Nations Framework Convention’s Conference of Parties (COP 26) by a full year to 2021. Although this rescheduling undoubtedly delays countries’ submissions to increase the ambition of their original 2015 Paris pledges, it offers the opportunity for meaningful participation by the United States, if 2020 results in a new administration. It also provides a key window for the U.S. and China to rebuild its partnership on climate and energy, recognizing that economic recovery due to COVID-19 will need to be a critical component of any discussion. At the most recent United Nations General Assembly meeting, President Xi Jinping announced that China would aim for carbon neutrality by 2060, a goal that climate science has identified as necessary to keep global climate goals within reach.⁴ China joins more than 120 national governments that have also committed to net-zero emissions by mid-century or sooner,⁵ providing an important signal for other countries that are expected to submit “enhanced ambition” nationally-determined contributions (NDCs) in the coming months.

³ Lauri Myllyvirta, “Analysis: China’s CO₂ emissions surged past pre-coronavirus levels,” Carbon Brief, May 2020, Available: <https://www.carbonbrief.org/analysis-chinas-co2-emissions-surged-past-pre-coronavirus-levels-in-may#:~:text=China's%20emissions%20rebound,%2Ddon%2Dyear%20in%20May>.

⁴ Isabelle Gerretsen, “‘China is willing to contribute more’: Beijing signals carbon neutrality intent,” *Climate Home*, 2020, Available: <https://www.climatechangenews.com/2020/09/16/china-willing-contribute-beijing-signals-carbon-neutrality-intent/>.

⁵ United Nations Environment Programme (UNEP), UNEP (2019), Emissions Gap Report 2019, United Nations Environment Programme, Nairobi.

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Forging a path forward for U.S.-China bilateral re-engagement on climate change and energy in this context will be challenging, particularly given the shift to a predominant framing of the relationship in competitive terms in the past four years. Consequently, national climate and energy policy in the U.S. and China has diverged over the last three years. China has continued to follow the program mapped out in its Paris commitments and 13th Five Year Plan (2016-2020), while the U.S. has hollowed out national policies that were part of its Paris package. Despite this seeming divergence between the two countries, local and state-level policy innovation in the United States⁶ and through environmental groups actually reflects greater convergence with the Chinese approach than is obvious on the surface.

In both countries, climate and energy-related policies that emphasize green economic approaches are often more politically salient, both at the local and national levels. This common ground, referred to most recently as “Green New Deal” (GND) approaches in the United States, could bring U.S. and Chinese national policymakers back to the climate and energy negotiating table, particularly as both countries consider COVID economic recovery strategies. There has been a major shift in U.S. climate advocates’ thinking away from price-based carbon regulation (i.e., cap and trade or carbon tax policies) that are politically challenging to secure and towards GND-type policies that emphasize sector-specific standards and industrial incentives.⁷ This

⁶ The America’s Pledge Initiative on Climate Change (2020) Delivering on America’s Pledge: Achieving Climate Progress in 2020, W. Jaglom, C. Frisch, K. Kennedy, L. Clarke, N. Hultman, T. Cyr, J. Lund, D. Saha, J. Feldmann, C. Bowman, J. O’Neill, M. Campton, M. Herbert, L. Calle, A. Light, P. Bodnar, Published by Bloomberg Philanthropies with Rocky Mountain Institute, University of Maryland Center for Global Sustainability, and World Resources Institute. New York, Available at: americaspledge.com/reports.

⁷ David Roberts, “At last, a climate policy platform that can unite the left,” *Vox*, May 27, 2020, <https://www.vox.com/energy-and-environment/21252892/climate-change-democrats-joe-biden-renewable-energy-unions-environmental-justice>

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approach to climate policy aligns with the long-standing Chinese approach, which emphasizes targets and the creation of new industries by incentivizing green energy.⁸

Reframing a U.S.-China climate and energy relationship based on a GND approach would be a win-win for policymakers in both countries, regardless of whether a change in U.S. national leadership happens. This shift away from what voters perceive as punitive taxes and a focus on dirty energy to an approach emphasizing green energy that voters view positively⁹ clearly has domestic political advantages in terms of securing potential votes in Congress. But just as importantly, it lays the groundwork for creating what Meckling et. al (2015) refer to as a “winning coalition.”¹⁰ Rather than a policy that is directed towards loss (i.e., the additional costs of fossil fuel use), an industrial policy approach creates winners that will then likely lobby for more climate-friendly policies that aid their businesses and their union members’ employment.¹¹ The opportunity for U.S.-China cooperation to build such coalitions across borders is fortified by constituencies in both countries finding advantages in a greener future.

In the following sections, we outline what pursuing a “winning coalition” strategy framed in GND-terms would mean for the U.S.-China climate relationship. We point to a key commonality in climate and energy governance between the two countries, namely a focus on standard-setting and industrial policy, as a building block for establishing a broader GND-approach to address climate change. Key to mobilizing a U.S.-China GND climate collaboration will be engaging local actors who have continued working together despite a chilling of national bilateral relations; and dialogues and partnerships that focus on “just transitions” away from coal,

⁸ Kelly Sims Gallagher and Xiaowei Xuan, *Titans of the climate: Explaining policy process in the United States and China*, (Cambridge, MA: MIT Press, 2019).

