



Climate Finance

a Status Report & Action Plan

December 5, 2015



REGIONS OF
CLIMATE ACTION



USC Schwarzenegger Institute
for State and Global Policy

USC Price
School of Public Policy

Climate Finance: a Status Report & Action Plan

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About the USC Schwarzenegger Institute for State and Global Policy

The USC Schwarzenegger Institute for State and Global Policy is committed to advancing post-partisanship, where leaders put people over political parties and work together to find the best ideas and solutions to benefit the people they serve. The Institute seeks to influence public policy and public debate in finding solutions to the serious challenges we face.

While the Institute engages on a variety of critical policy areas, a primary focus is climate change, which reflects Governor Schwarzenegger's leadership on the issue and it being one of the defining challenges of our generation. The Institute is also engaged in the following policy areas: Education; Energy & the Environment; Fiscal & Economic Policy; Health & Human Wellness and Political Reform.



Photos above left: Ceremony signing at California's 2010 Governors' Global Climate Summit 3 establishing the R20.



Photo above right: Left to right: Chancellor Werner Faymann of Austria, President Jose Manuel Barroso, Gov. Arnold Schwarzenegger, Dr. Kandeh Yumkella attend the 2013 R20 Vienna Conference.

About R20 Regions of Climate Action

The R20 Regions of Climate Action (R20) was created as a non-profit organization in 2010 under the leadership of California Governor Arnold Schwarzenegger and other leaders of sub-national and regional governments worldwide in collaboration with the United Nations. Our Members are sub-national governments (states, provinces, cities, counties, etc.) and our Partners include financial institutions, technology providers, academics, corporations and other NGOs.

The purpose of R20 is to facilitate climate change solutions by helping our Members implement low carbon economic development projects in sectors that measurably reduce greenhouse gases (GHGs) such as energy efficiency retrofits, waste reduction, and renewable energy deployment. We do this by working in three primary aspects of development: policy, technology, and finance.

- **Policy:** R20 helps its members share lessons learned about policies that support and encourage sustainable development, providing model codes/standards, legislation, and executive orders, along with data showing the results of these policies.
- **Technology:** R20 introduces and demystifies green technology for its Members, Partners, and other stakeholders, making it easier to adopt policies and commercialize technologies that set new efficiency standards, reduce greenhouse gases, and otherwise support low carbon economic development.
- **Finance:** R20 has developed a Green Finance Network which is made up of more than 200 financial institutions globally across all asset classes (sovereign wealth funds, pension funds, private equity, development banks, family offices) to educate them about sustainable policies and technology, thus shortening the time and due diligence needed to evaluate specific investment opportunities.

Taken together, R20 designs and implements projects in cooperation with its Members and Partners. We are a hands-on organization that works directly with governments, technology companies, and investors to identify, design, and implement low-carbon economic development projects that would otherwise not be undertaken.



On the steps of the Elysée: Mr. Laurent Fabius, Mr. Nicolas Hulot, President François Hollande, Gov. Arnold Schwarzenegger, Ms. Michèle Sabban, Mr. Christophe Nuttall, Mr. Terry Tamminen

Mandate for Climate Finance: A Status Report & Action Plan

The mandate for this Report and Action Plan came as a result of a meeting in late 2014 between R20 Founding Chair Arnold Schwarzenegger, French President Francois Hollande, French Foreign Minister Laurent Fabius, and policy experts from France and the R20. President Hollande identified climate finance (and the gap between need and committed resources) as a critical element to a new, meaningful global agreement at the annual Conference of Parties to the United Nations Framework Convention on Climate Change, to be held in December 2015 in Paris (COP21).

R20 therefore pledged to the President to establish a Climate Finance Advisory Committee (CFAC) to address these climate finance gaps by:

- Creating a comprehensive database of existing public and private climate finance efforts around the world, including an evaluation of the results of such initiatives;
- Evaluating national GHG-reduction goals (and sub-national programs that can support such national goals) and related development projects and the attendant finance that will be needed to achieve such goals;
- Establishing a mechanism to identify and align (and match/leverage) donors & investors from all sources on realistic timelines for capital infusions equal to those national aspirations; and
- Highlighting the finance gaps and barriers to securing those missing resources.

The CFAC will work to address the identified gaps by:

- Designing *best/fastest available* approaches to new funds and project development mechanisms, and by working with innovative developers and de-risking mechanisms;
- Working to open existing green funds to regional government projects and needs; and
- Sharing information through co-hosting conferences, work groups, events, and sharing results of this effort online.

The initial findings and recommendations related to this mandate are included in this Report and Action Plan, which will also serve as the basis for implementation of climate finance solutions after COP21.

Letter from Dr. Christophe Nuttall R20 Executive Director

Humanity is at the crossroads of its development. During the last decade the world has faced unprecedented social, economic, financial and ecological crises, which our existing international and inter-governmental systems have been unable to solve. It is now urgent to shift towards a truly sustainable economy that emphasizes better natural resource and ecosystem management, equitable livelihoods, new employment opportunities, and improved public health.

While many inter-governmental, international, national, and local stakeholders are deeply involved in climate change issues, there are many obstacles that prevent smooth integration and effective cooperation between local, national and international initiatives. As a result, many of these stakeholders operate in silos.

Shifting to a sustainable economy is challenging, but not because of a lack of pro-green policies, as many are already in place (some of which are described in this white paper). Nor is there a lack of clean technologies, although these are not yet deployed at an appropriate scale. A lack of financing is also not the problem, because both public and private investors are constantly looking for green investment opportunities.

One of the primary reasons that more investment is not being made in the sustainability and clean-tech sectors is that investors are uncertain of government policies related to these technologies. Moreover, investors are unfamiliar with many of the emerging renewable energy, energy efficiency, and waste conversion technologies. Finally, investors have difficulty finding large scale, bankable projects that utilize green assets.

As we drafted this paper, we were cognizant of the other social concerns affiliated with project implementation, such as energy access for the poor and equity issues. Our hope is that the low carbon projects that are implemented through climate finance funding will reduce GHG emissions but in doing so will address many of these other social issues. We are also aware that climate mitigation projects should be part of an integrated approach to climate resilience and adaptation when possible, to optimize the investment costs. While it's beyond the scope of this report to address all of these issues, there are many good reporting organizations that can assist investors to ensure projects that benefit all.

With these important issues in mind, R20 is presenting this white paper on climate finance based on our experience in demonstrating local opportunities that are complementary to existing national and international approaches. We demonstrate that these complementary approaches are more effective in addressing climate change and other sustainability challenges than either approach alone. We look forward to collaborating with all interested stakeholders to accelerate our transition to a sustainable, fair, and inclusive economy. Please join us!

Sincerely,

A handwritten signature in black ink, appearing to read "Nuttall", with a stylized flourish extending from the end of the signature.

Dr. Christophe Nuttall, R20 Executive Director

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EXECUTIVE SUMMARY

The Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015 in Paris (COP21) comes at a pivotal moment for our planet. The global effects of climate change due to greenhouse gas emissions are becoming more apparent every day, as has been documented in the latest Assessment Report (AR5) from the United Nations Intergovernmental Panel on Climate Change (IPCC).



Among the many important and decisive topics that will be discussed during COP21 by government officials, agency representatives, policy makers and financial actors, will be how to significantly increase the funding for low-carbon economic development. An increase in funding is required to avoid the worst-case scenarios of climate change. However, many questions still remain over what are the most efficient methods to mitigate climate change.

With climate finance at the center of the climate change debate, *Climate Finance: A Status Report & Action Plan* (the Plan) aims to not only inform key policy makers, financial actors, and other stakeholders about the current and future trends taking place in the climate finance efforts, but set forth new strategies and investment vehicles for rapid scale-up and expansion of climate finance.

Unlike other studies and reports about climate finance, which call for a change in government policy or ask financial actors to take on higher risk and lower than market rate returns, this Plan provides an argument for properly structured, low-carbon investments that can produce risk/return profiles that meet the criteria of private finance, all within the parameters of the world we live in today.

This is presented through various case studies and suggested financing mechanisms. The Plan makes the case that climate finance can be made an attractive investment, not only for the public sector but also the private sector. Institutional investors have signaled the intention to invest in more green companies and projects, but have not been able to find bankable deal flow proportionate to that appetite. Being able to blend public and private capital will be critical in advancing climate finance efforts.

By providing a comprehensive brief about the current and future trends of climate finance, along with a detailed roadmap for replicating early successes, this Plan will demonstrate that investments in climate finance can significantly mitigate the effects of climate change in a timely manner and can also be attractive financial investments for both the public and private investor.

Section One: Overview of Climate Change Science & Policy

The issues associated with climate change are being witnessed today. Such impacts include droughts, an increased occurrence of wildfires, threats to fresh water security, more intense and frequent storms, and ocean acidification.

Additionally, current policy responses from sub-national governments have played an important part in moving the conversation forward. The significance of these advancements shows that action does not need to wait on national agreements, but can continue successfully at a smaller scale.

Section Two: Overview of Climate Finance to Date

Climate finance can be defined in a number of ways, and by a number of factors. Various stakeholders perceive the monetary need of climate finance differently, but the general consensus among many independent organizations brings the conversation into the trillions and not the billions.

Climate finance is needed to address two primary challenges: adaptation and mitigation. They are two sides of the same coin in climate finance, though there exists a debate over which should be prioritized in a world trying to stop climate change with existing inertia. Overwhelmingly, the majority of climate finance to-date has been given to mitigation efforts through a combination of public and private investment. On the other hand, adaptation efforts have seen significantly less funding, which typically has not involved the private sector.

Both the public and private sector have played different roles in climate finance to date. The public sector, which includes government agencies, development banks and bilateral aid agencies, is willing to invest in opportunities that provide zero or below-market rates of return. The private sector, which includes sovereign wealth funds, pension funds, private equity, public equities, and commercial banks, is only willing to invest in opportunities that provide market-rate returns. The private sector is responsible for the majority of climate finance to date, but it is apparent that these financiers continue to invest in low-risk and familiar situations, which excludes many other important low-carbon opportunities that lack the traditional structure to be attractive.

Climate finance mechanisms from both the public and private sector have been met with varying degrees of success. A carbon trade emission scheme like REDD is one example that has seen success at a local or regional level, but it is ultimately an unreliable source for project finance on a large scale. For private investors, the introduction of green bonds into the marketplace has provided a valuable outlet to distribute capital to low-carbon projects in an effective manner.

Climate finance has benefitted from the installation of these mechanisms into the market, but there is still a gap in achieving the trillions needed. This disconnect arises from several barriers, which may be summarized as:

- Large data gaps in climate finance efforts
- Sovereign risk
- Technology risk
- Policy risk
- Subsidies of incumbent technologies
- Lack of project intermediaries and developers
- Risk/Return On Investment gaps
- Lack of tracking, certification, and clear definitions
- Lack of institutional capacity and entrepreneurial skills

Given the barriers presented, there is an importance in analyzing the innovative approaches to climate finance to date in hopes of replicating them in the future. Four case studies are reviewed, which show how, when properly structured, effective climate finance can be deployed. These include the R20's retrofit of Brazilian streetlights into energy efficient, emission reducing LEDs as well as the Global Environment Facility's ability to leverage billions of public funds to gain private funds for climate finance.

Section Three: Climate Finance: A Blueprint for the Future

The Plan presents a realistic framework for future finance efforts, which utilizes an action-oriented approach to develop a low risk, high return scenario for climate finance projects worldwide. The framework can be replicated and scaled to different projects depending on the investment terms and region.

The approach is to design investment vehicles that reflect both the sense of urgency and the realities faced by government policymakers and investors from both the public and private sectors. Intermediaries, such as the R20, provide added value to financing low-carbon development. This includes the ability to streamline processes to identify bankable projects as well as the option to aid in finalizing purchase agreements for project developers.

Existing pre-investment facilities (PIFs) are generally limited by factors such as scope and geography, but innovative new PIFs are being established to provide investors with bankable, low-carbon economic development projects from different regions that meet market rate risk-adjusted return requirements. These new PIFs are structured

as revolving loan funds with seed capital for design, development, and due diligence of projects where success or transaction fees from completed projects replenishes the PIF so it can continue funding new feasibility studies and project plans.

To provide a dedicated source of capital for the pipeline of projects passing through the PIF, the Plan proposes the Green Investment Accelerator Fund (GIAF). The GIAF will provide seed capital that can align the developers of climate-friendly investment opportunities with intermediaries that can de-risk those transactions and make them bankable; fund managers that can apply their financial and additional due diligence skills to ensure financial viability; and investors with capital to invest in these deals.

The GIAF will act as an accelerator rather than the primary source of capital, helping to jumpstart transactions and unlock the main sources of capital. The GIAF Team will coordinate deal flow origination with capital sources, but will recruit qualified Fund Managers in each geographical region to lead diligence and investment.

The GIAF is proposing a target fund size of \$1 billion USD, which will be split equally among the five following regions:

- Sub-Saharan Africa
- Mediterranean and Middle East
- China/India/Asia-Pacific
- North America/Europe
- Central/South America

Section Four: Conclusion & Call for Active Partners

Specific investment vehicles and project development strategies, such as market-oriented PIFs and GIAFs, can form the basis of new large-scale climate finance projects and partnerships. R20 proposes to serve as a hub for these new opportunities and will recruit partners in refining the concepts presented in the Plan and launching new climate financing vehicles jointly with all relevant stakeholders.

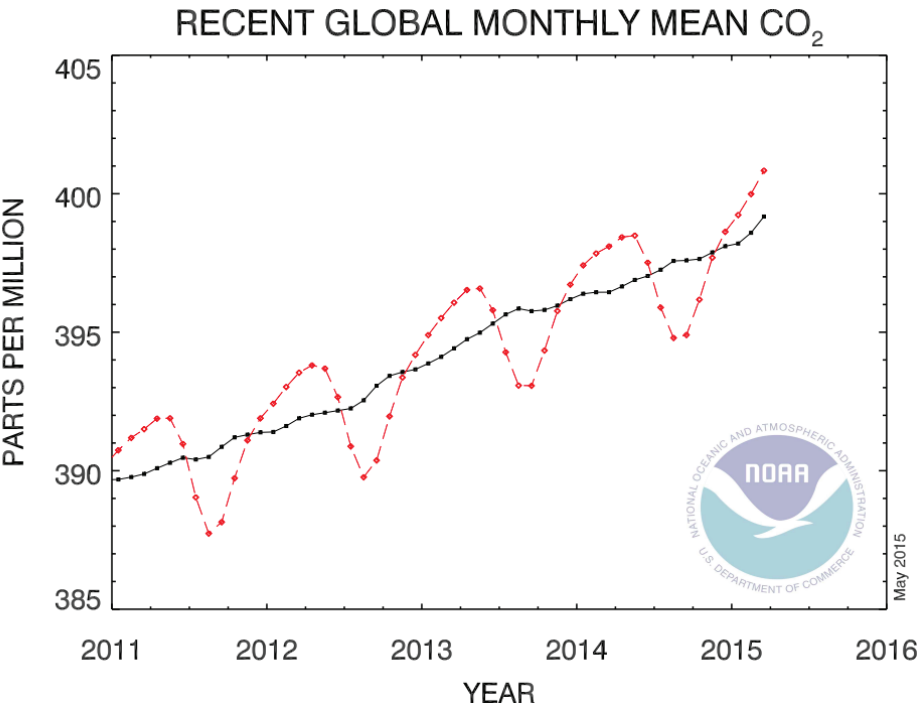
The Climate Finance Advisory Committee welcomes participation from all relevant stakeholders to help create this new model of climate finance (after a thorough identification and review of existing hubs and climate financing vehicles to ensure real value-added for any new facilities), further validate its global viability, and replicate/scale-up the concept in all markets at sufficient levels to address the identified climate finance needs.



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SECTION I: Overview of Climate Change Science & Policy

Figure 1: Recent Global Monthly Mean CO₂
Source: National Oceanic and Atmospheric Administration



Many of the impacts of climate change have already been observed around the world as GHG levels continue to increase. This section outlines how these impacts have caused a significant financial burden on the global economy by increasing the amount of natural disasters and by threatening public health and the security of food, fresh water, and other natural resources.

