

Unlocking the Power of Renewable Energy: Insights into Stimulating Corporate Investment

# About this Report

Renewable energy (RE) sources are key to the global transition to a low carbon economy. Yet their reach and growth trajectory is not yet at the scale required to respond effectively to the climate challenge. This report focuses on how to unlock the power of clean energy by exploring the conditions needed to stimulate greater private sector investment in renewable energy. It draws on insights provided from 18 Fortune Global 500 companies that currently buy, or generate onsite, renewable energy and are looking to expand such investments.

The report builds on practical efforts led by the World Resources Institute (WRI) and supported by the Green Growth Action Alliance (G2A2) to develop large-scale corporate partnerships for bulk RE purchase. The goal is to help scale these efforts, and to provide actionable recommendations to governments on policies and regulatory frameworks that can support global companies with large energy needs to tap renewable energy. By focusing on policies that energy demand, rather than supply, this research sheds light on a neglected area of clean energy policy. Its findings lend real world experience and lessons learned to public and private efforts to scale clean energy.



### Methodology

**PARTICIPANTS** 18 leading global companies and large energy buyers, headquartered in the United States or Europe, with RE investments. The following sectors were represented: household products, consumer goods, food and drink, media and information, engineering and electronics, retail, home furnishings, building materials and IT. Additional expert interviews were conducted with renewable energy investment and manufacturing companies.

RESEARCH METHODS: The research reflected in this report has two components - detailed surveys and in-depth follow-up interviews. These were completed by, and conducted with, relevant corporate officials including energy and energy supply managers and sustainable operations managers. Companies were chosen based on their relevance with regard to energy consumption, and existing RE investments in a range of countries. Data collection took place between February and August 2013. The research provides an overview of informed corporate views and experiences, and is not a scientific, peer-reviewed study.

**REPORTING:** Company officials were surveyed and interviewed on a confidential basis to encourage full and frank disclosure. With the exception of Walmart, companies quoted in the following pages are identified by sector but not by name.

### Research Partners

THE GREEN GROWTH ACTION ALLIANCE (G2A2): Launched at the 2012 G20 Summit, G2A2 is a private sector led initiative that helps unlock private investment for green infrastructure projects around the world. The Alliance draws on the experience and expertise of more than 50 member organisations, including leading financial institutions, corporations, and non-governmental organizations. G2A2's members work to assist governments in developing and pilot testing breakthrough finance models for green growth. Its work is supported by the Global Green Growth Institute - which hosts the G2A2 Secretariat, the World Economic Forum, the World Bank Group and the World Resources Institute.

#### THE WORLD RESOURCES INSTITUTE

(WRI): is a global research organization that works closely with leaders to turn big ideas into action to sustain a healthy environment—the foundation of economic opportunity and human well-being. WRI's energy program works with businesses, policymakers, and civil society to transform the global energy system. The goal is to dramatically reduce greenhouse gas pollution while meeting the energy needs of the poorest and building competitive economies.

# Unlocking Clean Energy: Industry Insights

## Renewables State of Play

Overall global investment in clean energy, including renewables, has fallen in the past two years, from a high of US\$318bn in 2011 to US\$254bn in 2013. Analysts pin the blame on uncertainty surrounding renewable energy policies and incentives in Europe and the United States, coupled with a sharp drop in the cost of photovoltaic systems, which means less investment has been required to build solar installations.

Nevertheless, conditions remain favorable for a global scale up of renewable energy (RE) demand. RE costs continue to drop, boosting the fledgling industry's competitiveness. The levelized cost of electricity, for example, is falling for both wind power and solar photovoltaics (PV), making them the most affordable option for consumers in a growing number of markets. In addition, both countries and global companies are looking to renewable energy as a means to meet greenhouse gas (GHG) emissions reduction targets.

At least 138 countries have renewable energy targets and 127 countries have renewable energy support policies in place.<sup>iv</sup> And in addition industrial, commercial, and residential consumers are increasingly becoming onsite producers of renewable power.<sup>v</sup>

Through 2012 (the latest year for which figures were available) renewables, including hydropower, comprised more than 26% of global generating capacity and supplied an estimated 21.7% of global electricity.

Significant barriers remain, however, to scaling both onsite and offsite corporate RE investment. Many regulatory and policy environments are currently complex to navigate and/ or lack predictability, discouraging corporate market entry.