⁹ Stephen Ansolabehere and David M. Konisky, *Cheap and clean: how Americans think about energy in the age of global warming*, (Cambridge, MA: MIT Press, 2014).

¹⁰ Joans Meckling, Nina Kelsey, Eric Biber, and John Zysman, “Winning coalitions for climate policy,” *Science* 349, no. 6253 (2015): 1170-1171.

¹¹ Robert O. Keohane and David G. Victor. "Cooperation and discord in global climate policy." *Nature Climate Change* 6, no. 6 (2016): 570-575.

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which both countries will need to phase out if there is any hope of avoiding the most dangerous impacts of global warming.

Reframing Policy Toward Climate Winners

From the outset of the Kyoto Protocol negotiations in the 1990s until the failure of the Waxman-Markey bill in 2009, international climate policy has focused on cap and trade programs. The attraction of cap and trade is clear: economists have argued strenuously that it provides least-cost solutions to carbon mitigation with the assurance of clearly defined emissions caps.¹² Moreover, cap and trade had demonstrated success, most spectacularly with the U.S. sulfur trading program¹³ but also with the European Emissions Trading System (EU-ETS) for carbon.¹⁴ As the U.S. struggled to enact cap and trade, some advocates argued that the solution was simply to choose a different market-based mechanism, namely a carbon tax, which has lower transaction costs but can be more politically contentious in contexts like the U.S.¹⁵

But the real shift away from the notion that climate change policy needed to be centered on cap and trade began even before 2009 through the introduction of alternative approaches that emphasized standards and industrial policy. By the time Waxman-Markey was debated in Congress, 34 states (a number of them with Republican legislatures and/or governors) had adopted renewable energy portfolio standards.¹⁶ When the World Resources Institute estimated

¹² Robert N. Stavins, "Addressing climate change with a comprehensive US cap-and-trade system," *Oxford Review of Economic Policy* (2008): 298-321.

¹³ Robert N. Stavins, "What can we learn from the grand policy experiment? Lessons from SO₂ allowance trading." *Journal of Economic Perspectives* 12, no. 3 (1998): 69-88.

¹⁴ Ralf Martin, Mirabelle Muûls, and Ulrich J. Wagner, "The impact of the European Union Emissions Trading Scheme on regulated firms: what is the evidence after ten years?" *Review of environmental economics and policy* 10, no. 1 (2016): 129-148.

¹⁵ James E. Hansen, "Carbon tax & 100% dividend vs. tax & trade," *Testimony submitted to the Committee on Ways and Means, US House of Representative* 25 (2009); Joseph E. Aldy, "Carbon tax review and updating: institutionalizing an act-learn-act approach to US climate policy," *Review of Environmental Economics and Policy* (2020).

¹⁶ Jess Chandler, "Trendy solutions: why do states adopt sustainable energy portfolio standards?" *Energy Policy* 37, no. 8 (2009): 3274-3281.

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emissions reductions from the so-called cap and trade bill, they found that complementary and other measures, mainly standards and incentive policies, would result in reductions similar to the actual cap and trade portion of Waxman-Markey.¹⁷

This shift in climate policy towards standards and industrial policy meets two needs. In the U.S. context, it better meets the concerns of voters. Although economists tout the efficiency of “market-based mechanisms,” loss aversion¹⁸ makes taxes a difficult sell to voters¹⁹ in the context of climate policy.²⁰ Not only is the public averse to taxes, but, with a climate tax, they are being asked to adopt a cost now to prevent a future that is difficult to understand probabilistic terms— the so-called irrational discounting of the future that makes climate change a “super wicked” problem.²¹

By contrast, standards and industrial policy are easier to present to voters—they promote positive gains, such as clean energy and new technology. Additionally, if designed well, both generate the constituencies for their continuance. While the renewable sector would likely benefit from a carbon tax, for example, it is much more difficult for them to estimate the effect, compared to a renewable energy portfolio requirement or industry-specific taxes breaks or subsidies. They also need to lobby directly against the fossil fuel industry, which opposes the tax. With industrial policy, industries tend to lobby for their benefits, but rarely against others’

¹⁷ World Resources Institute, “Emissions Reductions Under The Waxman-Markey Discussion Draft: 2005-2050,” April 2009, Accessed May 2020, <https://www.wri.org/resources/charts-graphs/emissions-reductions-under-waxman-markey-discussion-draft-2005-2050>

¹⁸ Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, “Anomalies: The endowment effect, loss aversion, and status quo bias,” *Journal of Economic perspectives* 5, no. 1 (1991): 193-206.

¹⁹ Alberto Alesina and Francesco Passarelli, *Loss aversion in politics*, no. w21077, National Bureau of Economic Research, 2015.

²⁰ Jeffrey J. Rachlinski, “The psychology of global climate change,” *U. Ill. L. Rev.* (2000): 299

²¹ K. Levin, B. Cashore, S. Bernstein & G. Auld, “Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change,” *Policy sciences* 45, no. 2 (2012): 123-152.

