
States & Regions

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How states and regions are developing the next
generation of climate and energy policies

INTRODUCTION

Current national policies to address climate change are falling short. But state and regional governments are developing a new generation of policies to meet the challenge.

Over the past two decades, the world has looked to national governments to confront the risks posed by a changing climate. But to date, those collective efforts have been insufficient. An international treaty mandating ambitious greenhouse gas (GHG) reductions from all major nations has proved unworkable. And according to the International Energy Agency, current national policies have global average temperatures on track to rise as high as 5.3 degrees Celsius above pre-industrial levels by the end of the century – far beyond the 2-degree increase identified by scientists as the threshold for avoiding dangerous climate change.¹

But while many national governments remain stuck in entrenched debates, state and regional governments around the world are moving

**“THIS IS AN AGE
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BENJAMIN FRANKLIN**

forward to develop a new generation of innovative climate and energy policies. Together, they amount to a series of policy ‘experiments’ that will shape the future climate policy landscape.

This report examines the nature of these sub-national policy experiments – as well as what it will take for them to contribute to the large-scale impacts that are needed.

¹<http://www.worldenergyoutlook.org/>

SUMMARY

- While national governments remain stuck in entrenched debates, state and regional governments around the world are moving forward to develop a new generation of climate and energy policies. Together, they amount to a series of global policy 'experiments' that will shape the future climate policy landscape.
- This new generation of policies tends to be motivated by local needs, aimed at overcoming specific barriers, and designed to do more with less government spending.
- Two policies that exemplify this trend are Connecticut's Green Bank in the US and South Australia's Adaptation Framework. The former attracted US\$180 million in new private investment for clean energy last year, while the latter has seen every region of the state commit to an adaptation planning process.
- In order for these new policy models to contribute to the large-scale impacts that are needed to tackle climate change, they must spread beyond their original borders. This process can be accelerated through global learning, and by overcoming specific barriers to adoption.

A NEW APPROACH

The present generation of climate and energy policies was developed in a different time. Hope for an international treaty mandating GHG reductions from all major nations was high, and policies, such as carbon caps, were designed with global cooperation in mind. With little prior experience for governments to draw on, policies, like renewable energy standards, were necessarily broad in scope. And the high cost of clean energy technologies prompted government subsidies that were often unsustainably high.

Over the past two decades, these policies have faced significant challenges. Efforts by leading national governments to cap their emissions have been undermined by concerns about loss of competitiveness that could result from others not following suit. And attempts to buoy clean energy industries through high subsidies have been compromised by budget cuts and waning public support. These challenges have prevented the present generation of policies from achieving the widespread adoption needed to adequately address climate change. And they only appear to be worsening as time goes on.

The new generation of climate and energy policies being developed at the sub-national level today reflects a new reality.

They are motivated less by global goals, and more by local needs. How can Connecticut develop cheaper, cleaner, more reliable energy? How can South Australia protect its core industries from expected climate impacts? How can Brittany leverage its historic shipbuilding industry to become a world leader in marine renewable energy technologies?

This diverse set of needs is driving the creation of a diverse set of policies. They include policies to increase clean energy investment and deployment, such as green banks in Connecticut and New York,

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and green bonds in Île de France, Massachusetts and Stockholm.² They include policies to spur new technologies, such as zero emission vehicle mandates and energy storage requirements in California, and clean tech clusters in Basque Country, Lombardy and Québec.³ And they include policies to build resilience to climate impacts, such as public-private partnerships in Scotland, South Australia and Tasmania.

While this 'bottom-up' approach has the disadvantage of not necessarily solving the global problem (an issue addressed later), it does have the advantage of attracting the political constituencies needed to move these policies out of debate and into implementation.

The new generation of policies also tends to have more targeted goals. Whereas early climate policymaking could only chart the way forward with targets and quotas, experience enables today's policymakers to focus on overcoming specific barriers to progress.