### Corporate Survey: Key Findings

Non-energy companies take different approaches to RE investment, depending on the local regulatory environment and their corporate outlook. Some look to generate wind or solar power on-site at their facilities while others contract with an offsite RE generator. Some prefer shared financing approaches like Power Purchase Agreements while others choose to deploy their capital budgets for purchasing RE. Opinions on which government incentives are most favorable also vary.

Nevertheless, the G2A2 research found broad agreement among prominent global companies on the basic building blocks required to attract investment in renewables from large corporate energy users. Below are the survey's four key findings on what companies look for:

- A transparent, effective regulatory framework that provides clear standards and rules
- Long term predictability of policies and incentives - at least 5 years - to offset risk and align with corporate project planning horizons

- 3. Grid access with reasonable and predictable costs and procedures for standardized interconnection of projects
- Incentives and policies that are easy to value in standard accounting practice, since most companies tapping offsite RE generation are not in the energy business.

These findings provide useful insights for policymakers on what type of support policies work best and why they are effective. This is important, since private sector demand and commitment to purchase offsite RE can provide a tipping point in the feasibility of delivering new large-scale RE capacity.

The experiences shared by surveyed companies suggest that countries and regions where such frameworks and policies exist are more likely to attract corporate RE investment. The graphic below shows those markets favored by surveyed companies, from those generating high interest (India, Mexico, U.S.) to moderate interest (Germany, Sweden, Brazil).

The following pages describe companies' views and experiences on each key finding, and related policy approaches.

#### Leading RE Markets Among Surveyed Companies.

Top Markets



**US** - 14 out of 18 companies that participated in the study are buying RE in the US. Most interesting states: California and New Jersey.

**Mexico** - described as the most comprehensive framework for RE investment for off takers.

**India** - dependent on the state, but especially the Bangalore region described as very dynamic.

**Germany** - tradition of favorable policies, especially with regards to FIT. But difficult for companies to contract with an independent RE generator.

**Sweden** - well designed system that promotes investment in RE. Existence of a stable REC market.

**Brazil** - supportive framework for RE contracts.

3.

# Encouraging Corporate Investment: A Roadmap

# **KEY FINDING 1:** A transparent, effective regulatory framework that provides clear standards and rules

Many large international companies have corporate commitments to purchase renewable energy for their facilities. For both on and offsite generation, our research provides a message that a clear and effective (and long-term) regulatory environment is the essential starting point for them to consider RE investments in a country. This is unsurprising given that such investments are expensive and typically have a very long time horizon: 30+ years for offshore wind installations and 25+ years for solar generation.

#### Rules required for onsite generation

The key condition companies cited for generating renewable energy at their own facilities was an open market that allowed them to enter financing arrangements with third party energy operators.

Such financial structures, the most common being power purchasing agreements or PPAs, enable energy end users to enter into long-term, guaranteed power purchase contracts directly with an RE developer, which builds and operates the system. Surveyed companies' experience of PPAs was very positive, and frequently cited as the key driver of an RE investment. Countries highlighted for their effective rules governing RE financing structures included Germany, Mexico, Brazil and several U.S. states including New Jersey and California. (For specific company experiences of PPAs see box on Why are power purchasing agreements a useful tool?).

Two other important factors that interviewees highlighted as required for investing onsite RE generation, were:

- Long term, predictable incentives that provide investment security, such as feed-in-tariffs and net metering (discussed in Key Finding 2)
- Clearly defined and easy to implement technical, legal and procedural standards to connect onsite RE installations to the grid (discussed in Key Finding 3).

# Why are power purchasing agreements a useful tool?

Companies gave several reasons for favoring PPAs over direct capital investment in onsite solar or other RE projects. These included a preference to source RE projects to specialist outsiders since non-energy companies had limited staff able to maintain owned projects. PPAs were also perceived to be lower risk, in comparison to self- developed projects, and could generate the financing for larger scale investments. PPA also allowed companies to use operating budgets for energy investments rather than capital budgets, which they generally reserved for their core business.

An electronics company that operates solar power in the United States, Israel, France, Germany and India put it this way: "Using a PPA gets around the capital budgeting cycle. We prefer no cash out of pocket. It's a good hedge. We can also get the environmental attributes." A media company that entered a subsidized PPA in New Jersey described how it was easier to sell internally because it involved low risk. "That is what finance people like."