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benefits. Once these types of policies are adopted, therefore, they are likely to create their own constituency to lobby for their continuation and expansion—their own “winning coalition.”

This approach is clearly an industrial policy approach for both countries. Thus, it entails creating more competition between green industrial players in both countries. Ultimately, this competition will be beneficial to both countries and to the world by driving down the prices for green technologies. As long as both countries are engaged in this type of effort it should be possible to do so in a way that respects each’s efforts with harmonized subsidy rules.

Using “Winning Coalitions” to Bridge the U.S.-China Policy Gap

The Chinese program with its centralized five-year plans has been heavily reliant on top-down program design. Five-year plan targets set at the national level are then implemented through provincial and local five-year plans as well as specialized plans for industrial sectors, including energy.²² As a result, Chinese non-state targets are a component of overall national goalsetting, and not additive. They do, however, constitute a clear and readable industrial policy. The focus is on standard-setting and the encouragement of green industry through targets and green financing. China has now added a cap and trade system to its industrial policy-focused approach²³ may well offer opportunities for trading with state and regional cap and trade systems in the United States, but thus far it does not suggest a shift away from an overall focus on industrial policy.

The United States situation is quite different, since U.S. states and localities are free to set their own climate and energy agendas. The state of California has regularly set environmental

²² Gallagher and Xuan, *Titans of the climate*; David Sandalow, *Guide to Chinese Climate Policy 2019*, Columbia/SIPA Center on Global Energy Policy, 2019.

²³ IEA, *China’s Emissions Trading Scheme*, IEA, Paris, 2020, Available:<https://www.iea.org/reports/chinas-emissions-trading-scheme>.

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standards that exceed those at the national level (i.e., vehicle fuel standards), and became the first state to set a goal to become carbon neutral by 2045. Even during the Obama administration many states chose to be more ambitious than the federal government.²⁴ With the Trump administration reversing course on Paris commitments and environmental protection overall, the difference between state, local, and business approaches and the federal government's has become cavernous. As a result, the commitments by these non-state actors are indeed additive to federal action.²⁵

Reigniting the U.S.-China climate relationship entails reconciling these two different approaches to subnational and nonstate actors. China's is integrated and the U.S.'s is distinct from these "bottom-up" actors, but they both act as catalysts for national action. Shenzhen, as host of one of China's regional pilot emissions trading schemes, for example, reports it far exceeded the national government's allocated carbon intensity target of 21 percent, doubling it during the 12th Five-Year Plan period.²⁶ It is this role of states as laboratories and catalysts²⁷ that offers the opportunity for subnational and non-state cooperation to act as the initial engine for restarting the relationship. While it will take time for the federal government to implement new climate policies and even to revive some of the Obama era policies, these subnational and private efforts are already underway, and can be deepened by federal encouragement and even by existing relationships with Chinese counterparts. Because Chinese entities are not separate, but indeed are integrated into national goals, a future climate-friendly administration can build on

²⁴ Roger Karapin, *Political opportunities for climate policy: California, New York, and the federal government*, (Cambridge, UK: Cambridge University Press, 2016).

²⁵ Takeshi Kuramochi, Mark Roelfsema, Angel Hsu, Swithin Lui, Amy Weinfurter, Sander Chan, Thomas Hale, Andrew Clapper, Andres Chang, and Niklas Höhne, "Beyond national climate action: the impact of region, city, and business commitments on global greenhouse gas emissions," *Climate Policy* 20, no. 3 (2020): 275-291.

²⁶ C40 Cities for Climate Leadership, Case Study: Shenzhen Carbon Emission Trading System, 2018, Available: https://www.c40.org/case_studies/shenzhen-carbon-emission-trading-system#:~:text=Statistics%20show%20that%20by%202015,12th%20Five%2Dyear%20Plan%20period.

²⁷ B. G. Rabe, "States on steroids: the intergovernmental odyssey of American climate policy," *Review of Policy Research* 25, no. 2 (2008): 105-128.

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this goodwill at the subnational and non-state level to reinvigorate ties at the national level. Given the current lack of trust at the bilateral level, finding trust in other relationships, whether subnational, private, or academic, is critical to reimagining the relationship.

‘Winning Coalitions’ and the Green New Deal

Meckling et al. (2015) suggest three key elements for winning coalitions include 1) design and adoption of targeted sector-specific policies that are linked with local issues; 2) policies that send direct, high-stakes, and clear signals to motivate industrial actors; 3) strategic sequencing of policies to ensure long-term stability of decarbonization strategies. Since the failure of Waxman-Markey climate activists in the U.S. have broadened their outreach to stakeholders considerably, no longer focusing mainly on elite business interests and the “median” senator, but expanding their vision to bring in organized labor and the climate justice movements.²⁸ In expanding their vision, the focus has become more on creating benefits for large numbers of people through a robust green economy.

This concept of a green industrial policy has been most notably encapsulated in the “Green New Deal (GND),” first introduced in the U.S. House of Representatives in early 2019. It has now been incorporated into candidate Biden’s platform as “Build Back Better.” The idea of a “Green New Deal” proposes a broad transformational plan to dually address climate change and the economy and thus is well situated to act as a key component of economic recovery. Extending across broad sectors of the economy, a GND approach to climate change in the United States recognizes the need for inclusive, sustainable win-win growth that addresses climate change while fundamentally restructuring the economy. Some of the key components of a GND approach include decarbonizing the economy to achieve zero greenhouse gas emissions by 2030

²⁸ David Roberts, “At last, a climate policy platform that can unite the left.”