CO₂ is the primary GHG and its concentration in the atmosphere over time is a standard method of tracking trends. Figure 1 outlines the mean CO₂ concentration in the Earth's atmosphere, by tracking the monthly averages. The red line displays the monthly value of CO₂ levels and shows the seasonal fluctuations, with each dot representing one month. The black line also represents the monthly average, but corrects for the seasonal fluctuations by tracking the levels of seven consecutive seasonal cycles.² This graph outlines the amount of CO₂ in parts per million (PPM).

Naturally, there are seasonal CO₂ fluctuations depending on the time of year, however, by tracking the global average of those fluctuations, it becomes clear that the overall CO₂ concentration is continually rising. In May 2015, the CO₂ concentration was about 403 PPM, as compared to 390 PPM in 2011.

1. Issues Associated with the Rise of GHGs in the Atmosphere



According to the Fifth Assessment Report (AR5) from the United Nations Intergovernmental Panel on Climate Change (IPCC), there is now *overwhelming scientific consensus that climate change is human caused and the time remaining to avoid the worst-case scenario is rapidly running out.*³ Impacts already observed include:

- More severe heat waves and droughts;
- Increased occurrences in wildfires;
- Pressure on food and fresh water security;
- More intense and frequent storms;
- Sea level rise and ice sheet melt off;
- Ocean acidification with resulting impacts to fisheries;
- Degradation of wildlife habitat;
- Significant human health impacts.⁴

The costs of a carbon dependent economy are both environmental and economic. Together these global impacts cause market unrest and volatility and establish a threat to the security of the global economy, particularly in developing countries.⁵ In addition we are unable to predict and plan for uncertainties and unknowns that may increase impacts beyond what we know. The estimated costs of climate change impacts include:

Air pollution

The burning of fossil fuels remains the main culprit of urban air pollution and the release of GHG emissions into our atmosphere. The Organization of Economic Cooperation and Development (OECD) estimates that globally 3.5 million premature deaths are caused by the abundance of pollution particles in urban areas.⁶ The health impli-

cations of poor air quality costs the 34 countries within the OECD \$1.7 trillion USD, while the costs for China and India are \$1.4 trillion USD and \$0.5 trillion USD respectively.⁷ These estimates do not include the effect on productivity from sick workers, which will substantially add to these costs.

Natural Disasters

Economic losses due to natural disasters are estimated at \$2.5 trillion USD, since 2000.⁸ Annually natural disasters cost between \$250-300 billion USD, with a projected estimate of \$415 billion USD a year by 2030.⁹ Between 1994 and 2013, a recorded 6,873 natural disasters occurred worldwide, which took the lives of 1.35 million people.¹⁰ Almost 68,000 lives were taken annually and over 218 million people were displaced or negatively impacted during this 20-year time frame.¹¹

Water stress

By 2050, 45% of the global GDP is forecasted to be at risk due to water stress.¹² Over 750 million people do not have access to clean water, with 37% of those living in Sub-Saharan Africa.¹³ Climate change exacerbates the imbalance of the rising demand and the falling supply of clean water by causing floods and droughts.¹⁴ The IPCC has robust evidence that as GHG concentrations continue to increase, risks associated with fresh water will also rise.¹⁵ The impacts of climate change will intensify the competition for water among agriculture, ecosystems, settlements, industry, energy production and domestic use.¹⁶

Food security

The impacts associated with climate change are threatening the security of food worldwide. The increase in temperatures are causing extreme weather patterns which result in a shift in rainfall patterns, and threaten the availability of water for agricultural systems, livestock production and fishery stocks.¹⁷ The combined effects of climate change are set to decrease crop yields by up to 25% by 2050.¹⁸ As a result, the impacts of climate change on agriculture could increase food prices by up to 84% by 2050.¹⁹ Additionally, impacts caused by extreme weather further threaten the security of fresh water and food, which is expected to lead to social unrest and an increase in food prices.²⁰ Finally, a report published in the journal *Nature* concluded that rising CO₂ emissions are making food crops less nutritious. The study found that field trials of key crops i.e. wheat, rice, maize and soybeans showed that higher CO₂ levels significantly reduced the levels of the essential nutrients iron and zinc, as well as cutting protein levels.²¹

Wildlife degradation

Climate Change is also contributing to the loss of habitat for wildlife. For example, wildlife that need cool temperatures of high elevations, such as the American pika, may soon run out of habitat. Coastal wildlife may find their habitat underwater as sea levels rise. According to a report by the USGS along the Antarctic Peninsula, populations of Adelie Penguins are declining because coastal ice no longer persists through the winter in many locations. In Antarctica, the Adelie Penguin is commonly a coastal bird found in areas where sea ice persists throughout the winter, because it relies on sea ice for access to feeding areas where upwelling ocean currents contain many krill and fish.²²

2. Current Policy Responses to Climate Change

There are many efforts underway that are working to counteract the impacts of climate change by accelerating the transition to a low carbon economy. First and foremost are the UN's efforts to set targets and inspire action through the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC's annual Conference of Parties (COP) has been a key focal point for action, as countries around the world set goals to become less dependent on fossil fuels and convert their energy source to low carbon alternatives. However, efforts have thus far largely failed to create the action needed to counteract the increasing impacts of climate change in a timely manner.

In 2015, COP21 will attempt to achieve a new global agreement with each party offering its Intended Nationally Determined Contributions (INDCs) for reducing greenhouse gases, supported by Carbon Management Plans that show how these goals will be met. Early analysis of the INDCs reported to date shows the combined efforts of these nations would result in an average increase in global warming of approximately three degrees centigrade, compared to a rise of six degrees centigrade if nothing is done.²³

As stated in the UNFCCC's Copenhagen Accord of 2009, limiting warming to no more than two degrees centigrade from pre-industrial levels has become the internationally accepted target for climate policy. The two degrees Celsius goal acknowledges the greatest amount of global temperature rise that will still avoid the worst case catastrophes, as outlined by climate scientists globally.²⁴ It is predicted that global GHG emissions would have to decline by 40-70% by 2050 compared to 2010 levels in order to meet this goal.²⁵

Despite this generally accepted target, global emissions are currently increasing, not decreasing. According to the IPCC, emissions from the burning of fossil-based fuels have both caused a record high of 36 billion tons of carbon dioxide in 2013, a 2.3 percent rise compared to the 2012 level.²⁶ Emissions are expected to grow by 2.5 percent and set a new record of 37 billion tons in 2014, putting the world on course to breach the two-degree budget even sooner than the calculation above would suggest.²⁷

To put these figures in perspective:

- A typical passenger vehicle used in the United States emits 4.7 metric tons/year.²⁸
- The average American has a carbon footprint of 17.6 tons/year.²⁹
- The average Chinese has a carbon footprint of 6.2 tons/year.³⁰

There is, however, great opportunity to meet our climate change goals when we look towards the work being done at the sub-national level. R20, in collaboration with the Yale School of Forestry and Environmental Studies and the USC Schwarzenegger Institute for State and Global Policy, produced the white paper "Scaling Up - Local to Global Climate Action", which highlights several examples of actions taking place at

“

The key point is that to reach safety on the planet all countries are going to have to decarbonize their energy systems. This isn't the case where if the developed countries did it, that would be enough. Not even close. Everybody has to decarbonize. That's the Arithmetic at this point.”

Jeffrey Sachs, Director of the Earth Institute
Columbia University, February 24, 2015

the sub-national level that when scaled up nationally could have a significant impact, in many cases contributing more than a third to national climate goals. The following sub-national programs provide a snapshot of how instrumental these efforts are in terms of cutting carbon emissions and creating low carbon projects, which help transition us to a global green economy.

Oran, Algeria: Integrated Solid Waste Management Program

- Expanding Oran's waste sorting program could reduce the nation's annual emissions by 11 million tons of carbon dioxide, or roughly 4.3 percent, from 254 million tons to 243 million tons, in 2020.
- Expanding Oran's waste management program to the national level between 2015 and 2020 would reduce the country's carbon dioxide emissions by as much as 52 million tons, enough to power 4,744,526 million American homes for one year.
- Oran's expanded waste management efforts have the potential to create a vast number of domestic jobs.

Acre, Brazil: State System of Incentives for Environmental Services Program

- Land use change is the largest source of greenhouse gas emissions in Brazil, accounting for approximately 44 percent of the country's total emissions.
- As of 2013, Acre had achieved 63 percent of its goal to reduce deforestation 80 percent by 2020, compared to the state's average deforestation rate from 1996 to 2005.
- Expanding Acre's forest conservation policies nationwide could help close the gap between Brazil's 2020 reduction goals and its emissions trajectory by about 31 percent.

California, U.S.A.: Advanced Clean Cars Program

- California's Advanced Clean Cars program is the single largest carbon mitigation strategy in the state. The state's vehicle emission standards (Pavley, AB 1493) and Advanced Clean Cars program are, together, expected to reduce California's greenhouse gas emissions by 30 MTCO₂e in the year 2020 – equal to a nearly 25 percent reduction in the state's total passenger vehicle emissions in 2013.
- Scaling the Advanced Clean Cars program nationwide would result in a reduction of 731 MMCO₂e in 2020. This impact, compared to national projected BAU emissions, exceeds the reduction needed for the U.S. to achieve its 2020 target by 17 MTCO₂e.
- Scaling up all of California's climate policies would enable the United States to exceed its 2020 target by more than 1.5 times.



SECTION II: Overview of Climate Finance to Date

Climate finance means many things to different stakeholders. This section provides definitions by examining how much public and private investment is needed to achieve climate change policy goals; the two primary climate challenges that are being addressed by those investments; the sources of capital and investment vehicles for that funding; the barriers to scaling up such investment opportunities more rapidly; and finally the methods of defining effectiveness as shown in four relevant case studies.

1. Defining the Need: Trillions, not Billions

Transitioning from a carbon dependent economy to one that is decarbonized will not just require annual targets to reduce emissions, but will also require a substantial level of investment in relevant technologies and their deployment.

Christiana Figueres, Executive Secretary of the UNFCCC, has said “global investment in clean technologies is running at about \$330 billion USD a year, but that is [not] where it needs to be. From where we are to where we need to be, we need to triple, and we need to do that over the next five to ten years, but certainly by 2030.”³¹ Figueres states that the global climate finance efforts needs to reach \$1 trillion USD per year by 2030 to keep the average global temperature rise under the internationally agreed upon 2 degree centigrade target.³²



The current pace of investment in sustainable energy is not sufficient to meet SE4All’s stated objectives. Current government and public sector investment and incentives for the private sector, combined with improving technology costs are supporting the current momentum, but are insufficient. One potential constraint on the long-term growth trajectory is perceived risks, some specific to sustainable energy and others specific to emerging markets.”³³

Excerpt from “*Scaling Up Finance for Sustainable Energy Investments: Report of the SE4All Advisory Board’s Finance Committee 2015.*”

According to the Organisation for Economic Co-operation and Development (OECD), the largest institutional investors (pension funds, insurance companies, foundations and investment managers) hold about \$76 trillion USD in capital. However, Figueres estimates those institutional investors are committing less than 2% of their funds to clean energy infrastructure, compared to 10%-15% that is still going into coal and oil.³⁴ Supporting these views, the World Economic Forum (WEF) predicts that in addition

to the projected \$5 trillion USD required for traditional infrastructure investment (like agriculture and transportation) per year by 2020, about \$0.7 trillion USD more will need to be invested annually in green infrastructure during the same amount of time. Such green infrastructure includes energy efficiency, renewable energy, sustainable transport, and forestry sectors.³⁵

In addition, the International Energy Agency's (IEA) report, *World Energy Investment Outlook 2014*, states that limiting warming to less than 2 degrees Celsius would require \$53 trillion in cumulative investment to 2035: with around \$40 trillion in energy supply; and \$14 trillion in energy efficiency. By 2035, investment in low-carbon energy supply would need to rise to almost \$900 billion and spending on energy efficiency should exceed \$1 trillion.

The report further states that dependable policy signals are essential to ensure that these investments offer a sufficiently attractive risk-adjusted return. Getting prices right is essential, both by phasing out existing distortions, in the form of fossil-fuel subsidies, and through carbon pricing. On the financing side, there is still much work to do to marry the available instruments with the specificities of low-carbon energy projects, notably their dispersed, diverse and small-scale nature.³⁶

However since these various estimates were made, GHG emissions have increased, resulting in a more difficult problem to solve. According to the IPCC, the time taken to invest plays a large role in the total amount of financial support needed to halt the global temperature rise. The IPCC report showed that continuing to hold off on investing in clean energy could increase costs by 40 percent.³⁷



All we can do is speculate. We don't really know the costs. However, the chance of a catastrophic outcome should be enough to motivate investment to avert climate change even in the face of uncertainty."

Robert Pindyck, Professor of Finance and Economics and Professor of Applied Economics at the MIT Sloan School of Management.³⁸

For this section, we surveyed leading climate finance institutions, including: 2 banks, 17 funds, 1 investment group, 4 multilateral/bilateral funds, 1 NGO, 1 private equity, 2 private foundations, 5 sovereign funds, 19 trust funds.

The analysis and definitions that follow are based on the results reported by these institutions (except where otherwise noted).

2. Defining the Categories: Financing Mitigation & Adaptation

Regional Distribution of Mitigation Finance

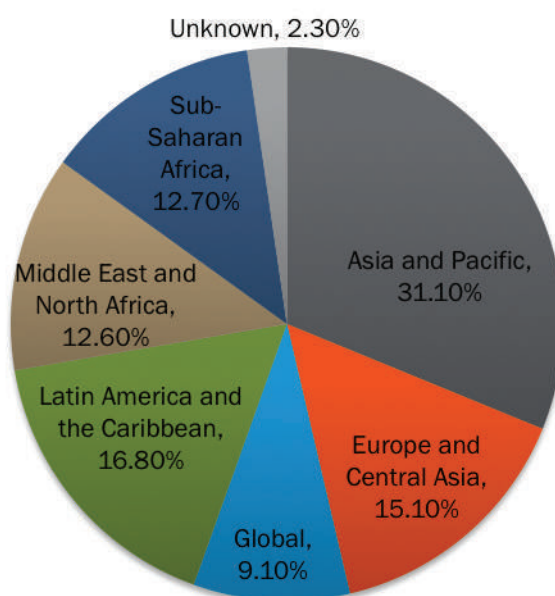


Figure 2

Source: Overseas Development Institute. Climate Finance Thematic Briefing: Mitigation

Mitigation refers to any strategy that aims to reduce the amount of carbon emissions being produced. In general, mitigation efforts utilize development in a sustainable manner to prevent the progression of climate change. This is accomplished, for example, by expanding renewable energy generation, implementing energy-efficient building practices, and by investing in low carbon transportation options.³⁹ It also includes asset finance or re-capitalization (tangible asset investments, such as utility-scale energy projects, real estate, infrastructure assets, agriculture/forestry assets, etc.).

