



IFC Climate Implementation Plan

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Executive Summary

Climate change is one of the largest threats to developing country prosperity. Without immediate intervention in emissions reductions, climate change could result in an additional 100 million people living in extreme poverty by 2030.¹ At the Conference of the Parties (COP21) in Paris, December 2015, 196 countries came together to forge a climate change agreement that pledged to keep global warming to 2 degrees Celsius or less. CEOs from industries ranging from cement to technology companies made pledges to decrease their carbon footprint, buy more renewable energy, and engage in sustainable resource management. Global financial institutions pledged to make hundreds of billions of investment over the next 15 years in clean energy and energy efficiency. According to the UN's Intergovernmental Panel on Climate Change (IPCC), GHG emissions would have to be cut 40-70 percent by 2050, and reduced to nearly zero by 2100, to meet the 2 degree goal.² The world is facing an unmatched challenge.

From the momentum of COP21, IFC, along with the World Bank, is in an unprecedented position to help its clients capture the opportunities and avoid the risks that climate change will bring. By systematically incorporating climate into its investment decisions, IFC brings private capital that will help emerging countries grow on a low carbon path and build resilience to climate impacts. As part of the WBG Climate Change Action Plan, IFC's Climate Implementation Plan rests on 4 objectives:

- 1) Scale climate investments to reach 28% of IFC's annual financing by 2020;
- 2) Catalyze \$13 billion in private sector capital annually by 2020 to climate sectors through mobilization, aggregation, and de-risking products;
- 3) Maximize impact through GHG emissions reduction and resilience;
- 4) Account for climate risk—both the physical risk of climate impacts and the carbon asset risk in IFC's investment selection.

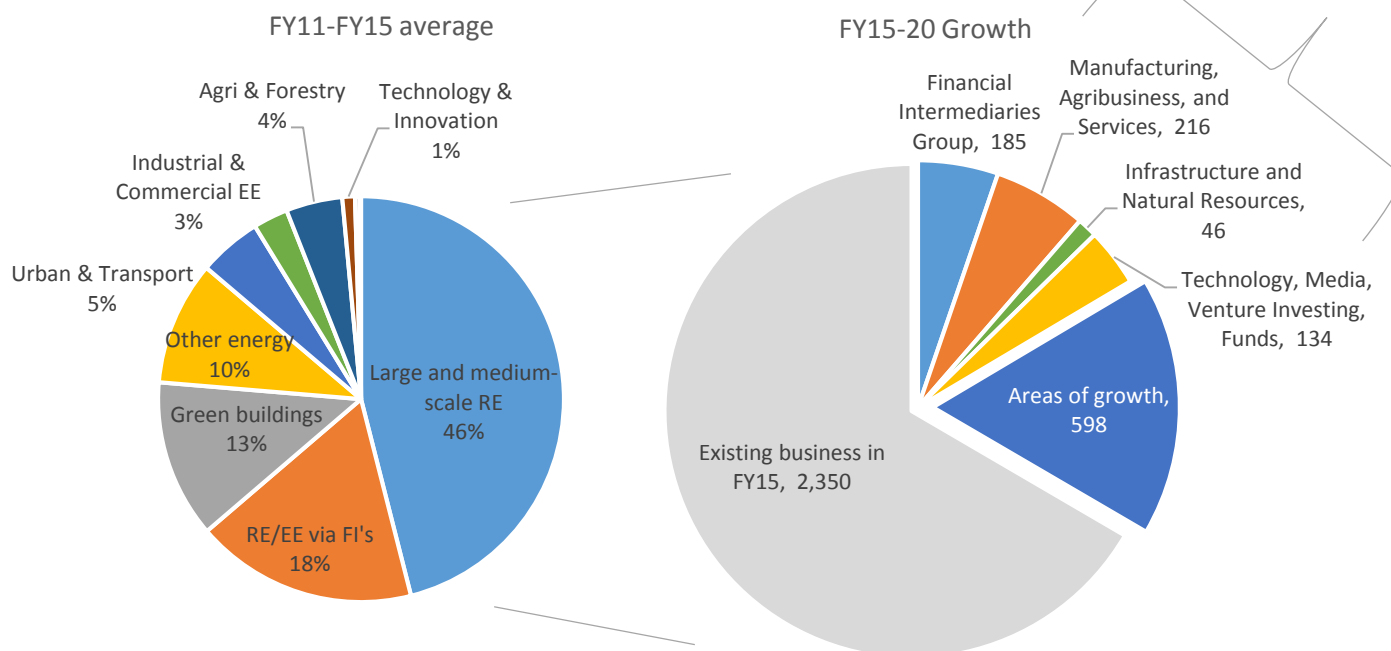
IFC will achieve these 4 objectives through the investments of its Industry and Regional Departments with key support from the Climate Business Department and Cross Cutting Advisory Solutions (CAS). IFC will also increase coordination with the World Bank in areas where the public sector can set the groundwork or provide products that leverage private sector investments.

1) Scale climate investments to reach 28% of IFC's financings by 2020

To reach its goal of 28% of commitments by FY20, own account climate volumes are expected to be around \$3.5 billion of long-term finance, from FY15 levels of \$2.3 billion.¹ This is a 50% increase in five years, requiring 8% CAGR. This ambitious growth rate is achievable, but it will not be accomplished through business-as-usual. IFC's core climate business has grown exponentially over the past 5 years, nearly doubling between FY11-FY15. After this period of rapid expansion, projected growth for IFC's traditional sectors of grid-tied renewable energy and energy efficiency is slowing. To reach the goal of 28%, IFC will need to move into new climate markets, create new investment vehicles, and increase internal tools and support.

¹ This projection is based on IFC's Strategy and Business Outlook FY17-19.

Growth of business to FY20



Large-scale renewable energy investments will begin to level-off in the next five years as the commercial markets become more familiar and comfortable with renewable energy technologies. Young markets are maturing and attracting competitive commercial pricing, while pre-commercial markets are bringing in concessional funding, making it hard for IFC to compete on pricing in either market. To grow, IFC will need to make greater use of programmatic and/or wholesale interventions opening the market to a new tier of institutional and large scale investors.

Energy efficiency/renewable energy credit lines have traditionally been an important vehicle for IFC to build local capacity to finance climate-related investments and will continue to expand with modest growth. This business will still require technical assistance to build the banks' pipeline for EE/RE loans and to train banks to identify and account for climate-related investments.

Direct investment in green buildings remains a core strategy of MAS's climate program, with strong growth prospects. IFC's EDGE program systematically develops IFC's green building investments by working upstream on policies, working with developers to build pipeline, offering easy green building certification.

Growth within the IFC existing businesses will leave a 26% gap to IFC's target which will need to be filled by new business lines and models.

To reach its goal, IFC will expand its business in:

Distributed renewable energy for industrial and commercial sources: Low renewable energy prices present a new wave of market opportunity for distributed renewable energy. At the Paris COP, over 114 companies committed to renewable energy targets and sustainable resource management across their supply chains. IFC is in a unique position to push this business forward, having both industrial and commercial clients looking to purchase renewable energy, and power developer clients looking to supply this growing market. IFC will work help broker and finance captive RE power and RE projects with client off-takers through PPAs.

New FI Models: There are numerous opportunities to expand the business of Financial Institutions in financing the transition to a low carbon economy. For example, IFC will use its expertise (FIG and Treasury) to help FI (and corporate) clients develop their own **green bonds** with IFC taking an anchor position. New business can be captured through **green construction finance and green mortgages, energy performance insurance** and **new aggregation and de-risking vehicles** on portfolios of projects such as through **vendor finance**. In addition, incorporation of a “**climate carve out**” in **significant SME credit lines** can boost climate investment without the need for dedicated lines. This strategy can also be used for corporate loans and investment funds.

Urban Infrastructure: In addition to green buildings, targeting investments in cities, particularly in climate-friendly waste, water, street lighting, and municipal transport projects is a strong area for growth. By 2030, urban populations will expand by over 50% and the need for climate-smart infrastructure and services will explode. The World Bank is working with municipalities on the enabling environment to attract private sector capital through PPPs and concessions, creating opportunities that IFC could capture through its advisory and municipal finance groups.

Agriculture: Providing technical assistance and financing through corporate supply chains is a critical strategy to boost the impact of IFC’s agribusiness investments and strengthen the resilience of its clients to climate change. Climate impacts could result in up to 5% crop yield losses by 2030.³ Companies such as Coca-Cola, Campbell’s, Hershey’s, Kellogg’s, PepsiCo, Nestle, and Danone are beginning to report substantive operational risk from climate change impacts.⁴ There is a large opportunity for IFC to help these companies reduce the climate impact on their business and on global food supply, particularly by improving productivity and yield in dairy/livestock and crops.

Clean Tech Venture Capital: IFC works with innovative companies in their early stages to grow the businesses that will provide scalable solutions tomorrow. IFC has started to work throughout the finance value-chain for entrepreneurs, from incubators through private equity to increase its impact and grow the market in climate-smart innovation.

These new business lines are the cornerstone of IFC’s climate business growth. However, new markets and new business models are inherently risky and take time and resources to build. New and additional project risk can be mitigated through **blended finance** instruments such as counter guarantees, interest rate reductions, longer tenors, and subordination structures, both for debt and equity. Blended climate

finance will continue to abide by IFC's existing principles, but IFC will expand its partnerships with contributors to augment global and flexible funds under management, and cover more products, markets, and larger initiatives. In addition, IFC will ramp up and coordinate its technical assistance to help clients in each of its industries to understand which climate investments are commercially achievable, help them set appropriate aspirations for reducing their GHG impact and increasing their resilience and connecting them to the latest innovations.

2) Catalyze \$13 billion in external private sector capital annually by 2020 to climate sectors through mobilization, aggregation, and de-risking products

IFC's biggest impact is not its own account financing, but its ability to mobilize external capital to climate sectors. IFC has an unprecedented opportunity to catalyze private sector funding as global financial institutions pledge to invest hundreds of billions of dollars in clean energy and other climate investments.² Due to country risk or perceived technology and project risk, major financial institutions have expressed interest for IFC to help unlock commercial investments by addressing these risks. Institutional investors have also shown a keen interest for IFC to provide financial instruments and structures to allow them to invest at a scale and risk profile that can accommodate them. To respond to these demands, IFC must develop new instruments that crowd in outside private sector capital and leverage with its own investments.

As part of President Kim's climate pledge in Lima, the World Bank Group now has a target of catalyzing \$13 billion in private sector co-finance for climate projects.⁵ Private co-finance is based on total project cost, excluding any public sector financing (e.g., Mobilization from another MDB, or domestic/bi-lateral government agency). Over the past 5 years, IFC has leveraged \$3 of private sector co-finance for every \$1 of IFC financing (1:3 ratio).³ To achieve the \$13 billion pledge, IFC will need to increase its co-finance leverage to almost a 1:4 ratio on IFC's FY20 climate projections of \$3.5 billion. To accomplish this, IFC will:

Create products that attract larger institutional sources of capital through aggregation and securitization: IFC will develop new products including asset-backed securities and collateralized loan obligations, as well as RE wholesaling facilities and performance insurance. For example, IFC is investigating the creation of financial structures that assist financial institutions to pool together debt they have issued and sell those pools as a single package to investors. Additionally, to ramp up the RE business, IFC is looking beyond project by project investments to offer investors wholesaling instruments that leverage IFC's structuring expertise and programmatic approach.

² Commitments include Goldman Sachs (\$150 billion), Bank of America Merrill Lynch (\$125 billion), and Citibank (\$100 billion), as well as a pledge in September by a coalition of 374 organizations accounting for more than \$24 trillion of assets to invest in the low-carbon economy.

³ For total co-finance, including public sector co-financing, this ratio is 1:4.

Create de-risking vehicles that use blended finance to catalyze new external investment: IFC will explore with donors the use of blended finance to support larger climate investment facilities which will help IFC crowd in new tiers of private sector investment. This will allow donor funding to have far greater impact, leveraging IFC's billions several fold, but will also require donor funds to have an increased level of risk appetite and agree to be measured against the leverage in the total facility versus solely IFC's own account. Given that current globally flexible blended finance funds are allocated to existing pipeline, fundraising of additional donor funding to catalyze external investors will need to be actively pursued.