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through aggressive policies like powering all electricity through zero-emissions and renewable energy sources; upgrading transportation and building infrastructure to address climate change; galvanizing growth in green jobs and manufacturing; among others. Cutting across all of these sectors would include a social equity and justice component to common inequalities resulting from climate change and current economic institutions, ensuring healthcare, welfare, affordable housing, and provision of environmental goods like clean air and water.²⁹

GND approaches to climate change and economic growth are gaining traction, particularly in the current context of COVID-19. Thirty countries gathered in April 2020 at the Petersberg Climate Dialogue to strategize how to ensure recovery from the coronavirus pandemic is made green. Some economies, like South Korea, Indonesia, and the European Union, have already begun to explore how their economic recovery plans from the coronavirus can also foster the transition to a greener economy. The U.S. has a history of integrating clean energy in economic recovery: the American Recovery Act of 2009 represented the largest clean energy investment in U.S. history.³⁰ It included programs that improved the energy efficiency of more one million low-income homes, saving families more than \$3,000 on their heating and cooling bills over the lifetime of measures installed,³¹ and creating over 200,000 jobs. The Act's funding for green infrastructure projects, like boosting public transport, ended up creating more jobs than support focused on conventional projects like building roads.³²

²⁹ Andrew Chatzky, "Envisioning a Green New Deal: A Global Comparison," Council on Foreign Relations, January 16, 2020, <https://www.cfr.org/background/envisioning-green-new-deal-global-comparison>.

³⁰ Helen Mountford, "Commentary: Raising climate ambition in the time of COVID-19, in Climate 2020: The Path Ahead," United Nations Association – UK, Available: <https://de245f09468707bcd53c-60bfda6ee3d3188d62b9ff646c561dce.ssl.cf2.rackcdn.com/Climate%202020%20The%20path%20ahead.pdf>.

³¹ White House, "FACT SHEET: The Recovery Act Made The Largest Single Investment In Clean Energy In History, Driving The Deployment Of Clean Energy, Promoting Energy Efficiency, And Supporting Manufacturing," 2016, Available: <https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy>

³² Jeff Tollefson, "Climate vs coronavirus: Why massive stimulus plans could represent missed opportunities," *Nature*, March 30, 2020, <https://www.nature.com/articles/d41586-020-00941-5>.

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While the GND has yet to be adopted at the national U.S. level, Democrats have now embraced the concept as the future of climate policy. Moreover, it sparked municipal and state leaders to rethink and recast climate change policies at the local level to develop GND policies. Minnesota, for example, proposed sourcing all of the state's electricity needs from carbon-free sources by 2030. Los Angeles Mayor Garcetti introduced a sustainability plan to increase the number of zero-emission vehicles to 100 percent by 2050.³³ In fact, subnational (e.g., city and region) governments and non-state actors (e.g., businesses) have proven to be critical agents in global climate change action, particularly in contexts where national governments have left leadership voids.³⁴ California has even signed its own memoranda of understanding (MOUs) directly with China, including a cleantech partnership, which commits to exchange policies on emissions trading, zero emissions vehicles, building energy efficiency, etc. (Table 1).

Existing 'Bottom-Up' U.S.-China Climate and Energy Cooperation

A significant opportunity exists for the U.S. and China to engage bilaterally in Green New Deal approaches that represent the shared interest in standard-setting and industrial policy. Coordination at the subnational level could benefit both national economies and the global climate. Bottom-up coalitions of private sector, subnational, and individual actors that have continued bilateral engagement despite friction at the national level have laid the foundation for reinvigorated national engagement on climate and energy issues.

While bilateral U.S.-China cooperation on climate and energy issues has all but stalled at the national level during the Trump administration, subnational and non-state actors (cities, states/provinces, and businesses) between the two nations have continued to cooperate (Figure

³³ "Sustainable City pLAN," <https://plan.lamayor.org/> on Eric Garcetti, Mayor of Los Angeles, "Sustainability," <https://www.lamayor.org/sustainability>.

³⁴ Hale, 2016; Hsu et al., 2018; Kuramochi et al., 2020 in Kuramochi et al., "Beyond national climate action."

