

Renewable Energy Sector Funding



Analysis and Report by Resurgent India

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Contents



Executive Summary – 3

India’s Renewable Energy Sector Overview - 4

Government Support on RE Financing - 8

Existing Funding Options for RE Sector - 13

Challenges in RE Financing - 20

Global Overview, Trends and Select Case Studies - 26

Executive Summary

Rising environment concerns and depleting fossil fuels have triggered the need for renewable power to play a critical role in India's energy security. Moreover, the Government's target of reducing India's carbon footprint has prompted a policy and regulatory / legal support for renewable energy projects. The total renewable grid-interactive power installed capacity as on March, 2014 stood at 31,702 MW, having grown at a CAGR of approx. 17% in the last 5 years. MNRE plans to further add 29,800 MW grid-connected over the Twelfth plan period; targeted capacity addition will comprise of - 15,000 MW for Wind Power, 2,100 MW for Small Hydro Power, 2700 MW for Bio Power and 10,000 MW for Solar Power.

We have made tremendous progress in the recent past. The new government is already looking at the holistic development of the sector. Off late, the new government has been very bullish on growing solar; In fact, plans are underway to revise the National Solar Mission target to 100 GW by 2022. As per RECAI 2014 report, India is fast working towards re-energizing the country's clean energy ambitions, having already reintroduced accelerated depreciation for wind projects and begun exploring the potential for more than 300GW of wind and solar developments in the country's desert regions, requiring around US\$33b of investment by 2022. Additionally, the Government has launched an US\$8b grid upgrade program to address a weak infrastructure that has hindered renewables development so far.

Though the RE sector has garnered significant attention, there are few concerns which needs to be addressed to keep continued momentum for the sector. The key issues impeding growth are: a) High cost and short term debt, b) Low availability of debt for renewable energy sector due to non-conducive bank policies, restricted foreign borrowings and a weak bond market and lastly, low availability of equity for new projects.

The key stakeholders, i.e. Government, Financial community, Renewable energy developers and Distribution companies will need to work cohesively to address the challenges related to raising finance. Our key recommendations are - Introduce / strengthen new /existing schemes to improve access to domestic and foreign debt, amend existing policies of lending by Banks and IREDA and institutionalize any best practice / successful examples to facilitate wider adoption across locations. All these recommendations need to be explored further so as to build a comprehensive solution that addresses the challenges and reduces the financing costs of renewable energy.

India's Renewable Energy Sector: An Overview

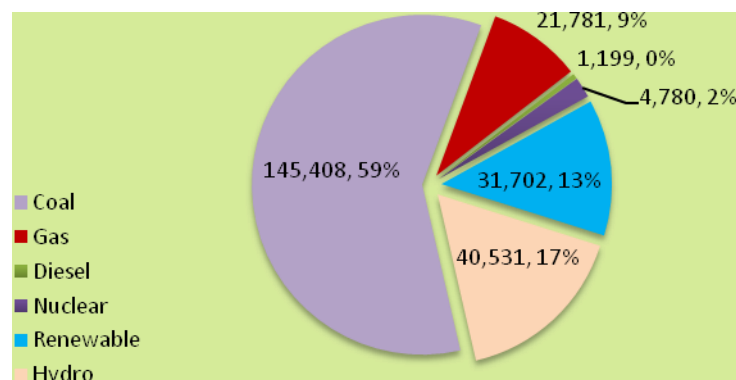


Overview

India is at the forefront of global energy scenario today, being one of the leading power consuming and generating nations. Economic growth, rising population, low per capita energy consumption and rapid urbanization, are likely to spurt the energy demand further. India has rapidly added capacities over the years to be in line with rising demand. It is estimated to have grown at a CAGR of over 10% for FY 2010-14 to reach about 245,000 MW as on March, 2014. Traditional fuels like Coal and Gas are the dominant power sources, accounting for about 59% and 9% share respectively. The Average Plant load factor for thermal (Coal, Gas, Diesel) capacity has come down drastically in the last few years led by increasing coal and gas supply shortage.

The skewed energy profile has necessitated government to reduce reliance on traditional sources and promote sustainable growth through tapping into the abundant renewable energy potential. As of FY 2014, renewable based power plants constitute about 13% of total installed power generating capacity of the country, excluding large hydro.

Chart 1: All India Installed Power Generation capacity in MW as on 31.3.2014

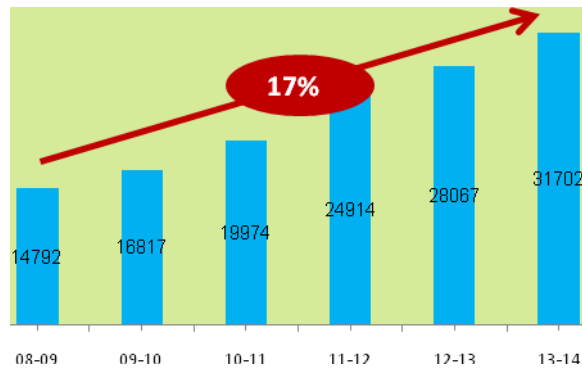


Source: MNRE Annual Report (2013-14)

Renewable Energy: Indian Scenario

Power generation from renewable sources has seen considerable growth in the past few years, with its share in total energy mix rising to about 13% in FY14. The total renewable grid-interactive power installed capacity as on March, 2014 stood at 31,702 MW, having grown at a CAGR of approx. 17% in the last 5 years. Capacity addition of grid interactive renewable energy during 2013-14 was around 3,639 MW. Off-grid/captive power capacity as of March 2014 was 1022 MW, of which bio-power accounted for around 54%

Chart 2: RE Grid Installed Capacity Growth, MW

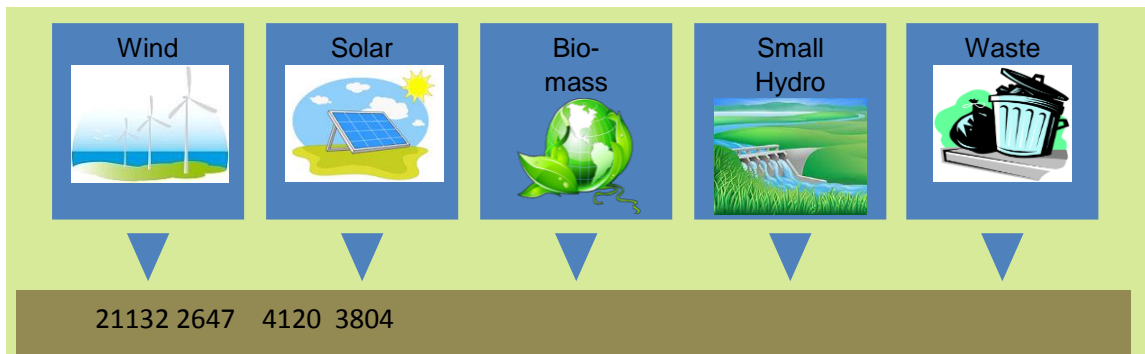


Source: MNRE Annual Report (2013-14)

Wind energy continues to dominate with over 67% of installed capacity, followed by Bio-mass, small hydro power, solar power and urban & industrial waste.

(#Source: MNRE Government, Partnership Summit Speech_US_May 14th 2013)

Chart 3: Renewable Grid Interactive Power Installed Capacity (MW), March 2014

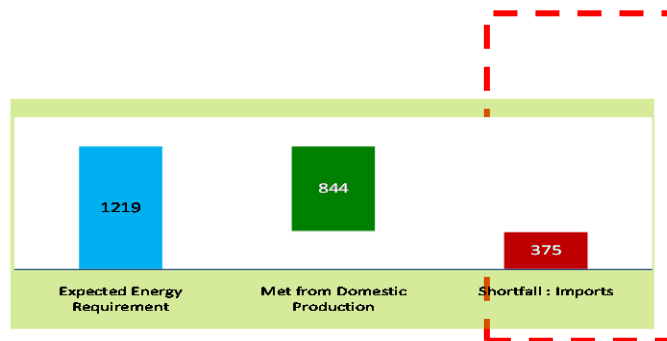


The Government of India is envisaging a capacity addition of around 29,800 MW of renewable energy during the Twelfth Plan. The targeted deployment is of 15,000 MW for Wind Power, 2,100 MW for Small Hydro Power, 2,700 MW for Bio Power and 10,000 MW for Solar Power. At the end of 12th plan, the targeted contribution of renewables is 55,000 MW in total power generation capacity of 318,000 MW.