Mobilize capital through public-private partnerships (PPPs): IFC works with clients to develop and implement PPPs, with an estimated \$2.9 billion mobilized since 2012. The PPP group will increase its emphasis on climate business by actively seeking climate-related PPP opportunities, ensuring transactions meet core mobilization criteria, and utilize in-house products and services, such as EDGE for green buildings.

3) Maximize impact through GHG emissions reduction and resilience

IFC will also focus on maximizing its climate impact by (1) reducing the GHG emissions of its investments, (2) increasing client resiliency, (3) collaborating across WBG, and (4) sharing lessons learned through partnerships, thought leadership, and setting global standards.

IFC reports **greenhouse gas emission reductions** from climate projects as a part of IFC's Development Goals (IDG-6). IFC's climate-related investment and advisory projects from FY15 alone are expected to reduce 9.6 million metric tons of greenhouse gas emissions⁴ annually, the equivalent to taking more than 2 million passenger vehicles off the road. As the climate business grows, IFC will increase its resources to measure climate impact in a way that will not place a heavier burden on investment officers, including harmonizing definitions across the WB and other MDBs to make it easier for IOs to identify and account for a climate project.

In addition to greenhouse gas mitigation, IFC will place investments that build help clients **adapt to the impacts of climate change**. IFC is looking to increase its adaptation business through direct investments in projects such as high-yield agriculture, climate resilient ports, and water efficiency in water-stressed regions. IFC has created an adaptation working group that will look at how IFC can mainstream adaptation in a private sector context.

Coordination within the WBG is increasingly important in order to enhance impact in new climate sectors and leverage public sector investment with private sector know-how and financing. In scaling its climate business, IFC will work with the World Bank to develop **Joint Implementation Plans** that prioritize where interdependency between private sector investment and government regulation/enabling environment is high. IFC and the WB have preliminarily identified rooftop solar and agriculture in Africa as initial focus

⁴ This amount is in CO2 equivalent, which accounts for the radiative forcing effect of each greenhouse gas.

sectors. IFC will also work through the Global Practices Steering Committee to coordinate high-level decisions that foster greater collaboration.

Finally, ***partnering with key business groups to reach scale and sharing lessons learned*** will become more important to increase IFC's climate impact. IFC's 10+ years of investing in climate sectors bring experience that can aid its clients, governments and investors as they transition to the low carbon economy. There is increasing demand for IFC to share these lessons in the international community and join with others to help scale what works. IFC will join initiatives such as the World Business Council for Sustainable Development, We Mean Business, and other business initiatives that mobilize the private sector to move the needle in emission reductions. IFC will also work within international standard setting groups to bring usable 'science-based standards,' and new technology innovations to its clients as they seek to set ambitious climate targets.

4) Account for climate risk

Increasingly, shareholders are asking companies and financial institutions to account for climate risk. There are two types of climate risk: climate impact risk—where investments can be affected by the physical impacts of climate change; and climate asset risk—where policies create pricing that devalues the investment. Mark Carney, Bank of England Governor and G20 Financial Stability Board Chair, has announced the “Task Force on Climate Related Financial Disclosures” that will highlight the financial exposure of companies to the risk of climate change. As climate risk assessment becomes more mainstreamed in financial institutions, IFC and the WBG will be sought out for leadership on screening and accounting for climate risk. IFC is creating systems to address these risks.

Climate Impact Risk: The World Economic Forum has recently listed the failure of climate change mitigation and adaptation as the most impactful risk for the years to come.⁶ IFC needs to ensure that its investments are helping clients address physical climate risks. In addition, IFC needs to ensure the risks from climate impacts in its portfolio are mitigated. Sectors with high potential climate risk exposure include hydroelectricity, thermal power generation⁷, agriculture and forestry (primary production and processing), beverage and other water intensive manufacturing, ports, and infrastructure. IFC's action plan is to develop systems to better understand these risks and over time to screen the portfolio and new investments for these risks.

Carbon Asset Risk: Global and local policies and behavior changes are expected to affect carbon-intensive investments. For example, demand for carbon intensive goods and services may decline as the world decarbonizes, 'stranding' these assets. IFC needs to be aware of carbon-intensive infrastructure or businesses that could become stranded either during the investment tenor or beyond. In IFC's portfolio, five sectors account for 81% of IFC's portfolio emissions—cement; electric power; chemicals; oil, gas and mining; and primary metals. Moving forward, IFC will consider how to evaluate the risk of its existing portfolio and of new investments and what actions to take to reduce this risk.

Summary: Moving Forward

The IFC Climate Implementation Plan lays out a blueprint for IFC to meet its four key objectives. To realize these goals, IFC will need to expand its existing business and build new areas for growth. It will also need to be a leader in setting standards and advising clients and the international community. However, more importantly than the specific plans and projections, IFC management at all levels will drive climate business throughout the whole organization. Achieving a 28% level of penetration will require new ways of thinking, tolerance for different risks, and a prioritization of climate as a development goal.

I. Introduction: Financing the transition to a low-carbon economy: opportunities for private sector engagement

The 21st session of the Conference of the Parties (COP21) to the UNFCCC in Paris in December 2015 committed the 195 participating countries to identify action that would keep global temperature rise below 2 degrees C.⁸ Achieving this goal will require a major transformation of the global economy, as the electricity, transport, industrial and agricultural sectors will need to transition away from the use of fossil fuels inputs. According to the U. N.'s Intergovernmental Panel on Climate Change (IPCC), GHG emissions would have to be cut 40-70 percent by 2050, and reduced to nearly zero by 2100, to meet the 2 degree goal.⁹ This transition will require an estimated \$8 trillion dollars in clean energy development alone between 2015 and 2040.¹⁰ Governments have acknowledged that they cannot fully fund this investment, and that much of these financing will need to come from the private sector.

Investing in the transition to a low-carbon economy creates both opportunities and challenges for the private sector. As part of the COP21 agreement, 182 countries submitted “Nationally Determined Contributions” (NDCs) to reduce GHG emissions (mostly by 2030). The NDCs will be reviewed every 5 years and are viewed by some as the first signal for companies and investors to shift their investment portfolios. The NDCs cover reduction targets in energy (158 NDCs), industry (105), agriculture (106), waste (119), land use and forestry (116) and transport (22). Investment in these plans is expected to create a significant pipeline of low-carbon infrastructure projects for both the public and private sectors as countries begin to execute their commitments. Current global investment in clean energy is \$329 billion (2015), while according to the IEA World Energy Investment Outlook¹¹, this annual investment level will need to more than double to over \$700 billion by 2035 to meet the 2 degree C target.

This transformation will lead to new opportunities and better returns for IFC clients in these sectors,¹² but over the longer term, can also have the reverse effect on other industries (i.e. energy-intensive and extractive industries). Today, some 40 governments and 23 cities, states, and regions already have a price on carbon and cover about 12% of annual global greenhouse gas emissions.¹³ More than 90 NDCs include proposals for emissions trading, carbon taxes, and other pricing mechanisms as part of the action plans by governments to internalize the price of carbon into their economies. This trend will increase the pressure on IFC and its clients to evaluate the carbon intensity of assets, while also making investments in low-carbon options more attractive.

In addition to the risk to carbon-intensive assets due to climate policies, the private sector is becoming increasingly aware of the physical risks climate change poses for their business. Rising sea levels coupled with the increased frequency and intensity of extreme weather events is already embedded in the climate system. By the end of this decade, the average yearly insured losses from extreme events is expected to be 37% higher than 2000-2009, and more than double the level in the 1990s.¹⁴ Looking at climate impacts within portfolios is becoming a standard part of risk management.

Private sector response to climate change:

The significant private sector presence at COP21 was a clear indication that climate is on the radar of many companies. CEOs from industries as far ranging as cement, transportation, energy, and consumer products stepped up their efforts to address climate change. Emerging trends and private sector pledges from corporations, financial institutions and insurers include:

- 1) ***Step change for investment in transition to low-carbon economy:*** Global financial institutions pledged to make hundreds of billions of investments available over the next 15 years for clean energy and energy efficiency. Leading up to Paris, at least 14 private institutions, institutional investors, asset managers, and banks have announced commitments to fund climate investments. These companies include Goldman Sachs (\$150 billion), Bank of America Merrill Lynch (\$125 billion), and Citibank (\$100 billion). In September 2014, a coalition of 374 organizations accounting for more than \$24 trillion of assets committed to invest in the low-carbon economy; and a year later a group of 15 investors with combined assets under management of \$2.5 trillion committed to scale up financing for energy efficiency.¹⁵ The International Cooperative & Mutual Insurance Federation and the International Insurance Society committed to increasing their climate-smart investments 10-fold by 2020, from a baseline of \$42 billion in 2014.¹⁶
- 2) ***Corporations commit to decrease their carbon footprints:*** More than 114 companies committed to set emissions reduction targets or by adopting renewable energy targets and engaging in sustainable resource management across their supply chains. Participating companies have combined annual carbon dioxide emissions equivalent to the annual emissions of 125 coal-fired power plants. Under RE100,¹⁷ 53 companies have pledged to source 100% of their electricity from renewables, including Microsoft, Adobe, Google, BMW, Coca-Cola, Google, H&M, Johnson & Johnson, Mars, Nestle, Nike, Philips, Procter & Gamble, Starbucks, Unilever, and Wal-Mart. The World Business Council for Sustainable Development, comprised of international corporations, has made ambitious commitments in eight sectors under their Low-Carbon Technology Partnerships initiative (LCTPi) including increasing investment in renewable energy, issuing green bonds and reducing corporate carbon footprints.¹⁸
- 3) ***Strong private sector support for more meaningful carbon pricing:*** The most common “ask” of the private sector to government was to put in place a long-term, predictable price on carbon, to allow them time to shift their investments accordingly. This came from multinational companies including oil companies like BP and Statoil to consumer products manufacturers Unilever and Mars, to emerging economy leaders like Cemex, Braskem and The Mahindra Group. CEOs from 78 global companies (including 21 from emerging markets) announced support for climate action, and outlined their support for working with governments and other stakeholders to implement concrete action through 2016 and beyond.¹⁹ Many of these pricing programs will be implemented in emerging economies.

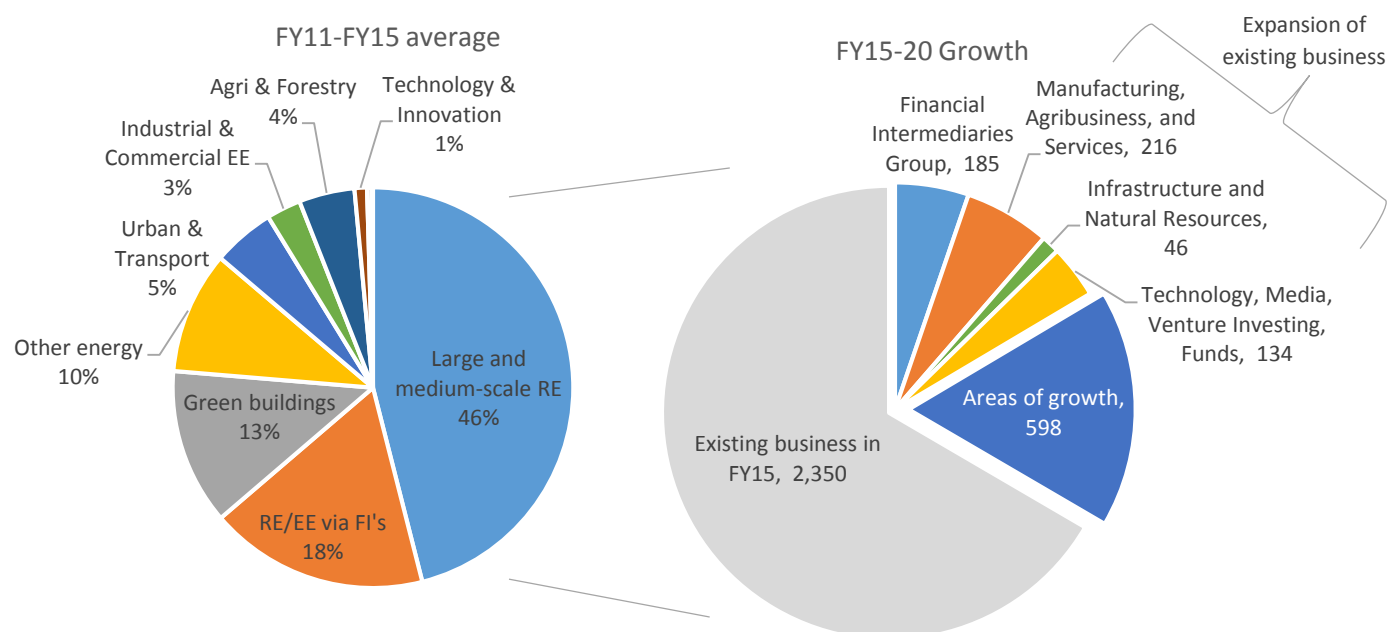
IFC's Climate Implementation Plan is designed to respond to the dynamic external environment for climate investment by building on the strengths of IFC's current climate portfolio, incorporating new opportunities flowing from the trends outlined above, and mitigating climate risk in IFC's portfolio. Unlike in established areas of business, IFC will need to provide more assistance to its clients in understanding the risks and opportunities inherent in the transition to a low carbon economy. Without immediate intervention in emissions reductions, climate change could result in an additional 100 million people living in extreme poverty by 2030.²⁰ Through increasing its investment in climate business, IFC, along with the World Bank, can make a significant difference in helping its clients reduce risk and capture the opportunities that a changing climate will bring.