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1). In fact, these actors in the U.S. can make up more than half of the U.S.'s Paris pledge or Nationally-Determined Contribution (NDC).³⁵ In China, the contributions of subnational and non-state actors are more difficult to disentangle, largely due to data availability and a more tightly vertically-integrated governance structure where these actors' roles are viewed more as implementers rather than their relatively more autonomous U.S. counterparts. There are, however, a few noteworthy bilateral climate and energy efforts:

- The Alliance of Peak Pioneering Cities (APPC), born out of the Obama administration's U.S.–China Climate Leaders Summit in 2015, is an agreement by 23 Chinese cities to adopt peak emission year targets earlier than the national 2030 peaking goal. It encourages bilateral cooperation between Chinese cities and the U.S. to develop peaking policies, improve emissions inventory management, and accelerate low-carbon innovation. Early peaking by these cities could allow China to not only reach its NDC targets but increase overall climate ambition levels. Moreover, the alliance could send a positive signal to other cities and regions, inspiring them to adopt early peaking goals. Although the APPC was largely perceived as a symbolic, political effort, our data shows that three cities (Beijing, Shanghai and Guangzhou) have already achieved their peak years ahead of 2030. Significantly, APPC cities account for 17 percent of China's population, 28 percent of national GDP, and 16 percent of national carbon emissions.
- California-China bilateral cooperation, the government of California has also partnered with Chinese cities in various bilateral climate efforts, with former governor Jerry Brown even meeting with President Xi Jinping specifically on climate change in June 2017.³⁶ More than 20 MOUs and joint declarations to enhance cooperation on issues including energy efficiency, environmental legislation, electric vehicles, and emissions trading have been signed between California and China. Most recently, at the 5th meeting of the California-Jiangsu Joint Economic Committee in October 2019, the government of California signed an MOU with the province of Jiangsu to advance mutual trade and investment in low-carbon energy resources and clean technology across a multitude of sectors. Further, at the 2019 United Nations Climate Action Summit in New York, former Jerry Brown, alongside top Chinese officials, launched the California-China Climate Institute in partnership with the

³⁵ Kuramochi et al., "Beyond national climate action."

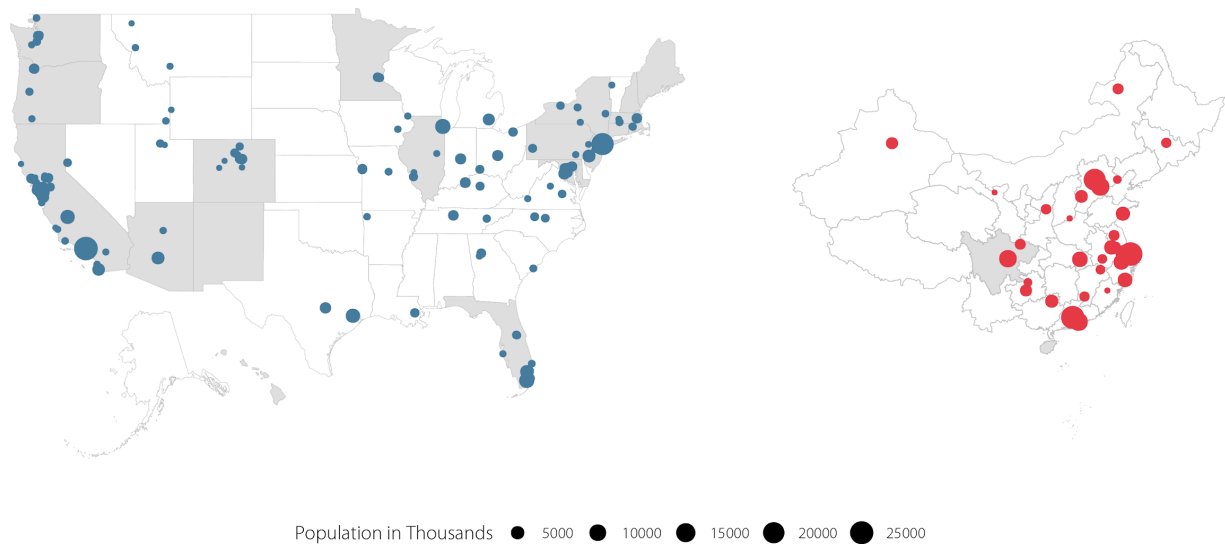
³⁶ Javier Hernandez and Adam Nagourney, "As Trump Steps Back, Jerry Brown Talks Climate Change in China," *The New York Times*, June 6, 2017, <https://www.nytimes.com/2017/06/06/world/asia/xi-jinping-china-jerry-brown-california-climate.html>.

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University of California, Berkeley and Beijing's Tsinghua University. The institute will focus on research and innovation in carbon capture and storage, zero-emission vehicles, carbon pricing, and sustainable agriculture.

Besides cities and regions, companies have also stepped forward to increase joint cooperation—in 2017, China's Huadian Green Energy Corporation inked a 5-year agreement with the California Energy Commission to share technical expertise in the planning, designing, and construction of energy storage facilities. California's continued engagement with Chinese leadership on climate change and energy has meant that not all bilateral exchange has stalled the last four years, and building on this significant relationship has the potential to generate new climate solutions and deeper emissions reduction.

Figure 1: Climate Actions of Subnational Actors in the U.S. and China



Subnational U.S.(n=179) and China (n=32) actors committed to climate actions as recorded through voluntary or transnational climate change initiatives. States/provinces participating in transnational climate change initiatives shaded in gray. Data source (Data-Driven EnviroLab, 2019).