Renewable Energy: Growth Drivers

1. **Energy Security:** India is heavily dependent on conventional sources of power ~ 68%. As the economy grows and residents expect a better lifestyle, energy security concerns are likely to assume greater significance#. The Twelfth plan indicates that total domestic energy production of 669.6 million tons of oil equivalent (MTOE) will be reached by 2016-17 and 844 MTOE by 2021-22. This will meet around 71 % and 69% of expected energy requirements – the balance to be met from imports, projected to be about 267.8 MTOE by 2016-17 and 375.6 MTOE by 2021-22.

Chart 4: Estimated Energy Scenario for India in 2021-22



Source: MNRE Annual Report, 2013-14

Given the intensified competition for procurement of already depleting fossil fuels and assumed price volatility, India's trade and fiscal deficit can be put at risk, thereby impacting economic prospects of the country. This warrants measures to improve energy security by focusing on renewable energy.

2. **Energy Deficit:** India is an energy deficient nation, coupled with low per capita energy consumption of 883.6KwH, at the end of the 11th Five Year Plan (around one-third of the global average per capita energy consumption). As per an E&Y report, the country is witnessing a high peak deficit of 12-13% and a sustained energy shortage of 6-8%. The shortfall needs to be bridged through sustainable measures to keep the growth momentum going.
3. **Abundant Renewable Supply and Potential :** India has abundant untapped renewable potential. The country's huge land mass receives one of the highest levels of sun radiations. The nation harbors an expansive coastline and high wind velocity in many areas – all providing perfect ecosystem for renewables to be tapped in.
4. **Climate Change:** India has adopted the National Action Plan on Climate Change (NAPCC) in 2008. It is being implemented through eight National Missions which aim at achieving sustainable development, by integrating the need for economic growth with the need to address environmental concerns. The National Solar Mission is one of the key missions under the NAPCC, towards achieving the renewable energy target of 15% share by 2020.
5. **Government Support:** The new government's serious commitment to the sector is evident from the numerous initiatives and platforms delivered in a short span of time towards re-energizing the country's clean energy ambitions. Having already reintroduced accelerated depreciation for wind projects and begun exploring the potential for more than 300GW of wind and solar developments in the country's desert regions, requiring around US\$33b of investment by 2022. Prospects are further boosted by inclusion of this sector under Make in India campaign. Critically, the Government has also launched an US\$8b grid upgrade program to address a weak

infrastructure that has hindered renewables development so far[#]. The foreign investment policy has also been favorable which is likely to augur well for the sector.

6. **Energy Access:** As per the latest census (2011), only about 92.8 MN households in rural India have access to electricity out of the total 167.8 MN rural households. Being a distributed and scalable resource, Renewables have the capability to reach far and beyond into the remote access areas as well.
7. **Increased competitiveness of RE sector:** Technological advancements have led to improved conversion efficiency and lowered capital costs for RE technologies (RET). This is true largely for Solar and wind projects. The falling prices of renewable energy technologies (primarily Wind and Solar) have made them very mainstream and competitive as compared to conventional energy sources across many parts of the world, including India (Source : IEA).



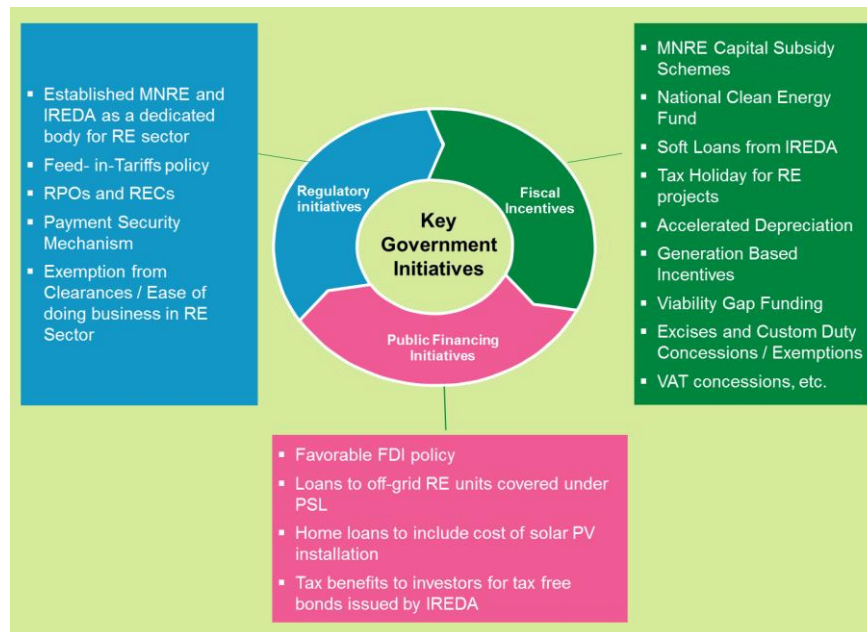
([#]Source: RECAI, September 2104 report) ([#]Source: MNRE Government, Partnership Summit Speech_US_May 14th 2013)

Government Support on RE Financing



Regulatory / Policy support aimed to increase financing in the RE sector

The Government of India has come up with various incentives and policies to promote use of renewable energy in the country. Some of the incentives may not reduce the cost of deb / capital directly, but indirectly they aid in reducing the cost by enhancing returns or reducing risks in one way or the other.



1. Regulatory / Policy level initiatives :

1.1. GOI set up the **Ministry of New and Renewable Energy (MNRE)** as a nodal agency for all matters relating to new and renewable energy. The aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country. IREDA was established under the administrative control of MNRE to promote, develop and extend financial assistance for renewable projects. Recently, MNRE's budget was enhanced by 65% to INR 2519 crore to ensure that adequate funds are available for financing renewable energy projects.

1.2. **Feed in Tariffs** - Feed-in tariff policies offer guaranteed price for fixed periods of time for electricity produced from RE sources. By offering assured prices for a fixed period, this policy helps in reducing the revenue risks of investing in renewable energy technologies significantly, and also contributes towards developing a favorable environment for rapid development of renewable energy sources.

1.3. **RPOs** - DISCOMs and some large power consumers are obliged to purchase minimum ratio of their total power from renewable sources, referred to as Renewable purchase obligation (RPO). The long-term objective for India is RPO to reach 15% by FY2020. There are however substantial problems with the compliance as the entities in the majority of the states continue to remain below the RPO trajectory. One of the reasons for the lack of demand in renewable energy is the financial difficulties (high debt) of the state-owned distribution companies. Under the RPO framework, non-compliance of RPO attracts penalties on such entities.

- 1.4. **REC:** In November 2010, the Government launched Renewable Energy Certificate (REC) mechanism which enables the obligated entities to meet their RPO. The RECs are used for inter-state trading of renewable power. The purpose of RECs is to facilitate states with low renewable potential / capacity to comply respective stipulated RPOs. They are used as a proof of the generation of 1MW renewable energy. The certificates can be traded through a power exchange platform within price range set by CERS and are differentiated into solar and non-solar renewable sources.
- 1.5. **GOI introduced the payment security mechanism** to enable financial closure of projects under the National solar mission by extending Gross Budgetary Support amounting to INR 486 crore to the MNRE. Under the scheme, in the event of defaults in payment by the state utilities to NTPC Vidyut Vyapar Nigam (NVVN), the Central Agency which will purchase solar power from the developers and sell it to the utilities bundled with unallocated thermal power available from NTPC utilities. The core component of the Payment Security Scheme is to ensure availability of adequate funds to address all possible payment related risks in case of defaults.
- 1.6. The renewable energy industry is exempted from obtaining several industrial clearances that are mandatorily required for setting-up an industry in India.