For example, when US federal regulators directed mortgage lenders to avoid homeowners with energy efficiency projects financed through property-assessed clean energy (PACE) programs, the State of California adopted a loan-loss reserve fund specifically designed to address the regulators' concerns about potential losses from defaults. The solution allowed the state to move forward with a first-of-its kind program to finance US\$300 million worth of home efficiency retrofits.⁴

Finally, the new generation of policies tries to do more with less government spending. Governments today operate under significant budget constraints. And in places like India, Spain, Greece, Belgium, Czech Republic and Bulgaria, these pressures have even compelled governments to retroactively cut renewable energy subsidies – demonstrating the limitations of big-budget solutions in today's budget-strapped world.⁵

At the same time, there is increasing awareness among policymakers that the amount of investment needed to transition to a clean energy system far exceeds even the most extensive government budgets. This is encouraging them to rely less on one-time rebates, grants and tax breaks to subsidize deployment, and more on cost-effective partnerships and reforms to catalyze private sector action.

While it would be impossible to capture the breadth of global activity currently underway at the state and regional level, on the following pages are two policy experiments that exemplify the trend.

²<http://about.bnef.com/white-papers/green-bonds-market-outlook-2014/>

³<http://internationalcleantechnetwork.com/partners/>

⁴<https://www.greentechmedia.com/articles/read/the-narrative-that-residential-pace-is-dead-is-now-pretty-much-dead-itself>

⁵<http://www.bloomberg.com/news/2013-07-09/india-risks-spain-s-solar-slump-with-move-to-cut-tariff.html>

CONNECTICUT'S GREEN BANK

- **Goal:** Develop cheaper, cleaner, more reliable energy in Connecticut.
- **Innovation:** Use limited public funds to leverage private capital.
- **Results:** US\$220 million in new investment, 30 megawatts (MW) of clean energy installed, 9:1 private-public investment ratio (2013).

In 1998, the State of Connecticut became one of the first US states to adopt a renewable portfolio standard (RPS), with the goals of reducing air pollution, hedging against volatile fossil fuel prices, and promoting economic development. But after more than a decade, the RPS was not meeting its goals. By 2010, 89% of Connecticut's RPS was being met by old biomass and landfill gas facilities located outside the state, failing to spur new technologies, and forgoing the air quality and economic benefits derived from the projects.⁶

Connecticut's incoming Commissioner for Energy and Environmental Protection, Dan Esty, saw this as a problem.

"Fifteen years with an RPS in place: how many grid-scale wind projects had been developed as a result? Zero. How many grid-scale solar projects had been developed? Zero," he told an audience at Columbia University's Center on Global Energy Policy.⁷

"Command and control does not work in the energy domain. You need to figure out how to get the projects to happen on the ground. And that requires a different approach."

For Esty, a different approach meant working to overcome the specific finance barriers that were preventing renewable energy projects from being built in Connecticut. He observed how projects involving mature technologies, like energy efficiency and rooftop solar, were failing to get financing for non-economic reasons; being either too small or too lengthy for banks with high capital requirements, or lacking sufficient information about how they would perform.

With the help of a non-profit organization called the Coalition for Green Capital, Esty began exploring ways Connecticut could use targeted policies to attract more private investment for these projects. In 2011, Connecticut established the world's first state-level 'green bank', with broad bi-partisan support from its legislature.

The Connecticut Green Bank uses several mechanisms, including co-lending, credit enhancements, and aggregation and securitization (see sidebar), to de-risk clean energy projects for private investors.⁸ The Bank is also experimenting with innovative loan repayment mechanisms, such as on-bill and PACE financing, which reduce risk by linking loan payments to established payments like electricity bills and property taxes.

"The goal," Esty said, "is to use limited government money to leverage private capital, and make it attractive for them to come in and do the bulk of the work."

While the Green Bank is still in its early years, the results to date have been encouraging. In 2013, the Bank helped finance over 1,000 new clean energy projects in the state, with a combined generating capacity of 30 MW.⁹ Overall, 55 MW of new renewable generation was installed – a tenfold increase over previous years.¹⁰

⁸Green banks help de-risk clean energy projects for private investors through three main mechanisms, including:

1) Direct lending and co-lending: Green banks lend to under-financed projects directly, either by themselves, or alongside private lenders. Co-lending can reduce the risk involved for private investors when the green bank takes on subordinated debt (i.e. the part of the loan that gets paid last if the loan defaults).