In contrast, adaptation strategies strive to reduce vulnerability to the inevitable impacts associated with climate change, for example by improving coastal resiliency to the effects of sea levels rise and extreme weather patterns, such as more frequent or intense hurricanes.⁴⁰ The IPCC defines climate adaptation as the “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effect, which moderates harm or exploits beneficial opportunities.”⁴¹

A. Mitigation Finance

In 2013, \$301 billion, or 91% of climate finance, was allocated towards mitigation efforts.⁴² Investments in renewable energy generation received \$235 billion USD or 71% of climate finance, with the vast majority going towards solar PV (\$117 billion USD) and on/off shore wind energy (\$71 billion USD).⁴³

Figure 2 shows the amount of funding each region of the world received for mitigation efforts. As observed, Asia and the Pacific region received nearly one third or \$93.61 billion USD of the \$301 billion USD that was spent in 2013 for mitigation efforts. Latin America and the Caribbean received 16.8%, while Europe and Central Asia received 15.1% of the total mitigation flow. However, it is important to note that 2.3% of the mitigation finance did not have a known beneficiary due to a lack of reliable data.⁴⁴

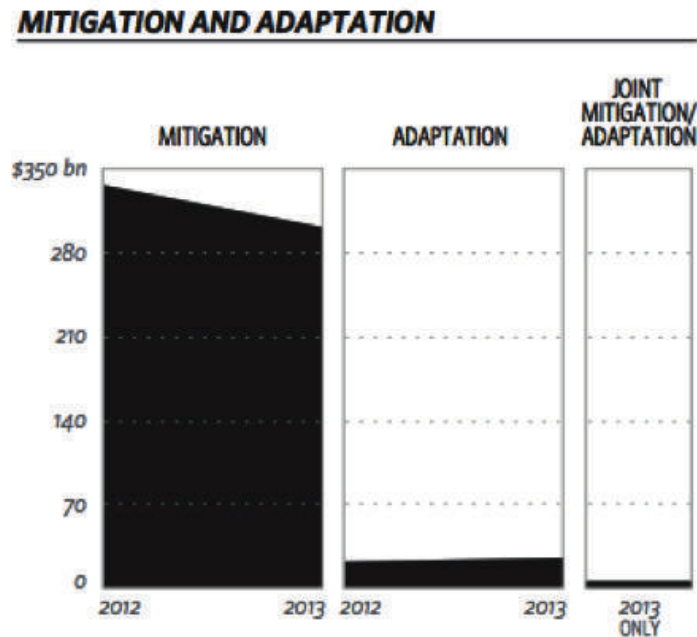


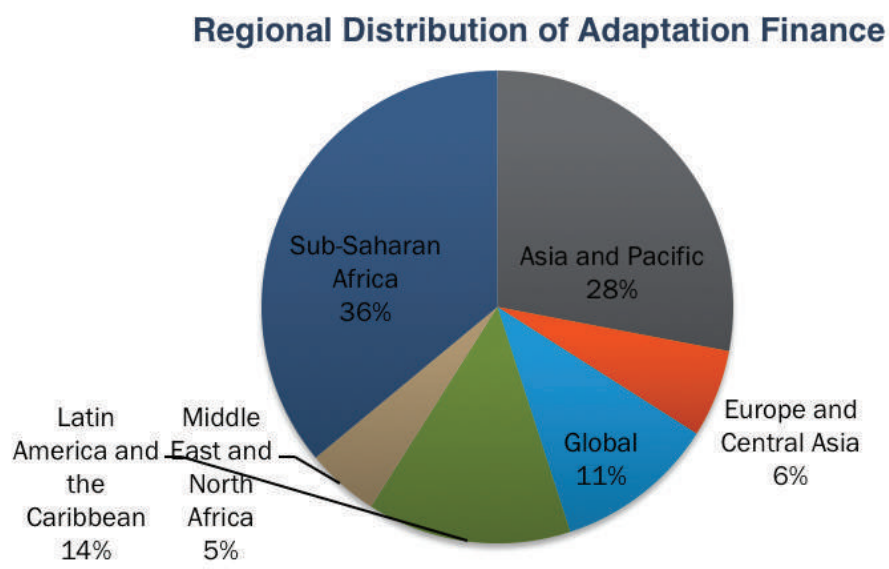
Figure 3: Public Funding for Mitigation and Adaption
Source: Climate Policy Initiative. The Global Landscape of Climate Finance 2014

B. Adaptation Finance

In 2013, \$25 billion USD from the public sector went towards adaptation efforts such as water supply and management, climate resilient infrastructure, coastal protection, and disaster risk management.⁴⁵ The funding for adaptation efforts came largely through low-cost debt, including loans (52%), grants (16%), and market-rate debt (30%).⁴⁶ Private investments towards adaptation are not recorded due to the absence of reliable data.⁴⁷ These figures also do not reflect government budgets for activities such as repairs to seawalls and levees that have been damaged by sea level rise and more intense storms.

When analyzing the funding received from climate finance in 2013, adaptation efforts received significantly less funding when compared to mitigation. Figure 3 shows the investment gap between mitigation and adaptation efforts. Around 7% or \$25 billion USD of public resources benefitted adaptation efforts. \$4 billion USD of public investment was allocated to joint mitigation and adaptation efforts.⁴⁸ As observed, adaptation received \$3 billion USD more funding in 2013 than in 2012.

Figure 4: Regional Distribution of Adaptation Finance.
Source: Overseas Development Institute. Climate Finance Thematic Briefing: Adaptation Finance



As observed above in Figure 4, Sub-Saharan Africa (SSA) received 36% of the total climate finance that was designated for adaptation efforts. In contrast, SSA only received 12.7% of mitigation finance, indicating that flows entering SSA focus on efforts such as forest management, aquatics, agriculture and ecosystem resilience, and will utilize native plants, natural infrastructure, land plans and rainwater harvesting.⁴⁹ Other regions that received significant amount of adaptation finance are Asia and the Pacific (28%) and Latin America and the Caribbean (14%), while 11% of adaptation efforts are being allocated to global efforts. Meanwhile the regions of Europe and Central Asia and the Middle East and North Africa received 6% and 5% respectively.

3. Defining the Sources: Public and Private

Climate finance typically comes from two sources: private funding (pension funds, sovereign wealth funds (SWFs), insurance companies, etc.) that seeks to gain market rates of return or public sources (noncommercial grants and other funding from governments, international inter-governmental organizations, and development banks) that are willing to accept zero or below-market rates of return. This distinction and the opportunities for blending public and private finance are at the center of any realistic strategy for the expansion of climate finance.⁵⁰

In 2013, \$331 billion USD a year was invested into climate finance projects globally. According to the most recent report by the Climate Policy Initiative (CPI), *Landscape of Climate Finance 2014*, the public sector contributed \$138 billion USD or around 42%, while the majority of climate finance (\$193 billion USD or 58%) was leveraged from private investors.⁵¹



There is a broad and diverse pool of private sector investors in both OECD and emerging markets, that could increase their exposure to investments in sustainable energy, but it will be important to address scale, risk and liquidity issues, as well as develop financing opportunities tailored to each type of investor. While momentum exists, blended capital-focused financing mechanisms, that help mitigate risks and standardize investment structures are needed to increase the size and scale of investment opportunities and also the reach so that many more smaller scale projects can attract financing.

Excerpt from “*Scaling Up Finance for Sustainable Energy Investments: Report of the SE4All Advisory Board’s Finance Committee 2015*”

A. Public Sector Funding

As noted, the public sector (government ministries, bilateral aid agencies, export credit agencies, and multilateral/bilateral/national Development Finance Institutions) committed \$138 billion USD towards climate finance efforts in 2013.⁵² Of that funding, low-cost and commercial rate loans, viability gap funding and equity investments were the main types of capital for climate finance. When comparing public investment levels from 2012 to 2013, the global flow rose by 4% to account for 42% of climate finance in 2013.⁵³

Figure 5 shows the sources of funding, dominated by Development Finance Institutions (DFIs). DFIs may be defined as an intermediary space between public aid and private investment and include the International Finance Corporation, European Bank for Reconstruction and Development, and the Overseas Private Investment Corporation to name a few primary examples.⁵⁴ In whole, DFIs contributed \$126 billion USD or 91% of the \$138 billion USD contributed by the public sector.⁵⁵

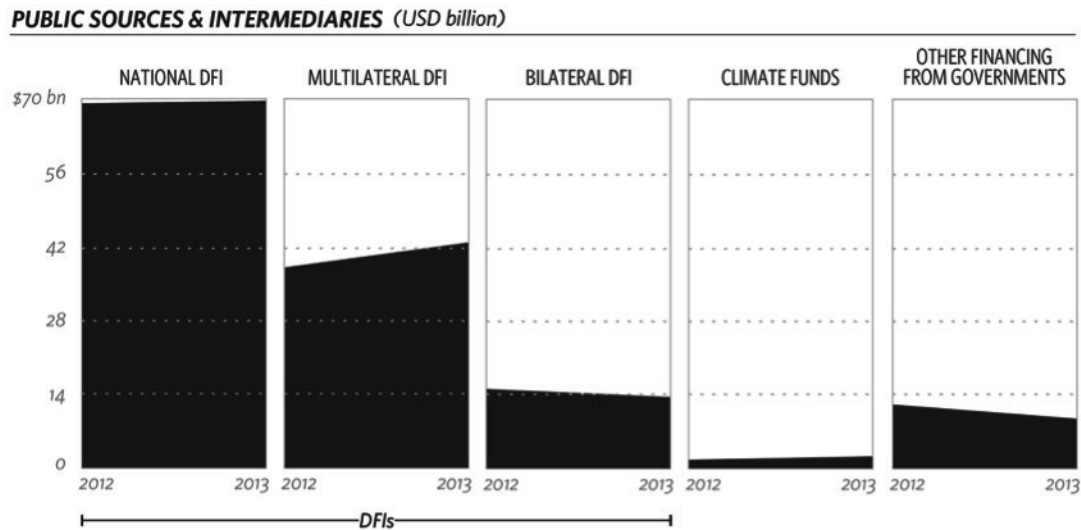


Figure 5: Public Sources of Climate Finance
Source: Climate Policy Initiative, Landscape of Climate Finance 2014

In contrast to DFIs, *climate funds* as shown in Figure 5 refer generally to grants made by developed nations to intermediaries working on behalf of developing nations. An example of this is the UN's Green Climate Fund (GCF), created in Copenhagen as a result of COP15 in 2009, which aims to act as the main fund for global climate finance by gathering \$100 billion USD by 2020 (and an additional \$100 billion per year thereafter) from a mix of public and private sources to help its beneficiaries design and implement low carbon economic development projects that might otherwise not be bankable from institutional investors or DFIs. Thus far, as described below, the GCF has garnered pledges of approximately \$10 billion USD (with initial investments beginning in 2015).⁵⁶



There is one specific commitment on the table right now, which is to reach \$100 USD billion per year of funding for developing countries by 2020. At the minimum we need to do this, and it's not hard to do. Because we're in a \$90 trillion USD world economy, so a \$100 billion USD is not tiny change, but it's absolutely manageable. But even that \$100 billion USD has not been sorted in any serious way."

Jeffrey Sachs, Director of the Earth Institute at Columbia University.

A recent example of a public sector response to climate finance needs, which harnesses private sector and public institutional sources of capital, is the Obama administration's Clean Energy Investment Initiative. The Initiative's goal of catalyzing \$2 billion in independent commitments to fund low carbon projects has been surpassed, with more than \$4 billion of independent commitments made by major foundations, institutions, and other long-term investors. The Initiative also includes:⁵⁷

- Launching a new Clean Energy Impact Investment Center at the U.S. Department of Energy (DOE) to make information about DOE energy and climate programs and other government agencies accessible and more understandable to the public, including to mission-driven investors;
- Facilitating investments by charitable foundations in clean energy technologies through new Treasury Department guidance on impact investing; and
- Improving financing options from the U.S. Small Business Administration for private investment funds seeking long-term capital, including early-stage investors in capital-intensive clean energy technologies.

B. Private Sector Funding

Private investors, specifically project developers, which include utilities, independent power producers, corporate actors and manufacturers, were the most important private sources of climate finance in 2013, raising and deploying \$88 billion USD in total.⁵⁸ Additionally, of the \$193 billion USD invested from the private sector in 2013, 90% remained within the country of origin, indicating that financiers continued to invest in low-risk and familiar settings.⁵⁹

Figure 6 shows two important pieces of information. Firstly, it displays the total amount of finance received from each category within the private sector. Secondly, it displays the decrease of investment from the private sector, from \$224 billion USD in 2012 to \$193 billion USD in 2013.⁶⁰ However it is important to note that the drop in finance from the private sector can be attributed to the overall decrease in the cost of some renewable energy technologies, particularly solar PV. For example, in 2013 it cost \$40 billion USD less to achieve the same level of solar installations as in the previous year.⁶¹

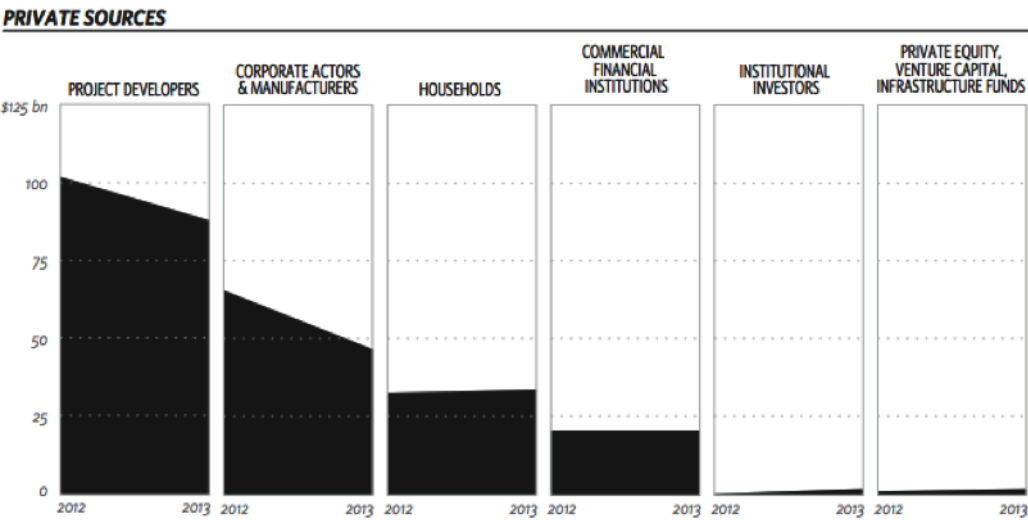


Figure 6: Private Sources of Climate Finance
Source: Climate Policy Initiative, Landscape of Climate Finance 2014

C. Distribution of Climate Finance by Institutional Type (Public & Private)

Both the public and private sector have played a role in financing climate-focused projects, however it is important to gain an understanding of how these funds have performed and of their current status.

Figure 7 shows a representative sampling of the fifty-two institutions surveyed and their percentage of successful fund distribution (based on their reported distributed amounts compared to the pledged amounts). By this metric, we can see trends of how successful each fund has been in converting pledged amounts into actual project finance, despite the fact that only 31% of the 52 funds have reported both pledged and distributed amounts.

Two funds, Australia's Fast Start Finance and Sustainable Energy for All, have successfully converted 100% of their pledges into distributions for projects. On the other hand, the Forest Investment Program (FIP) has only converted 4% and the Forest Carbon Partnership Facility Readiness Fund (FCPF-RF) has only converted 7%. The average success percentage is 51%.

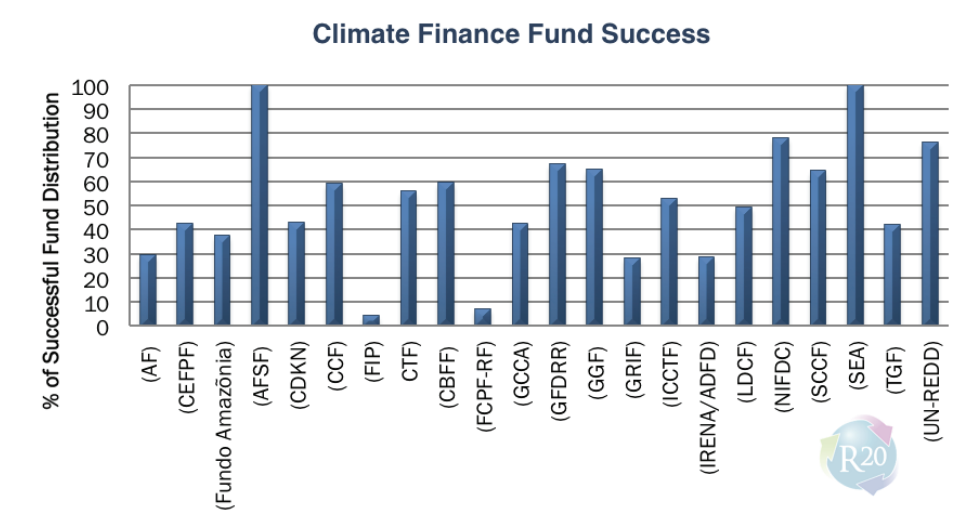


Figure 7: Climate Finance Fund Success

4. Defining Investment Vehicles and Asset Classes

There is a wide variety of financing vehicles across all asset classes available to both public and private investors for meeting climate finance objectives, although as noted above, these have not yet scaled to levels that adequately respond to the levels of capital needed to achieve policy goals around climate change mitigation or adaptation. The following are several of the primary types of climate finance opportunities available to investors, often where both public and private investors find common ground. As will become evident, these are often both investment vehicles and approaches to ensuring the success of such investments through risk-sharing, harnessing more traditional secondary markets, government policies, and a focus on measurable carbon emissions as the metric for ROI.