2. Fiscal initiatives :

- 2.1. **MNRE capital subsidy schemes-** The scheme provides partial subsidy and interest bearing loan to the project developer. The entire funding under this scheme is based on project basis. A detailed project report including client details, technical & financial details, O&M and monitoring arrangements has to be submitted to the ministry.
- 2.2. **National Clean Energy Fund-** It was created to support entrepreneurial ventures and research in the field of clean energy technologies. NCEF is collected by the central board of excise and customs via a levy of INR 100 per ton on coal. GOI provides low interest bearing funds from the NCEF to IREDA for lending to renewable energy projects at concessional rate of interest.
- 2.3. **Soft loans from IREDA-**The funds secured by IREDA from the NCEF are provided as loans to banks at 2 per cent for funding renewable energy projects at cost not exceeding 5%. Recently, the GOI increased the authorized share capital of IREDA to INR 6000 crore from INR 1000 crore. This move will enable IREDA to mobilize financial resources to the tune of INR 14000 crore and finance capacity of 4800 MW from RE projects during the 12th five year plan. This is discussed in more detail in the subsequent section.
- 2.4. **Accelerated Depreciation** – Accelerated depreciation, a fiscal mechanism has been was one of the most significant drivers of additions to renewable energy capacity. Under this, GOI allowed the producers of renewable-energy-based power to claim accelerated depreciation (AD) up to 80% in the first year on a written-down value (WDV) basis under Section 32, Rule 5, of the Income Tax Act.
- 2.5. **Generation based incentives** – To attract foreign investors, the government has taken several initiatives such as introducing GBI schemes to promote projects under Independent Power Producers (IPP) mode for wind and solar power

- 2.6. **Viability gap funding (VGF)** was introduced as a financing mechanism to fund the solar projects. VGF is a capital subsidy that bridges the gap between the project cost dictated by the prevailing electricity rate and the price quoted by a developer. The advantage of this scheme is that with upfront availability of part of capital, the cost of financing is lower.
- 2.7. **A 10-year tax holiday** for RE projects. – Income tax exemption applicable to RE projects. Union Budget 2013-14 has extended the sunset clause for eligibility for tax holiday u/s 80IA from March 31, 2013 to March 31, 2014, i.e. undertaking which begins generation of power by March 31, 2017 will be eligible for tax holiday. MAT @ 20% is applicable to RE projects.
- 2.8. The Central Government has given various incentives on setting up the renewable energy power project which includes **concessions and exemption from customs** and excise duties on specific goods required for setting up the renewable energy projects.
- 2.9. Some state governments have provided the incentives in the form of a **VAT at a reduced rate** (5 percent) whereas the other states levy a VAT of 15 percent. An exemption of sales tax in certain states
- 2.10. In the 2014 Budget, the GOI announced a onetime investment allowance of 15% to manufacturers investing above INR 25 crore on new plant and machinery.
- 2.11. Loans at concessional rates for off-grid applications.

3. Public financing initiatives :

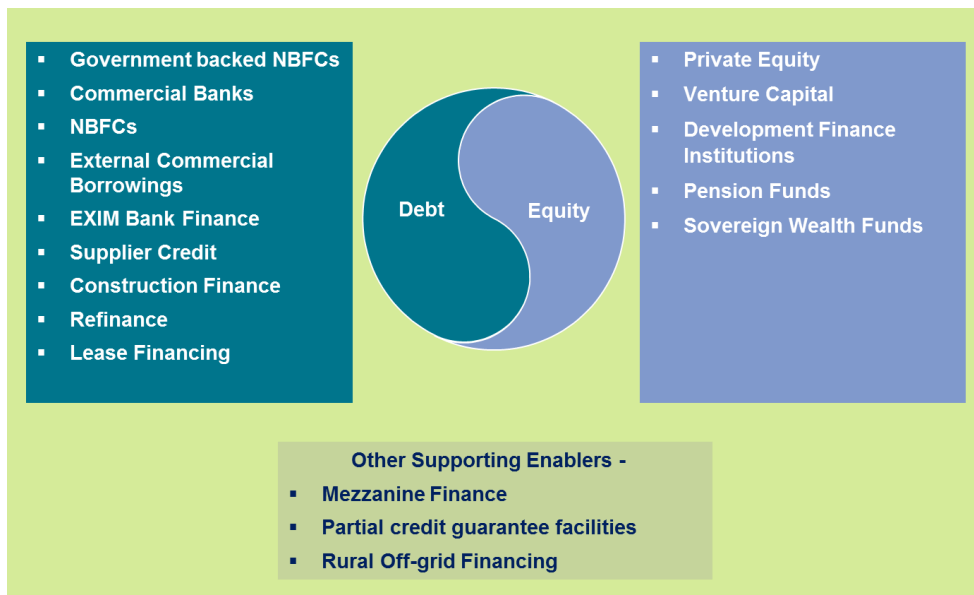
- 3.1. **FDI policy on investment in RE sector** – GOI has formulated a policy to encourage transfer of foreign technologies in the renewable energy sector. FDI up to 100 percent in the sector under the automatic route in Renewable Energy Generation and Distribution projects that are subject to the provisions of the Electricity Act of 2003. Under the Act, no prior approval of regulatory authorities is required.
- 3.2. As per the RBI directives, all scheduled commercial banks can treat loans sanctioned to individuals for setting up off-grid solar and RE solutions for household purpose as a part of **Priority Sector Lending**. This will encourage more funding; and greater adoption of renewable technology among households.
- 3.3. The Government has advised all banks to encourage home loan/home improvement loan seekers to install roof top solar PVs and include the cost of equipment in their home loan proposals.
- 3.4. The tax free bonds issued by IREDA have been able to attract significant interest from the investors due to the tax benefits they offers as compared with other investment options.

Giving a fillip to the country's renewable energy programme, the new government has taken a slew of measures in a short span of time to revitalize the country's clean energy ambitions.

Existing Funding Options for RE Sector



Existing Funding options in the Renewable Energy Sector



1. **DEBT INSTRUMENTS** –Debt is a very important source of capital for RE projects; approximately, 70% of project costs are funded through conventional term loans. Key sources of debt funding RE projects are:

1.1. Local Currency Loans -Debt financing for RE projects is primarily provided through local currency term loans by FIs. Some of the major FIs providing INR term loans to RE projects are -

Govt. backed NBFCs	Public sector Banks	Private sector Banks	Private NBFCs
IREDA	State Bank of India	ICICI Bank	L&T Infrastructure Finance
Power Finance Corporation	Canara Bank	Axis Bank Ltd	Tata Capital
Power Trading Corporation	Central Bank of India	HFC Bank	
Rural Electrification Corporation	Punjab National Bank	IDFC	
India Infrastructure Finance Co. Ltd.	Andhra Bank	Standard Chartered Bank	

Source – USAID-MNRE report 2013

1.1.1. **Government-backed NBFCs** -IREDA and Power Finance Corporation are the major GOI-backed NBFCs leading the debt financing of RE projects in India. IREDA raises finance by issuing tax free bonds and also receives financial support from the National clean energy fund and international agencies for financing renewable projects in India. Recently, IREDA

issued Tax free bonds to raise funds. Tax free bonds are an efficient way of raising low cost long term funds for financing renewable energy projects. In February 2014, IREDA first issued 15-year tax-free bonds with an AAA credit rating. These bonds offer attractive 8.8 percent rates and good returns to investors due to their tax-free nature and long tenure. These funds are then provided to RE developers for meeting their credit requirement. The interest rates for loans provided to RE projects by IREDA and PFC range between 12 and 14 percent, with tenure around 10 years. Some recent examples of financial assistance from international agencies have been mentioned below –

1.1.1.1. The Agence Francaise de Development (AFD) of France has extended a line of credit of Euro 100 million to IREDA for a period of 15 years without any guarantee from the GOI, for financing the Renewable Energy and Energy Efficiency projects in the country.