A European household products company said its investments in Europe, North America, Brazil and Mexico had been driven by the incentives PPAs provide. Germany was a favourite because "the legislation provided...PPAs that were really subsidized." The company also singled out Brazil as a favourable investment market for similar reasons.

#### Rules required for offsite generation

Third party financing agreements are also essential to companies looking to buy RE generated off their premises, since they enable end users to enter into long-term, guaranteed contracts directly with an RE supplier.

The other key requirement for offsite generation cited by interviewees was the ability to use the grid effectively for transactions between customers and renewable energy generators. Surveyed companies cited the paramount need for energy transmission (technically known as wheeling) to be legal, reliable and affordable, with clear and predictable costs. Mexico was singled out as a market with an attractive wheeling policy that is generating a lot of investment interest. For more discussion of wheeling, see key finding 3.

The European Union's renewable energy directive has been a helpful driver, setting a target of generating

20% of energy consumption across its 28 member states from renewable resources by 2020. For example, Sweden has introduced renewable energy certificates which companies in some sectors are required to buy, driving investment. An interviewee company cited the Swedish approach as a "well-designed, stable REC market" with companies provided a guarantee of origin that made it easy to prove sustainable energy sourcing.

#### Policy barriers to RE investment

Other than the absence of the above policies and rules, many companies cited unclear time horizons for government incentives (discussed under key finding 2) as a major disincentive. Regulated energy markets in some U.S. states were described as very difficult to operate in, with utilities displaying very little incentive or interest in supporting RE projects. There are some emerging regulatory models in the Pacific Northwest and North Carolina that could be promising.

Several companies also described the inability to claim the green attributes of RE projects as a key barrier. One household products company looking to sign PPAs for solar PV installations in India and Canada did not go ahead because the governments would have claimed the renewable energy credits. When governments adopt this approach, companies are unable to monetize RECs, making the upfront investment in renewables far less attractive.

Other companies warned that in some markets the presence of Renewable Portfolio Standards could hinder their ability to claim the green attributes of generating renewable energy. Such a situation, they stated, can arise if a purchasing company's claim to green attributes, such as RE certificates, conflicts with the utility's need to claim them for RPS compliance. Without the ability to monetize RECs, or to count RE generation toward their corporate GHG emission reduction commitments, companies lose a key incentive to invest in renewables.





## RE Policy in Focus: Walmart

Walmart, the world's largest retailer, considers renewable energy a critical driver to meeting its sustainability targets, planning for volatile fossil fuel costs, and lowering its operating costs. In 2013, it set a goal to drive the production or procurement of 7 billion kWh of renewable energy globally by December 31, 2020 - an increase of more than 600 percent over 2010.

The company seeks to drive down the cost of renewable energy by securing cost-effective, stable energy pricing equal to or less than utility power pricing. It implements distributed/on-site generation, utility-scale/off-site generation and grid-connected green power purchases. By the end of 2013, Walmart had more than 335 renewable energy projects across its global portfolio, which provided the company 2.2 billion kWh of energy (double the prior year), about 8% of the company's total electricity demand. The grid supplies another 16% of renewable electricity, bringing the company to a total of 24% of its global electricity demand met by renewable electricity.

In response to the WRI/G2A2 survey, Walmart's Director of Sustainability, Miranda Ballentine emphasized the preeminent need for a strong policy framework to drive corporate RE investment. "Key policies are the foundation without which the other stuff doesn't matter." Specific policy building blocks

- 1. Markets open enough to enable power purchasing agreements or long term leases between energy buyers and developers
- 2. Grid systems that allow for predictable pricing and wheeling (power transmission and distribution)
- 3. Fair net metering rules and effective interconnection standards
- 4. Incentives such as feed-in-tariffs (FITs), structured with energy buyers' needs in mind to accelerate rather hinder investment.

Walmart's experts pointed to the U.S. and Mexico, among others, as countries with workable policy frameworks where they are focusing efforts. In 2013, the company became the largest onsite green power generator in the United States, with over 200 solar installations. In Mexico, Walmart has begun construction on two utility-scale wind projects and two micro-hydro projects, which, once fully operational, are expected to provide 40% of WalMex's electricity consumption.