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The California relationships in particular demonstrate the breadth possible, both in terms of areas of interest and in variety of Chinese partners. California has now supported these relationships consistently through both Republican and Democratic administrations at both the state and national level. It, thus, has a level of credibility to its commitment that any new federal initiative lacks. The same is true of a number of private-sector, university, and NGO efforts. In adopting a national climate program, the U.S. federal government would therefore benefit from seeking to partner and support these efforts and build upon them, rather than reinventing the wheel or dictating policy to U.S. subnational and private actors or to Chinese counterparts.

At the same time, if there is not a different administration in 2021, it is imperative to focus even more on these subnational actors and seek to expand the type of relationship California has with China to other states. Climate action is urgent, and given the anti-action stance of the national Republican party, other actors will need to become even more creative. The growing trend for states to form alliances to tackle specific challenges and the already existing U.S. Climate Alliance, a bipartisan coalition of 25 governors pledging to uphold the U.S.'s original Paris pledge and with many committing to carbon neutrality by mid-century or earlier, provides some basis for this action. The continued leadership of U.S. states on climate change further grounds credibility for future re-engagement at the national level.

Beyond Coal

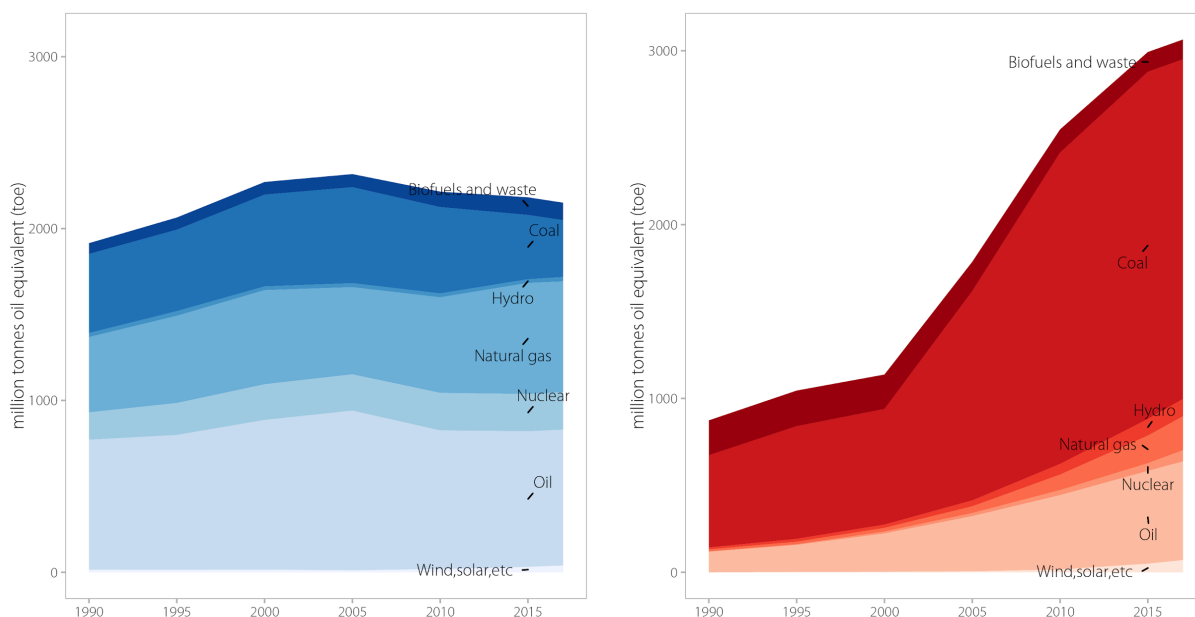
It is important to keep firmly in mind that while the Trump administration was rolling back U.S. climate efforts, the Chinese government continued to move forward. At a minimum, the U.S. should rejoin the global community's climate change efforts through the Paris Agreement, which other countries have continued to make progress on despite the lack of U.S.

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action. The Chinese have continued to make progress in improving energy efficiency and increasing their stock of renewable energy. However, one area where both the U.S. and China face enormous challenges is in how to address the challenge of phasing out fossil fuels while protecting those workers and regions that depend on its production and use. The engagement of the Climate Justice movement, as well as organized labor, and the focus in U.S. proposals on just transitions provides an opportunity for a new dialogue on addressing coal, one that thinks about how to actually phase it out. Although there has not been much traction to date on climate justice in these exact terms, China has already pledged 100 billion RMB (around 14.3 billion USD) to aid workers made redundant due to central government policies to shrink both the coal and steel industries.³⁷ The U.S. situation is on the one hand easier (coal is now a much smaller fraction of our power supply) and in other ways more complex (we have a large oil and gas industry, as well). For China the issue is coal production and use (see Figure 2 below). But in both countries, renewables are increasingly competitive and there is recognition that coal-fired power must be phased out if climate mitigation goals are to be met.

³⁷ G. He, J. Lin, Y. Zhang, W. Zhang, G. Larangeira, C. Zhang & F. Yang, “Enabling a rapid and just transition away from coal in China,” *One Earth* 3, no. 2 (2020): 187-194.

Figure 2: U.S. and China Total Primary Energy Supply



Comparison of U.S. (left) and China (right) 2017 Total Primary Energy Supply. Data source: IEA, 2020.