A. Public-Private Partnerships (PPPs)

Private finance requires competitive risk-return ratios for each asset class. The wealthier a country or the higher its future income stream, the easier it will be to mobilize private finance in the form of loans, bonds, equity, insurance products, or risk guarantees.⁶² For this reason a symbiotic partnership between the private and public sector is essential for the successful deployment of climate finance.

Overall, \$245 billion USD or 74% of total climate finances was invested in 2013 with the expectation of earning commercial returns.⁶³ Private investors have an appetite for climate resilient projects, while governments and public actors can incentivize the private sector by setting policies that reduce risk or provide long-term stability for the private investor and help aid a mutually beneficial public-private partnership. The World Bank, for example, is able to offer concessional loans and loan guarantees (which are provided at more attractive interest rates) and grants (that support projects by purchasing carbon credits).⁶⁴

The United Kingdom Greenbank is another good PPP example, capitalized with public money, but operating on private terms while focusing specifically on designated sectors of the green economy where capital flows are insufficient to meet the government's policy objectives for green infrastructure deployment.⁶⁵ Its investment approach specifically fills gaps in the capital structure of emerging markets and technologies to help them evolve and mature. The Greenbank has levered private capital to its own investments at a rate of 3:1, thus exemplifying the PPP approach, having committed £2 billion GBP to fund 56 green infrastructure projects in the UK (offshore wind, waste, biomass and energy efficiency) with a total worth over £8 billion GBP. The Greenbank has also been flexible enough to enter into a JV with UK's Department of Energy & Climate Change to manage a pilot fund of £200M to invest in green infrastructure projects in South Africa, Eastern Africa and India.

B. Listed Equities

Institutional investors, including insurance companies and pension/hedge/mutual funds, have been channeling money into socially responsible, publicly traded companies for many years. The Swedish Pension Fund AP4 conducted a portfolio wide carbon footprint exercise to analyze the carbon emissions of each company they have invested in. Based on their findings, they then developed a climate index fund (composed of low carbon emitting investments) that has out-performed the market standard.⁶⁶ Other private investors, such as France's ERAPF, have begun to diligently screen potential investments based on their carbon footprint.

C. Green Bonds

One relatively new and growing source of private climate finance is the green bond market. Green bonds are fixed income, financial mechanisms that are used to raise funds dedicated to climate-mitigation, adaptation, and other environmentally sound projects.⁶⁷ These bonds can provide important liquidity and refinancing capital to existing projects, such as utility scale solar or wind energy assets.

According to a report from the Climate Bonds Initiative (a London based non-profit to promote global large-scale investments in the low-carbon economy), \$36.6 billion USD was issued in green bonds in 2014 (with 73 different issues), more than tripling the amount in 2013.⁶⁸ Since 2007, development banks such as the World Bank and the European Bank for Reconstruction and Development have been channeling investments into green bonds and currently issue 44% of green bonds worldwide.⁶⁹ However, there is a recent surge in green bond investment that can be attributed to the contribution made by corporations, banks, and municipalities.

For example, Toyota kicked off the first quarter of 2015 with a \$1.75 billion USD green asset bond. This bond showcased how proceeds from a bond backed by car leases and loans can be allocated for future green vehicles.⁷⁰ Green bonds emerge as an excellent outlet for investors looking to distribute their money to mitigate climate change, while still looking to gain an attractive rate of investment (ROI) when compared to traditional bonds.

D. Present Value Collateralized Savings

Energy efficiency upgrades are often financed from an asset owner's savings on energy bills and maintenance costs collateralized by utility taxes, fixed assets (typically real estate), or other revenue streams. One example is the R20 Brazil Streetlight Retrofit Program, as well as numerous and widely accepted projects with building retrofits. The concept is also being studied using savings on insurance premiums if measurable, insurable risks go down in proportion to investments in climate resilience.⁷¹ This would provide the private investor with a low risk project; an opportunity of maintaining a net positive cash flow throughout the life of the loan; and a chance to achieve a high rate of return over a long-term cycle.⁷² There are issues that need to

be resolved before this strategy will be widely adopted as a potential climate finance option, but several stakeholders are considering it in some markets.

E. Tax Credits

This approach is similar to the current Production Tax Credit for generating renewable energy in the United States. The Product Tax Credit reduces the amount of income tax taken on by owners of renewable energy facilities based on a per/kilowatt of power produced.⁷³ To highlight the success that the Production Tax Credit has had on the United States wind industry, between 2007 and 2014, wind capacity has nearly quadrupled, representing an annual average investment of nearly \$15 billion USD.⁷⁴ Simultaneously the cost of generating electricity from wind has fallen by more than 40 percent over the past three years.⁷⁵ Similarly, the investment tax credit and the special 30% tax rate have supported expansion of solar generation in the U.S., however this example highlights the hazards to investors of such programs: they are set to expire in 2016 unless Congress takes action to extend them.⁷⁶



In addition, private tax-equity investors may be able to invest in the up front costs of a project and shelter other income from taxation based on depreciation allowances for large assets.⁷⁷ In some instances, the project need not be in the same country as the one where the tax equity investor has a tax liability.⁷⁸

F. Loan Guarantee Programs

A loan guarantee provides security for private borrowers and can help bring down the financing cost for projects. With a loan guarantee program, the public sector guarantees the debt associated with a privately held project, guaranteeing to a private lender that if the company defaults on a loan, the government will step in to repay the outstanding balance. This provides a necessary security blanket for private investors to take the jump into a project with higher risks than would otherwise be acceptable. Overall, the goal of a Loan Guarantee is to encourage private investment while minimizing risks associated with the project.⁷⁹ Examples include:

- The Green Job-Green New York program for energy efficiency improvements, which were financed with a \$24.3 million USD bond. The New York State Environmental Facilities Corporation (through its State Revolving Fund program under the Clean Water State Revolving Fund) guaranteed to repay the principal and interest associated with the bond, which was therefore given an AAA rating.⁸⁰
- The US Department of Energy has pledged \$4 billion USD in loan guarantees that are intended to support the commercial scale deployment of innovative clean energy technologies.⁸¹

- The World Bank offers a partial risk guarantee program (PRG) for energy investments in developing countries. It covers risks such as the failure of the national grid to pay for electricity generated, as well as risks related to changed government policy, but leaves the normal commercial risks to be borne by the private financing source. For example, the Lake Turkana Wind Project in Kenya, where the PRG covers offtake risk in the event the transmission line is not completed in time to send power to the national grid.⁸²

G. Public Tiered or Layered Investments

A tiered or layered investment lowers the overall risk for a private investor by insulating them with public capital. This occurs, when both public and private investors infuse capital in a project or a fund. The public investment then acts as a safety cushion in the occurrence of a net loss from the performance of the investment. In other words, private investors are guaranteed to meet their return targets before public investors are repaid. This type of investment strategy is an excellent method for the public sector to incentivize the private to infuse capital into climate finance projects.⁸³

An example of tiered or layered investing is observed with the deployment of the Electricity Access Fund which aims to invest €55 million EUR over five years, with €10 million EUR of the fund's capital coming from the European Investment Bank. The investment will support around 20 small to medium enterprises in Sub-Saharan Africa involved in off-grid, decentralized solar energy with an emphasis on micro grid technology.⁸⁴ The development of the Electricity Access Fund is the latest example of the EU blending development grants with finance from the private sector to pay for large-scale investments.⁸⁵

H. REDD

Reducing Emissions from Deforestation and Forest Degradation (REDD) attempts to create financial value for the carbon stored in forests. REDD accomplishes this by offering incentives for countries to reduce emissions by preventing deforestation through agricultural expansion, conversion to pasture, and destructive logging.⁸⁶

Deforestation and forest degradation account for nearly twenty percent of global GHG emissions, which is more than the entire global transportation sector and only second to the energy sector.⁸⁷ There are estimates that at least \$10 billion USD in market-based payments and \$25 billion USD from domestic budgets are going toward biodiversity and forest protection each year. However, the lack in reliable data excludes those estimates from the previously stated global finance flows.⁸⁸

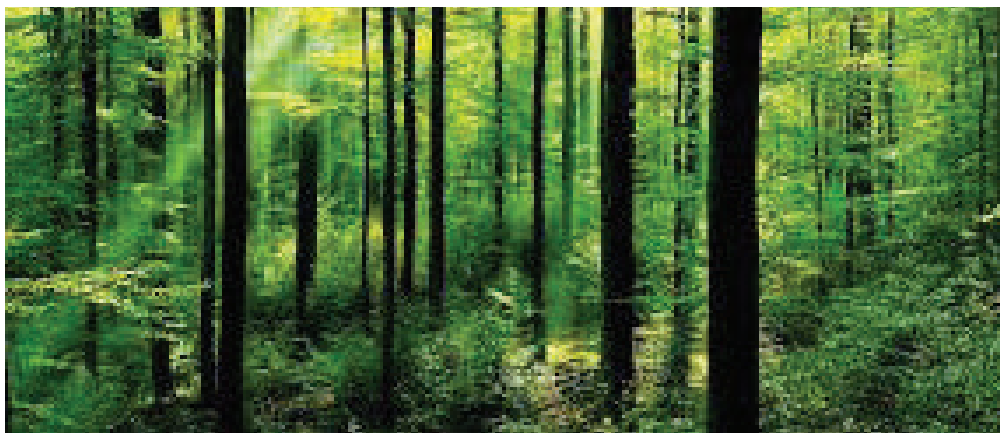
As a larger concept, REDD is another form of carbon trade emission schemes. Though this type of mechanism has played a role in reducing GHG emissions, it is ultimately an unreliable source of project finance on a large scale. Regionally, there are entities today that are employing a carbon trade system, but there is still an uncertainty surrounding how those systems will expand.

The UN initiated the Clean Development Mechanism (CDM) following the Kyoto Protocol to bring carbon trading to the global market; however there has been much debate about its effectiveness and limitations thus far.⁸⁹ In the United States, both the State of California and the Regional Greenhouse Gas Initiative (RGGI) have successfully implemented a carbon trading system. The proceeds from those transactions have funded local programs and initiatives that reduce regional GHG emissions. In California, the Greenhouse Gas Reduction Fund (GGRF) has provided \$900M USD to-date in funding to many low-carbon projects for the state, including the Affordable Housing and Sustainable Communities Program, as well as the Wetlands and Watershed Restoration initiative.⁹⁰

While a robust carbon trading system would create expansive opportunities for investors and returns to be re-directed towards project finance, these programs are not at that scale.

“

Innovative use of financing has the potential to unlock the benefits of private investment and build electricity supply for millions of people and small businesses. We can use development aid to absorb risk, build investor confidence and accelerate economic growth for a wider number of people.” Erik Habers, Head of Development at the European Union in Kenya



5. Defining the Barriers to Entry: Real & Perceived Risks



Policy makers, investors, financial intermediaries and analysts do not always have the same understanding of key climate finance terms and concepts. Building a common understanding of key climate finance terminology would improve ongoing discussions on how best to track climate finance, clarify efforts to measure its effectiveness, and help identify where public sector interventions can best impact the scale up of climate finance.”

Excerpt from *“What is climate finance? Definitions to improve tracking and scale up climate finance.”* Climate Policy Initiative

Worldwide, various climate finance efforts are underway today, from both governments and private sources. However, there is a high level of uncertainty when analyzing climate finance efforts due to large gaps existing in the available data.⁹¹ Additionally, there is not one centralized system for tracking all relevant climate finance flows.⁹²

A comprehensive database of green finance initiatives would provide necessary data and information to track climate finances effectively and could be compiled from a variety of publicly available sources/reports, subscription services, and voluntary reporting by institutions. A comprehensive database would:

- Allow project developers to access capital more effectively
- Allow various sources of capital to collaborate
- Help policymakers assess whether the collective results are commensurate with the need.
- Increase the efficiency of investments allocated for climate finance

Overall, the current information about existing climate finance programs are generally lacking or confusing. In addition to the lack of transparency surrounding climate finance, other barriers have prevented the scale up of promising green technologies because of real or perceived risks, such as:

- **Sovereign risk:** stable, corruption-free governments are essential for project development, especially given the timelines for the development of renewable energy and other long-term projects.

- **Technology risk:** proven technologies, based on existing commercially viable and available products will attract more capital and a greater up-front investment.
- **Policy risk:** if projects depend on government feed-in tariffs or other mandates/subsidies, capital providers will want visibility into the future of such policies before risking capital.
- **Subsidies of incumbent technologies:** such as oil/gas development (which depend strongly on government subsidies) make low-carbon alternatives appear expensive.
- **Implementation capacity:** Projects require EPC skills (engineering, procurement, and construction) as well as equipment service and repair.
- **Lack of project intermediaries and developers:** R20 has learned first-hand that government, technology, and finance is available for low carbon projects, but often there is a lack of intermediaries to “connect the dots” - - bring the parties together around specific projects and to overcome perceived barriers.
- **Risk/ROI gaps:** Private capital, especially pension funds, philanthropies, and Sovereign Wealth Funds (SWFs) that have very specific mandates to protect beneficiary assets, will not accept projects that require higher risk or lower return than other opportunities for their capital in the market.⁹³
- **Lack of tracking, certification and clear definitions:** A lack of an accepted definition of climate finance, gaps in knowledge, and data (in addition to tracking the flow of investment) have often limited the ability of policy makers to address investment gaps within climate finance efforts.
- **Lack of institutional capacity and entrepreneurial skills:** Several countries have ambitious goals for pursuing a path of low emissions, but generally lack the institutional capacity or skill set to convert these goals into tangible results. Since we are dealing with policy driven initiatives and market failures, financing to deal with this challenge also needs to be addressed.

“

It's easy enough to screen for the bonds issued by the World Bank or other multinational institutions because most investors trust those [organizations]. But when it comes to bonds issued by private corporations, it's not so simple.”

Sean Kidney, CEO and Co-founder of the Climate Bonds Initiative

Some climate finance actors have begun to address this issue. In the public sector's effort to improve tracking efficiency, the OECD and the Research Collaborative on Private Finance are working to develop a strategy to track and calculate private climate finance investments, including those spurred by public organization.⁹⁴

On the public side, Multilateral Development Banks (MDBs) now report climate finance data to the OECD, and through their Joint Report on Climate Finance (now in its third year) they interact with bilateral and national DFIs (i.e., the International Development Finance Club) with the aim of forming a consistent approach to tracking and reporting climate finance.⁹⁵

6. Defining Effectiveness: Four Case Studies

Of the public and private investments to date, projects like solar and wind farms are well-defined asset classes with proven track records. Given the defined need to dramatically scale up climate finance, and faced with the previously described barriers to entry, how have other climate finance initiatives performed in attempts to go beyond these traditional green categories? Four case studies demonstrate important innovative approaches that can be replicated in the future, including two that are unique sources of large-scale climate capital and two that are unique deployments of such capital.