II. Scale climate investments to reach 28% of IFC's annual own account long-term finance by 2020

At the Annual Meetings in Lima, President Kim committed that 28% of WBG finance will be climate-related by FY20; IFC's own target is likewise 28%.⁵ The majority of growth will come from new business areas, which will require different instruments and approaches to unlock the opportunities. Business growth is illustrated in Figure 1 and explained in detail in sections below.

While the following sections describe focus sectors from a global point of view, regional contributions are described in the Annexes.

Figure 1: Growth of business to FY20



⁵ The target for own account was chosen in order to avoid double counting with other DFIs, but it is coupled with an objective to catalyze private sector finance, described below in separate section.

II.1. Large- and mid-scale renewable energy generation and integrated equipment manufacturers

Market Opportunity: Strong growth in renewable energy in developing markets will require trillions in financing

In the last 15 years, the renewable energy (RE) market has grown from 46.8 GW to 467.9 GW in cumulative capacity.²¹ This growth has been supported by significant decreases in the price of renewable energy, coupled with favorable national policies that aim to reduce pollution and increase energy independence. Bloomberg New Energy Finance (BNEF)⁶ predicts that non-hydro renewables, just 6% of global electricity in 2014, will reach at least 33% of global electricity production by 2040 (46% with hydroelectricity), with most of the projected growth (78%) occurring in developing countries.²² Cumulative installed capacity of large grid-tied solar in non-OECD countries is expected to require about \$1.3 trillion in new capacity investment through 2040. Onshore wind is expected to grow in developing countries by 585% through 2040, driven by India, with investments of approximately \$1.8 trillion. Hydroelectric capacity will also grow in emerging markets by about 64%, needing approximately \$1 trillion in the next 25 years.²³

The strong growth in renewables will stimulate additional demand from equipment manufacturers, including those in developing countries. In 2007, developing countries went from net importers to net exporters of RE equipment, primarily driven by solar photovoltaics (PV)²⁴. In 2013/2014, wind and solar original equipment manufacturers (OEMs) emerged from a difficult period of industry consolidation. The leading OEMs emerged strengthened and were able to build a presence in several robust markets. Wind manufacturing hubs have developed in key emerging markets (e.g. China, India, Turkey, Brazil, and South Africa) and leading OEMs are developing supply chains to support local demand. For solar, manufacturing landscape has been dominated by players from China and Taiwan, China, which are starting to diversify their operations across Southeast Asia, MENA and LAC.

IFC's Strategy: Focus on large hydro, wind, and solar capacity; use blended finance to open new markets; and invest in select leading OEMs

IFC's Infrastructure group has grown its grid-tied renewable energy investment business at a 26% CAGR over the last 10 years, with a record \$1.1 billion in FY14 and \$893 million in FY15. IFC also invests in RE through financial intermediaries, which includes credit lines, leasing, and funds. In FY15, over \$325 million was placed into RE through financial institutions (FIs). This growth has taken advantage of dramatic drops in RE technology prices, particularly in solar and wind, and has built strong RE capacity within IFC. After this period of investment growth, IFC is forecasting minimal growth in grid-tied RE through 2019.

⁶ BNEF growth projections, echoed by McKinsey analysis, are underpinned by relatively conservative assumptions, including no new RE country policies or targets (including no carbon price), and technological experience curves consistent with historic trends, rather than dramatic breakthroughs (including for storage and component manufacturing). BNEF credits their projections to overwhelming energy demand growth in emerging markets, where the playing field is so large, fossil fuels are not expected to crowd out RE technology.

IFC's approach to renewable energy has been (a) to invest early in nascent markets to support new technologies that were unable to attract adequate private sector financing because of perceived risks that IFC was willing to assume; (b) to open new markets to renewable energy using concessional finance (see Box 1). As renewable markets and technologies are maturing, more commercial financing is available and IFC's role to address any market failure is shrinking. Moreover, concessional funds are more accessible for renewable generation in the nearly-commercial markets, further limiting IFC role.²⁵

IFC will continue to pursue renewable energy business, but to continue to grow its business, IFC will refine its products and strategies to ensure value add. To this end, IFC will:

- Continue to invest in hydro, solar, and wind generation, increasingly investing in **larger projects**, while also supporting first-of-kind smaller projects in frontier markets. In addition, IFC will increase its business in large hydropower.
- Provide **programmatic interventions** that remove barriers (e.g. Scaling Solar), aggregate deals (e.g. Jordan's 'Seven Sisters'), and achieve scale efficiencies (e.g. Egypt's feed-in-tariff). IFC will review trends in generation and financing and pursue new approaches that maximize IFC's ability to provide solutions at scale.

Sustaining investment volumes through financial intermediaries will require reaching new banks and new clients. The challenge is to replicate IFC's current model of providing **credit lines** to banks to support local medium-scale RE projects. What is required to sustain the current level of investments is Advisory support for capacity building and awareness activities to help partner institutions take advantage of new climate opportunities (see Section VI for more details).

Build on a pipeline of business for integrated OEMs: IFC's investments into wind and solar equipment manufacturers and service providers have been much smaller than in RE project developers – about \$150 million in the last five years. MAS is focusing on investments in select top tier solar and wind component manufacturers in a range of emerging markets, including but not limited to Brazil, India, China, Vietnam, Philippines, South Africa, Mexico, and Turkey. Leading OEMs, especially in solar, are increasingly integrated along the full value chain, from manufacturing capacity, to providing solar energy solutions, to developing utility scale projects. IFC's investments are aimed at establishing relationships and partnerships with leading players to for corporate support to scale up the use of renewable energy across industries and regions. Given IFC's upstream and downstream business with leading global OEMs, flexible exposure limits will allow IFC to take advantage of the significant business enabled by the scale and reach of Tier-1 companies.

Use Advisory as a tool for upstream market development and firm-level advice: IFC provides advice at the sector level to accelerate development of new and clean technologies. For example, IFC's Advisory Services supported the development of the small hydro sector in the Balkans which has attracted over \$400 million in financing, including \$120 million from IFC just for Albania. Advisory also provides firm-specific advice, working across the value chain to develop competitive, clean, high quality and affordable modern energy solutions, often working alongside investment to maximize IFC's impact. Advisory will

work across IFC to determine other geographies and sectors to develop, and to identify clients that can benefit from IFC's support.

To open up new markets, IFC must increase its use of blended finance for both direct and FI investments

in RE: In many countries and for certain applications, costs of renewable energy have come down to grid-parity. Due to high capital intensity and sensitivity to cost of capital, the first few installations or business models generally need concessional assistance to account for the increased perceived risk. Renewable energy costs are generally based on project cost, project size, experience in the country, and competition. In addition, projects need a stable regulatory environment and credit-worthy off-takers. Because most of the costs are up-front (as there are no fuel costs), spreading CapEx over longer tenor with cheaper financing will lower tariffs. IFC will need to scale up the use of blended finance to open commercial renewable energy markets. Blended finance allows IFC to 1) enter markets with untested feed-in-tariffs, 2) mitigate multiple risks (e.g. technology, economics/payback, underlying credit risk), 3) test new business models and ensure appropriate risk sharing, 4) cover additional transaction costs on new business models, and 5) sustain low end-user tariffs. Access to appropriate blended finance on flexible terms will be needed for both direct investments and work through FIs. For the latter, competitively priced advisory support is key as well.

BOX 1: CATALYZING NEW RENEWABLE ENERGY MARKETS: SOUTH AFRICA EXAMPLE

In 2011 South Africa launched its Renewable Energy Independent Power Producer program (REIPP) that aimed to award 3,600 MW of private sector concessions for renewable energy production, including concentrated solar power (CSP).

As is typical with first installations, CSP in South Africa faced high upfront costs. In 2012, IFC partnered with Abengoa Solar to invest in the first two CSP projects—KaXu & Khi—that are among the first independent power production plants using CSP technology in developing countries. IFC financing packages included \$41.5 million in concessional finance with \$154.3 million from IFC's own account.

KaXu & Khi will be establishing a performance record for CSP in a developing country, encouraging other private sector developers and investors. Multiple rounds of bids resulted in reduced bid tariffs and project costs for CSP investments. From 2012 to 2014, tariffs for CSP reduced by 18% and the project cost dropped from US\$9.3M/MW to US\$8.7M/MW, while storage capacity increased from 2.5 hours to 5 hours.

IFC's first mover position, enabled by strategic use of blended finance, lowered perceived risk for a new technology and established a track record for CSP that led to a competitive private sector market.

Summary of key implementation steps:

- Invest in large RE projects, coordinating within WBG in Africa.
 - Build new markets with “first-of” investments, using blended finance where needed.
 - Programmatic interventions.
 - Target top tier equipment manufacturers with project development business who can also be key partners for distributed generation.
 - Leverage advisory to promote and accelerate market development, and help companies refine and implement profitable business models. Ensure sufficient capacity for technical assistance to financial institutions to support RE investments.
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II.2. Distributed generation: Industrial and commercial sources and off-grid solar home systems

IFC sees opportunities for large growth in this sector, but the intervention will require significant dedication of resources and new ways of thinking, summarized in later sections. The ability to scale will also depend upon growth in battery storage technology and favorable local enabling environments.

II. 2. A. Distributed generation in industrial and commercial sources

Market Opportunity: Private sector RE pledges will fuel rapidly growing distributed generation market

Distributed solar PV (generally about 1 MW or less) is today almost a \$50 billion market. Conservative forecasts expect annual capacity installations to grow from 20 GW in 2015 to over 30 GW in 2020 (\$70 billion), topping 50 GW in 2024 (\$80-90 billion), with half of the market in developing countries.²⁶ The vast majority of distributed solar PV in developing markets will be commercial and industrial.²⁷ Companies are publicly pledging their RE plans through Initiatives such as RE100²⁸, the World Business Council for Sustainable Development²⁹, and UNEP’s Portfolio Decarbonization Coalition.³⁰

Countries are also proposing policies that will enable more distributed generation. For example, China has pledged increased smart grid deployment and distributed generation. India also has policies that will increase roof-top and off-grid solar investment.

IFC's strategy: IFC Advisory to take a sector view, while Investments focus on value-add for industrial, agri, and commercial clients and new financial products for FIs

IFC is developing a value-added proposition to manufacturing, agribusiness, and commercial clients to build or purchase grid-tied or off-grid solar power as well as bring technical expertise, financial solutions, and tools to identify cost-savings, mitigate risks, and/or meet corporate carbon footprint targets. IFC can provide a “match-making” link between clients and energy solution-providing vendors.³¹ IFC is identifying companies who are paying high electricity tariffs (grid or diesel) and/or who are facing unreliable electricity sources. It is also approaching clients with RE, energy saving or other GHG reduction targets. IFC will pursue two business models for industrial/commercial RE:

BOX 2: HELPING INDUSTRIAL CLIENTS MEET THEIR RENEWABLE ENERGY TARGETS

MAS recently signed an MOU for a client committed to source renewables for 100% of its energy use in 5-10 factories that consume over 200 GWh of electricity per year.