# **KEY FINDING 2:** Long term predictability of policies and incentives - at least 5 years - to offset risk and align with corporate investment time horizons.

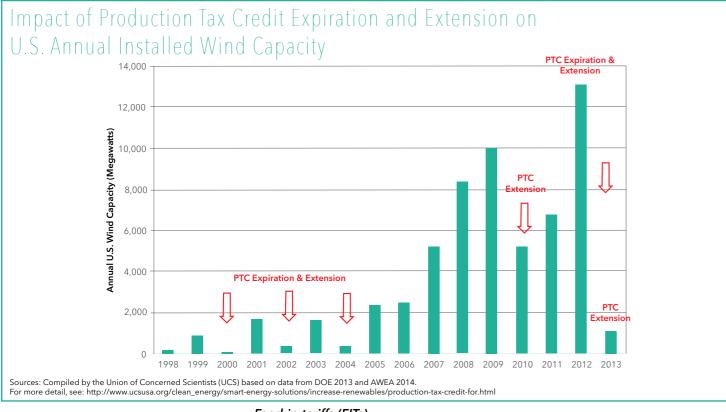
Having clear, investment-friendly rules in place lays the essential groundwork for corporate RE energy buyers. Germany, for example, is covered with small-scale RE facilities as a result of its clear, stable and predictable policy frameworks. But unless a market provides a long-term policy and incentives framework that matches their project planning timelines, companies are less likely to take the plunge.

Surveyed companies emphasized that renewable energy projects are long-term and often complex investments. It can take over a year just to plan a wind or solar project at a company site, and once executed, installations

typically operate under multi-year contracts. To make the effort worth their while, companies require predictable incentives that don't change the goalposts between the projects conception and completion (when it is eligible for the incentive).

Specifically, corporate interviewees cited the importance of multi-year government incentives that align with project development cycles. In an important signal to government policymakers, several companies stated they would be unlikely to take advantage of annual tax credits to offset the cost of RE projects, due to the uncertainty of renewal.

For example, a household products company referred to a one-year investment tax credit offered in the U.S. state of Wisconsin, with no guarantee of renewal, as "an extreme impediment" to installing a wind project. This effect was also demonstrated in the United States during 2012 when the wind Production Tax Credit (PTC) required renewal from Congress. The uncertainty that resulted from the PTC's late renewal contributed to a slump in wind power investments. Analysis by the Union of Concerned Scientists, illustrated in the graphic below<sup>vii</sup>, shows that this boom and bust cycle has occurred over the past 14 years whenever PTC renewal is under threat.



# Similarly, rebates given retroactively

were not considered to be key drivers by interviewees, since companies have already been required to invest capital and had not planned on the rebate.

Conversely, surveyed companies generally supported market incentives that provide clear, long term horizons for subsidizing the costs of RE projects. Two commonly used policy approaches that foster predictability in this way, and are used in the leading RE markets highlighted on page 2, include net metering and feed-in-tariffs (FITs).

#### Feed-in-tariffs (FITs)

Popular in Europe and Japan, FITs foster long term predictability by providing fixed income over a set period of time, often a decade or more. They help to make projects economically feasible by lower capital costs and their long term nature reduces investment risks. However, FIT schemes need to align with technology uptake to be sustainable from a national budget perspective, and in recent years Spain, Germany and other European countries have renegotiated their FIT incentives downwards.

One leading European company described benefiting from FITs for 15 years in Germany and 12 in France, stating that their use 'makes life easy'. However, the interviewee also warned that 'there are myriad ways to change the rules' and that because FITs are often fixed to inflation, while companies buy electricity at a variable price, the corporate consumer can lose out. One solution proposed was a floating FIT, indexed to the previous year's electricity prices. (See also Top 3 RE Incentives Pros and Cons on page 5).

#### Net metering

Net metering is a system by which solar panels and other renewable energy generators connected to a public utility can transfer surplus power onto the grid, allowing customers to offset the cost of energy drawn from the utility. Depending on the region, companies that generate renewable energy on site are credited for the excess electricity they sell to local electric companies, which are required to buy this power.<sup>viii</sup> Net metering is common across U.S. states.