A. The Global Environment Facility

The Global Environment Facility (GEF) is a partnership for international cooperation where 183 countries work together with intergovernmental and international institutions, civil society organizations and the private sector, to address global environmental issues. Since 1991, the GEF has provided \$13.5 billion USD in grants and leveraged \$65 billion USD in co-financing for 3,900 projects in more than 165 developing countries.⁹⁶

The GEF supports climate change initiatives in countries across a broad spectrum of action areas. A total of \$910 million USD was allocated to individual countries to support national climate change mitigation policies and strategies, enhance the renewable energy supply and increase energy efficiency, including sustainable transport and urban design, and the expansion of climate-smart agriculture. The GEF has also allocated \$225 million USD to support UNFCCC related reporting and assessments, including intended Nationally Determined Contributions, and to help integrate their findings into national policy planning and implementation. In addition, the GEF expects to finance up to \$1.4 billion USD towards enhanced resilience, adaption and disaster risk reduction.⁹⁷

Going forward, the GEF plans to deploy approximately \$3 billion USD in climate finance, which it expects will leverage \$30 billion USD from other sources. Although it is an important example of leveraging public funds with private investments, the total amount is far less than the identified global need.⁹⁸

B. The United Nations Green Climate Fund (GCF)

Given the urgency and seriousness of climate change, the purpose of the UN Green Climate Fund (GCF) is to make a significant and ambitious contribution to the global efforts towards attaining the goals set by the international community to combat cli-



mate change.⁹⁹ The GCF will contribute to the achievement of the ultimate objective of the UNFCCC. In the context of sustainable development, the GCF will promote the paradigm shift towards low-emission and climate-resilient development pathways by providing support to developing countries.¹⁰⁰

Going forward, the GCF plans to harness \$100 billion USD annually by 2020, but has thus far secured pledges of only about \$10 billion USD (a third of which is dependent on uncertain politics and budgets in the USA).¹⁰¹ The GCF was created in 2009 by the UNFCCC and, although a valuable global asset, it does not approach the identified climate finance needs because the commitments thus far are one-time and paid out over several years. The gap between the existing commitments and projected \$100 billion USD annual target remains unaddressed. Additionally, about half the funds will be used for adaptation projects (which generally do not address the need to mitigate climate change). With these projects, the GCF acts more as a Fund than an Investment Fund due to the lack of returns generated. Adaptation is a greater expense than mitigation, representing a less effective means of investment.

C. R20 Brazil Streetlight Retrofit Program

Since 2013, R20 has been leading a large-scale street lighting retrofit program covering thirteen cities that will retrofit up to 1.5 million streetlights with more energy efficient and economical LEDs. R20 acted as an intermediary to help its member states and their cities in Brazil accomplish energy efficiency and GHG reduction goals through this program.

There were three primary reasons why Brazilian cities had not switched to LEDs already. First, LED streetlights were not manufactured in Brazil and imports were sub-

ject to substantial taxes and tariffs on imported manufactured goods, making the products unaffordable. Second, asset managers were concerned about technology failure based on past experiences of some cities globally that had begun these types of retrofits. Finally, cities in Brazil lacked financing to perform this task on a citywide basis.

R20 eliminated these barriers by:

- Working with numerous LED lighting companies and ultimately helping one (Lighting Science Group) leading brand to set up manufacturing in Brazil, thus overcoming the import tariff cost;
- Recruiting Brazil's largest utility (Eletrobras) to provide testing protocols to ensure the durability and performance of the made-in-Brazil products; and
- Asking R20's Financial Advisor (Pegasus Capital Advisors) to structure a Special Purpose Vehicle (a \$400 million USD ESCO format) for cities to finance these projects and repay the cost from measured savings on energy and maintenance costs (compared to business-as-usual).¹⁰²

The typical city participating in this program will cut energy consumption by over 50% (and cut GHGs related to that energy reduction) and repay the cost of the retrofits in an average of five years for products guaranteed for ten years (thus gaining the benefits of LEDs and saving taxpayers money for at least five years after the payback period).

D. R20 1 GW Renewable Energy Initiative in Africa¹⁰³

With less than 29% of the population having access to electricity, Central and West Africa present enormous potential for solar PV infrastructure development. Experts expect the population in the region to double between now and 2050 and the GDP to increase seven fold. In order to cope with such rapid growth, governments will have to diversify their energy portfolios, especially because current consumption relies so heavily on expensive imported fossil fuel.¹⁰⁴

The African Union has set an ambitious target to bring access to sustainable energy to at least 100 million people by 2020, but despite such strong political commitment, affordable technology, and investor interest, very few projects are being built.¹⁰⁵ Technology solutions, including solar (thermal and photovoltaic), wind and hydro can often be installed more rapidly than the fossil-fuel alternatives and, with growing concerns over the effects of climate change, such technologies will be key to delivering national sustainability goals.

The barriers to more rapid deployment of these energy solutions can be summarized as a lack of a fully integrated energy project development value chain and associated transparent, affordable and efficient energy markets. R20 is addressing these barriers by:

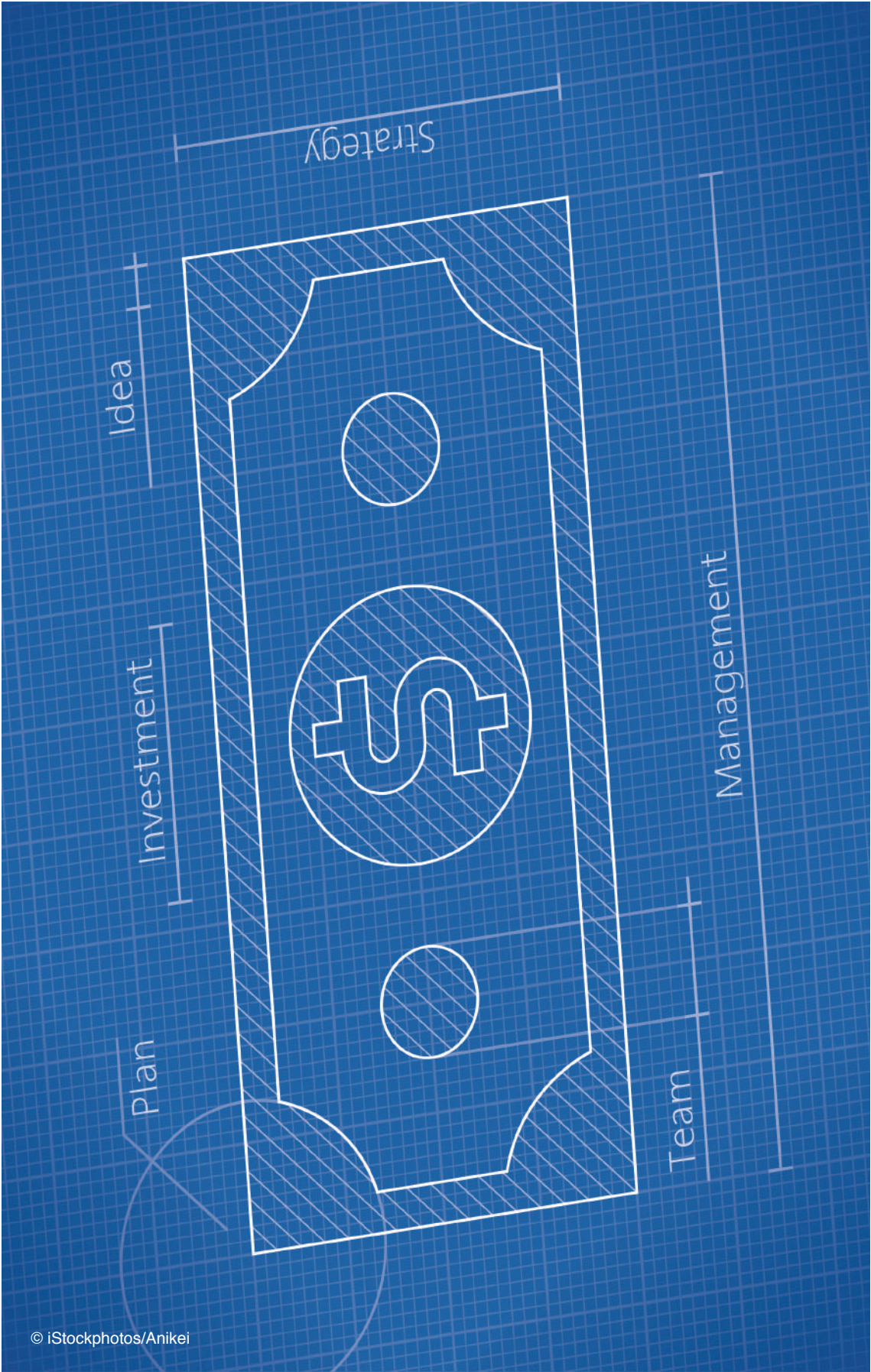
- Developing a 50MW grid-connected solar energy project in Kita, Mali;



- Using the Kita project as a demonstration project for the creation of a not-for-profit and self-financing *Pre-Investment Facility* (PIF). The PIF and its seven-person team will scale up the identification, development and financing of 1GW of solar projects across West and Central Africa. With \$3.5 million USD of start-up donor finance, the PIF will mobilize more than \$1.7 billion USD of climate finance.

The 50MW project in Mali illustrates the approach that the PIF will take in replicating project deployment. R20 signed a Political Protocol with the Mali Government to identify, develop and arrange financing of renewable energy projects, identified the Kita project, performed pre-feasibility studies, selected a reputed international project developer, Akuo Energy, performed feasibility and impact studies, negotiated off-take / concession agreements and guarantees, and identified both debt and equity investors (equity returns 15%). The project represents close to 10% of current national grid-connected generation capacity in Mali.

Based on that first success, R20 and the African Biofuel and Renewable Energy Company (ABREC/SABER) signed a strategic partnership agreement in Lomé, Togo, to work on co-financing the design and implementation phases of 200 MW renewable energy infrastructure projects in western African countries members of ECOWAS.



SECTION III:
Climate Finance: A Blueprint
for the Future

“

A plan for mobilizing clean energy investment capital at a much larger scale is a critical pillar of broadened climate change engagement, success at COP21, and for the global community's long-term response to climate change. The goal of limiting the impacts of climate change cannot be achieved without vast flows of new financial resources to permit significant new clean energy infrastructure, advances in energy efficiency and low carbon tech. The climate change finance model of the past 20 years – in which governments and other public institutions are the lead sources of capital – has not achieved, and cannot achieve, clean energy investment at the requisite scale. Climate change finance thought leaders recognize that this scale of capital can be supplied only if sources of private capital participate robustly in financing clean energy. This scale-up in private finance will occur only if risk-adjusted returns on clean energy investments are sufficiently attractive to private investors.”

From the Yale Center for Environmental Law and Policy Yale Climate Change Dialogue White Paper: *“Building Toward Breakthrough: Energizing the Paris 2105 Climate Negotiations and Post-Paris Action Agenda through Broader Engagement”* July 15, 2015.¹⁰⁶

In seeking to increase investments in climate finance, various stakeholders have called for fundamental changes to the way governments and capital markets operate. While most climate finance stakeholders agree with the idea that governments should restructure policy and incentives to help achieve climate and sustainability goals, experience shows that such efforts can take many years to implement and are often short-lived. Calls upon the private sector to divest from fossil fuel investments and to put more value on the sustainability attributes of alternative investment options are also laudable; however, do not reflect the world we live in today.

Because the science clearly shows the world cannot wait to move to a low-carbon economy, if we hope to avoid the most catastrophic and expensive impacts of climate change, R20's approach is to design investment vehicles that reflect both the sense of urgency and the realities faced by government policymakers and investors from the public and private sectors alike.

This section therefore offers a proposed investment vehicle that can be created with like-minded stakeholders immediately; can raise and match capital within a year of COP21; and make investments at a scale and timeframe that addresses the need to respond to GHG reduction goals and the capital market's need of bankable, market rate risk/return investment opportunities at a large scale. This vehicle can then be replicated, expanded, and adapted for local economies and opportunities as needed.

1. Defining a New Path for Climate Finance

Several intermediaries, including the R20 and NGO collaboratives, PPPs, and development agencies have developed tools and best practices that can overcome the barriers and risks of financing low carbon development projects (in both developed and developing countries). Key characteristics of the added value from these various intermediaries include:

Streamlined processes to identify bankable projects: Using surveys and existing information gathering systems, data can be collected that allows intermediaries to quickly determine if projects are likely to be practical or not. For example, R20 uses a streetlight inventory survey to assess a city's system costs and whether an energy service company (ESCO) model is viable to finance retrofits to more energy efficient lighting (where costs are repaid from measured energy and maintenance savings). Another example is found in the Transformative Actions Program (TAP), which was created to mobilize and assist cities and regions in designing their climate ambitions, addressing mitigation and/or adaptation, and collecting useful data to apply to the TAP project pipeline.¹⁰⁷

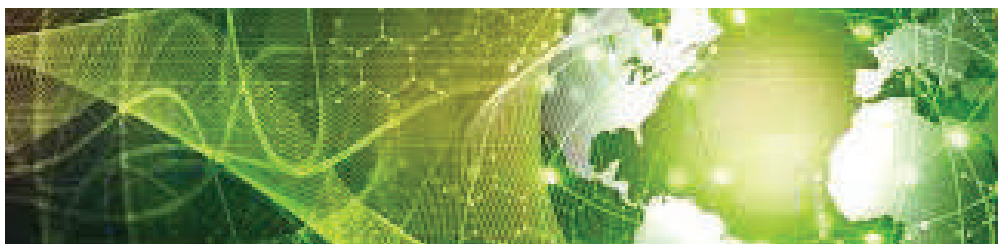
- **Default risk mitigation:** Existing public funding mechanisms can be used to reduce default risks. For example, the city utility tax in Detroit or Rio de Janeiro has been used to secure private finance of energy efficiency projects.
- **Purchase agreements:** High quality, investment grade power purchase agreements (PPAs) or feed-in-tariffs (FITs) from municipalities and utilities incentivize investment in renewables by providing a secure revenue stream. Regional governments benefit greatly when cutting-edge technology is preferred in municipal purchasing decisions. For example, commitments to buy clean fuels for fleets, efficient streetlights, or linking micro-grids to anchor energy demand at municipal buildings, schools, and hospitals.
- **Collateralization:** Securing debt or equity investments with levies on local utility or property taxes; or using asset swaps, such as revenue-generating municipal parking facilities, as temporary collateral.
- **Pre-investment due diligence support:** Initial costs for preliminary assessment and due diligence of projects can be relatively small, but often those expenses prevent identification of good opportunities or the means to make them bankable.
- **Bankable technologies:** Solar and wind power technologies are well-established at commercial scale, but other proven and promising technologies may need creative insurance products or other mechanisms to make them bankable from the investor's point of view.

- **Capital liquidity:** Liquidity from climate bonds and special purpose finance vehicles that recycle capital can expand funding of low carbon projects. For example, “YieldCo” vehicles of diversified project types and other methods to offer securities backed by the cash flows from PPAs on renewable energy projects.
- **Green Banks, Development Banks, and Government Loan Programs:** Financial institutions and products (whether public, private, or public-private partnership) that help avoid relatively hollow, but potentially deal-killing obstacles, are extremely valuable for scaling up sustainable technologies. These entities can provide first-loss or technology risk support, concessionary debt, and unique due diligence expertise, among many important functions.
- **Metrics & Measurement:** Measuring systems that value carbon reductions or efficient use of resources can steer green investors to appropriately valued projects and investment vehicles. For example, the carbonn Climate Registry (cCR), which is linked to the TAP, supports reporting and tracking of projects implemented by local and sub-national government and monitors their benefits.¹⁰⁸ Conversely, the growing trend to evaluate risk from dependence on fossil fuels and other carbon-intensive means of production may demonstrate to investors that the climate-based opportunities are significantly superior on a risk-adjusted basis.¹⁰⁹
- **Follow the Enlightened Policymakers:** The location of GHG reductions will not affect the global result, so project developers can look for welcoming governments (at the local or national level) and make the quickest progress there. For example, why push reluctant lawmakers in Washington, DC, to eliminate subsidies to fossil fuels and improve the regulatory climate for green technologies, when energy efficiency and renewable energy projects might be more quickly developed and financed in California, Algeria, Mato Grosso State (Brazil), or Chicago?

These attributes demonstrate the value of climate finance intermediaries who can connect the dots, but also highlight the reasons why more capital has not been invested in climate-oriented projects and technologies. Each of the beneficiaries of those projects (governments, technology companies, and investors) are eager, or even mandated, to engage in more green opportunities, but none of them typically have the time or tools to develop good concepts into bankable projects. Intermediaries, especially NGOs can fill this project design and de-risking gap.

NGOs are particularly well suited to serve as climate finance intermediaries, connecting the dots, because they:

- Are trusted independent experts with unique policy, scientific, and localized knowledge;
- Already work with many of the stakeholders needed for any successful project;
- Can bring additional planning and analytical resources to projects through their non-profit funding base;
- Develop capacity-building programs, such as training local intermediaries to identify and perform due diligence on projects; training SMEs to implement projects and expand green job opportunities in local economies; and educate local policymakers about ways to assist and facilitate development goals; and
- Have the mission to find, promote, and publicize these types of climate change solutions, so therefore also have the time to investigate and develop these opportunities that may not be practical for the other stakeholders.