1.1.1.2. Japan International Co-operation Agency (JICA) has extended a line of credit to IREDA of JPY 30 billion for a period of 30 years for financing Renewable Energy projects in India

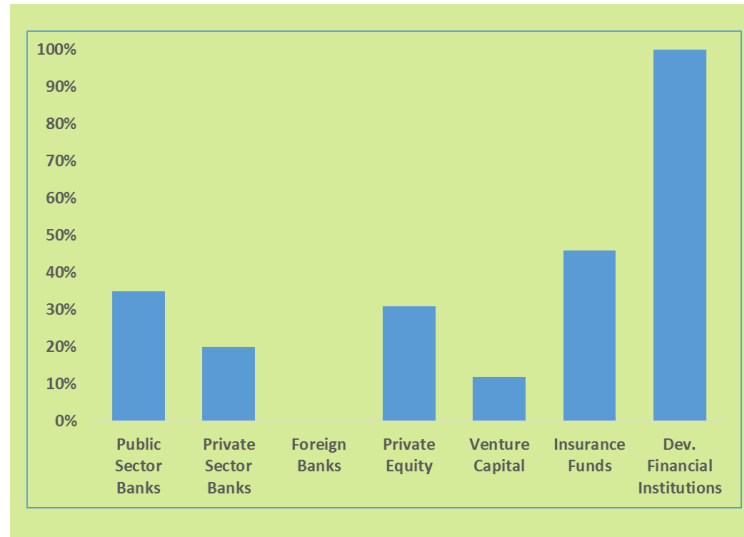
1.1.2. **Commercial Banks**- Infrastructure financing for private sector projects in India has been led by commercial banks. Commercial banks have also been at the forefront of lending to the power sector with a compounded annual growth of 42 % over a six year period from FY 2007 to FY 2012.

1.1.2.1. **Public Sector Banks** -Even though the public sector banks have dominated the commercial lending space in India, their lending to the RE projects has been limited. This is mainly on account of the defined exposure limits set by these banks for lending to the power sector, with no defined limit for RE projects.

1.1.2.2. **Private Sector Banks**-Exposure of private sector banks in RE projects is very low compared to public sector banks. Primarily, lending by the Private sector banks is done on the basis of relationship with promoters and guarantees provided by them. Interest rates on loans range between 13 and 15 percent with tenures between 5 and 10 years.

1.1.2.3. **Private NBFCs**- Private NBFCs are more amenable to financing RE projects and have been effective in funding solar and wind energy space. Example- L&T Infrastructure Finance and Tata Capital. Loans offered by these NBFC's are normally processed faster than other FIs, offered for longer tenures (b/w 1-15 years), but at a relatively higher rates of interest, typically between 13-15%. Moreover, some private NBFCs provide loans on a non-recourse or limited recourse basis without substantial guarantees from the parent company, with lien on the assets being financed.

Chart 5: Financiers active in the RE space (% of Total Investors engaged in RE sector Projects)



Source – CRISIL report

1.2. Foreign Currency Loans- RE Developers can also seek finance from development banks, export-import (EXIM) banks and international banks. These loans offer certain unique advantages such as low interest rates ranging between three and six percent, long tenures between 10 and 18 years, etc. However, all foreign currency loans carry an exchange rate fluctuation risk.

1.2.1. External Commercial Borrowing (ECB) - The debt instruments used to raise funds from international markets are called ECB. The RBI monitors and regulates the flow of ECBs into India. Indian companies are allowed to access funds from abroad through External Commercial Borrowings (ECB), Foreign Currency Convertible Bonds (FCCBs), Preference Shares, Foreign Currency Exchangeable Bonds (FCEBS), etc. There are two routes for ECB, the automatic and the approval route. Under the automatic route, corporates can avail of ECBs, with the maximum amount being USD 750 million, with cost ceiling over 6 month LIBOR of 3.5% for 3 to 5 years and 5% beyond five years.

1.2.2. Project Finance from Development Banks- Development finance institutions, such as the International Finance Corporation (IFC), Deutsche Investitions-und Entwicklungsgesellschaft (DEG), and Asian Development Bank (ADB) have been active in funding RE projects in India through foreign currency loans. The funding is done either in USD or Euros. These are typically low interest loans ranging between four and six percent, with tenures between 10 to 15 years with limited or no recourse.

1.2.3. EXIM Finance- EXIM Banks are credit agencies set up by governments to support export of locally manufactured goods to international markets in several ways including direct loans to buyers (buyer financing). The interest rate for EXIM long-term finance ranges between three and five percent (without currency hedge) with tenures above 15 years. The EXIM Banks of U.S., and China, and the Japan Bank for International Cooperation (JBIC) are a few

examples. Recently, the US Exim Bank agreed to offer USD 1 billion to finance RE project developers in India for purchase of US technologies, products and services.

- 1.3. **Supplier Credit** - It has been seen, that some suppliers extend credit to RE projects, limited to the value of the material supplied by them. These can be either in the local or foreign currency, and may or may not carry interest, depending on the arrangement between the borrower and the supplier. Supplier credit is typically extended during the construction period, i.e. between one to three years. Post commencement of project, the developers normally substitutes the supplier credit with a term loan.
 - 1.4. **Construction Finance/Bridge Finance**- Commonly, the term loans raised during the pre-construction phase carry higher interest rates due to the prevalence of higher risks during this period. It has been observed, that project developers use short term loans to fund projects during the construction period, and then refinance the loans with cheaper term loans post commencement. These loans are provided by private NBFCs and commercial banks and in some cases, construction loans convert into term loans once the project achieves commercial operations.
 - 1.5. **Take-out Finance/Refinance**-This financing option is relevant to RE projects which begin commercial operations. At this stage, when the cash flows are stable, and the operational risk is reduced significantly, the developers approach FIs to refinance existing loans at better terms, lower interest rate, and for a longer loan time period.
 - 1.5.1. **Take-out Finance through ECBs**- RBI allows RE projects to refinance rupee debt using ECBs, but with prior RBI approval. Eligibility criteria for refinancing include: (i) Take-out finance must be within the first 3 years of commercial operation; (ii) Loans provided through ECBs must have a minimum maturity of 7years; and (iii) Other conditions on end user, loan amount and interest are applicable.
 - 1.5.2. In 2011-12, the government of India issued guidelines for setting Infrastructure Debt Fund (IDF) through the mutual fund route to provide low-cost, long-term funds for infrastructure development including renewable energy. Though IDFs such as IL&FS have refinanced some projects in the renewable energy sector, their presence has largely been limited to a few transactions.
 - 1.6. **Lease Financing**-Lease financing is a commercial arrangement between an FI and the project developer, where the former purchases the generating equipment and other components (usually equivalent to 70 to 80 percent of the project cost) and leases them to the latter. Under this form of finance, the project developer is able to get access to debt in the form of a lease. Additionally, the terms under the lease financing arrangement are usually better than those of a term loan, as some benefits from the accelerated depreciation are passed on to the developer by the FI. In India, the leasing industry is dominated by NBFCs. Though the banks are allowed to perform leasing activities, they do not have significant presence in this sector.
2. **EQUITY FINANCE**- Strategic investors, venture capital, private equity are the principal providers of equity funding to RE projects. Private equity funds have dominated the equity investment scene. Majority of the investments are in INR and the funds stay invested in the companies for a period of 5

to 7 years. Recently, some equity investments have been made in companies developing small-scale RE applications and projects. Typically, the hurdle rates for direct equity investments range between 16 and 20 %, and are dependent on factors, such as the size of the project, the background of sponsor, the technology risk, the stage of maturity, and geographic and policy risks.