2) Credit enhancements: Green banks agree to cover some of the losses that would occur if a clean energy loan defaults. This can be done in a number of ways, the most common being loan loss reserve funds and loan guarantees. By protecting them from some of the potential losses, these "credit enhancements" can attract private investors to projects they otherwise wouldn't finance.

3) Aggregation and securitization: Green banks can collect a large number of small clean energy loans and store them until the pool is large enough to interest private investors. Once pooled, these loans can also be turned into a security, in order to attract new types of investors, like pension funds.

⁶www.ct.gov/deep/lib/deep/energy/rps/rps_final.pdf

⁷<http://energypolicy.columbia.edu/events-calendar/21st-century-clean-energy-lessons-state-level>

⁹<http://www.eenews.net/stories/1059994277>

¹⁰www.ct.gov/deep/lib/deep/energy/rps/rps_final.pdf

**“COMMAND AND CONTROL DOES NOT WORK
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DAN ESTY



With about US\$20 million in public funds going as loans for underserved markets, and another US\$20 million used to de-risk projects, the Green Bank was able to attract US\$180 million in additional private capital, for a total of US\$220 million in new clean energy investment, and a private to public investment ratio of 9:1. The Bank estimates that the new investment helped create over 1,200 new jobs in the state.¹¹

“As we look at fiscal year 2013, I’d give us a complete ‘A,’” Bryan Garcia, the Bank’s President told a local newspaper.¹²

The Green Bank’s ultimate goals are to become self-sufficient, and then obsolete. The Bank is currently capitalized almost entirely by public funds (i.e. US\$27 million from ratepayer surcharges, US\$10 million from federal grants, and US\$2 million from RGGI auction revenues).¹³ But unlike one-time grants or rebates, as the Bank’s loans are repaid they can be redistributed to new projects.

Over time, as the cost of clean energy continues to fall and private investors become more confident in the projects, the Green Bank may be able to step out of the market completely – something Bank officials think could be achieved within the next decade.¹⁴

SOUTH AUSTRALIA’S “SHARED OWNERSHIP” MODEL FOR ADAPTATION PLANNING

- **Goal:** Increase local resilience to growing climate impacts.
- **Innovation:** Share all planning, funding and implementation with local leaders.
- **Results:** All 12 local regions engaged in adaptation planning.

At the same time Esty was contemplating Connecticut’s clean energy deficit, the government of South Australia was facing a different problem.

The state had just experienced two record-breaking heat waves: one in March 2008 which saw 13 straight days of 100 degree Fahrenheit temperatures, and another, ten months later, which saw record high temperatures of 115 degrees.

Local scientists called it a “one in 3,000 year event.”¹⁵ But Michelle English, Manager of the South Australia Climate Change Unit, and her colleagues were concerned. The events were consistent with the latest temperature projections by the Intergovernmental Panel on Climate Change (IPCC), which predicted heat waves becoming more and more common in the country over the coming years. Whereas previous decades averaged only about one 100-degree day per summer, the 13 days in 2008 are expected to become a regular occurrence by 2030, and be regarded as relatively “cool” summer weather by 2070.