Through IFC's relationships with power developers and integrated solar OEMs, IFC is helping the client to engage third parties to structure or solicit proposals for the development, construction and operation of RE assets. The client will purchase the power through PPAs or other contracts. This is an important first, which, if successful, can be a model to replicate with other clients.

IFC is also working with the World Business Council on Sustainable Development, which is forming a consortium of RE purchasers from its membership who are aiming to buy RE power through PPAs or captive power.

Captive power: IFC will finance MAS clients to build rooftop or ground-mount solar for their own electricity use. It will also support broader clean energy solutions for industries such as cement (e.g. waste heat recovery, refuse derived fuel) and in agri (e.g. biogas in dairy or livestock). Currently, these investments are relatively small, but IFC hopes to do more “pure plays” in this area which has attractive economics and opportunities across a growing number of regions, sectors and applications. Scale-up in distributed power generally will require different business models, and effective collaboration across boundaries through joint ventures (JVs).

Power Purchase Agreements (PPAs) with third party renewable energy developers: IFC sees this business developing into significant volumes in the next five years. Financing models can help scale distributed generation—for example, a financing envelope for PV equipment suppliers/project developers to provide to their business clients. MAS will maximize its relationships with clients on both the buyer side (industrial/commercial clients) and the supplier side (RE solution providers/project developers) by structuring and financing commercial PPAs. FIG will look to establish new financing models such as those described in more detail in the Energy Efficiency section (see Section II.3).

There is also opportunity to create new **aggregation models** through FIG such as vendor financing through FIs and/or distributors, special purpose vehicles (SPVs), leasing models, and green bonds (these are described in Section II.3 in context of energy efficiency, though similar implementation steps apply to distributed generation). Advisory support can be leveraged to take a **sector view** and compile market

intelligence. Advisory can in particular demonstrate the technical, commercial and regulatory viability, and sustainability of rooftop solar projects, building on the Gujarat Solar PPP and similar projects.

II. 2. B. Off-grid solar home systems

Market Opportunity: Significant growth in the next five years, to 100 million households

The global poor spend \$37 billion annually on traditional energy solutions.³² The international community has been trying to address this market for many years. Today, with the dramatic drop in solar prices coupled with new storage and mobile technologies, the market is seeing previously unattainable opportunities. Initial findings from an upcoming report by the World Bank Group, BNEF, and the Global Off-Grid Lighting Association (GOGLA) estimate that market penetration will approach 100 million households by 2020, or about a third of households without access to the grid. Sub-Saharan Africa has seen sales triple in the last 3 years, and investors have infused the sector with almost \$250 million just in the past two years. The financing need for distributed clean energy (covering grid extension, mini-grids, large and small home systems, and solar lanterns) is estimated at \$500 million over the next two to three years alone.

IFC's strategy: Grow the market using working capital for early stage companies, commercial debt for mature companies, risk instruments for new markets, and technical assistance for standard setting and quality control

The off-grid solar sector is today at different stages of maturity in different markets, with the leading companies based in East Africa and in India, and opportunity growing in West Africa. IFC can bring solutions for Distributed Energy Service Companies (DESCOs) at different stages in their development, with the common goal of accelerating sector growth:

- IFC can provide **working capital** for companies providing equipment or services to off-grid customers.
- IFC's Venture Capital group will provide **early stage equity**. Some markets, particularly those serving rural off-grid customers in East Africa, are receiving significant concessional finance, which limits IFC's activity. IFC's VC group will seek to develop business in urban and peri-urban markets, and also with companies in West Africa, where the market is more commercial. IFC will increase its use of debt-equity combination structures, which is the most attractive packages to these growing companies, who need to finance their customers' solar system purchases.
- The leading 5-10 companies have outgrown early stage financing. These **companies are aiming to raise debt** securitized on the revenue from their solar home systems. However, much of the commercial debt in the sector is too expensive when the country risk, the early stage risk, and the currency risk are priced in. IFC is **addressing the early stage and performance risk** by working with insurers and reinsurers to develop technical standards of solar installations and relevant insurance products enabling FIs to confidently finance solar off-grid systems at scale. FIG is also addressing currency risk by working closely with IFC Treasury.

Summary of key implementation steps:

Industrial and commercial distributed generation:

- Identify clients with high energy tariffs and consumption, unreliable power, and/or RE targets for captive power solutions.
- Identify vendors and energy solution service providers.
- “Match-Make” and develop a business line in captive / distributed generation (e.g. solar in commercial and industrial buildings).

Off-grid solar home systems:

- Develop vehicles to provide working capital loans, and other solutions for scaling solar home systems (e.g. performance insurance, forex risk cover).
- Provide debt-equity VC to growing companies.
- Expand standard setting work through Lighting Global and through the energy performance insurance program.

Strategic support:

- Additional business development assistance to create workable vehicles and develop a pipeline and test different business models.
 - Develop risk guarantees or insurance products to adjust for risk perception of first-of-a-kind transactions.
 - Efficient coordination between industry groups and incentives for JVs.
-

II.3. Industrial and commercial energy efficiency

Market Opportunity: A \$360 billion market with significant GHG reduction potential

Global energy efficiency (EE) investments in 2015 were between \$310 billion and \$360 billion and are growing significantly in developing countries. In HVAC systems alone, annual revenues will almost double from \$17.2 billion in 2013 to \$33.2 billion in 2020. Asia Pacific will strongly drive growth in energy efficiency, reaching 55% of the world market by 2020.³³ In addition, the LED market more than doubled between 2011 and 2013. India’s LED light bulb market could lead to the sale and distribution of 3.4 billion bulbs in the next two years.³⁴

With positive returns, energy efficiency is often called the low-hanging fruit. However, several barriers limit EE demand and investment supply, including higher upfront component costs, unclear or longer than commercially acceptable payback periods, and competition with scarce capex budgets. In addition, local capacity to install and maintain EE systems is lacking in some markets.

IFC's strategy: Aggregating deals into traditional IFC products, building new business models, and sector approach with Advisory

Energy efficiency is an area where IFC faces significant competition in the market. Energy efficiency components are typically only 10-20% of total project cost, requiring aggregation to scale the business. IFC is building new approaches based on its significant lessons learned with EE investments over the past 10 years.

For near term results, IFC will expand its existing success in EE credit lines, while also using traditional corporate loans and green bonds. For longer-term scale, IFC will develop business models such as vendor and supply chain financing, which face hurdles in developing countries. While these approaches can also be applied to renewable energy, they are discussed in the section below to avoid overlap.

Expanding IFC's EE credit lines: IFC's most successful energy efficiency business model to date has been aggregating smaller deals through credit lines. IFC has seen the most success where credit lines are paired with advisory support and blended finance. Banks are often reluctant to make a commitment prior to seeing a clear pipeline. In addition, they need incentives and technical assistance to identify and track climate projects. The most recognized example to date was CHUEE,⁷ which had a risk sharing and capacity building component through Advisory Services. To keep building this business IFC will (1) strengthen business development assistance to develop the pipeline as well as advisory support to build market awareness, and (2) offer blended finance to help with risk mitigation, and align perceived risks and returns (see Section III.1 for more details). In addition to climate-smart dedicated credit lines, IFC will also aim to incorporate EE/RE financing elements into other credit lines for SMEs and/or for housing development wherever possible. For example, a 20% carve out for EE financing in multiple SME- dedicated credit lines could be part of the way to move the agenda.

Using existing IFC products—corporate loans and green bonds: IFC provides **corporate loans** to industrial and commercial clients. These generally define use of proceeds in the initial conversation with the client. IFC can include carve outs for energy efficiency options that will reduce emissions and operating costs. Clients could include manufacturing, agricultural, and commercial/retail companies. IFC will utilize energy efficiency experts to identify opportunities for investments that make sense for the client. The climate component of a corporate loan is not limited to energy efficiency, but could also include other elements noted in the Climate Implementation Plan such as captive power, water efficiency, and waste.

Green bonds are corporate or project bonds issued exclusively to fund qualifying projects and activities that promote a sustainable environment. IFC and the World Bank have played a crucial role in launching and building the green bond market. IFC has been an early issuer, having issued \$3.8 billion in green bonds by the end of FY15. Green bonds are now being adopted by corporations and financial institutions as a way to raise capital for climate-related initiatives, including energy efficiency. As part of its strategy, IFC is now helping clients issue their own green bonds, including acting as an anchor investor.⁸ IFC in

⁷ See www.ifc.org/chuee

⁸ IFC is able to provide technical support, bond structuring and mobilizing other global investors.

particular sees a large opportunity for initiatives with Treasury, building on the experience with Yes Bank in India. IFC will also support the green bond issuances of its manufacturing, agribusiness, and commercial services clients, targeting those who have made public climate-related commitments. MAS is testing client interest in corporate green bonds to build pipeline, with a view to doing a first-of transaction as proof of concept. IFC's partial credit guarantees can also accompany a bond, which, among other benefits to the issuer, will guarantee payment to bondholders up to a specified amount. This provides emerging market clients with access to a wider investor base and paves the way for future issuances without enhancement. While green bonds can support a range of climate-related activities, they are an ideal aggregation tool to finance IFC clients' energy efficiency improvements.

Aggregation models in emerging economies—resolving credit hurdles: To aggregate smaller deals and achieve scale, IFC will continue to develop **vendor finance** models with leading equipment manufacturers in areas such as HVAC, LED lighting, and smart energy demand management. While vendor finance has been successful in developed countries, the absence of adequate legal framework and regulatory environments in developing countries can leave investors and/or manufacturers holding unacceptable risk. Challenge to date has been that underlying capex needs project by project can be inherently small. Leading technology vendors often prefer to recognize revenues up front and can be unwilling to risk share and have adequate “skin in the game” if the vendor is not IFC's Borrower. IFC is working through models that address these issues and provide risk mitigation, mainly through blended finance offerings such as risk guarantees, or first-loss guarantees. The goal is to pilot at least one model that can be standardized and replicated. IFC is hiring a commercial/industrial EE specialist who can explore new approaches, including an offer to finance distributors. The team will be supported by a Credit Risk officer in order to develop a model with a sound investment thesis and acceptable risk-reward balance for IFC.

IFC is also examining ways to work with large companies to finance clean and efficient energy systems in their **supply chains**. Many companies are beginning to focus on ‘greening’ their supply chains. IFC will look at opportunities to work with client companies to reduce liabilities and risk within their supply chain. IFC Client relationship managers have been discussing this opportunity with agriculture sector clients.

To increase impact, advisory can assess sectors where IFC already has existing relationships and activities and apply promote resource efficiency **sector-wide**. Advisory works at the market level, promoting the broad adoption of emerging technologies and good practices through case studies and benchmarking. At the firm-level, advice to clients can help structure IFC's investment.

Summary of key implementation steps:

- Expand IFC's dedicated EE credit lines through FIs. Significant technical assistance to work with banks to identify pipeline and to build capacity to identify and monitor climate credit lines.
 - Climate carve-outs in corporate loans and SME finance facilities.
 - Build new business models such as vendor financing and supply-chain financing.
 - Green bonds with corporate and FI clients, including acting as anchor investor.
 - Leverage Advisory platform to develop sector level interventions and provide firm-specific advice to increase adoption of resource efficiency.
-

II.4. Urban Infrastructure

Market Opportunity: Rapid growth with stakeholders pledging action at COP21

By 2030, 60% of the world's population will live in cities, up from more than 50% today.³⁵ Over the same period, more than two billion people are likely to enter the middle class, the majority of whom will live in cities in emerging markets. Climate-smart cities have been part of IFC's climate strategy and will continue to play a significant role in the next five years. For IFC, the main urban infrastructure sectors are green buildings; water, wastewater, and waste investments; and transport.