2.1. Private Equity Investments-Private equity funds have dominated the investment landscape in RE projects in India since 2008. Typically, these funds are invested in majority-owned RE aggregation vehicles. Such vehicles include Green Infra Private Limited (99 % owned by IDFC Private Equity), Renew Power Ventures Private Ltd. (99 % owned by Goldman Sachs Private Equity), and Continuum Wind Energy (majority owned by Morgan Stanley Infrastructure Partners). Most equity investments in Indian RE companies have been made at the parent company level, and not at the project level. This approach provides various exit options, such as IPO route, or sale to a strategic investor

2.2. Other Equity Investors –

2.2.1. Development finance institutions such as IFC provide equity funds to large and small-scale RE projects. IFC has also provided funds to private equity funds like Nereus Capital (a RE-focused private equity fund) and SBI Macquarie Infrastructure Trust. Both these equity funds are active investors in India's RE sector.

2.2.2. Pension funds have also invested in RE in India through private equity funds, such as the SBI Macquarie Infrastructure Trust.

2.2.3. Sovereign wealth funds, namely Khazanah Nasional (Malaysia) and Temasek (Singapore) which have international exposure to the RE sector, are now actively looking for investment opportunities in India's RE space.

2.3. **Mezzanine finance** - Mezzanine Finance is a form of quasi debt/equity instrument, wherein sector- specific investors or short-term investors park their funds assuring higher returns (typically 15 % more than the debt instruments). This facilitates availability of low cost equity to project promoters. The investment is secured by charging on assets after assigning first charge to the term-loan lenders. Mezzanine Finance is typically associated with debentures offered to the investor with an option to convert them to equity at a later stage. This form of finance offers flexibility to meet both the investor's and the company's requirements, and also provides medium term capital without significant ownership dilution. Mezzanine finance is less risky than equity for investors, as it provides fixed interest along with principal repayment and minimum guaranteed returns to investors. It is normally used in situations where the company is generating adequate cash flows to service coupon payments and the promoters are unwilling to dilute their equity stake in the company. The Indian RE market has seen very few mezzanine finance transactions. Few of the noteworthy transactions are - Mytrah Energy raised USD 78.5 million from IDFC Project Equity and USD 19 million from PTC Financial Services. Solar IPP Azure Power raised USD 13.6 million from Germany's DEG.

2.4. **Partial credit guarantee facilities** - Partial credit guarantee facilities assume the lenders' default risk on a part amount of the debt provided to the project, in return of a predetermined fee

charged by the guaranteeing organization. To elaborate further, under a partial risk guarantee program, the project developer borrows funds from a FI to construct the project. The organization providing the partial risk guarantee, gives a guarantee to the FI for repayment of a portion or full amount of the debt. It charges a fee on the amount guaranteed. In case the project developer is unable to service the interest and principal repayment, the guarantee is invoked and the obligation to the FI is fulfilled by the guaranteeing organization

Partial credit guarantees improve a project's credit rating and reduce the perceived investment risk. They are used to encourage lending to projects that otherwise would not have been funded by FIs due to various reasons, such as the use of new technologies, counterparty risk, or a lack of understanding among lenders regarding a new sector. Guarantee providers can be government bodies, development banks, and government backed FIs. In India, risk guarantee programs for RE projects have not scaled up and have been limited to a few cases. Some of them have been mentioned below –

2.4.1. ADB's India Solar Generation Guarantee Facility- ADB has partnered with L&T Infrastructure Finance (L&T Infra) and Singapore-based Norddeutsche Landesbank (NORD/LB) to fund solar projects with capacities below 25 MW in India. Under this arrangement, L&T Infra and NORD/LB provides loans to solar projects, and ADB provides a partial risk guarantee to L&T Infra and NORD/LB. ADB in turn collects a guarantee fee (ranges between 1.5 and 2.5 percent) from L&T Infra and NORD/LB. As of June 2012, two solar projects with capacities of 25 MW and 10 MW have been funded using ADB's guarantee facility. The facility has had limited success and has been constrained by the lack of partner FIs.

2.4.2. World Bank Group's Partial Risk Sharing Program- the World Bank Group (WBG) provides partial risk and credit guarantee products to support projects including RE projects in developing countries. However, this facility has not been used by Indian FIs.

2.4.3. Partial Guarantee for Investment -USAID's Development Credit Authority has partnered with a U.S.-based institutional investor Northern Lights Capital Group to facilitate a USD 100 million investment in India's clean energy sector via Nereus Capital. USAID provides a 40 percent credit guarantee for a USD 100 million Alternative Energy Fund managed by Northern Lights Capital Group. The partnership is the first such guarantee facility with a private investment fund to facilitate targeted investment.

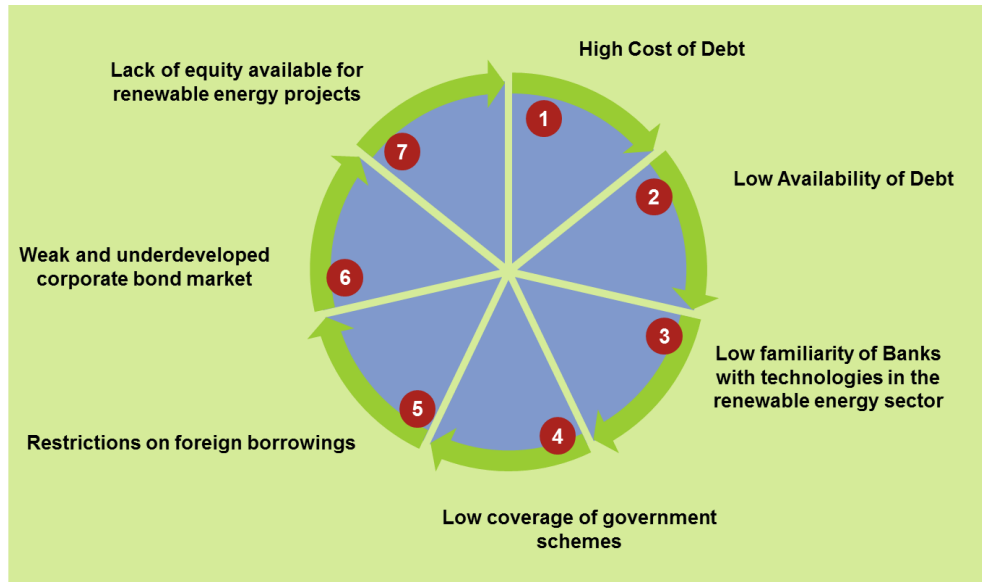
2.5. **Rural off-grid financing** - Rural off-grid RE projects are usually set up using a combination of government subsidies, grants/investments from sector specific investors, and in some cases small loans (about 10 to 20 percent) from FIs. Very few projects receive commercial-grade financing as the ticket size is significantly lower than large scale projects

Challenges to RE Financing



Key Barriers to Finance in Renewable Energy Sector

One of the major challenges facing the renewable energy development is adequate and timely financing. Renewable energy projects are capital intensive in nature and hence securing finance remains a crucial part of project development for project developers.



The key issues pertaining to finance in the RE sector have been detailed below –

1. High Cost of debt :

- 1.1. The benchmark interest rates in India are significantly higher, approximately 7% - 8% higher than in developed countries such as USA and Europe. This differential amounts to substantial variance in debt costs - cost of debt in a renewable energy project in India will typically be in the 12-15% range, as compared to the 5-7% range in the United States / Europe. This leads to significant increase in the overall project costs.
- 1.2. Loans are available at variable rather than fixed rates due to the short term lending nature of banks on account of asset liability mismatch and the absence of bond markets. Therefore, like other projects, RE projects are also subject to a variable ROI regime as against a fixed rate of interest. In such a scenario, any unexpected rise in interest rate may consume the company's cash flows and thereby increase the overall cost of borrowing.
- 1.3. Developers bear the burden of high finance costs in Renewable energy projects as they typically involve high initial investment leading to high cost of generation as compared to conventional power. This further amounts to high tariffs and does not get favor from already cash strapped electricity Distribution companies.