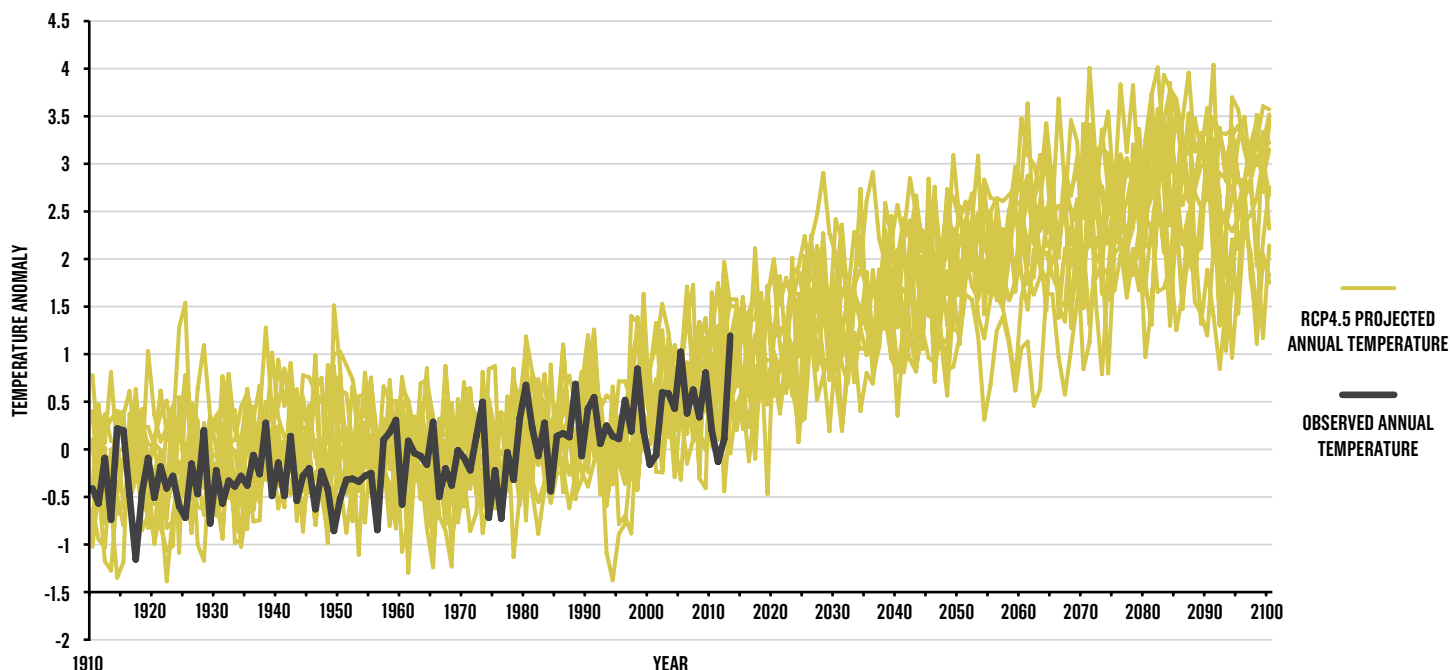
¹¹<http://www.coalitionforgreencapital.com/connecticut.html>

¹²<http://ctmirror.org/renewable-and-clean-energy-surges-connecticut/>

¹³<http://energyinnovation.org/2014/01/the-green-bank-movement-gains-momentum/>

¹⁴<http://energyinnovation.org/2014/01/the-green-bank-movement-gains-momentum/>

¹⁵<http://news.smh.com.au/national/adelaide-heatwave-one-in-3000-years-20080318-2034.html>

FIGURE 1: PROJECTIONS OF AUSTRALIAN ANNUAL TEMPERATURES

Observed and projected annual-mean temperatures for Australia. The graph is constructed using observational data from the Australian Climate Observations Reference Network — Surface Air Temperature (ACORN-SAT) from the Australian Bureau of Meteorology and data from 10 climate models that have submitted data to the Coupled Model Intercomparison Project Phase 5 (CMIP5). The CMIP5 models used were ACCESS1-0, ACCESS1-3, CanESM2, CSIRO-Mk3-6-0, IPSL-CM5A-MR, MIROC-ESM, MIROC-ESM-CHEM, MPI-ESM-LR, MRI-CGCM3, and NorESM1-M. Simulated historical climate forcing simulations are concatenated with future scenario simulations using RCP4.5 emissions scenario data for each individual model, regridded onto a common grid for the Australian continental land area was extracted from the data. Australia's annual mean temperature anomalies were calculated against Australia's 1961-1990 climatology.