Several surveyed companies described net metering as a valuable revenue earner. One U.S. retail corporation described fair net metering rules as a "basic policy building block" for its RE investments. Two other companies valued the net metering rules in place in California and New Jersey, where sending energy to the grid in non-operational hours had brought in significant revenue that improved project payback. Net metering revenue

has to reach wholesale prices, however, to be worthwhile. One company related its negative experience in Wisconsin where electricity can only be sold at 60% of the retail rate, creating an incentive to downsize RE projects.

In general, FITs and net metering were regarded as approaches that many surveyed companies could work with, if shaped to their needs.

# **KEY FINDING 3:** Grid access with reasonable and predictable costs and procedures for standardized interconnection of projects

For companies (and other users) to access offsite RE generation effectively requires easy and dependable access to a country's power grid. Unsurprisingly, interviewed companies stressed that they would not risk embarking on offsite RE generation projects in regulatory environments that did not provide reliable grid access at reasonable cost.

In practice, this requires legal rules governing "wheeling" - the ability to use the grid for transactions between customers and renewable energy generators. To attract investment, interviewees emphasized, electricity

transmission costs must be clear, reasonable and predictable, and governments should ensure adequate infrastructure for transmission and distribution.

Several countries cited Mexico's discounted, flat charge for wheeling (see case study) as a key reason for pursuing RE investments there. By allowing electricity to transmit across any distance for the same fee, Mexico's regulatory environment allows companies to invest in offsite wind farms in the country's best climatic conditions.

For surveyed companies investing in on-site generation, clear interconnection standards were a similarly critical policy requirement. Rules covering the interconnection of on-site power generators to the local grid can be problematic and burdensome in some markets, alienating potential RE onsite investors. In the U.S., several states have simplified and standardized their interconnection rules to attract more companies and institutions to build onsite installations.

### RE Policy in Focus: Mexico

Mexico has become a favored RE investment destination for the large corporate energy buyers surveyed. It offers supportive self-supply regulations (see graphic) that result in competitive prices for wind energy, driving investment from companies looking to generate power off-site.

The legislation especially favors contracting between energy buyers and developers through large-scale PPAs. Consumption does not need to match energy generation and a discounted, flat rate wheeling (transmission) charge is levied.

Wind conditions are very favorable in the south of Mexico, where more than 770MW had been installed through 2013. Walmart is one global company taking advantage. "Mexico charges a discounted wheeling fee...by law. It has been key to unlocking [RE] power investment."

#### Energy Bank Support for Independent Power Flat Wheeling Tariff nvestment Three types of • Allows the Transmission fixed • Investments in independent power RE generation intermittent charge independent generation permits: and efficient producer to fix of transmission Cogeneration, cogeneration have an average of distance or self-generation and a 100% accelerated generation at a balancing areas Independent Power depreciation of fixed rate and the crossed. surpluses and Producer the investment, shortages are taken provided they Enabling the entry from the virtual generate electricity of new producers to for 5 years energy bank generation

7.

# **KEY FINDING 4:** Incentives and policies must be easy to value in standard accounting practice<sup>ix</sup>

Most companies investing in RE energy systems or tapping offsite RE generation are not in the energy business. Thus government policies and incentives must be easy to value in standard accounting practice, predictable over time, and offer a return on investment attractive to a conventional corporate finance department.

Fixed grants and tax credits were the preferred incentives of most surveyed companies. Rebates given after a project starts operating are not considered useful as companies have already invested the capital and finance departments prefer upfront support. One media company noted, "Tax credit and depreciation are nice because it is clear what you get. It is easy to model out on a spreadsheet." An IT company with RE investments in several countries said such projects were "mostly about capital budgeting. We prefer to get it in place with no cash out of pocket." The interviewee added that national tax credits are well received internally as they "share benefits across the company".

Interviewees stated that performance based incentives for on-site RE systems can be difficult to predict and therefore unattractive. Companies also underlined that simpler incentives were likely to attract higher take-up.

Several companies cited various U.S. tax credits, such as the 30% Investment Tax Credit for solar commercial and residential properties\*, as making RE projects economically feasible. However, short term tax credits or those with uncertain futures, can give companies pause for thought, as discussed above.

In Europe, Germany's waste-toenergy grants and Italy's on-site solar incentives were cited as examples that made projects feasible, along with FITs in various countries.