2. Low availability of debt for renewable energy sector is another industry concern , led by :

2.1. Non-conductive Bank policies –

2.1.1. Renewable energy projects require long term debt of more than 10 years which the Banks are unable to finance due to the short-term nature of their borrowings. Short tenor loans stress the cash flows from the projects in the initial years, thus adversely impacts their financial attractiveness to investors.

2.1.2. Majority of the Banks include renewable energy sector as a part lending to power, utilities and energy sector. The large amount of credit extended to the fossil fuel based power sector has caused banks to reach their respective exposure limits thus limiting their ability to finance renewable energy projects. Further, Banks are cautious in lending to this sector, as it is still in a nascent stage characterized by emerging technologies and uncertain regulation.

2.1.3. Further, it has been observed that first time developers without existing banking relationships find it extremely difficult to get their projects financed from public sector banks. Most RE projects that are funded by public sector banks are based on existing relationships that the banks have with the project promoters. Moreover, few RE developers get access to finance due to stringent project evaluation policies of Public sector Banks

2.1.4. FIs normally provide funding for RE projects post obtaining partial or full guarantee from the parent entity. Only few private FIs provide debt to projects without a guarantee from the parent entity. It has been observed, that pure project finance (i.e., non-recourse based financing) is not very popular in India. Loans are typically not sanctioned solely on the basis of cash flows and the overall strength of the project. Lenders normally seek to have recourse to the parent company in the event of failure of the project. As a result, the developers are unable to take risks to undertake additional projects and also unable to leverage the balance sheet of the parent companies.

2.2. Low familiarity of Banks with the RE sector –

2.2.1. It has been observed, that most banks do not lend to RE projects due to unfamiliarity with sector, markets and related government policies. This is particularly relevant to solar energy based projects where technologies are still evolving and have not reached a maturity stage. Most Banks are reluctant to invest in technologies that are not closely followed by them. As a result, they are funding cautiously and have adopted a wait and watch approach. Given the above, project finance in RE sector is yet to take off on a substantial scale.

2.2.2. Solar energy contributes a significant chunk of the overall power generation in the RE space. The viability of a project depends on the correctness of the radiation data for the site. In the absence of proper and correct information / databases on solar irradiation, the lenders are not comfortable lending to such projects.

2.3. Low coverage of Partial Risk Guarantee Programs in the RE sector –

2.3.1. Even though the partial risk guarantee programs cover (in part or full) the risk associated with a developer defaulting on part or full of the outstanding loan to FIs, RBI guidelines classify such defaults as nonperforming assets of banks. This reflects negatively on the performance of the banks, thus restricting bank lending to this sector.

2.3.2. Low access to finance for small projects- Typically, the funding requirement for off-grid projects is relatively small and falls below the minimum qualification criteria of most banks and financing institutions. Furthermore, most FIs have limited penetration in rural areas, where off-grid projects are implemented, thereby limiting the ability of RE developers to reach out to the FIs for raising finance for such projects.

3. Restricted foreign borrowings limiting the sourcing debt capacity and higher cost of debt due to hedging costs

3.1. Restrictive government regulations on volume and interest rates limit the sourcing of debt from international lenders. E.g. - A company in the renewable energy sector can resort to ECB subject to a maximum of USD 750 MN during the financial year. Additionally, the flow of foreign funds is restricted due to interest rate ceilings imposed by the government of India on foreign loans. The ECB interest rate (all-in-cost ceiling) is capped at six-month LIBOR + 350 bps for three to five year loans and six-month LIBOR + 500bps for loans longer than five years. These stringent conditions make the RE sector unattractive for investment by the foreign investors.

3.2. Foreign currency payments carry a risk of exchange rate fluctuation as both the debt and interest repayment has to be made in foreign currency. In order to mitigate these risks, some lenders demand partial or full hedging of the debt component which leads to additional 3 to 6 percent costs in the overall loan. This makes it comparable to the cost of domestic debt. Further hedging is not available for long period, with the maximum hedge being only for 5 years.

3.3. The availability of foreign loans is further limited by international lenders requiring a company (or project) rating equivalent to India's sovereign rating (BBB), in addition to requiring credit guarantees from the holding companies. Moreover, higher international funding transaction costs also make it difficult for small project developers to seek foreign loans.

4. Weak bond market –

4.1. The weak state of the bond market largely due to stringent regulations and underdeveloped financial markets has impeded availability of credit to this sector. India's total outstanding bond market at 53% as a % of GDP is insignificant as compared to developed countries, such as Japan (247%), U.S. (176%), Malaysia (76%), and China (60%)

4.2. In the absence of a large, well developed and liquid corporate bond market, the RE project developers are unable to raise money directly through the issue of bonds; thus incurring cost of financial intermediation.

4.3. Government regulations restrict investments from banks and insurance companies in corporate bonds and also impose a ceiling on foreign investments in rupee-denominated government and corporate bonds. Further, the Indian financial markets do not offer adequate liquidity for corporate bonds and risk mitigation instruments, such as credit default swaps.

5. Underdeveloped state of REC market –

5.1. Typically, RE developers who have not availed of feed-in tariffs sell RECs in the open market and earn some extra revenue. But the slackening demand of RECs coupled with the fall in prices has hurt REC investors. The quantity of unredeemed RECs has increased substantially in the last few years. Poor enforcement of RPOs, demand-supply mismatch, absence of long term certainty in terms of price (beyond FY 2016-17) & availability, concerns of project financiers are some of the major issues which have diverted developer's interest from REC based sale of power. Majorly, due to the issues in enforcement / compliance, the FIs are reluctant to lend to projects based on RECs scheme, consequently businesses are unable to secure funding to meet their requirement.

5.2. Further, REC certificates are time-constrained, being effective only for 365 days, which makes them difficult to get accepted by financial institutions.

6. Poor state of SEB's and unfavorable local business environment restricts lending to some States- Poor financial condition of SEBs in many states, which are counterparties to PPA's signed by renewable energy developers, restricts Bank credit on account of high risk associated with such projects.

6.1. State electricity boards (SEBs) normally buy power from renewable energy projects through PPAs. Since the SEBs is in bad shape financially, both the developers and lenders recognize the risks associated with PPAs because of the possibility for non-payment by the SEB. In such States, the banks are apprehensive of lending to renewable energy projects that signed PPAs with SEBs due to the inherent risks associated with the poor finances of the SEBs. Example- In the state of Tamil Nadu, Banks are now refusing to provide debt to new wind-power projects, due to the weakening financial health of Tamil Nadu SEBs.

6.2. For the reasons mentioned above, most public sector banks have now started scaling down their exposure to the power sector due to weakening financial health of the state owned utilities. Banks are now following stringent norms for lending to the sector, especially to projects entering into financial contracts with state owned utilities. This has impacted the availability of debt to RE project developers as they usually enter into PPAs with these utilities.

7. Low availability of equity for RE projects :

7.1. Equity finance skewed towards specific RE sectors such as wind and solar- It has been noticed, that the availability of equity is heavily skewed towards companies implementing less risky technologies, such as wind and solar. Further, equity finance is limited to states with good policy regimes and attractive business environments. Besides, developers also face higher cost of equity and lower valuations from investors. This is primarily due to the prevalence of high

hurdle rates, up to 16 to 20 percent of equity investors for RE projects in India, compared to the hurdle rates of 10 to 15 percent for similar projects in the U.S. and Europe.

- 7.2. Low exit options for equity investors –Private equity investors tend to exit projects after few years of project operation and invest in new projects. But most of PE investors are struggling to raise new funds due to their inability to exit from existing investments, on account of the lackluster capital markets. This limits the ability of such investors to scale up and fund new projects.
- 7.3. Though the availability of equity from both domestic and foreign sources is relatively better than the availability of debt, it is the lack of availability of debt to refinance projects which forces equity to be invested in a project for too long, and hence restricts the equity available for commencing new project, i.e., Since the investors are unable to raise reasonably priced debt even after the project is built and operating, the developers thereby lack the capital available to invest in the next project.