Source: Australian Bureau of Meteorology, 2014

In addition to avoiding heat-related deaths, which the government estimates could triple by 2050, part of the challenge for South Australia involves protecting the region's key infrastructure and industry – including AUS\$27 billion worth of commercial buildings, AUS\$10 billion worth of roads and railway systems, a AUS\$5 billion agricultural sector and a AUS\$1 billion wine industry - from the affects of sea-level rise, drought and extreme weather.¹⁶

But encouraging local communities to prepare for these impacts can be difficult. A recent survey by MIT and ICLEI found that only about two thirds of global cities have begun planning for climate impacts and less than a fifth are currently implementing such plans. Cities blame a lack of funding and interest from local decision-makers as the primary obstacles to increased planning.¹⁷

¹⁶<http://www.climatechange.gov.au/climate-change/climate-science/climate-change-impacts/south-australia>

¹⁷http://www.iclei.usa.org/blog/survey_us_cities_report_increase_in_climate_impacts_lag_in_adaptation_planningworldwide-progress-on-urban-climate-adaptation-planning

English and her team believed the key to overcoming these obstacles was adopting a process that genuinely engaged local leaders. Instead of the typical government approach of unilaterally providing risk assessments, recommendations, and resources to guide local communities, they adopted a 'shared ownership' model, in which planning, funding and implementation would all be done by state and local leaders acting together.

"Embedding local values and knowledge in the planning process is a unique and powerful combination," English said. "The importance of getting local leaders involved can not be overstated."

The government enshrined the new approach in its 2012 Adaptation Framework. Dividing the state into 12 planning regions, it began convening local committees, made up of leaders from industry associations, economic development organizations, municipal associations, legislatures, banks and civil society. Before the planning process began, committees signed voluntary agreements with the state agreeing to the principles of shared ownership, including co-investment for all projects.

"Co-investment is powerful," English explained. "It has helped regions to prioritize the most feasible actions, rather than ending up with a long wish list."

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MICHELLE ENGLISH

The planning process itself was also novel in that instead of beginning with a community's vulnerabilities, it began with their priorities.

"The goal is to work with regional leaders to understand their perspective and the local context, then to identify existing planning processes and community decision-making that we can use to drive change," English said.

After two years of engagement with the local committees, the new approach has begun to produce results. Today, all 12 regions have committed to the planning process. Three have completed adaption plans and another three are due to complete plans in 2014.

In addition, all the costs have been shared by the partners, with the contribution to the regions cost the state about US\$1 million, with another US\$1 million contributed by local partners, and about another US\$2 million secured from the national government or other sources.

English believes the program still has a long way to go in terms of completing and implementing all the plans, but that it is building momentum for further action.

"We now have regional leaders passing on their knowledge and experiences to regions that are just starting the process. It is encouraging to see such a strong community of practice," she said.

ACHIEVING SCALE

While the bottom-up approach to climate and energy policy described above has the advantage of building the coalitions needed to move beyond the political deadlocks that have stalled national policies, without being linked to global policy goals, it has the disadvantage of not necessarily solving the global problem.

Connecticut may have generated US\$220 million in new clean energy investment, but global investment needs to increase from US\$254 billion in 2013 to US\$1 trillion annually by 2030, in order to avoid the worst effects of climate change.¹⁸ South Australia may be on its way to universal adaptation planning, but as mentioned above, only about two thirds of global cities have begun similar plans, and less than a fifth are currently implementing them.¹⁹

In order for a bottom-up approach to contribute to the large-scale impacts that are needed, successful new policy models will need to spread beyond their original borders, and achieve a scale far exceeding their original design.

One way for these policies to achieve such scale is through a 'laboratories of democracy' effect, whereby successful sub-national policy innovations are ultimately recognized and adopted by national governments. This typically occurs within a federal government system, which is currently in place in 25 countries around the world, including Brazil, Germany, India, South Africa and the US.²⁰ Examples include the State of Massachusetts' health care reform law, which became the model for the US Affordable Care Act, and the State of Tamil Nadu's Mid Day Meals program for school children, which became the model for India's national Mid Day Meal Scheme.²¹

But while it may represent the most direct route to scale, the laboratories of democracy effect has yet to be demonstrated in the climate and energy domain, with many successful state and regional policies proving unable to transcend contentious national policy debates. For example, while the early success of Connecticut's Green Bank has earned it bi-partisan support in the state, recent legislation to establish a national Green Bank based on the Connecticut model has yet to attract similarly broad support in the US Congress.²²