Each of these focus areas is seeing emerging opportunities and/or commitments to increase climate smart investments. Mayors have emerged as some of the most vocal government officials in pushing the climate agenda and engaging the private sector. In the **building industry, global stakeholders have pledged ambitious action** (1.25 billion square meters of green buildings over the next five years). **Sustainable waste management is estimated to triple** in the fastest growing low to middle income countries (e.g., India)³⁶ driven by a growing waste problem, enhanced regulatory environment, increased public pressure, urbanization and land scarcity. **In the water sector, accelerated urbanization has increased demand** for municipal and industrial water and for wastewater treatment. McKinsey estimate \$11.7 trillion will be required to invest in the water sector in the period 2013-30 and that emerging economies will have the highest rate of growth. Finally, transportation contributes to 14% of global GHG emissions. **Cities worldwide are investing heavily into public transit, and the market for electric and hybrid vehicles is growing rapidly.** Goldman Sachs predicts that carmakers will sell 25 million electric vehicles and hybrids by 2025, representing a \$240 billion market opportunity.³⁷

II. 4. A. Green Buildings

IFC's strategy: Continue growing direct investments and scale up FI investments and PPPs, using the EDGE tool

IFC's direct investments in green buildings reached \$317 million in FY15 (on average, \$184 million annually FY11-FY15). Most of this was in tourism, retail, and property (TRP), with some hospitals. In FY15, 34% of buildings in TRP were green buildings, with an aim to increase this percentage to 50%. With the proliferation of IFC's EDGE green buildings market transformation program, it is now easier than ever for clients to find an economically viable path to building green. As a result, growth in the green building portfolio can come from increasing penetration in the MAS TRP and health and education business and financing select developers that participate in the EDGE certification program. MAS also aims to cross-sell EDGE and expand its Green Buildings to other building types, such as warehouses (e.g. E-commerce, Traders). IFC is also exploring potential initiatives for retrofits and a "Green Factories" program.

IFC will continue to expand its **EDGE Green Building Market Transformation Program**.³⁸ The EDGE software is currently available for over 125 emerging markets. An intensive approach to the EDGE Program has been implemented in 7 target markets with the support of local certification providers, with expansion plans to 13 more in the next several years. IFC aims for 20% of new construction in these markets to be certified green within 7 years of launching the program. It also works with global certifiers who can provide EDGE certification outside of IFC target markets.

With huge expected growth in demand for new building construction in the next decade, green building **construction finance and green mortgages** have high growth potential. In sync with the socialization and uptake of EDGE and other green building programs in IFC's markets, IFC can offer a channel for financing green buildings to meet demand from property developers through its FI networks. Proposed is a 'climate carve out' for housing finance credit lines, with at least 20% of the overall investment marked for green buildings. Since the EDGE software was accepted as a standard by the Climate Bonds Initiative, IFC can help banks and corporates issue green bonds tied to building projects certified by EDGE. This structure is underway in PNB bank from India and with a possible first-of forthcoming with corporate clients.

IFC has also incorporated green building assessments into **PPP projects**, including the first LEED Gold Certified airport outside the United States, in Madinah, Saudi Arabia. IFC's PPP group will continue to recommend to government clients a focus on environmental sustainability when developing building projects, particularly for education, health, and infrastructure, thereby contributing to overall mobilization volumes.

II. 4. B. Waste

IFC's strategy: Focus on waste-to-energy, refuse-derived fuel, e-waste recycling, and integrated waste management

IFC's waste strategy focuses on:

- Waste-to-Energy, where energy costs are high, there is a consistent supply and demand, and there are rapidly growing cities. Near-term focus will be in Brazil, China, Turkey, Indonesia, India, and the Philippines.
- Refuse-Derived Fuel (RDF), which is waste processed into high caloric value fuel, particularly effective in cement kilns. IFC has already placed one investment with Lafarge Holcim and is looking to replicate this structure. Focus countries for RDF are Brazil, Turkey, Indonesia, India, Egypt, Philippines, and select Sub-Saharan African countries.
- E-waste recycling and hazardous waste, with a particular focus on China.
- Integrated waste management and waste processing and disposal, including landfill methane gas capture and use. Focus countries will be Turkey - where in FY15 IFC invested in Hexagon, a company that produces fertilizer from organic waste - and the Philippines, Indonesia, and India for waste processing and disposal.

II. 4. C. Water

IFC's strategy: Scaling up programmatic engagements

In the past 10 years, IFC has committed more than \$1.5 billion in the water and wastewater sector, with its current committed portfolio amounting to \$461 million. Brazil and China have been the main beneficiaries, but investments are in place around the world. These investments have enabled increased energy-efficiency of water use, wastewater treatment and industrial water processes using smart technologies, non-revenue water loss reduction programs, and retrofitting of old plants with new technology.

Going forward, IFC's strategy is built around programmatic engagements with municipal water utilities and private sector partners who have established implementation track records in the sector. In terms of specific industry segments, IFC is focusing on: (1) wastewater treatment, including helping the sector upgrade to higher discharge standards, (2) water efficiency investments, such as wastewater reuse, (3) water supply, with a focus on innovative business models, and (4) more sustainable industrial water use.

II. 4. D. Transport

IFC's strategy: Scaling up investments in mass transit with exploration into electric vehicle opportunities

To date, IFC has invested in several **public transit** deals in the cities of Izmir and Istanbul in Turkey, Bogota, and Lima through IFC's sub-national lending program. Scaling up similar investments may require funding for technical assistance to help municipalities develop and implement technically, financially, and socially sustainable and climate-smart solutions tailored to local realities. IFC will build on existing engagements with municipal clients and develop new relationships with credit-worthy, cities that are looking to address their congestion and mobility related problems. Collaboration with the World Bank and with MIGA may be needed to mitigate risks and maximize development impact.

In the automotive industry, IFC captures the growing **electric vehicle market** only through smaller and opportunistic venture capital investing in innovative companies or business models. Given that previous efforts for traditional types of IFC investments have not yielded significant opportunities, IFC has not prioritized investment in this sector. However, given the World Bank's emphasis on transport as part of its climate action plan, a WBG-wide exploratory team will lead focused discussions on a group approach to the sector, which could possibly identify profitable private sector investment opportunities.

Summary of key implementation steps:

- Leverage EDGE to continue direct green building investments and to build IFC's green construction/mortgage business. Climate carve-outs for housing credit lines. Goal for at least 50% of building interventions to be green.
 - Waste-to-Energy investments, with additional investments in refuse-derived fuel, e-recycling and integrated waste management.
 - Expand investments in wastewater treatment and water efficiency.
 - Increase municipal transport, leveraging cities Advisory engagements to create pipeline.
-

II.5. Agribusiness

Market opportunity: Increase productivity and resilience while reducing GHGs

Food production will require ingenuity and innovation to produce more food on less land in more sustainable ways. While population growth and changing diets will increase demand for food, climate change will exacerbate already tight resource constraints and decrease yields worldwide.³⁹ Climate Smart Agriculture focuses on three pillars: productivity, resilience, and emissions reductions. At COP21, leading

global agribusiness leaders have outlined their ambition to make 50% more food available and strengthen the resilience of farming communities while reducing greenhouse gas emissions by 50%.

Companies such as Coca-Cola, Campbell's, Hershey's, Kellogg's, PepsiCo, Nestle and Danone are beginning to report substantive operational risk from physical climate change impacts⁴⁰. Building resilience into agricultural supply chains includes water savings at farms and processing facilities, yield increases, and drought and disease-resilient crop variants. The impacts of climate change on agriculture could result in up to 5% crop yield losses by 2030, which could trigger higher prices and food insecurity.⁴¹

IFC's Strategy: Energy and resource efficiency products on both firm and market level; adaptation tools; and innovative insurance products

IFC's strategy in agribusiness draws from various technology and financing solutions also described elsewhere in this Implementation Plan.

IFC will support broad **energy solutions** for the agribusiness industry. MAS will invest directly in captive power solutions for agribusiness clients, including particularly solar and biogas. Advisory Services will continue to work on both the firm- and market-level issues related to energy and resource efficiency, driven by industry and regional priorities.

Efficient irrigation can save up to 50% water compared to traditional irrigation. IFC has developed the Global Irrigation Program (GIP) to facilitate the sale of efficient irrigation equipment and services to farmers in the emerging markets, which includes an advisory role to transfer technical knowledge to farmers and dealers, as well as an investment role that enables access to finance.

IFC is reviewing a specific proposal on how to **build resilience** into agricultural supply chains. IFC has started on climate-resilient seeds through investments (Kaiima) and advisory (Bangladesh). IFC also invested in a renovation of coffee plantations in Latin America affected by 'coffee rust' disease, which was linked to warmer temperatures. This innovative model can be replicated, but will require blended finance and technical assistance.

Weather index insurance is a relatively new but innovative approach to insurance provision that pays out benefits on the basis of a pre-determined index (e.g. rainfall level, seismic activity, livestock mortality rates) for loss of assets and investments, resulting from weather and catastrophic events, without requiring the traditional services of insurance claims assessors. WBG launched the Global Index Insurance Facility (GIIF), a multi-donor trust fund supporting the development and growth of local markets for weather and disaster index-based insurance in developing countries, primarily Sub-Saharan Africa, Latin America and the Caribbean and Asia Pacific. Key implementation steps will be to continue building the nascent private sector market and placing IFC's investments.

Summary of key implementation steps:

- Build resiliency through client supply chain and water efficiency facilities.
 - Provide energy and water solutions to agribusiness clients through investment and advisory.
 - Pursue innovative financial models, such as weather index insurance.
-

II.6. Building new markets: early-stage investment in climate sectors

Market overview: New sector growth based on deep tech and capital light models

In 2015, global cleantech VC investments grew for the first time since 2011, to \$3.3 billion.⁴² The industry focus has shifted from deep tech (industrial and power generation hardware) to capital light models based on sensors, software and on big data analytics. Globally, the largest VC cleantech subsectors are solar, biofuels, transport, efficiency, storage, and “digital energy,” (i.e. digital control of energy systems, from single generators to entire grids).

The key market driver for the renaissance of cleantech is the falling cost of components, in particular LEDs, solar PV, electronics, and batteries, which are all decreasing in price at a steep pace. This growing downstream market has led to further increased investment in smart-grid, energy storage deployment and capex-light Software-as-a-Service (SaaS), which manage the intermittent and distributed nature of renewables, as well as to coordinate efficiency across the grid.

IFC Strategy: Build markets from incubation to venture capital to private equity through funds

Early-stage investment is a powerful lever that allows IFC to invest in innovative companies with high growth potential and impact. Early stage investments inform the mainstream business of technology trends. Today, IFC’s VC group has \$122 million in twelve climate-related businesses in its portfolio, including in energy storage, agriculture, and software companies, in addition to the solar home system companies. IFC will build markets by providing early stage funding from *incubation*, to *venture capital (VC)*, to *private equity (PE) through its funds*.

The VC market for climate investments is constrained by investment-ready deal flow. IFC is helping to build the pipeline for investment-ready cleantech businesses by funding business *incubators*. These incubators provide pre-commercial financing and business development assistance to entrepreneurs in the early stages of their business.

IFC can provide follow-on capital to these companies, or venture capital to additional companies, through its *VC group*. These investment volumes are small due to the nature of the early stage funding business, but the impact can be disproportional due to the commercialization and scale up of new technologies. The VC team is focused on capital-light software companies that enable resource efficiency (e.g., big data

analytics, process efficiency, smart grid optimization, and the “Internet of Things”⁴³) and on distributed generation solutions including energy storage for homes and SMEs. The VC team is seeing deal flow both from locally based companies, especially in larger markets, as well as from companies based in North America and in Europe with products that are focused wholly or partially on transferring their technology to emerging markets.

Businesses graduate from the incubator to venture investment and then to **private equity funds**. To address a tracking gap, IFC will develop a method and system to better account for climate investments in its PE funds.

Summary of key implementation steps:

- Increase resources devoted to scaling up a robust program, with particular focus on: Internet of things (energy efficiency, smart grids, process optimization); Distributed systems (generation, storage, demand management); Business model innovation.
 - Work through finance value chain from incubators through private equity.
-

II.7. Additional sectors for volume and impact

The above sections outline areas where IFC will build its biggest volumes and have the largest impact in the climate-related space. In addition, IFC will invest in climate deals opportunistically where systematic scaling for IFC’s climate business over the next five years is not feasible or the markets are not yet ready. These include: renewable energy for cell towers; efficiencies in electricity transmission and distribution; energy efficient street lighting; district heating; shipping; geothermal renewable energy; green data centers, which might become a programmatic focus pending streamlined definitions, and forestry (sequestration). IFC also works in short-term finance through the climate-smart program with Global Trade Finance Program (GTFP), working with bank partners to support the trade in climate-smart goods and services.