Global Overview, Trends & Best Practices



Global Status - Renewable Energy

Renewable Energy continued to build its share of the global electricity market. Renewable energy excluding large hydro made up 43.6% of the new power capacity added in all technologies in 2013 (the same figure as in the previous year), and raised its share of total generation worldwide from 7.8% to 8.5%. Global energy-related CO₂ emissions would have been some 1.2 billion tons higher if not for Renewable Energy contribution[#]

Global new investment in renewable energy—not including large hydropower projects was an estimated USD 214.4 billion in 2013, lower by 14% from 2012. The total investment includes early-stage technology support through VC, R&D, assistance from private equity and public market investors, the roll-out of utility-scale wind farms, solar parks via asset finance, and the deployment of small-scale distributed capacity such as rooftop solar.

The decline of 14% YoY is partly on account of uncertainty over incentive policies/ and retroactive reduction support in some countries (mainly Europe and US). The other main reason behind the investment decline was from sharp reductions in technology costs, especially for Solar PV and Wind Power – even as the absolute solar investments went down, 2013 saw a record level of Solar PV installations; lower costs and efficiency improvements made it possible to build onshore wind installations in a number of locations without any subsidy support. Of the committed USD 214 billion, Solar accounted for the most, followed by Wind, Bio Power and Small Hydro in that order.

Chart6: Global New Investment in Renewable Energy, USD Bn

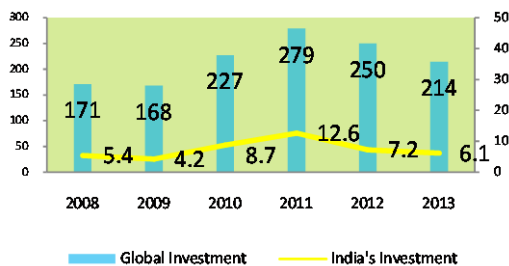
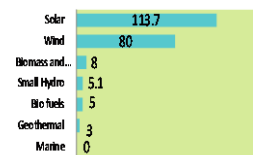
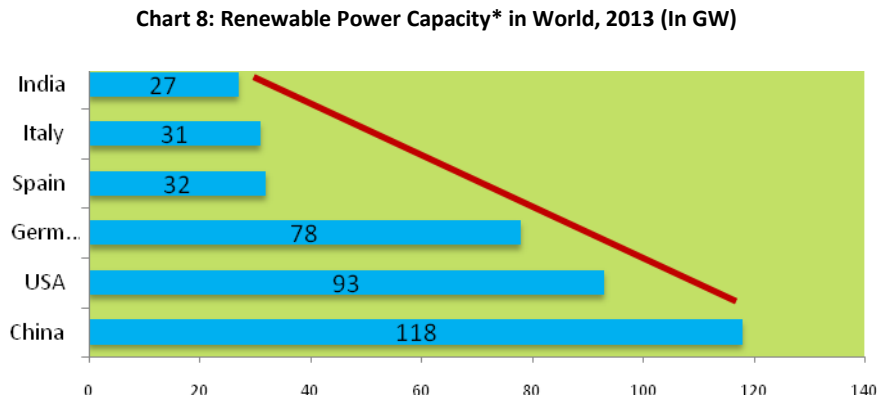


Chart7: Segment wise breakup of Global investment, 2013



Source : REN21 Report, 2014, Bloomberg Energy Finance Report

China, the United States, Germany followed by Spain, Italy, and India remained the top countries for total installed renewable power capacity. An overview of Total Renewable power capacities for Top 6 countries (including India) listed below:



Source : REN21, 2014 Report. *Excludes Hydro Power

Key Global Trends and Highlights#:

Leading Nations

- **China's** new renewable power capacity **surpassed new fossil fuel** and nuclear capacity for the first time. **Spain became the first country** to generate more electricity from wind power (20.9% of total) than from any other source for the entire year.
- China was the anchor of renewable capacity deployment, accounting for almost 40% of the global expansion and over 60% of non-OECD growth, as per the medium term RE report by IEA. Meanwhile, congressional gridlock hampered US interests.
- Renewables **no longer remained dependent on a handful of countries**. The number of developing nations with policies supporting RE surged from 15 developing countries in 2005 to 95 early 2013.
- Growing numbers of cities, states, and regions sought **strong targets to transition to 100 %** renewable energy. For example, Djibouti, Scotland, and the small-island state of Tuvalu all aim to derive 100 % of their electricity from renewable sources by 2020.

Investment

- Renewable energy provided an estimated **19 % of global final energy consumption** in 2012, with modern renewables accounting for 10 % and the remaining 9 % coming from traditional biomass.
- Solar power with approximately 53% share, led in terms of investments during 2013. Even as global investment in solar PV declined nearly 22% yoy, new capacity installations increased by about 32%. The **sharply reduced cost** of solar photovoltaic system meant that the record amount of PV capacity (some 39GW) was construed for less money than the smaller 2012 total of 31GW.

- Investment in wind was relatively resilient in 2013, falling just 1% to \$80 billion, while that in solar tumbled 20%. Biofuels saw a 26% drop in investment to \$5 billion, while biomass and waste-to-energy fell 28% to \$8 billion, and small hydro-electric (projects of less than 50MW) declined 16%. Geothermal was the only riser, investment in it gaining 38% to \$2.5 billion

Financing

- **Public competitive bidding**, or tendering, gained prominence, with the number of countries turning to public auctions rising from 9 in 2009 to 55 by early 2014. Central and South America remained global leaders in RE tenders. Brazil included solar power under tendering for the first time in November. For all renewable energy projects larger than 500 kW, Ontario replaced FIT support with a competitive bidding scheme. India too leveraged the system through Phase 2 of the Jawaharlal Nehru National Solar Mission. At the sub-national level, the state of Karnataka and Punjab were the first movers.
- In terms of Funding, **VC and PE** investment in renewable energy was down 46% at \$2.2 billion, led by lack of liquid funds due to dearth of successful exits and depleted cash holdings of clean energy venture funds. Of the shrunken pie, wind attracted a significant amount of new private equity capital into project development businesses, followed by Solar and Bio-fuels.
- Public market equity raising jumped over 201% to \$11bn. The financing stream was backed by **improved share price performance**, as many companies in the solar and wind manufacturing chains moved back towards profitability. It was also backed by institutional investors' increased appetite for funds offering solid yields on portfolios of operating projects.
- Amidst a continued surge in the issuance of green bonds, BNEF expects the total volume of green bonds in 2014 to almost triple the US\$14b issued in 2013, if the current pace is maintained.
- Institutional investors continued to play an increasing role, particularly in Europe, with a record volume of RE investment during the year. Development banks were again an important source of clean energy investment, with some banks pledging to curtail funding for fossil fuels, especially coal power.
- Deepened **involvement of long-term investors** such as pension funds, insurance companies, wealth managers etc. While currently this makes up only a tiny fraction, , the trend is to outlook for.
- North America saw the emergence of innovative **yield-oriented financing vehicles**, which pass a high share of earnings to shareholders and provide stable, long-term cash flows. **Crowd Funding** continued to become more main-stream.

Government Policies

- 2013 saw an increased focus on revisions to existing policies and targets, with some adjustments made to improve policy effectiveness and efficiency, and other to bring down costs regarding deployment. As in past years, most renewable energy policies enacted or revised during 2013 hinged on the power sector. Feed-in policies and renewable portfolio standards (RPS) remained the most commonly used support mechanisms. Feed-in policies evolved further towards premium payments in the power sector, and continued to be adapted for use in the heating sector.
- China introduced higher tariffs for offshore wind to spur the sector. Non-auction projects operational before 2017 will receive up to CNY0.85/kWh (US\$0.14), while projects in intertidal waters will receive CNY0.75/kWh (US\$0.12). A 13GW solar capacity target for 2014 has also been confirmed.