2. Filling the Deal Flow Pipeline: Pre-Investment Facilities and the Green Investment Accelerator Fund

As the information presented in this Plan demonstrates, there is climate finance capital available globally, but a lack of de-risked, market-rate, bankable investment opportunities. Although several coordinating entities exist (such as SE4ALL, Power Africa, the ECOWAS Centre for Renewable Energy & Energy Efficiency, the African Biofuel & Renewable Energy Company, and several UN agencies, among others) more intermediaries are needed to develop and expand the deal flow pipeline, while all of these institutions need partners that are prepared to take action when such opportunities are matured. In essence, this concept is comparable to shopping for a new home after you have been pre-qualified for a mortgage loan under pre-arranged terms, conditions, and locations.

There are several public, NGO, or private funding sources dedicated to turning good ideas into bankable projects, including the Global Environment Facility, UN Capital Development Fund, UN Development Program, UN Habitat, UN Industrial Development Organization (especially its Investment and Technology Promotion Office) and units within the World Bank, and regional development banks.

Pre-investment facilities (PIFs) that exist in these organizations are typically limited by scope, geography, focus (SMEs, Least Developed Nations, women-owned businesses, off-grid communities, etc.), and size. Others support capacity building, but assume projects will be developed to investment-grade by program beneficiaries, and many of these programs disappear when grant funding runs out over time. Still others are used solely for due diligence of business plans that have already been developed, but do not support the coordination and design elements that allow such plans to be conceived and commercialized in the first place.

A new model is emerging, however, for PIFs that may expand the utility and efficacy of such programs. For example, R20 has established a PIF to provide investors with bankable, low-carbon economic development projects at scale with superior risk-adjusted returns to ensure that “trillions not billions” are moving into the green economy. It is structured as a revolving loan fund with seed capital for design, development, and due diligence of projects where success or transaction fees from completed projects replenish the R20 PIF so it can continue funding new feasibility studies and project plans (see Appendix A).

“

A large set of viable and attractive new ventures and growth-stage companies are being left behind due to a “misalignment” with traditional asset classes. More specifically, the capital-intensive, long-technology-development-time-line ventures and first-of-a-kind infrastructure projects – the investment opportunities that are often in lockstep with reducing green-house gas emissions at scale – are insufficiently supported by the private sector today and represent a market failure – an incomplete capital market.

Long Term Investors (LTIs) find it increasingly difficult to access these opportunities in cost-effective ways that align with their own long-term objectives. As such, LTIs are ignoring the opportunity set altogether – not because of a distaste for the underlying assets but because of a lack of aligned access points to invest in those assets. This in turn creates a negative feedback loop whereby the opportunity set shrinks due to a lack of capital, and makes the opportunities even more difficult for willing LTIs to access.

There is a need to create a new investment toolkit that can serve as a bridge for the “valleys of death” faced by these companies - a new “Aligned Intermediary” (AI). A financial services organization that would specifically help Long-Term Investors to identify, screen, assess and invest in high potential companies that are producing the most impactful and indeed profitable solutions to climate change.

The AI will not, itself, provide financing to resource innovation companies or projects, at least in its initial incarnation. Instead, it will serve as a mechanism for unlocking direct investment capital from LTIs via proactive and deliberate collaboration and cooperation.”¹¹⁰

From “*Energizing the US Resource Innovation Ecosystem*” co-authored by The Stanford Global Projects Center, The Stanford Steyer-Taylor Center for Energy Policy and Finance and Prime. The paper underlines the need for “aligned intermediaries” at all stages of technology and project development.

Ideally, projects that successfully pass through PIFs would have access to a dedicated source of capital to reduce the transaction time otherwise needed to educate investors and align opportunities with their criteria. The purpose of the proposed Green Investment Accelerator Fund (GIAF) is to therefore provide seed capital that can align the developers of climate-friendly investment opportunities with intermediaries that can de-risk those transactions and make them bankable; fund managers that can apply their financial and additional due diligence skills to ensure financial viability; and investors with capital to invest in these deals.

- **Developers:** Developers of climate-related investment opportunities across all asset classes include national and local governments that control assets (such as streetlights for retrofit opportunities or landfills for waste conversion projects); technology companies that may be selling equipment and services to proposed developments; sector-specific advisory firms that design and develop programs such as utility-scale solar or wind farms and ESCOs with building retrofit programs.
- **Intermediaries:** After reviewing the investment philosophy of the “world we live in today” and the successful case studies to date, it becomes clear that scaling up bankable technologies and projects will require more skilled intermediaries to address a wide variety of barriers. As NGOs like R20 have demonstrated, many new climate finance opportunities could originate from these types of marriage brokers and dealmakers that act as a project accelerator for otherwise overwhelmed policy makers, technology companies, and investors.
- **Fund Managers:** Private equity firms, merchant banks, special purpose finance companies, and other skilled investment managers are needed, responding to the opportunities presented by Developers and their Intermediaries, to structure the appropriate investment vehicles for specific geographies, asset classes, risk/reward profiles, and the various segments of corporate and project-level capital structure.
- **Investors:** Educated investors are critical to scaling up climate finance. While many are eager to invest in green, many still lack the technical expertise to evaluate emerging technologies, to commercialize projects that have mostly been in pilot stages to date, and to fully understand government policy risks and opportunities.

A. Attributes of the Proposed Green Investment Accelerator Fund (GIAF)

The proposed GIAF will act as an accelerator rather than the primary source of capital, serving as a management hub for the four key stakeholders described above to align their interests, mutually educate them about specific investment and project opportunities, and allocate seed capital from the GIAF to jumpstart transactions and unlock the main sources of capital.

Deal flow will originate from a wide network of developers and other intermediaries. For example, the R20 Pre-Investment Facility (PIF) studies the feasibility of each project through expert due diligence to understand if the project meets the critical requirements that investors seek. This is done to create a pipeline of bankable projects, thus reducing the risk and investment timelines.

The GIAF will also align the various segments of the capital markets with relevant stages of climate finance opportunities. For example, some projects may need private equity for a technology company to meet the demand being created by project developers or to set up local manufacturing; project debt finance collateralized by local government fee structures or budgets; bridge finance for project construction that can be taken out later by debt; and completed projects may lend themselves to securitization to recycle capital.

The GIAF Team will coordinate deal flow origination with capital sources, but will recruit and rely upon qualified Fund Managers in each geographic region to make actual investment decisions, conduct fiscal due diligence (matched with local technical pre-feasibility and diligence processes), provide transactional/legal expertise, and ensure compliance with all local and global fiscal stewardship responsibilities.

The GIAF will support its Fund Managers in raising regional capital and co-investment funding. It will use the GIAF funding to provide seed funding for each transaction, but will identify co-investors of at least 10:1. For example, for every \$1 of capital the GIAF places up front, \$10 of capital will be attracted from a green investment source, such as governments, foundations, pension funds, private banks, SWFs, etc.

Because of this co-invest leverage strategy and benefits from concessionary public finance opportunities, the GIAF will target an average internal rate of return (IRR) of 20% and will recycle capital to new investments¹. Within 5 years, the successful proof-of-concept can grow the GIAF from \$1 billion USD up to \$10 billion USD (with \$100 billion USD co-investments) in the most successful regions and sectors.

¹ Some governments will not participate in projects that yield more than 15% to investors, so the target IRR, which is necessary to attract adequate capital from relevant institutions, is an average of projects that will yield infrastructure rates of return (8-15%) and leveraged equity rates of return (20-35%) based on project economics, technology scale-up, and recurring revenue or royalty streams in some cases

B. Geographical Scope of the Proposed GIAF (conceptual)

Given the unique requirements and challenges in each country, and the need for knowledgeable staff locally, the GIAF will be structured as multiple regional funds with common economic characteristics under one roof (aligned with relevant regional development banks):

- Sub-Saharan Africa: \$200m USD
- Mediterranean and Middle East: \$200m USD
- China/India/Asia-Pacific: \$200m USD
- North America/Europe: \$200m USD
- Central/South America: \$200m USD

C. Proposed Key Terms and Conditions of the GIAF (Conceptual)

- Target Fund Size: \$1 billion USD (in five Regional Funds)
- Target Co-Invest: \$10 billion USD (10:1 match with GIAF)
- Target ROI: 20% target annual IRR
- Term: Fifteen years from initial closing (with a five year extension option)
- Average equity transaction: \$5m - 25m USD
- Average debt transaction: \$25m - 75m USD
- Managed by: R20 GIAF Team & Regional Investment Fund Managers
- Management Fee: 1.5% per annum of total commitments (for the first two startup years only); thereafter, 2% per annum of total deployed capital (Fund and co-investment capital)
- Preferred ROI: 7% per annum
- Profits: 80% to investors; 20% to R20 & Fund Managers after preferred ROI returned to LPs
- Geography: Global (in five Regional Fund allocations)
- GHG Goal: At least 1 ton of GHG reduction for every \$5 USD invested

As noted, thanks to the R20 Pre-Investment Facility (PIF) and other successful intermediaries in various sectors and geographies, there is already a large pipeline of projects ready to be financed in the target geographies and each of these are designed to be replicable in the region and beyond (thus providing opportunities for substantially more capital to be deployed over time).



SECTION IV: Conclusion & Call for Active Partners

As this Status Report and Action Plan makes evident, time is of the essence to address our climate change challenge, but policy responses and investment in low-carbon technology deployment have been inadequate to the need. It is also clear from the examples given that there are supportive governments in various regions around the world (at the sub-national and national level); mature low-carbon technologies; and substantial amounts of capital, however, intermediaries are needed to align interests and develop projects.

1. Call for Partners to implement the Proposed GIAF

R20 will build upon the Climate Finance Advisory Committee (CFAC) that generated this Status Report and Action Plan to create the GIAF as previously described and to serve as its strategist and coordinator. To ensure the highest quality of local experience and financial insights, the CFAC will:

- Carefully select fund managers in each region, appointing one as the General Partner and will allocate a percent of each regional fund according to a project's pipeline and each manager's qualifications;
- Coordinate local governments and stakeholders to ensure the lowest risk and fastest implementation of projects;
- Synchronize with global investors in R20's Green Finance Network, the Global Environment Facility, the Green Climate Fund, and other capital sources for completing each regional capital raise and co-invest sources;
- Coordinate with complementary finance initiatives of the UN and donor nations; and
- Sign agreements with key regional investment/project originators, other intermediaries, and technology companies.

The CFAC welcomes participation from all relevant stakeholders to help create this new model of climate finance, further validate its global viability, and replicate/scale-up the concept in all markets at sufficient levels to address the identified climate finance needs.

To join this initiative as an active partner, please contact:

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ACRONYMS

AF	Adaptation Fund
ASFSF	Australia's Fast Start Finance
CBFF	Congo Basin Forest Fund
CCF	Climate Challenge Fund
CDKN	Climate Development Knowledge
CEFPF	Clean Energy Financing Partnership Facility
COP	Conference of Parties
CTF	Clean Technology Fund
DFI	Development Finance Institution
ESCO	Energy Service Company
FCPF-RF	Forest Carbon Partnership Facility-Readiness Fund
FIP	Forest Investment Program
FIT	Feed-in Tariff
GCCA	Global Climate Change Alliance
GFDRR	Global Facility for Disaster Reduction and Recovery
GGF	Green for Growth Fund
GHG	Green House Gases
GIAF	Green Investment Accelerator Fund
GRIF	The Guyana REDD+ Investment Fund
GW	Gigawatt
ICCTF	Indonesia Climate Change Trust Fund
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IRENA/ADFD	International Renewable Energy Agency/ Abu Dhabi Fund for Development
LDCF	Least Developed Countries Fund
LED	Light Emitting Diodes
MDB	Multilateral Development Banks
MW	Megawatt
NGO	Non-Governmental Organization
NIFDC	Norwegian Investment Fund for Developing Countries
OECD	Organization of Economic Co-Operation and Development
PIF	Pre-investment Facility
PPA	Power Purchase Agreements
PPM	Parts Per Million
PV	Photovoltaic
ROI	Return on Investment
SCCF	Special Climate Change Fund
SEA	Sustainable Energy for All
SSA	Sub-Saharan Africa
SWF	Sovereign Wealth Fund
TGF	Testing Grounds Facility
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office of Project Services
UN-REDD	United Nations Reducing Emissions from Deforestation and Forest Degradation
USD	United States Dollar
WEF	World Economic Forum

GLOSSARY

Adaptation Fund

Established to finance concrete adaptation project and programs in developing countries that are parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change.

Amazon Fund

A Brazilian based fund to support the development and implementation of land management and environmental plans in indigenous lands with a goal to prevent, monitor and combat deforestation, as well as to promote the preservation and sustainable use of forests in the Amazon Biome.

Australia's Fast Start Finance

Australia is committed to the fast-start climate finance goal as part of its continued commitment to support developing countries in their efforts to respond to climate change. The fund is fully grant-based, and is balanced between adaptation (52 percent) and mitigation (48 percent).

Clean Energy Financing Partnership Facility

Established in 2007 to help improve energy security in developing member countries and decrease the rate of climate change. It will do this by financing the deployment of new, more efficient and less polluting supply and end-use technologies, through either grant or non-grant resources.

Clean Technology Fund

Established in 2008 to provide scaled-up financing to middle income countries to contribute to the demonstration, deployment and transfer of low carbon technologies with a significant potential for long-term greenhouse gas emissions savings.

Climate Challenge Fund

A Scottish Government program, managed and administered by Keep Scotland Beautiful which provides funding for community groups that are tackling climate change through local community-led projects.

Climate Development Knowledge Network

Aims to help decision-makers in developing countries design and deliver climate compatible development.

Conference of Parties

The governing body of the Convention [UNFCCC], and advances implementation through the decisions it takes at its periodic meetings.

Congo Basin Forest Fund

Seeks to address the challenges associated with climate change by reducing and eventually reversing the rate of deforestation in the Congo Basin forests; and to alleviate poverty.

Development Finance Institutions

Occupy an intermediary space between public aid and private investment, by facilitating international capital flows.

Energy Service Company

A commercial or non-profit business that provides a broad range of energy solutions including: retrofitting, design, and implementation of energy savings projects.

Feed-in Tariff

A policy mechanism that pays people for creating their own "green" electricity.

Forest Carbon Partnership Facility Readiness Fund

A global partnership focused on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+).

Forest Investment Program

Focuses on the importance of the REDD+ agenda by linking relevant mitigation and adaptation initiatives together and providing additional motivation for comprehensive engagement and dialogue on the issue across multiple stakeholder groups.

Gigawatt

A measurement of power commonly used for large power plants or power grids.
1 gigawatt = 1000 megawatts.

Global Climate Change Alliance

Established by the European Union in 2007 to strengthen dialogue and cooperation with developing countries, in particular least developed countries and small island developing states.

Global Facility for Disaster Reduction and Recovery

A global partnership, managed by the World Bank and funded by 25 donor partners, to help high-risk, low-capacity developing countries better understand and reduce their vulnerabilities to natural hazards and adapt to climate change.

Greenhouse Gases

Contributes to the greenhouse effect by absorbing infrared radiation.

Green Investment Accelerator Fund

Aligns the developers of climate-friendly investment opportunities with: fund managers that can apply their financial and additional due diligence skills to ensure financial viability and investors with capital to invest in these deals.

Green for Growth Fund

An innovative public-private partnership established to reduce energy consumption and CO₂ emissions in Southeast Europe and Turkey.

The Guyana REDD+ Investment Fund

Creates an innovative climate finance mechanism, which balance national sovereignty over investment priorities with ensuring that REDD+ funds adhere to the Partner Entities' financial, environmental and social safeguards.

Indonesia Climate Change Trust Fund

Created by the Government of Indonesia and acts as a catalyst to attract investment and to implement a range of alternative financing mechanisms for climate change mitigation and adaptation programs.

Intergovernmental Panel on Climate Change

Assesses the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change.

International Energy Agency

An autonomous organization that works to ensure reliable, affordable and clean energy for its 29 member countries and beyond. The IEA has four main areas of focus: energy security, economic development, environmental awareness and engagement worldwide.