Another, perhaps more likely, way for these policies to achieve scale is through 'policy diffusion', in which new policy innovations spread from one sub-national government to another.²³

Once thought to be a regional phenomenon in which neighboring states and regions merely adopted similar policies, political scientists now view policy diffusion as a learning process, in which governments look beyond their borders – and increasingly globally – for successful policy models to emulate.²⁴

IN ORDER FOR A 'BOTTOM-UP' APPROACH TO CONTRIBUTE TO THE LARGE-SCALE IMPACTS THAT ARE NEEDED, SUCCESSFUL NEW POLICY MODELS WILL NEED TO SPREAD BEYOND THEIR ORIGINAL BORDERS, AND ACHIEVE A SCALE FAR EXCEEDING THEIR ORIGINAL DESIGN.

¹⁸<http://www.iea.org/etp/etp2012/>

¹⁹<http://web.mit.edu/jcarmin/www/urbanadapt/Urban%20Adaptation%20Report%20FINAL.pdf>

²⁰<http://www.forumfed.org/en/federalism/federalismbycountry.php>

²¹<http://mdm.nic.in>

²²<http://vanhollen.house.gov/media-center/press-releases/house-democrats-introduce-the-green-bank-act-of-2014>

²³A well-established phenomena, there have been nearly 1,000 research articles on policy diffusion in political science and public administration journals over the past 50 years.

²⁴<http://www.batten.virginia.edu/sites/default/files/publications/ShipanVoldenPAR2012.pdf>

“Whereas prior policymakers may have been limited to learning only from the experiences of nearby neighbors, today’s sophisticated politicians and administrators have a much greater capacity to look far and wide for useful solutions to policy problems,” political scientists Charles Shipan and Craig Volden wrote in the *Public Administration Review*.

“The best and most relevant experiments may be across the country or halfway around the world.”²⁵

Indeed, Connecticut’s Green Bank has begun to spread, not only to other Northeastern US states like New York, New Jersey, Pennsylvania and Vermont, but also to Hawaii and possibly to California, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, Rhode Island and Washington.²⁶

TABLE 1: GREEN BANK-LIKE PROGRAMS IN THE US

DATE	STATE	NAME	TYPE	STATUS	INITIAL CAPITALIZATION (US \$)
2011	Connecticut	Connecticut Green Bank	Green Bank	Operating	\$40 million ²⁷
2013	New York	New York Green Bank	Green Bank	Operating	\$210 million ²⁸
2013	Vermont	Vermont Clean Energy Loan Fund	Green Bank-like program	Operating	\$16.5 million ²⁹
2013	Hawaii	Green Energy Market Securitization	Green Bank-like program	Operating	\$50 million ³⁰
2013	California	California Green Infrastructure Bank	Green Bank	Proposed	TBD
2014	Pennsylvania	Warehouse for Energy Efficiency Loans	Green Bank-like program	Operating	\$25 million ³¹
2014	New Jersey	Energy Resiliency Bank	Green Bank-like program	Proposed	\$210 million ³²

Similarly, a shared ownership approach to adaptation planning has been adopted, not only in neighboring South Australia, Tasmania and Victoria, but also in far off New York, Scotland and Québec.

²⁵<http://www.batten.virginia.edu/sites/default/files/publications/ShipanVoldenPAR2012.pdf>

²⁶<http://stateenergyreport.com/2014/05/08/can-green-banks-bring-energy-investing-into-the-mainstream/>

²⁷<http://energyinnovation.org/2014/01/the-green-bank-movement-gains-momentum/>

²⁸*ibid*

²⁹*ibid*

³⁰<http://www.bizjournals.com/pacific/news/2014/04/21/new-hawaii-program-encouraging-solar-energy.html>

³¹<http://www.treasury.gov/PressReleases-2014-4-9-WHEEL.html>

³²<http://www.nj.gov/dca/divisions/sandyrecovery/pdf/NJ%20Action%20Plan%20Substantial%20Amendment%202%202%20final.pdf>