# Top Three RE Incentives: Pros and Cons\*

#### **GRANTS**

- Predictable value
- Easy to model on a spreadsheet and explain to finance departments
- Easy to calculate so valued by corporate finance teams
- Performance based grants are difficult to value

#### TAX CREDITS

- Easy to model on a spreadsheet explain to a finance department
- It takes time to bring the money spent back onto the balance sheet
- The tax credit is part of a company's overall tax liability, not directly tied to the business unit taking on the risk of the RE project

#### FEED IN TARIFFS (FITS)

- Reduce project expense by lowering the cost of capital
- Provide clear return rates for a fixed period of time
- Can be undermined (through tax laws, forecasting approaches, VAT rule changes)
- Deliver varied benefits since FITs are fixed but electricity is a variable price
- Often don't allow companies to consume the green power they generate, instead forcing them to sell to the grid

# **NEXT STEPS**

# Recommendations for Policymakers

These research findings can usefully inform how countries go about establishing or improving policy and regulatory frameworks for renewable energy generation as they seek to combat climate change and transition to a cleaner energy future.

In addition to the specific policies discussed above, the following issues broadly encapsulate how effectively and affordably large corporations can invest in renewable energy. Answering these questions affirmatively will steer governments toward crafting supportive policy environments that should attract new or scaled up corporate investment.

- 1. Can end users buy directly from generators?
- 2. Are the rules for doing this clear and predictable?
- 3. Can incentives be easily valued by end users?
- 4. Are there transparent and timely processes for end users to apply for incentives?
- 5. Does regulation make electric utilities supportive or resistant to customers buying renewables or doing on-site projects?

### Next Steps for G2A2/WRI: Power Pooling

The research findings will also inform nongovernmental efforts, led by WRI and G2A2, to develop large-scale corporate partnerships for bulk renewable energy purchase. Such initiatives can reduce the risk and cost associated with RE investment and serve as a model for a scaled up approach to clean energy generation. They can also help both companies and governments deliver on renewable energy targets.

In 2013 WRI, supported by corporate G2A2 members, led an initiative to develop a large scale corporate RE purchase scheme in India (see box). In 2014, the Alliance will look to expand this successful approach to new regions in India and to additional countries, including South Africa. Drawing on the intelligence provided in this report, we will work to build coalitions between government, project developers, and end user companies that collaborate to get the RE investment environment right.

## India Pilot Power Pooling Model

WRI and the Confederation of Indian Industry (CII) launched the Green Power Market Development Group (GPMDG) in Bangalore in January 2013. The Group has become the go to place for companies, regulators, and utilities to discuss effective business models for scaling deployment of renewable energy in India. G2A2 members taking part include Accenture, ACC Cement, Cognizant, IBM, Infosys and Wipro.

Putting ideas into action, the GPMDG began facilitating a pooled procurement of rooftop solar PV by five companies in greater Bangalore that could sustain up to 3 MW of electricity. The solar energy systems, due to go online in 2014, will generate peak power when and where needed, providing greater energy security and reducing the companies' use of costly back-up diesel generation.

#### ENDNOTES

- An Introduction to Finance for Resilience, Bloomberg New Energy Finance, February 2014.
- ii. Press release, Bloomberg New Energy Finance, January 2014; http://about.bnef.com/press-releases/clean-energy-investment-falls-for-second-year/
- iii. WRI Unlocking the Power of Energy Buyers Results PPT2\_2013.0913.pdf; slide 8  $\,$
- $iv. \quad http://www.ren21.net/Portals/0/documents/Resources/GSR/2013/GSR2013\_lowres.pdf$
- v. http://www3.weforum.org/docs/WEF\_GreenGrowthActionAlliance\_Presentation\_2012.pdf
- vi. http://www.erec.org/policy/eu-policies/implementation-of-the-res-directive.html
- vii. http://www.ucsusa.org/clean\_energy/smart-energy-solutions/increase-renewables/production-tax-credit-for.html
- viii. http://www.eei.org/issuesandpolicy/generation/NetMetering/Documents/Straight%20Talk%20About%20Net%20 Metering.pdf
- viiii. Content generated from PPT slide 17, 18, 25 as well as interviews
- x. http://www.seia.org/policy/finance-tax/solar-investment-tax-credit

<sup>\*</sup>Based on responses from 18 companies in WRI/G2A2 survey/interviews