International Renewable Energy Agency and Abu Dhabi Fund for Development

Provides soft loans that are used solely to finance renewable energy projects recommended for developing countries.

Least Developed Countries Fund

Established to address the special needs of the least developed countries under the Climate Convention.

Light Emitting Diodes

Semiconductor devices that produce visible light.

Megawatt

A measurement of power.

1 megawatt = 1,000,000 watts

Multilateral Development Banks

An institution created by a group of countries that provides financing and professional advising for the purpose of development. They usually have large memberships including both developed donor countries and developing borrower countries.

Non-Governmental Organization

Any non-profit or voluntary citizens' group that is organized on a local, national or international level. Task-oriented and driven by people with a common interest, NGOs perform a variety of service and humanitarian functions, bring citizen concerns to governments, advocate and monitor policies and encourage political participation through provision of information.

Norwegian Investment Fund for Developing Countries

Invests in the establishment and development of profitable and sustainable enterprises in developing countries.

Organization of Economic Co-Operation and Development

Promotes policies that will improve the economic and social well-being of people around the world.

Parts Per Million

A measurement for the concentration of particles in the air or water.

Photovoltaic

Relating to the production of electric current at the junction of two substances exposed to light.

Power Purchase Agreements

A financial arrangement in which a third-party developer owns, operates, and maintains a power generating facility, and a host customer agrees to site the system and purchases the system's electric output for a predetermined period.

Return on Investment

A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments.

Sovereign Wealth Funds

A government owned investment fund that invests financial assets such as stocks, bonds, real estate, precious metals, or in alternative investments such as private equity fund or hedge funds.

Special Climate Change Fund

Established under the UNFCCC in 2001 to finance projects relating to: adaptation; technology transfer and capacity building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification.

Sub-Saharan Africa

A geographical area of countries within the continent of Africa that lies south of the Sahara Desert.

Sustainable Energy for All

A multi-stakeholder partnership between governments, private sector, and civil society to ensure universal access to modern energy services by 2030.

Testing Grounds Facility

Established in 2003 as a regional carbon finance facility structured as a Public Private Partnership. The TGF has funded projects by buying emission reductions in countries including Estonia, Latvia, Lithuania, Russia and Ukraine.

United Nations Framework Convention on Climate Change

An international environmental treaty with an objective to stabilize greenhouse gas concentrations in the atmosphere to prevent dangerous human interference with the climate system. Has a near universal membership with 196 parties.

United Nations Office of Project Services

An operational arm of the United Nations, supporting the successful implementation of its partners' peace building, humanitarian and development projects around the world.

United Nations Reducing Emissions from Deforestation and Forest Degradation

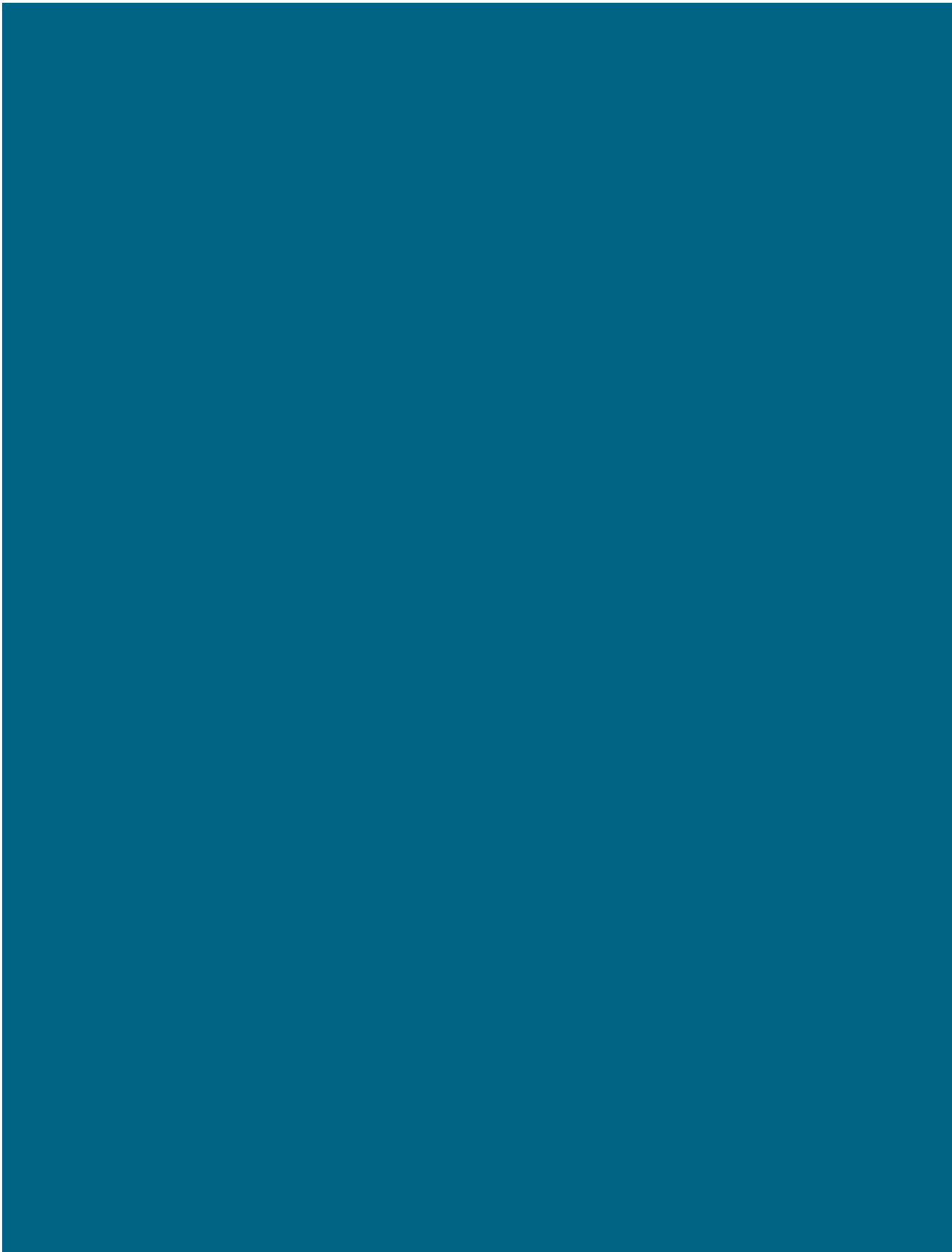
A collaboration between the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP) to ensure that Reducing Emissions from Deforestation and Forest Degradation occurs in developing countries.

United States Dollar

The currency used in the United States of America.

World Economic Forum

An international institution committed to improving the state of the world through public-private cooperation.



APPENDIX

A

Overview of the R20 Pre-Investment Facility (PIF)

R20 has proven the concept step by step...

Research & Development:

Build a Green Finance Network to identify willing investors, and gain in-house project expertise

2010-2012

Design & Implement Individual Projects:

For example:
Algeria zero-waste campus;
Brazil streetlight retrofits;
Mali solar utility.

2013-2014

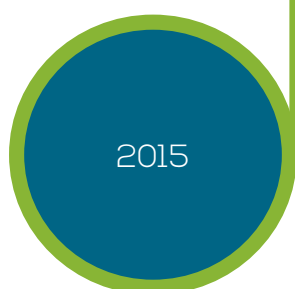
Overview of the R20 Pre-Investment Facility (PIF)

... a dedicated project investment fund is next:

R20 Pre-Investment Facility (PIF):

Based on proven projects, identify & de-risk similar projects globally using specialized due diligence and deliver to investors (incl. in R20 GIAF).

R20 Green Investment Accelerator Fund (GIAF): to finance replication & scale-up of proven projects made bankable by the R20 PIF. USD 1 billion invested will unlock USD 100 billion total project finance.



Overview of the R20 Pre-Investment Facility (PIF)

The R20 Pre-Investment Facility (PIF): Efficiently Filling the Green Deal Pipeline
Given the success of the R20 hands-on model, the small capital infusion in the pre-investment phases unlocks billions of dollars of project capital for development projects. R20 therefore created the PIF Fund with the following characteristics:

- Fund size: \$10m (USD)
- Fund Source: Program Related Investment (PRI)
- Target ROI: 5% IRR after 10 years
- GHG Reductions: Priority given to projects that provide the most GHG reductions per dollar invested by the PIF Fund over the shortest timeframe.
- Fund Type: Revolving (funds deployed as described below; returned from success fees on completed projects to re-deploy after repayment of initial PRI).

Project Types & Target Geographical Distribution:

- **Energy efficiency:** streetlight retrofits based on Brazil model; Central & South America.
- **Renewable energy:** utility scale solar based on Mali model; West/Central regions of Africa.
- **Waste reduction:** zero waste campus projects based on Algerian model; Bahrain; Asia and North America.

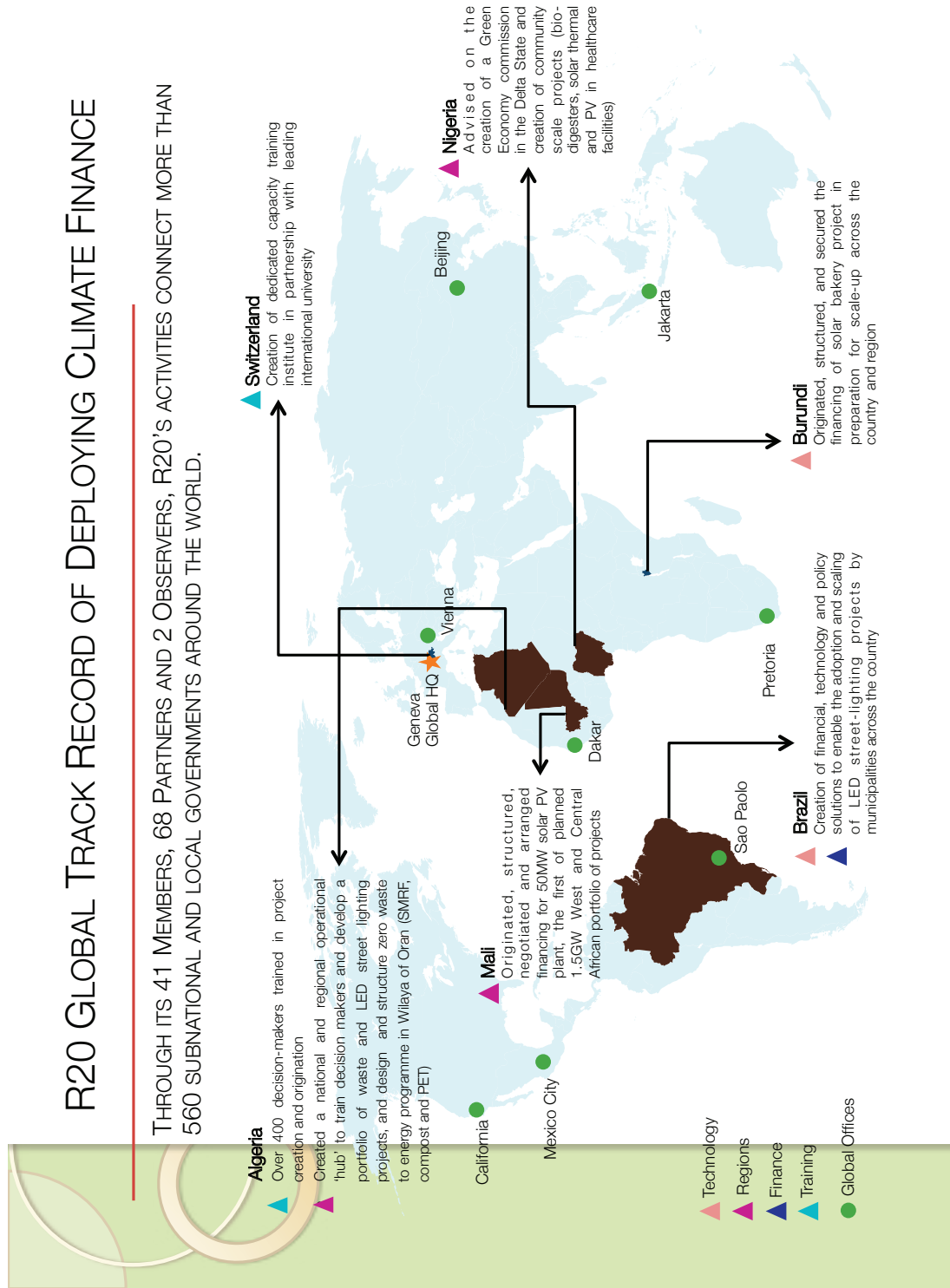
The target geographies reflect where R20 has staff and inquiries from current government members, however it is not meant to be limiting. The goal is to find projects that meet our criteria and can be implemented as quickly as possible, which creates reference projects for subsequent jurisdictions that may take longer to design and permit (see pro-forma spreadsheet with details of number of scopes and studies; budgets; timing).

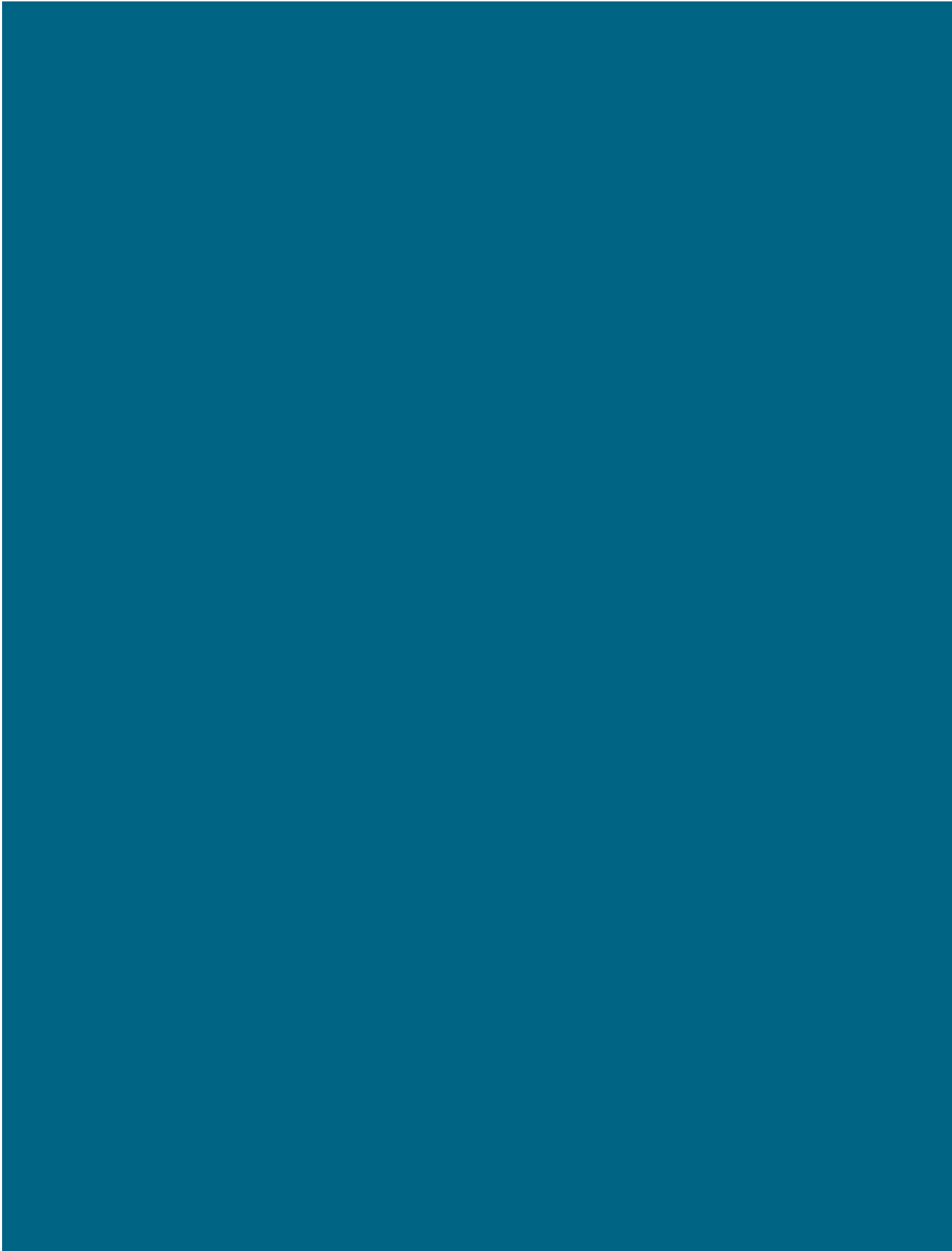
The R20 Pre-Investment Facility: Highlights of Results to Date:

- **Africa:** First 50 MW solar PV structure ready for implementation leading to a 1 GW Africa renewable energy initiative.
- **Brazil:** \$400m special purpose finance vehicle with utility giant Eletrobras for 13 cities to retrofit 1.5 million to LED streetlights.
- **Algeria:** Zero Waste expertise leading to a Zero Waste Campus to convert 90% of waste (now going to landfills) to productive resources and products.
- **China:** Zero Waste Initiative is now leading to an Asian Zero Waste Campus in Shenzhen.