II.8. Cross-sector approaches: incorporate consideration of climate risks and opportunities in the early project review

Climate-smart thinking must become a norm, not an exception, in IFC’s project design. Investment Officers need incentives to consider whether a project could include a mitigation or adaptation component and be able to make a reasoned decision as to why or why not to include such elements. The ambition would be to include this consideration in all project review discussions. In the medium term, IFC is looking to redesign project development documents (PDS documents) for concept review to include climate considerations in the project.

For some sectors, IFC can set **transformational climate targets** that will show global leadership. For example, IFC’s Power Department was able to transform its investments from three-quarters fossil-fuel-

based to over three-quarters renewable-energy-based investments. Similar transformations can build on already existing momentum within IFC, for example:

- At least 50% of building investments are green certified.
- At least 20% of all housing loans have a climate component.
- All waste projects include a climate-related component.
- Corporate loans have a climate component, where possible.
- General purpose credit lines to FI's have a 10-15% carve out for climate on-lending.

Summary of key implementation steps to

Scale investments to 28%

Reaching 28% is achievable but requires moving into new climate markets, developing new investment vehicles, building climate considerations into the early project review, and setting transformational sector-specific targets. IFC will use blended finance and technical assistance to open new markets, where needed, especially in renewable energy, energy efficiency, agribusiness, and to build capacity with FI's to deploy climate finance.

III. Catalyze \$13 billion in private sector capital annually by 2020 to climate sectors through mobilization, aggregation, & de-risking products

The global transition to a low-carbon economy will require an estimated \$8 trillion dollars in clean energy development alone between 2015 and 2040.⁴⁴ Governments have acknowledged that they cannot fully fund this investment, and that much of these financing will need to come from the private sector. Mobilizing private sector investments has become a crucial task for the WBG, particularly IFC, and other DFIs.

In addition to the 28% penetration target on IFC's own account for long-term finance, the WBG has committed to attract \$13 billion of private sector co-financing by 2020. This computes to almost a 1:4 leverage factor off of IFC's projected climate investments in 2020 of \$3.5 billion. Over the past five years, every \$1 of IFC's climate investments was accompanied by \$3 in private sector funding.⁴⁵ To scale to \$13 billion of co-finance, IFC will need to attract new co-investors.

III.1. Products that provide aggregation or risk mitigation

IFC is looking into products that attract larger institutional sources of capital through aggregation and securitization, as well as de-risking vehicles that use blended finance to catalyze new external investment. These include:

Asset-backed securities and collateralized loan obligations: IFC is investigating creating financial facilities that assist financial institutions to pool together debt they have issued and sell those pools as a single package to investors. Securitization allows banks to focus on setting up new loans such as those for green buildings or energy efficiency through ESCOs,⁴⁶ rather than holding on to loans long-term. Non-banking financial institutions might be another avenue (e.g. leasing companies) for scaling financing.

RE performance insurance kicks in when small-scale renewable energy projects do not perform as projected, typically when, for whatever reason, the electricity generated falls below 90% of the projected yield. This insurance addresses the technical risks of small-scale PV and enables banks to offer leasing models such as pay-as-you-go financing solutions. FIG is currently working on pilot transactions in South Africa and the Philippines. The goal of performance insurance is to unlock the markets in which IFC will ultimately invest.

New models: The Global Trade Supplier Finance (GTSF) facility incentivizes IFC clients to improve on E&S performance: the better the E&S score, the lower the pricing on the credit facility. Advisory is looking into how a similar structure could help clients improve their climate performance in order to achieve improved lending terms.

BOX 3: GREENING FINANCIAL MARKETS

IFC influences the broader financial markets space through a combination of standards, regulations, and support to financial institutions, including:

Greening the banking systems through working with regulators on the enabling environment, demonstrating the business case and creating champions: This includes E&S performance standards, including the Equator Principles, technical advice to banks, and climate finance policy guidance for regulators through the platform of the Sustainable Banking Network.

Influencing **bond markets** and making **institutional investors** part of the long term solutions for climate finance: As one of the leading issuers of green bonds, IFC and the World Bank have helped develop the standards for green bonds issuance. IFC works with financial institutions to issue their own green bonds, enabling banks to further develop green financing.

Building broader consensus for green finance policies through **G20 engagement**: As active member of the G20 Study Group on Climate Finance, IFC shares its pilot experience.

III.2. Expand use of blended finance to target outside capital

Many of IFC's clients, collaborators and partners have committed to significant financing for climate mitigation and adaptation investments, such as Bank of America Merrill Lynch, Citibank and Goldman Sachs, who have collectively committed over \$375 billion to climate investments over the next 10 years. One challenge for IFC is to identify ways to help these financial institutions and others to deploy this capital at attractive rates that will incentivize project developers and expand the universe of viable projects for IFC and others.

One approach is for IFC to channel concessional finance together with a sliver of its own funds to mobilize projects, leveraging not only its own investments, but also the co-financing from private commercial institutions that are investing in new climate projects. This will require IFC and the donors to re-think the ratios of concessional finance to IFC capital, focusing instead on the ratio of total private capital that is leveraged. In the upcoming year, IFC would like to develop products – likely resembling special purpose vehicles (SPVs) or other aggregation vehicles – with an element of de-risking through concessional funds to unleash outside private capital at scale. Donor funding for these initiatives will need to be flexible and come with the right level of risk appetite.

III.3. Mobilize capital through PPPs

IFC helps governments in designing and implementing public-private partnerships in infrastructure and other basic services. Since 2012, IFC has closed 21 climate-related PPP transactions, which are expected to mobilize \$2.9 billion in private investments. There are currently about 30 climate-related PPPs on which IFC is advising, including in areas such as hydropower, rooftop solar, green buildings, solid waste management, and district heating. In FY16, IFC expects that about 5 of these climate-related PPPs will reach financial closure, with core mobilization upwards of \$300m.

IFC will continue to work with clients to design and implement climate-related PPPs to help governments leverage the expertise and efficiency of the private sector, raise capital, and spur development. The PPP group will continue to increase its emphasis on climate business through actively seeking climate-related PPP opportunities, and put a greater focus on the PPP transaction fee structure so that transactions meet core mobilization criteria. Efforts will also be made to see where CAS projects may make better use of in-house products and services, such as EDGE for green buildings.

Summary of key implementation steps to Catalyze private sector capital

- Develop aggregation models. Where required, de-risk new aggregation structures, using blended finance as a key tool.
 - Mobilize capital through PPPs.
 - Use advisory and investments resources throughout IFC to develop innovative financing approaches.
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IV. Maximize impact through GHG emissions reduction and resilience

IFC will focus on maximizing its climate impact by (1) reducing the GHG emissions of its investments, (2) increasing client resiliency, (3) collaborating across WBG, and (4) sharing lessons learned through partnerships and thought leadership, particularly in financial markets and standard setting.

IV.1. Reducing GHG emissions

IFC climate projects reduce the amount of GHG emissions released into the atmosphere, and help reduce the Corporation's overall carbon footprint. IFC's climate-related investment and advisory projects from FY15 alone are expected to reduce 9.6 million metric tons of greenhouse gas emissions⁹ annually, the

⁹ This amount is in CO₂ equivalent, which accounts for the radiative forcing effect of each greenhouse gas.

equivalent to taking more than 2 million passenger vehicles off the road. To support the growth of climate investment, IFC has created methods that (1) define whether and how much of a project's investment volume counts as climate-related, (2) calculate the GHG emissions reductions for mitigation projects, and (3) calculate the gross GHG emissions from IFC's real-sector investments.

IFC's definitions and metrics group is coordinating with industry and regional climate anchors to develop more streamlined definitions in key sectors with high GHG emissions that strike a balance between efficiency and accountability. The group is providing ongoing support and is focusing in the near term on updating mitigation criteria for agriculture, transportation, green data centers, and adaptation. The key to success is using **definitions that are practical and applicable to the private sector**. In particular, IFC will suggest "positive lists" of eligible types of projects by area, similar to the list developed for GTFP climate smart trade.⁴⁷

As IFC increases its amount of climate investment, it must provide more support to the operational groups so that this growth will not place a heavier burden on investment or operation officers. Currently, the Results Measurement Unit supports GHG accounting across the entire Corporation without dedicated resources. IFC will require a new staffing strategy to assist staff in calculating and reporting the GHG impacts of their projects.

IV.2. Increasing client resiliency

Even with the Paris agreement's aspirational target to retain global warming to under 2 degrees C, climate change will still affect food security, power supplies, and infrastructure. Through the UNFCCC process, many developing countries created National Adaptation Programs of Action (NAPAs) to think holistically about the topic and lay out their risks and needs for adaptation. Adaptation finance estimates span from between \$28 billion annually by 2030 to \$300 billion annually by 2050.

Developed countries and MDBs are under increased pressure to increase their adaptation funding, both public and private. At COP 21, donor governments of the USA, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Sweden, Switzerland and the United Kingdom pledged an additional \$248 million to the GEF's Least Developed Countries Fund for adaptation.

More than 100 private companies have initiated adaptation programs in transport management (HSBC & Sompo Japan Insurance), food security (John Deere & Bayer), water resources (General Electric & Unilever), early warning systems monitoring (Microsoft), human health (BHP Billiton & Entergy Corp.) and agriculture (Bayer & Starbucks).⁴⁸

IFC's strategy: To date, IFC has invested very little in adaptation—three projects totaling less than \$40 million. To increase its adaptation funding, IFC must first have clear and practical definitions, which can be achieved with a "positive list" of eligible projects by sector area. Once definitions clearly identify adaptation projects, IFC will look at building a program around key sectors.

Adaptation sectors with potential private sector opportunities include water-related investments and technologies, insurance, agriculture, resilient energy systems, and technology manufacturing.⁴⁹ Near-term investment opportunities will focus on agriculture and water (see Section II). Adaptation opportunities will be driven by specific climate related impacts in a region.

IFC must place more focus and human resources in identifying opportunities and supporting investment and advisory staff to engage with clients on these activities. The most successful MDB private sector adaptation programs have corporate focus and incentives, staffed programs, substantial funding for technical assistance, and flexible blended finance.

IFC has created a **task force** that is elaborating a proposal to create a growing adaptation portfolio by FY20 and the needed funding and staffing to achieve it. In addition to the ongoing development of climate risk management tools, the task force will examine the most effective way to more systematically increase IFC's adaptation investments and advisory services, including (1) evaluation of IFC's pipeline for climate risks and opportunities to address these risks; (2) climate resilient audits; (3) technical assistance to companies (particularly FIs) that can help reach the most vulnerable companies and SMEs; (4) investment mechanisms to finance adaptation needs for existing clients; (5) country-level market studies to identify adaptation investment opportunities. IFC expects to test and validate the outputs on the first set of sectors by September 2016.

IFC will look to leverage its existing adaptation funds available through the **Pilot Program for Climate Resilience (PPCR)** to identify tangible adaptation measures, better articulate the adaptation story and seek to identify specific investments and advisory opportunities. IFC Advisory currently manages PPCR-related activities in Mozambique, Niger, Bangladesh, and Nepal. While the central focus of these programs is agribusiness, the programs can fund risk assessments of IFC's portfolio and high potential pipeline. The results can be used to identify projects that directly address climate risks and therefore are considered as adaptation. Bangladesh has already committed to undertake a climate risk assessment of its portfolio.

In addition, IFC will undertake a **review of its existing PPP portfolio and new projects** to understand how projects may address climate change adaptation or resilience. The Rockefeller Foundation has already made a \$2.5m grant available for projects addressing resilience.

Finally, building an adaptation business require **business development and technical assistance**. In the next five years, IFC will be building its capacity and models for a robust adaptation business. Volumes are likely to be small, with the fastest growth post-FY20. Given that many of the interventions that improve resilience involve small investment amounts, IFC is analyzing how it can best have a scalable business in this space and how to measure its impact.