Renewable energy now exceeds coal-based energy in the U.S. for the first time, and coal-based power generation, in fact, declined by 15% in 2019.³⁸ The long-term trend in coal decline now comes with the rapid shock to the oil industry because of the COVID-19 pandemic.³⁹ Many jobs throughout the fossil fuel industry may well be permanently gone in the not-too-distant future. Unlike the market-based approaches to climate change, the current U.S. policy proposals specifically address the costs to workers and communities formerly dependent on fossil fuels as part of a broader effort to provide “just transitions.” For example, the proposal by the largest consortium of climate-oriented NGOs, the Climate Action Network, proposes economic

³⁸ United States Energy Information Agency (EIA), “U.S. renewable energy consumption surpasses coal for the first time in over 130 years,” 2020, Available: <https://www.eia.gov/todayinenergy/detail.php?id=43895&src=email>.

³⁹ David Hodari, “Coronavirus Projected to Keep Weighing on Oil Demand,” *Wall Street Journal*, May 13, 2020, Available: <https://www.wsj.com/articles/oil-demand-projected-to-remain-subdued-11589373825>.

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assistance to hard-hit communities and 3-5 years of guaranteed income for displaced workers.⁴⁰ All of the groups surrounding GND efforts propose green manufacturing and heavy investment in renewables, mass transit, and efficient buildings as major jobs generators. While the concept of a “just transition” doesn’t exactly translate in the Chinese context, the Chinese leadership, concerned about social and economic stability, recognizes the need for worker reskilling as it continues to reduce the number of jobs in the coal sector, which has declined from a peak of 5.3 million workers in 2013 to 3.21 million in 2018.⁴¹

This approach, looking to encourage climate-friendly business, rather than to impose new costs on old industries, is much more aligned to the Chinese approach. China’s interest in climate mitigation has been in part due to concerns about climate change’s effects itself and in part due to interests in co-benefits from pollution reduction, but the opportunity to develop cutting-edge industries and keep its manufacturing sector vibrant has always been a key attraction. Until now, however, the Chinese government has not actually had a robust approach to addressing the needs of displaced workers and communities. It has relied instead of China’s historically high growth rate. Economic growth was already slowing before COVID-19, and now China like other countries is faced with a sharp economic decline.⁴² Thus, looking at new approaches to both jump-start economic activity and address workers in declining industries will be more important than it had been before and offers an opportunity for both countries to share best practices.

Green industrial policy in both countries, even if competing for global market share, could engender greater respect and confidence to support deeper emissions cuts within the Paris

⁴⁰ United States Climate Action Network, “Vision for Equitable Climate Action,” 2020, Available: <https://equitableclimateaction.org/wp-content/uploads/2020/05/Vision-for-Equitable-Climate-Action-May-2020-final-1.pdf>.

⁴¹ He et al., “Enabling a rapid and just transition away from coal in China.”

⁴² Emily Feng and Amy Cheng, “China Abandons Economic Growth Targets Amid Pandemic,” *National Public Radio*, 2020, Available: <https://www.npr.org/2020/05/22/860667352/china-abandons-growth-targets-for-1st-time-in-40-years>.

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Agreement structure. There are opportunities for enhanced mutual learning, but this is not a Pollyanna strategy. A focus on developing green industry will lead to greater competition, not less. However, this competition will actually enhance climate mitigation by focusing the world's two largest and most creative economies on producing more and better green alternatives, supplying the world market with least cost options, and thus promoting mitigation worldwide.

A Winning Coalition for Enhanced Action

Neither the United States nor China is doing enough at present to avert catastrophic climate change. China has more of a national policy structure in place, one that could be enhanced for more rapid action. The U.S. doesn't have a national policy at present, but through subnational and non-state actions is still managing to reduce GHGs, although not sufficiently, and it has this innovation to build on. The need in both countries is to engender the type of winning coalition that supports change and creates a positive feedback loop where the constituency for enhanced action increases with each action. U.S. credibility is at a low ebb after pulling out not only of the Paris Agreement, but of the Kyoto Protocol before it. The GND approach's advantage is that it should help change "facts on the ground" both by focusing on actual investments that can't disappear like a tax can with a change in administration and by creating the business and labor constituency that benefits from that investment. The U.S. and China can work together to identify mutual winning coalitions. This approach, rather than looking for China to make a first move, will help create trust in the international environment, as well. Given China's continued progress on both energy efficiency and renewables, we have at least as much to learn as to share. A new approach, based on mutual learning, would be a useful basis for the future relationship.