R20 GLOBAL TRACK RECORD OF DEPLOYING CLIMATE FINANCE

THROUGH ITS 41 MEMBERS, 68 PARTNERS AND 2 OBSERVERS, R20'S ACTIVITIES CONNECT MORE THAN 560 SUBNATIONAL AND LOCAL GOVERNMENTS AROUND THE WORLD.





REFERENCES

1. Pegasus Capital Advisors, LP is a private equity fund manager focused on global resource scarcity, resource efficiency, and the growth in demands for human wellness. Mr. Cogut is an active philanthropist in the fields of improving education, building civil society and championing environmental and health issues.
2. National Atmospheric and Oceanic Administration. Trends in Atmospheric Carbon Dioxide. Updated June 5th, 2015. <http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html>
3. IPCC. C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White. Summary for policymakers. in: Climate Change 2014: Impacts, Adaptation, and Vulnerability to the Fifth Assessment Report. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA; and in Climate change: Implications for Cities – Key findings from the Intergovernmental Panel on Climate Change Fifth Assessment Report University of Cambridge and ICLEI, May 2014 http://www.iclei.org/fileadmin/PUBLICATIONS/Brochures/IPCC_AR5_Cities_Summary_FINAL_Web.pdf .
4. United Nations Framework Convention on Climate Change (UNFCCC). Report on Structured Expert Dialogue on the 2013-2015 review. Published May 4th, 2015. <http://unfccc.int/resource/docs/2015/sb/eng/inf01.pdf>
5. United Nations Environmental Programme. Inquiry: Design of a Sustainable Financial System. Published May 2015. <http://www.unep.org/inquiry/Portals/50215/Documents/The%20Coming%20Financial%20Climate.pdf>
6. OECD. The Cost of Air Pollution: Health Impacts of Road Transport. Published May 21st, 2014. <http://www.oecd.org/env/the-cost-of-air-pollution-9789264210448-en.htm>
7. Ibid
8. Business Insider. Natural Disaster Have Cost the Global Economy \$2.5 Trillion Since 2000. Published May 15th, 2013. <http://www.businessinsider.com/un-natural-disasters-cost-25-trillion-2013-5>
9. United Nations Environmental Programme. Inquiry: Design of a Sustainable Financial System. Published May 2015. <http://www.unep.org/inquiry/Portals/50215/Documents/The%20Coming%20Financial%20Climate.pdf>
10. Relief Web. The Human Cost of Natural Disaster 2015: A global Perspective. Published March 6th, 2015. <http://reliefweb.int/report/world/human-cost-natural-disasters-2015-global-perspective>
11. Ibid
12. The Water Project. Facts About Water: Statistics of the Water Crisis. Published August 12th 2014. http://thewaterproject.org/water_stats
13. Ibid
14. United Nations Environmental Programme. Inquiry: Design of a Sustainable Financial System. Published May 2015. <http://www.unep.org/inquiry/Portals/50215/Documents/The%20Coming%20Financial%20Climate.pdf>
15. Ibid
16. Ibid
17. Ibid
18. Ibid
19. Ibid
20. Ibid
21. Nature. Increasing CO2 threatens human nutrition. Published May 7, 2014. <http://www.nature.com/nature/journal/v510/n7503/full/nature13179.html>
22. USGS. Climate Change and Wildlife Health: Direct and Indirect Effects. [http://www.istc.ru/istc/istc.nsf/va_WebResources/Workshop_Biodiversity_and_Climate_change/\\$file/lit_Climate_Change_and_Wildlife_Health_USGS_2014.pdf](http://www.istc.ru/istc/istc.nsf/va_WebResources/Workshop_Biodiversity_and_Climate_change/$file/lit_Climate_Change_and_Wildlife_Health_USGS_2014.pdf)
23. http://www.huffingtonpost.com/entry/carbon-emissions-reduction-pledges-paris_563d0c03e4b0411d30710b42
24. Overseas Development Institute. Barnard, Sam; Caravani, Alice; Nakhooda, Smita; Schalatek, Liane. Climate Finance Thematic Briefing: Mitigation Finance. Published December 2014. <http://www.odi.org/sites/>

odi.org.uk/files/odi-assets/publications-opinion-files/9322.pdf

25. The Carbon Brief: Evans, Simon. Two degrees: Will we avoid dangerous climate change? Published December 9th, 2014. <http://www.carbonbrief.org/blog/2014/12/two-degrees-will-we-avoid-dangerous-climate-change/>
26. Intergovernmental Panel on Climate Change. Fourth Assessment Report: Climate Change. https://www.ipcc.ch/publications_and_data/ar4/syr/en/spms1.html
27. Ibid
28. U. S. Environmental Protection Agency. Greenhouse Gas Emissions from a Typical Passenger Vehicle. Published May 2014. <http://www.epa.gov/otaq/climate/documents/420f14040a.pdf>
29. The World Bank Database. CO2 emissions, Metric Tons Per Capita. <http://data.worldbank.org/indicator/en.atm.co2e.pc>
30. Ibid
31. The Guardian. Goldberg, Suzanna. UN Climate Chief Calls for Tripling of Clean Energy Investments. Published January 14th, 2014. <http://www.theguardian.com/environment/2014/jan/14/un-climate-chief-ripling-clean-energy-investment-christiana-figueres>
32. Ibid
33. Sustainable Energy for All, Bank of America/Merrill Lynch, BNDES, The World Bank “Scaling Up Finance for Sustainable Energy Investments: Report of the SE4All Advisory Board’s Finance Committee 2015”. Published July 4, 2015. http://www.se4all.org/wp-content/uploads/2014/12/SE4All-Advisory-Board-Finance-Committee-Report_04072015.pdf
34. Ibid
35. World Economic Forum. The Green Investment Report: The Ways and Means to Unlock Private Finance for Green Growth. Published 2013. http://www3.weforum.org/docs/WEF_GreenInvestment_Report_2013.pdf
36. International Energy Agency, World Energy Investment Outlook, Published 2014. http://www.iea.org/publications/freepublications/publication/WEIO_2014_ES_English.pdf
37. IPCC. C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White. Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability to the Fifth Assessment Report. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
38. MIT: Technology Review. Bullis, Kevin: How Much Will it Cost to Solve Climate Change. Published on, May 15th, 2014. <http://www.technologyreview.com/news/527196/how-much-will-it-cost-to-solve-climate-change/>
39. United Nations Environment Programme. Climate Change Mitigation. <http://www.unep.org/climatechange/mitigation/>
40. United Nations Environment Programme. Climate Change Adaptation. <http://www.unep.org/climatechange/adaptation/Introduction/tabid/6704/Default.aspx>
41. IPCC. C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White. Summary for Policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability to the Fifth Assessment Report. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
42. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
43. Ibid
44. Overseas Development Institute. Barnard, Sam; Caravani, Alice; Nakhooda, Smita; Schalteck, Liane. Climate Finance Thematic Briefing: Mitigation Finance. Published December 2014. <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8675.pdf>
45. Ibid
46. Ibid

47. Ibid
48. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
49. United Nations. Climate Change Adaptation Can Help Promote Sub-Saharan African Livelihoods-Un Report. August 13th, 2014. <http://www.un.org/climatechange/blog/2014/08/climate-change-adaptation-can-help-promote-sub-saharan-african-livelihoods-un-report/>
50. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
51. Ibid
52. Ibid
53. Ibid
54. Forbes. Runde, Daniel. Development Finance Institutions Come of Age. Published October, 17th 2014. <http://www.forbes.com/sites/danielrunde/2014/10/17/development-finance-institutions-come-of-age-dfi/>
55. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
56. World Resource Institute: How to Spend the Green Climate Fund's \$10 Billion? <http://www.wri.org/blog/2015/03/how-spend-green-climate-fund%E2%80%99s-10-billion>
57. White House, Office of the Press Secretary "Fact Sheet: Obama Administration Announces More Than \$4 Billion in Private Sector Commitments and Executive Actions to Scale up Investment in Clean Energy Innovation. June 16, 2015. <https://www.whitehouse.gov/the-press-office/2015/06/16/fact-sheet-obama-administration-announces-more-4-billion-private-sector>
58. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
59. Ibid
60. Ibid
61. Ibid
62. United Nations Sustainable Development Solution Network. Sachs, Jeffrey; Schmidy-Traub, Guido. Financing for Development and Climate Change post-2015. Published March 16th, 2013. <http://unsdsn.org/wp-content/uploads/2014/02/130316-Development-and-Climate-Finance.pdf>
63. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
64. The World Bank. Climate Finance is Flowing, But It Isn't Enough, Yet. Published November 30th, 2014. <http://www.worldbank.org/en/news/feature/2014/09/05/climate-finance-is-flowing-but-not-enough-yet>
65. Green Investment Bank. UK Green Investment Bank Announces 2014/15 Results and Plans to Raise Private Capital. Published on June 25th, 2015. <http://www.greeninvestmentbank.com/news-and-insight/2015/uk-green-investment-bank-announces-201415-results-and-plans-to-raise-private-capital/> and personal correspondence October 20, 2015 with Chris Holmes, Managing Director, Waste & Bioenergy, UK Greenbank
66. Ibid
67. The Economist. Green Grow the Market, O. Published July 5th, 2014. <http://www.economist.com/news/finance-and-economics/21606326-market-green-bonds-booming-what-makes-bond-green-green-grow>

68. Climate Bond Initiative. Kidney, Sean. Final 2014 Green Bond Total is \$36.6bn. Published January 14th, 2015. <http://www.climatebonds.net/2015/01/final-2014-green-bond-total-366bn-%E2%80%93-that%E2%80%99s-more-x3-last-year%E2%80%99s-total-biggest-year-ever-green>
69. Ibid
70. Ibid
71. World Economic Forum. Climate Adaptation: Seizing the Challenge. Published January 2014. http://www3.weforum.org/docs/GAC/2014/WEF_GAC_ClimateChange_AdaptationSeizingChallenge_Report_2014.pdf
72. Ibid
73. United States Department of Energy. Renewable Electricity Production Tax Credit (PTC). <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc>
74. Union of Concerned Scientists. Production Tax Credit for Renewable Energy. http://www.ucsusa.org/clean_energy/smart-energy-solutions/increase-renewables/production-tax-credit-for.html#.VXioVRNVikp
75. Ibid
76. http://www.seia.org/sites/default/files/ITC%20Impact%20Analysis%20Factsheet_Sep2015.pdf
77. United States Department of Energy. Renewable Electricity Production Tax Credit (PTC). <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc>
78. World Economic Forum. Climate Adaptation: Seizing the Challenge. Published January 2014. http://www3.weforum.org/docs/GAC/2014/WEF_GAC_ClimateChange_AdaptationSeizingChallenge_Report_2014.pdf
79. Solar Energy Industries Association (SEIA). Loan Guarantee Program. <http://www.seia.org/policy/finance-tax/loan-guarantee-program>
80. The Climate Trust. Weisber, Peter. Incentivizing Investment In Climate Change Infrastructure. Published March 2nd, 2015. <https://www.climatetrust.org/incentivizing-investment-in-climate-change-infrastructure/>
81. Energy.Gov. Davidson, Peter. New Solicitation Support U.S. Innovation With Renewable Energy Efficiency. Published July 3rd, 2014. <http://energy.gov/lpo/articles/new-solicitation-supports-us-innovation-renewable-energy-and-energy-efficiency>
82. http://siteresources.worldbank.org/INTGUA/RANTEES/Resources/IDA_PRG.pdf
83. The Climate Trust. Weisber, Peter. Incentivizing Investment In Climate Change Infrastructure. Published March 2nd, 2015. <https://www.climatetrust.org/incentivizing-investment-in-climate-change-infrastructure/>
84. Smart Villages. EU Drives Energy Access Through 'Blending' Grants. <http://e4sv.org/eu-drive-energy-access-through-blending-grants/>
85. EU Observers. Fox, Benjamin. EU Unveils Private Equity Fund to Invest in African Energy. Published April 24th, 2015. <https://euobserver.com/energy/128442>
86. United Nations Environment Programme. Climate Change REDD+. <http://www.unep.org/climatechange/reddplus/Introduction/tabid/29525/Default.aspx>
87. Ibid
88. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>
89. The World Bank. World Development Report 2010: Development and Climate Change. <http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1226014527953/Overview.pdf>
90. California Environmental Protection Agency: Air Resources Board. Auction Proceeds Funded Programs and Events. <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ggrfprogrampage.htm>
91. Organisation for Economic and Co-Operation and Development (OECD). Clapp, Christa; Ellis, Jane; Benn, Julia. Tracking Climate Finance: What and How?. Published May 2012. <http://www.oecd.org/env/cc/50293494.pdf>
92. Climate Policy Initiative. Buchner, Barbara; Stadelmann, Martin; Wilkinson, Jane; Mazza, Federico; Rosenberg, Anja; Abramskiehn, Dario. The Global Landscape of Climate Finance 2014. Published November 2014. <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf>

93. Bennett Jones. Taylor, Gray; Jones, Bennett. Private Sector Finance for Adaptation. <http://www.bennettjones.com/uploadedFiles/Publications/Articles/34PrivateSectorFinanceforAdaptation.pdf>
94. Organization for Economic and Co-Operation and Development (OECD). Clapp, Christa; Ellis, Jane; Benn, Julia. Tracking Climate Finance: What and How? Published May 2012. <http://www.oecd.org/env/cc/50293494.pdf>
95. Ibid
96. Global Environmental Facility. What is the GEF. <https://www.thegef.org/gef/whatisgef>
97. Ibid
98. Ibid
99. Green Climate Fund. Background Information. <http://www.gcfund.org/about/the-fund.html>
100. Ibid
101. Ibid
102. R20 Regions of Climate Action. LED Streetlight Program. <http://regions20.org/projects/list/item/13-led-lighting/15-led-street-lighting-program>
103. R20-Regions of Climate Action. 50 MW Solar PV Plant. <http://regions20.org/projects/list/item/10-solar-pv/8-solar-power-plant-of-20mw>
104. World Summit of Regions for Climate. Developing 1 GW worth of Solar Projects Across West & Central Africa. Published 2014. <http://regions-climate.org/developing-1-gw-worth-solar-projects-across-west-central-africa/>
105. Ibid
106. http://envirocenter.yale.edu/sites/default/files/yale_climate_change_dialogue_white_paper.pdf
107. www.tap-potential.org
108. www.carbonn.org.
109. 2Degree Investing Initiative. Shifting Private Capital Towards Climate-Friendly Investments: The Role of Financial Regulatory Regimes. Working Paper November 2013. http://www.2degrees-investing.org/#/!page_Resources
110. Stanford Global Projects Center, PRIME Coalition, Stanford Steyer-Taylor Center for Energy Policy and Finance. Donnelley, Elliot; Kearney, Sarah; Monk, Ashby, Seiger, Alicia. "Emerging the US Resource Innovation Ecosystem: The Case for an Aligned Intermediary to Accelerate GHG Emissions Reduction. Published June, 2015. https://steyertaylor.stanford.edu/sites/default/files/publications_files/ssrn-id2617816.pdf

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