IV.3. Expanding partnerships and thought leadership

Sharing lessons learned will become more important as the scale and impact of IFC's climate investments increase. IFC's 10+ years of investing in climate sectors bring experience that can aid its clients, governments and investors as they transition to the low carbon economy. There is increasing demand for IFC to share these lessons in the international community and join with others to help scale what works.

IFC will increase external **communications** from Management through op eds, blogs, and articles on key lessons learned in private sector investment in climate sectors. IFC will also publish thought pieces through collaboration between the Climate Business Department, and the newly formed IFC Thought Leadership Group. IFC will more strongly participate in major climate conferences (i.e. COP22), and continue its Annual IFC Climate Business Forum (3rd conference to be held in LAC in June 2016).

IFC will join **international initiatives** such as the World Business Council for Sustainable Development, We Mean Business, and other business initiatives that mobilize the private sector to move the needle in emission reductions. IFC will also convene a Joint MDB Task Force on private investment catalyzation that will allow the MDBs to accurately report their climate catalyzation efforts.

IFC has a rich history of developing and implementing **standards**, most notably IFC Performance Standards, which have become global benchmarks, as well as climate-specific standards, such as EDGE standard for green buildings⁵⁰ and CAFI (Climate Assessment for FI Investment) which enables financial intermediary clients to monitor climate results.⁵¹ Scaling Solar is a new initiative that includes standardized templates of project documents that can speed up financing.⁵² Moving forward, IFC will work within international standard setting groups to bring usable 'science-based standards' and new technology innovations to its clients as they seek to set ambitious climate targets.

Internal knowledge management will be just as important as external presence. Together, the Climate Change Cross-Cutting Solutions Area, Cross-Sector Advisory Services, and the Chief Economist's Thought Leadership Group will aim to be a leading contributor and catalyst for climate knowledge and results. This will include technical webinars for WBG staff, designing workshops for new initiatives, and conducting and participating in knowledge events and training weeks.

IV.4. Increasing business development and technical assistance

Business development and technical assistance is critical to maximizing IFC's impact. Given that making climate-smart investments is relatively new to IFC's clients, greater effort into business development is often required with greater technical support needed. In addition, technical assistance directly to clients is necessary where information or training is a significant barrier. This is particularly important for credit lines and is likely to be a key factor in IFC's ability to build its climate business in agriculture and adaptation. Advisory activities often go well upstream of the market or investment opportunity. Using long term **programmatic approaches** to address deep seated market failures will continue to be a core pillar of the IFC advisory strategy. Greater efforts will be taken to communicate the approach and the results of the

work to date internally as well as externally. IFC Advisory will hold periodic meetings with industry departments to identify areas for programmatic work and review results in the climate space.

One of the key implementation steps is **to work directly with investment teams and client service leaders** to build IFC's climate investments. IFC's Climate Business Department will provide technical input, market analysis, and industry-specific knowledge through climate industry specialists.⁵³ Industry sector leads and industry specialists will be particularly important to increasing IFC investments by contributing to development of new business models in energy efficiency, distributed renewable energy, agriculture, and adaptation.

Advisory services will provide technical assistance to clients and will work with investment staff to identify and remove barriers to investment and enhance IFC's investment offer. In some areas, **donor supported technical assistance** to IFC clients helps to build investments and encourage early adopters to take risks. This is common in the marketplace amongst DFIs and is particularly important for energy efficiency credit lines and IFC's climate business in agriculture, green mortgages, and adaptation.

To increase IFC's climate business, IFC will implement **additional technical expertise in targeted growth areas and greater coordination** between technical specialists across the corporation. Experience has shown that translating high level opportunities to committed IFC investments requires putting the best placed expertise – wherever it may sit within IFC – in front of clients for a given sector or technology. Close involvement of senior investment staff is essential for input on financial aspects and investment structuring but also to prioritize clients and projects, given the emphasis that IFC is placing on quality upon entry and profitability.

IV.5. Collaborating and coordinating across the World Bank Group

The World Bank's work in creating attractive investment environments is essential to the IFC's ability to fulfill its mission of developing jobs and private sector markets in emerging economies. As both the World Bank and IFC look to increase their efforts to eliminate poverty and promote shared prosperity in a sustainable way, the need to coordinate is increasingly important to (1) increase impact, and (2) avoid duplication or inefficiencies between the public and private sectors.

In scaling its climate business, IFC will work with the World Bank to develop **Joint Implementation Plans** that highlight where interdependency between private sector investment and government regulation/enabling environment is high. (i.e., infrastructure and other sectors with high government participation/regulation). IFC and the WB have preliminarily identified distributed solar (rooftops and off-grid) and agriculture in Africa as initial areas of focus. These plans will clearly define the relative roles of the public and private sectors in project implementation, thereby helping to grow the overall business opportunities for the WBG, and mitigate potential competition for the same business. In addition, IFC and WB are collaborating to facilitate the efforts of greening financial systems across regions. The engagement with G20 green finance/climate finance working groups and the support to banking/financial regulators in developing countries (through the Sustainable Banking/Finance Network) will allow IFC/WB to share its

experience and advice on how financial policies and incentive schemes can help gear private sector investments for both climate mitigation and adaptation purposes.

IFC will also work at a senior management level to ***increase effectiveness of WBG joint support to the private sector***. The WB and IFC have created an IFC-Joint Global Practices Steering Committee comprising of IFC Client Services Vice Presidents, VP EFI Practice Group, and a rotating World Bank Regional Director. This mechanism will focus on resolving barriers to effective collaboration across the WB and IFC. An urgent global issue is to develop an effective mechanism to agree on key areas where the World Bank can provide regulatory or technical assistance or concessional finance that leverages IFC private capital. Conversely, concessionality (both in terms of concessional donor funds as well as sovereign guaranteed funds) need to be minimized where the market is ready for commercial investments. This is the case in Asia and ECA, where subsidized lending through Governments for RE and EE can affect IFC's efforts to build the local financial sector's growing capacity to finance RE and EE in its region. For large-scale renewable energy in Africa, the IFC and the World Bank Group will identify where the market is commercial and ready for IFC private capital and where regulatory, technical assistance and non-commercial investments can be provided by the World Bank.

Through the IFC-WB Joint Global Practices Steering Committee and also through staff-initiated coordination, IFC will work with the World Bank to develop products that build on the strength of both groups, such as risk-share facilities, blended facilities, and blended bonds. A key factor in this will be agreement between IFC and IBRD on the measurement of targets, and of the effectiveness of results in terms of mobilizing and developing private sector markets. Experiences from the JIPs can provide important lessons.

IFC and the joint Global Practices (Trade and Competitiveness and Finance and Markets) have developed ***MoUs that detail priority areas*** of engagement to be included in the joint GPs work programs for FY16. These MoUs are an important mechanism to plan for and monitor the IFC AS delivered via the joint GPs, and to work with the joint GPs to ensure support in delivering on IFC regional and industry priorities. Any climate-related regulatory or technical assistance that would be delivered out of T&C and F&M could be included in the FY17 MoU (MoUs cover a 3 year period and will be updated on an annual rolling basis).

Summary of key implementation steps to
Maximize impact:

- Lead MDB effort to develop streamlined definitions for mitigation and adaptation projects that can be easily used by private sector clients.
 - Strengthen internal capacity to calculate GHG emissions reductions of IFC projects.
 - Create working group to develop robust adaptation program.
 - Provide thought leadership through publications and by participating in global initiatives and events.
 - Further IFC's position as a leader in setting standards by 1) developing programs that unlock climate investments by standardizing regulatory or certification processes, and 2) bringing its internal standards to international applications to help others mainstream climate through their institutions.
 - Help remove market barriers through technical assistance and demonstration projects.
 - Increase effectiveness by collaborating across the World Bank Group, particularly through JIPs.
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V. Account for climate risks

Investors are increasingly aware of climate-related risk factors. This includes both the risk that an investment will be affected by the **physical impact** of climate change, and also **carbon asset risk**, which is the risk that a carbon-intensive asset will be subject to mitigation policies, which might render the asset less valuable (e.g. a 'stranded asset'). Investors are getting pressure from their shareholders to account for these risks in their portfolio and investment screening processes.

Mark Carney, Bank of England Governor and G20 Financial Stability Board Chair, has announced a new global taskforce to highlight the financial exposure of companies to the risk of climate change. This new body, the Task Force on Climate Related Financial Disclosures, will support companies and investors to better understand the risks and opportunities of climate action by helping companies to disclose their climate risk information.

BOX 4: FSB RESPONDS TO CLIMATE RISKS

The Financial Stability Board (FSB) is establishing an industry-led disclosure task force on climate-related financial risks under the chairmanship of Michael R. Bloomberg. The Task Force on Climate-related Financial Disclosures (TCFD) will develop climate-related financial risk disclosures for use by companies in providing information to lenders, insurers, investors and other stakeholders. FSB Chairman Mark Carney, who is also governor of the Bank of England, said one of the reasons for better disclosure was the risk that large assets such as fossil-fuel reserves could be "stranded" and rapidly lose value as the world tries to wean itself off carbon. The report, expected at the end of 2016, will consider the physical, liability and transition risks associated with climate change, and what constitutes effective financial disclosure.

IFC is developing a process to screen **climate impact risk** in its investments. This process was approved by COC, based on recommendations from the Climate Risk Working Group. The process includes a risk screening tool that will be rolled out as a pilot on the following sectors: ports, waterways, forestry, pulp & paper and insurance. The climate risk assessment is not intended to be the basis for a go/no-go decision, but an additional data point in the decision making process. IFC expects to test and validate the outputs in on the first set of sectors by September 2016.

To begin to understand the **carbon intensity of IFC's portfolio and the corresponding potential carbon asset risks**, IFC analyzed its carbon footprint in May 2015. This analysis was for the on-site emissions (scope 1 and 2) of its direct investment portfolio. IFC found that five sectors account for 81% of IFC's portfolio emissions—cement, electric power, chemicals, oil gas and mining, and primary metals. IFC has hired a consulting firm to help analyze its carbon asset risk. The consultants will look at where IFC is vulnerable, potential strategies that could help mitigate risks, and insights into how other FIs and companies are addressing these risks. IFC will create a cross-industry consultation group to get input on the consultants' recommendations and next steps.

One tool to mitigate carbon asset risk that IFC is evaluating is a carbon price. IBRD has a carbon price starting at \$30/ton in 2015 and rising to \$80/ton in 2050, to be considered during the economic evaluation of its projects. After a year of implementation, the Bank is evaluating the process and results of utilizing

a carbon price. IFC will take these lessons learned and determine whether a carbon price would be an effective risk mitigation tool for IFC.

In order to be credible with IFC clients, *IFC's Footprint Commitment*⁵⁴ works to reduce the environmental impact of IFC's daily work activities. IFC has a carbon neutrality commitment; as part of its scaling up ambition, IFC is in the process of restating its carbon reduction target.

**Summary of key implementation steps to
Account for climate risks:**

- Complete climate impact risk screening pilot.
 - Identify carbon asset risks and create recommendations for IFC's exposure to these risks.
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VI. Summary and next steps

Climate change is now part of IFC's investment landscape. As the global economy de-carbonizes and climate change begins to affect the sectors and infrastructure in which IFC invests, IFC is faced with new opportunities as well as new risks that must be internalized in its investment decisions. In the upcoming years, IFC will build on nascent initiatives and launch new ones necessary to expand its climate business and build climate-smart markets in its client countries.

IFC has built expertise in key climate sectors such as renewable energy and green buildings. To remain profitable and to create climate-resilient economies in its client countries, IFC needs to more systematically build a low-GHG and climate-resilient portfolio. The private sector opportunities exist today. To realize these opportunities, IFC needs a commitment from management to provide the needed support and resources, particularly in blended finance, internal incentives, and technical assistance/business development.

Annex 1: IFC Climate Business since 2005

IFC has tracked climate business volumes since 2005. Since then, ***business has grown from just over \$200 million to \$2.3 billion in FY15 (long-term finance, own account, only)***. In the past five years alone, climate business almost doubled, rising from \$1.3 billion in FY11, at 12.7% CAGR. In FY15, core mobilization was an additional \$2.2 billion, for a total of \$4.5 billion in new commitments. Volume growth has translated into greater penetration into IFC's overall business: starting with only 4% of IFC overall in FY05, climate penetration in FY15 surpassed publicly stated targets and reached 22% of own account totals.