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Specific policy recommendations

- The low-hanging fruit for the U.S. in a new administration is to rejoin the Paris Agreement. The U.S. is currently set to officially start the process to withdraw on Nov. 4—reversing this action would go a long way in restoring the U.S.-China bilateral climate relationship and international trust in global climate governance.
- The more challenging need for a new administration will be to enact ambitious domestic climate legislation. As countries are being asked to submit “enhanced-ambition” nationally-determined contributions (NDCs) to the Paris Climate Agreement, a national administration in the U.S. should submit next year a longer-term (i.e., post-2025, the current target year for its current NDC) emission reduction goal and ideally a long-term strategy for decarbonization by 2050. These pledges would need to be backed by meaningful domestic policy to be credible in an international context and help restore the U.S.-China climate relationship.
- To reengage with China, the national government could replicate, transfer, and scale California’s successful engagements with Chinese counterparts. A future U.S. administration can leverage existing MOUs and partnerships at the subnational and non-state level to reinvigorate ties at the national level.
- Engage bilateral counterparts to facilitate learning in fossil-fuel and industrial sectors where just transitions will be necessary if global climate goals are to be achieved. Identify successful reskilling and training programs in both countries where each side can learn from mutual experiences.
- Learning can take place at the policy level, especially on just transitions. At the same time policymakers should recognize that industrial policy in both countries will mean there will be robust competition at the industry level. Green competition will ensure less expensive energy transitions in both countries and around the world.
- In the absence of a new administration, the least best alternative is to attempt to expand private and state-level cooperation with China. There is an urgent need not to lose another four years on climate change, with the latest science indicating there is only 10 years left for the world to make needed progress on halving the current level of global emissions to keep temperature goals within reach.

Table 1. Summary of California-China Climate Partnerships

Actor (US)	Actor (China)	Key Activities	Sectors	Key Issues	Launch Date	Status
Government of California	Province of Jiangsu	Research, investment	Agriculture, biotechnology, culture, education	Low-carbon development, clean technology	Oct 2019	Ongoing
Government of California	Ministry of Ecology and Environment	Research, investment	Industrial, Transport	Energy efficiency, air pollution, emissions trading	Sep 2018	Ongoing
Government of California	Chinese People's Association for Friendship with Foreign Countries	Exchange	Cross sector	Bilateral relationship	Sep 2018	Ongoing
California Energy Commission	Shenzhen Clean Tech Innovation Center	Research, technical assistance	Cross sector	Clean technology	Nov 2017	Ongoing
Government of California	Municipality of Shenzhen	Research, commercialization	Energy, transport, ICT	Low-carbon development, clean technology, pollution (air, water)	Nov 2017	Ongoing
California Energy Commission	Jiangsu Science and Technology Department	Research, investment	Renewable energy, ICT, Transport, Buildings	Clean technology, energy efficiency	Nov 2017	Ongoing
California Energy Commission	Ministry of Housing and Urban-Rural Development	Research, technical assistance	Buildings	Green urban development	Oct 2017	Ongoing
California Energy Commission	Huadian Green Energy Corporation	Research	Energy	Energy storage, energy efficiency	Jun 2017	Ongoing
California Energy Commission	Haidian District of Beijing	Research, investment	Cross sector	Low-carbon development, clean technology	Jun 2017	Ongoing

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Government of California	Ministry of Science and Technology	Research, investment commercialization	Renewable energy	Low-carbon development, clean technology	Jun 2017	Ongoing
Government of California	Province of Jiangsu	Research, investment, commercialization	ICT, cross sector	Pollution (air), low-carbon development, clean technology	Jun 2017	Ongoing
Government of California	Province of Sichuan	Exchange	Smart cities, education, culture	Low-carbon development, clean technology	Jun 2017	Ongoing
Government of California	Municipality of Zhenjiang	Research, technical assistance, exchange, pilots	Cross sector	Low-carbon development, clean technology	Dec 2015	Ongoing
Government of California	Province of Jiangsu	Exchange, technical assistance	Smart cities, shipping	Low-carbon development, pollution (air)	Oct 2015	Ongoing
Government of California	Municipality of Zhenjiang	Research, exchange	Smart cities	Low-carbon development, clean technology, energy efficiency, pollution (air)	Sep 2015	Ongoing
Government of California	Province of Guangdong	Exchange	Renewable energy, conservation	Bilateral relationship	Apr 2013	Ongoing
Government of California	Province of Jiangsu	Exchange, investment, commercialization	Agriculture, bio-medicine, ICT	Bilateral relationship	Apr 2013	Ongoing
Government of California	Ministry of Commerce	Exchange, investment, commercialization	ICT, manufacturing, agriculture, energy	Bilateral relationship	Apr 2013	Ongoing
California Environmental Protection Agency	Beijing Municipal Environmental Protection Bureau	Exchange	Cross sector	Environmental legislation, public education, pollution (air, water)	Jun 2016	Expired

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California Governor's Office	Beijing Municipal Commission of Development and Reform	Exchange, Pilots	Cross sector	Emissions trading, low carbon development, clean technology, smart grids	Jun 2016	Expired
Government of California	Province of Sichuan	Research, Exchange, investment	Agriculture, bio-pharmaceuticals, ICT, culture	Low-carbon development, clean technology, pollution (air, water), New Energy Vehicles	Sep 2015	Expired
Government of California	National Development and Reform Commission	Exchange, research, investment	Buildings, industrial, transport,	Low-carbon development, clean technology, New Energy Vehicles	Sep 2015	Expired
Government of California	Province of Guangdong	Exchange, investment	Cross sector	Low-carbon development, clean technology	Sep 2014	Expired
Government of California	Inner Mongolia Autonomous Region	Exchange, investment, commercialization	Agriculture, bio-pharmaceuticals, ICT, energy	Bilateral relationship	Oct 2013	Inactive