TABLE 2: SHARED OWNERSHIP MODELS FOR ADAPTATION PLANNING

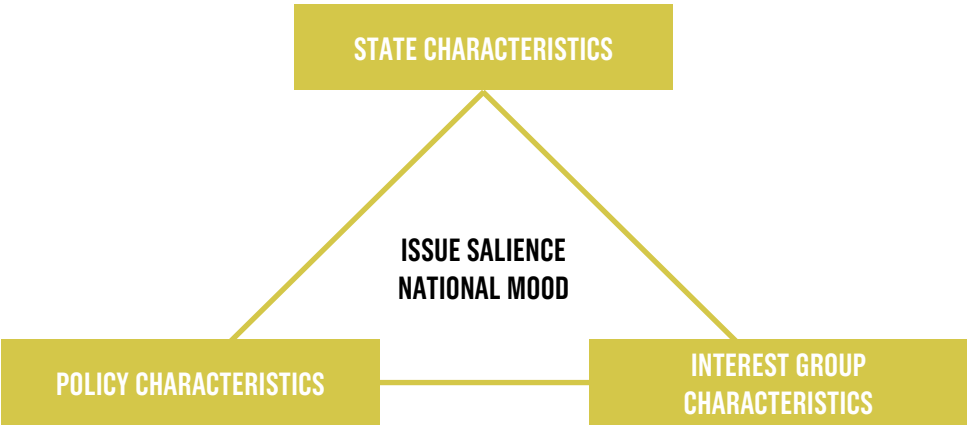
DATE	REGION	NAME
2009	New York	Climate Smart Communities ³³
2011	Tasmania	Regional Councils Climate Adaptation Project ³⁴
2012	South Australia	Climate Change Adaptation Framework ³⁵
2013	Victoria	Victorian Adaptation and Sustainability Partnerships ³⁶
2013	Québec	Climate Change Action Plan ³⁷
2014	Scotland	Scottish Climate Change Adaptation Program ³⁸

However, while global learning can drive policy diffusion, the process can be a slow one. As Shipan and Volden observe: “Learning about others’ policies and then effectively using lessons learned to solve one’s own policy problems is time intensive and takes a high degree of skill. Time-pressed policymakers, those with limited staff support, and those generalists who have not had the opportunity to gain specialized expertise will not be able to take full advantage of others’ policy experiences.”

One way to accelerate the process is by providing governments with the resources, connections, and opportunities for the global learning they lack – an approach recently taken by the international Clean Energy Solutions Center.³⁹

Another way is to overcome the barriers that prevent specific policy models from spreading. In his book Policy Diffusion Dynamics in America, University of California political scientist Graeme Boushey explains how a number of factors, including the characteristics of the policy, the governments that adopt them, the interest groups that advocate for them, and the larger political environment all combine to determine how quickly a new policy model will spread.⁴⁰

FIGURE 2: SYSTEM FRAMEWORK OF POLICY DIFFUSION



Source: Boushey, Policy Diffusion Dynamics in America, Cambridge University Press, 2010

³³<http://www.dec.ny.gov/energy/50845.html>
³⁴<http://stca.tas.gov.au/cc/rccap—regional-councils-climate-adaptation-project/>
³⁵<https://www.sa.gov.au/topics/water-energy-and-environment/climate-change/adapting-to-climate-change/adapting-to-climate-change-in-south-australia>
³⁶<http://www.depi.vic.gov.au/environment-and-wildlife/sustainability/victorian-local-sustainability-accord>
³⁷http://www.mddelcc.gouv.qc.ca/changements/plan_action/index-en.htm
³⁸<http://www.scotland.gov.uk/Publications/2014/05/4669/0>
³⁹<http://www.cleanenergyministerial.org/Our-Work/Initiatives/Clean-Energy-Policy>
⁴⁰<http://www.amazon.com/Policy-Diffusion-Dynamics-America-Boushey-ebook/dp/B004V909A8>

For example, policies that are straightforward, resonate with the public, and are backed by capable interest groups have the potential to spread very rapidly among a group of innovative governments.