On average in the past 5 years, the majority of ***investment volumes*** came from the Infrastructure department (INFRA) (55%), followed by 19% from Financial Intermediaries Group (FIG) and 23% from Manufacturing, Agribusiness, and Services (MAS), and 2% from Telecoms, Media, Technology, Venture Capital, and Funds (CTT). On average in the past 5 years, the largest contributions from the regions came from the ECA and LAC regions (24% and 23% of total volumes, respectively), followed by East Asia and South Asia (17% and 15% of the total respectively), and finally Sub-Saharan Africa at 12% and MENA at 8% of the total volumes (MENA's recent growth in the renewables business will likely result in greater, sustainable contribution to total volumes). Unlike industry volumes which tend to show steady growth trends, regional volumes have been more uneven year over year. Due to large projects, regional volumes tend to have cyclical spikes and lows, so steady growth will require portfolio diversification.

Cross cutting advisory solutions (CAS) contributes to IFC's climate agenda on several fronts including broader market and business development, direct transaction support from industry specialists, and mobilization through PPPs. Between FY12-15, IFC advisory services related to clean energy and resource efficiency have reached nearly 8,300 client companies, leading to close to \$2.4 billion in climate investments of which IFC investments reached nearly \$200 million. In the same timeframe, IFC closed 21 PPP climate related transactions, which are expected to mobilize over \$2.9b in private investments. Of these, 8 climate-related PPP transactions (almost a third) contributed \$854m to IFC's Core Mobilization.

IFC's climate business is supported by an ***extended network of climate managers and anchors embedded in its industry and regional departments***, and overseen by the centralized Climate Business Department. This network is responsible for coordinating the climate business program in their respective group. The network holds regular video conferences to coordinate strategy across industry and regions and to share tools and knowledge developed across the network.

The Climate Business Department (CBD) also supports operational departments through technical/market assistance, innovative financing mechanisms, and blended concessional finance, as well as communications and knowledge management support. A variety of tools have been developed to help create new business (for example, the EDGE green buildings tool⁵⁵), or capture the climate component in ongoing deals (for example, the CEET tool for GHG emissions calculations⁵⁶).

Annex 2: IFC Pilot Climate Risk Management¹⁰

IFC Performance standards (v.3, Jan 2012) require inclusion of climate risk assessment and evaluation of adaptation options in IFC projects. The Independent Evaluation Group (IEG) “Adapting to Climate Change: Assessing World Bank Group Experience” report (October 2012) recommended that the WBG “develop reference guidelines for incorporating climate risk management into project and program design, appraisal and implementation.” This was accepted by IFC management.

In response, IFC’s Climate Risk Working Group elaborated a set of recommendations for Climate Risk Management at IFC. The recommendations were presented to and approved by IFC Corporate Operations Committee.

The recommendations and proposed way forward reflected concerns about potential impacts of climate change on IFC investments, PPP mandates, and project sustainability; were consistent with parallel efforts of WBG and MDB-wide harmonization of approaches to climate risk and adaptation; and aimed to use IFC’s existing risk identification and mitigation systems for integration of climate risks. As such, climate risk assessments are not intended to be a basis for go/no-go decision but an additional data point in the decision making process.

In order to achieve this, a set of sector-based tools and information sets will be elaborated to enable investment teams to address potential climate risks including a screening tool, sectoral manual, and relevant climate information. The elaboration of the tools and information was initiated in January 2016 for a set of pilot sectors chosen by industry departments (ports & waterways, forestry, pulp and paper, and insurance). The process is coordinated by the WBG Climate Policy team with leadership by industry specialists for pilot sectors.

To reduce the burden on investment teams, ***IFC will use its existing risk identification and mitigation systems*** to integrate climate risk.

IFC expects to have developed a tool for the initial sectors by July 2016, and tested and validated by September 2016. Upon finalizing, CBD will revert to the Climate Risk Working Group to decide on whether/how to extend risk evaluation to additional climate vulnerable sectors, and the relevant timeline.

¹⁰ “Climate risk”, in the context of this initiative, refers to the effects that direct and indirect physical impacts of climate change may have on an investment’s financial and E&S performance.

Annex 3: Regional Opportunities

Region-specific climate opportunities, plans, and integrated WBG priorities are described in the WBG Climate Change Action Plan. Below describes regional strategies for IFC.

In **Sub-Saharan Africa**, IFC will focus on large-scale renewable energy, green buildings, and off-grid electricity. Moreover, IFC is examining ways to increase adaptation investments in agriculture, which will require new business models and technical assistance.

In **East Asia and the Pacific**, IFC will focus on urban infrastructure (including green buildings and waste management), energy efficiency opportunities, renewable energy (with an emerging focus on South-South business), water efficiency, and green banking. Furthermore, IFC will also build its business in climate-smart agriculture, for instance, through projects on sustainable rice in Cambodia and protein in Mongolia, and agricultural insurance products in the Philippines.

In **Eastern Europe and Central Asia**, IFC identified opportunities for green buildings, urban infrastructure, sustainable energy finance, and renewable energy. Turkey has been the key driver for IFC climate business in the region. Going forward, Russia and Ukraine could offer the next major opportunities. In addition, there are opportunities for renewable energy and sustainable cities in the Western Balkans and South Caucasus as well as Romania, Bulgaria, Croatia, and Poland.

In **Latin America and the Caribbean**, IFC will grow investments in urban and agribusiness, and support financial instruments. IFC plans to grow its portfolio in the region on urban infrastructure, such as green buildings, transport, waste management, energy, water and sanitation, telecom, and social infrastructure. Another priority area is agribusiness, especially in the Caribbean, Brazil, and Central America. IFC will also support financial instruments such as green bonds in the Caribbean, Brazil, and the Andean region.

In the **Middle East and North Africa**, IFC will continue to build its renewable energy business and develop new markets in the region. IFC's priorities include growing its portfolio of green buildings (for instance, in Lebanon), waste water treatment and re-use, and clean tech innovation (in Morocco and Egypt). There is also opportunity for increased sustainable energy finance through financial institutions, depending on resources for technical assistance.

In **South Asia**, IFC will focus on sustainable urban infrastructure, continue to invest in wind and solar, energy efficiency, and advisory services for scale-up. IFC will focus on sustainable urban infrastructure, such as waste, street lighting and green buildings, and continue to invest in wind and solar. In agriculture, IFC is building a pipeline in solar irrigation, among other areas. Furthermore, IFC will look toward South Asia for large "pure play energy efficiency," while still developing lines of credit to banks in India and Bangladesh. To scale up large renewable energy investments, to build the pipeline for sustainable urban infrastructure, and for adaptation (especially in Bangladesh and Nepal), IFC will focus on advisory services.

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- ¹ Shock Waves: Managing the Impacts of Climate Change on Poverty. Washington, DC: World Bank. 2016
- ² IPCC, 2014: "Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change." [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf
- ³ "A Transforming World," Bank of America, 2013
- ⁴ "The Forgotten 10%: Climate mitigation in agricultural supply chains". Carbon Disclosure Project, September 2015
- ⁵ <http://www.worldbank.org/en/news/feature/2015/10/10/funding-boost-for-climate-action>
- ⁶ "The Global Risks Report 2016, 11th Edition", World Economic Forum, January 2016.
- ⁷ Thermal power generation relies on heat rejection which is difficult if the water gets too hot or becomes scarce.
- ⁸ The parties agreed to pursue further efforts to limit temperature increase to 1.5 degree C. This agreement will enter into force when it is ratified by 55 countries that produce at least 55% of global emissions.
- ⁹ IPCC, 2014: "Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change." [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf
- ¹⁰ BNEF 2015 New Energy Outlook
- ¹¹ IEA World Energy Investment Outlook 2014
- ¹² For analysis of profitability of climate projects, please see the Annex 3.
- ¹³ This includes China's 7 regional emissions trading pilots currently underway. It does not include China's planned national emissions trading scheme. When the China's national ETS enters into force (planned 2017), 25% of global GHG emissions will be covered by carbon pricing policies.
- ¹⁴ Allianz, "Hedging climate change, How insurers can manage the risk of increasing natural catastrophes" Sep 2007
- ¹⁵ Vivid Economics, <http://www.vivideconomics.com>
- ¹⁶ Speech to UN by Shaun Tarbuck, CEO of ICMIF, September 2014
- ¹⁷ <http://there100.org/>
- ¹⁸ LCTPi presentation by Maria Mendiluce (WBCSD Director), 2015
- ¹⁹ World Economic Forum, "Open letter from CEOs to world leaders urging climate action." For the text of the letter and full list of undersigned companies, please see <http://www.weforum.org/agenda/2015/11/open-letter-from-ceos-to-world-leaders-urging-climate-action/>
- ²⁰ Shock Waves: Managing the Impacts of Climate Change on Poverty. Washington, DC: World Bank. 2016
- ²¹ Bloomberg New Energy Finance, Renewable Projects tracker, 2000-2015 (Accessed Dec 21, 2015)
- ²² "Waking up to 25 Years of Bewildering Change in Global Power System", Angus McCrone, Chief Editor, BNEF. June 29, 2015
- ²³ BNEF 2015 New Energy Outlook
- ²⁴ "Green economy: south-south trade in renewable energy, a trade flow analysis of selected environmental goods" UNEP, 2014
- ²⁶ "New Energy Outlook," BNEF 2015
- ²⁷ Phone interview with Dexter Gauntlett, Senior Energy Research Analyst, Navigant Research
- ²⁸ <http://there100.org/>
- ²⁹ <http://www.wbcsd.org/>
- ³⁰ <http://unepfi.org/pdc/>
- ³¹ "MAS Climate Business: Scaling Up for Our Clients & For Impact – FY16 to 20," Presentation to IFC Directors, October 2015
- ³² "From Gap to Opportunity : Business Models for Scaling Up Energy Access", IFC, 2012
- ³³ "Energy Efficient HVAC Systems", Navigant Research, June 2013
- ³⁴ "Energy efficiency market report: market trends and medium term prospects" IEA, 2014
- ³⁵ "How to make a city great", McKinsey & Company, September 2013
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- ³⁸ See www.edgebuildings.com

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- ³⁹ “Climate-Smart Agriculture: A Call to Action,” The World Bank, available from http://www.worldbank.org/content/dam/Worldbank/document/CSA_Brochure_web_WB.pdf
- ⁴⁰ “The forgotten 10%: Climate mitigation in agricultural supply chains”. Carbon Disclosure Project, September 2015
- ⁴¹ “Shock Waves: Managing the Impacts of Climate Change on Poverty”. World Bank, 2016
- ⁴² BNEF, January 2015
- ⁴³ See https://en.wikipedia.org/wiki/Internet_of_Things
- ⁴⁴ BNEF 2015 New Energy Outlook
- ⁴⁵ Analysis by the Climate Business Department.
- ⁴⁶ <https://www.climatebonds.net/2014/05/ecbs-draghi-backs-need-support-securitization-%E2%80%93-let%E2%80%99s-make-%E2%80%98green%E2%80%99-securitization>
- ⁴⁷ See http://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/industries/financial+markets/trade+and+supply+chain/gtftp/gfm-tsc-gtftp-ee-info
- ⁴⁸ UNFCCC, Private Sector Initiative, Database of actions on adaptation
- ⁴⁹ Disaster preparedness, coastal management, and natural resources management and other potential adaptation sectors are more oriented toward the public sector.
- ⁵⁰ See www.edgebuildings.com
- ⁵¹ See www.ifc.org/cafi
- ⁵² See www.ifc.org/scalingsolar
- ⁵³ Includes specialists for solar, wind, green buildings, utility-driven energy efficiency, industrial/commercial energy efficiency, waste and embedded IT.
- ⁵⁴ See http://ifcintranet.ifc.org/wps/wcm/connect/dept_int_content/IFC+Footprint
- ⁵⁵ www.edgebuildings.com
- ⁵⁶ See www.ifc.org/climateometrics