Source : Bloomberg UNEP Report on Global Trends in Renewable Energy Investment, REN 21 2014 Report; REN 21 2014 Report; E&Y RECAI, 2014

- France's energy law is likely to come through parliament after the cabinet approval. The bill aims at reducing nuclear to just 50% of total electricity by 2025 from 75% now, as well as target 32% of energy from renewable sources by 2030. The proposed measures include tax breaks and low interest loans, with the Government expecting around €10b (US\$13b) of investment to be mobilized.
- Energy use for the provision of useful heat represents about half of total world final energy consumption. While the heating and cooling sector lags policymakers' attention, the adoption of targets and support policies has increased steadily. As of early 2014, at least 24 countries had adopted renewable heating (and cooling) targets and at least 19 countries had obligations at the national or state/provincial level.

Select Country Case Studies:



China: Renewable energy investment has risen considerably in the world's leading emerging market, and Chinese fiscal and governmental policies foster market development

Current Status

In 2013, China invested more in renewable energy than did all of Europe combined, and it invested more in renewable power capacity than in fossil fuels. It also led the world in hydropower capacity, new wind power installations, solar thermal heating among others. China was home to about 24% of the world's renewable power capacity. In the first three quarters of 2014, China spent \$175 billion on clean energy projects.

Recent Developments

- China introduced higher tariffs for offshore wind
- A 13GW solar capacity target for 2014 has also been confirmed, with a heavy focus on distributed projects.
- China has listed out 35 RE projects that will be open to private investment.
- Further plans for a US\$40b project to develop 15GW of tidal power.

Key Financing Policies/ Mechanisms

Renewable Energy Law: The legal framework consists of mandated targets, market-based incentives, and direct subsidies. Subsidies are administered customized for integrated PV applications, rural applications, and captive use.

Feed-in Tariffs: For Wind Power, Regional FiTs were introduced in 2009. For Solar, China offers a national FiT at RMB 1 (\$0.164) per kWh with regional adjustments

Government Financial Support: In 2009, two solar subsidy programs initiated: a) An up-front subsidy for building-integrated PV (BIPV) systems and a subsidy of 50% of the bidding price for the supply of critical components are provided (Zhang et al., 2013) b) The Golden Sun Demonstration Programme provides direct subsidies for on- and off-grid PV systems

Renewable Power Quotas: Government agencies set and modify quotas annually for the proportion of power purchased that must come from renewable energy sources. This requirement is directed at power generating companies, grid companies, and provinces and encourages renewable energy investment.

Renewable Portfolio Standards: Renewable Energy Law, enacted in 2006, specified renewable portfolio standards. 2009 Amendments to the law mandates grid companies to absorb the full amount of renewable power produced. All generators and grid companies regulated by the RPS are state-owned enterprises, and their managers

are evaluated annually by the State-owned Assets Supervision and Administration Commission (SASAC). Deadlines and economic penalties are imposed on failure to comply.

Priority Dispatch: Government agencies require grid companies to give priority electricity dispatch to renewable energy generators over coal or other high-emission power plants.

National Renewable Energy Fund: Surcharges applied per kWh on electricity prices; which is pooled with other national funding sources into a national renewable energy fund to finance FITs for wind projects

China is encouraging **local renewable equipment manufacturers** through a range of tax exemptions as well as direct financial support



Germany: The German renewable energy market is among the most expansive and innovative. A combination of national-level policies and investment protection has fostered tremendous growth since the German Renewable Energy Act was enacted in 2000.

Current Status

Germany is one of the key renewable markets in European Union and has been one of the pioneers in the field of renewable energy development in Europe with a proper policy on renewable development since 1979. In the first quarter of 2014, renewable energy sources met a record 27 % of the country's electricity demand.

Recent Developments

- The European Commission approved the amendments to Germany's renewable energy law (or EEG) at the end of July. The new law will impose technology-specific deployment caps and initiate a transition to competitive bidding. It will require the operators of new plants >500kW (reducing to 100kW from 2016) to market their electricity directly, supplemented by premium payments (i.e., not fixed tariffs). It also requires new power plants >10kW to pay 30% of the EEG surcharge on self-consumed power, increasing to 40% in 2017.

Key Financing Policies/ Mechanisms

Simple feed-in tariff (FIT) policy, which pays renewable energy producers a set amount for the electricity they produce under long-term contracts, has driven the solar power boom. The long-term fixed Price allows equal access to the energy production market and fuels rapid scaling of the renewable energy market. However, lowered FITs have lessened demand and led to a massive oversupply of solar panels in Germany, offering a lesson about the **need for careful planning** for the emerging solar market in India.

Capital Subsidies/ Rebates: Capital subsidies up to 40% of investments are provided to individuals and MSMEs for installations of solar collectors. Soft loans and investment incentives by the market incentive programme for biomass combined heat and power (CHP), small hydro-power, photovoltaic (PV) in schools

Several **soft loans schemes** indirectly support renewable energy technologies for enterprises, and the municipalities. Credit terms range from 10 to 20 years. The interest rates offered are 1% to 2% below market interest levels.

To incentivize research, **Non-repayable grants** for R&D in the field of photovoltaic, wind power, geothermal, solar thermal power plants and low temperature solar thermal.

Deductions and accelerated depreciation are provided for leased and owned buildings meeting green building requirements.



USA: The U.S. clean energy sector has seen \$35–65 billion of investment each year since 2007 with overall investment in clean energy surging to \$51.8 billion in 2014. The United States is the second largest investor in clean energy after China.

Current Status

Renewable energy accounts for 16.28 % of total installed U.S. operating generating capacity: water – 8.57 %, wind – 5.26 %, biomass – 1.37 %, solar – 0.75 %, and geothermal steam – 0.33 %.

This is up from 14.76 % two years earlier (i.e., June 30, 2012) and is now more than nuclear (9.24 %) and oil (4.03 %) combined. Actual net electrical generation from renewable energy sources in the United States now totals about 14 % according to the most recent data

Recent Developments

- Recent months have witnessed few instances of partisan politics, impacting both specific initiatives and investor confidence: (i) failure to renew the PTC for wind and other technologies in the Senate; (ii) blockage of the proposed US\$150m loan guarantee for the flagship Cape Wind offshore wind project; and (iii) a Republican funding bill designed to topple the Clean Power Program targeting 30% carbon emission reductions by 2030.
- The US Department of the Interior is continuing to auction off prime sites for offshore wind developments, the latest offering of almost 350k acres off the coast of New Jersey that could host as much as 3.4GW of capacity

Rebates and Buy downs: Offers a refund / discount for cost of new renewable energy installations. These schemes are administered through local utilities / state agencies and rebates are provided based up on installed capacity of system.

Several **grant programs** along with financial as well as technical assistance are provided under separate schemes. These are helpful towards ensuring **energy access** -- Rural Energy for America program, Tribal Energy Program Grant to name a few.

Under Renewable Electricity Production Tax Credit (PTC) – **Per unit tax credit for electricity generated** by renewable energy resources and sold by the taxpayer to an unrelated person; applicable for industrial and commercial customers.

Clean Energy Renewable Bonds: Certain public entities like electric cooperatives, can issue bonds to finance RE projects. The bondholder receives federal tax credits in lieu of a portion of the traditional bond interest, resulting in a lower effective interest rate for the borrower.

Green banks : They obtain low-cost capital and use it to support clean energy projects at rates lower than for purely private sector transactions, resulting in significant savings in the cost of delivered clean energy.

Qualified Energy Conservation Bonds: Issued by state, local and tribal governments. Under QECBs, the bondholder receives federal tax credits in lieu of the traditional bond interest. Credits exceeding tax liability may be carried forward to the succeeding tax year.

State-level Renewable Portfolio Standards (RPSs): In California, for example, utilities procure solar energy to meet mandated renewable energy targets. In contrast to India's RPO program, the RPS has proved to be a very effective policy due to strong compliance and enforcement mechanisms.

**Key Financing Policies/
Mechanisms**

Source : Crisil Report on Low Cost Financing, 2013, NRDC e paper, 2014, RECAI 2014,

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