An example in the climate and energy space is renewable portfolio standards (RPS) in North America, which spread to 29 US states and five Canadian provinces over the course of 13 years, and 20 states and provinces in only four years.

“The occasional alignment of rising issue salience, a widely appealing innovation, well-organized interest groups, and a large number of susceptible states can produce periods of extremely rapid policy diffusion,” Boushey explains.

While such a perfect storm of circumstances has rarely materialized for climate and energy policies to date, being, like most regulatory policies, relatively complex and obscure, Boushey believes it’s possible to overcome such barriers to diffusion, helping the policies to spread.

For their part, both Dan Esty and Michelle English are working to help their innovations spread.

Earlier this year, the Connecticut Green Bank co-hosted a Green Bank Academy to help other state governments learn about the model, and to explore ways to make it easier for governments to adopt a green bank by standardizing the documents, processes and structures needed to establish one.⁴¹

“The most important thing we can do now is to show other governments that the model works,” Esty said in an interview.

English and her team have also begun exploring opportunities to share their experience with other sub-national governments.

“We know that for planning to be accepted and effective, it must be based on local values, and communities must be genuine partners in the process,” she said. “Their knowledge and resources are critical to the success of the process, and we believe our model delivers on that commitment.”

By achieving scale, both believe their model can have a major impact.

“I think green banks can spread rapidly around the world,” Esty affirmed.

⁴¹<http://www.brookings.edu/blogs/the-avenue/posts/2014/02/05-innovation-green-bank-academy-muro-hundt>

SUCCESS IN THE AGE OF EXPERIMENTS

“Experiment alone can give us certainty.” Jules Henri Poincaré

Uncertainty has always been a central feature of climate policymaking. How severe will future climate impacts be? Will national governments follow through on their long-term commitments? Can sub-national policies scale quickly enough to influence global outcomes?

But it's this very uncertainty that argues for a greater degree of policy innovation and experimentation at every level of government: national, state and regional, city, and local.

“When you're dealing with a high degree of uncertainty, the only way to navigate through it in a low-risk way is through experimentation,” Josh Suskewicz, a partner at the global innovation firm Innosight, said in an interview.

“A lot of cutting-edge thinking on innovation in the business world today has to do with setting up experiments that are low-risk and low-cost, but which allow for much bigger actions latter on.”

As in business, success in addressing climate change will depend on today's limited policy experiments enabling bigger, smarter actions in the future.

They can do this by providing valuable information on which policy models work and which don't, and by helping build the political constituencies needed for further action. Perhaps most importantly, they can also demonstrate that it's possible to do things differently.

“It's important to show what success looks like when you do things differently,” Suskewicz added. “Early wins go a long way towards changing the culture of a company, and it's probably even more important in politics.”

With a greater focus on facilitating global learning and overcoming barriers to policy adoption, a great opportunity exists for today's sub-national policy experiments to achieve scale, enable further action, and ensure that the new generation of policies is more successful than the past.

AS IN BUSINESS, SUCCESS IN ADDRESSING CLIMATE CHANGE WILL DEPEND ON TODAY'S LIMITED POLICY EXPERIMENTS ENABLING BIGGER, SMARTER ACTIONS IN THE FUTURE.



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The Rockefeller Brothers Fund advances social change that contributes to a more just, sustainable, and peaceful world. Through its grant-making, the Fund supports efforts to expand knowledge, clarify values and critical choices, nurture creative expression, and shape public policy. The Fund's programs are intended to develop leaders, strengthen institutions, engage citizens, build community, and foster partnerships that include government, business, and civil society. Respect for cultural diversity and ecological integrity pervades the Fund's activities.

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The Climate Group is an award-winning, international non-profit. Our goal is a prosperous, low carbon future. We believe this will be achieved through a 'clean revolution': the rapid scale-up of low carbon energy and technology.

We work with corporate and government partners to develop climate finance mechanisms, business models which promote innovation, and supportive policy frameworks. We convene leaders, share hard evidence of successful low carbon growth, and pilot practical solutions, which can be replicated worldwide.

Our offices are in Greater China, North America, India and Europe. 2014 is The Climate Group's 10th Anniversary.

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