



THE POSSIBLE WAYS TO FINANCE THE RENEWABLE ENERGY PROJECTS IN TERMS OF PROJECT FINANCE AND LAW

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ABSTRACT

The purpose of this paper is to examine the possible tools and their ways to finance the renewable energy as it is becoming a hot topic among the investors throughout the world. Together with the increase in demand for the renewable energy, the question of how to finance has become more of an issue. Except the commercial banks which have been considered as the major lender for the renewable energy project, many other tools such as international organizations, governments, capital markets have come up with the attractive conditions to the interested investors. This paper is analysing the methods of these new models by giving example from the renewable energy projects being adopted in the world. Though the commercial banks still have been preferred, the gap between the commercial banks and other financial ways have been expeditiously filling and it is more likely to say that these new models will have a positive effect on the renewable energy projects in the near future.

Keywords: *Renewable energy, project finance, law, securitization, export credit agencies, feed-in tariff, power purchase agreement, insurance.*

INTRODUCTION

1. GENERAL

The term “renewable energy” refers to energy that is engendered from a great variety of natural resources such as wind, geothermal heat, sunlight, water, wastes. They can be grouped as centralized electricity generation such as: wastes; geothermal and large hydro; decentralised electricity generation such as small hydro, wind and photovoltaic’s; heating technologies like energy crops, solar heating, industrial wastes, geothermal and transport like pyrolyse solid biomass.^[1] These resources, generally, can be used to generate electricity for industrial processes, economic sectors, and heat for the buildings and for transportation. Resources of renewable energy are not distributed on an equal basis all around the world. Every country has different kinds and quantities of renewable energy sources. In that sense, each renewable energy technology is in different stages of development and commercialization. There are many kinds of renewable energy sources throughout the world.

2. PRESENT SITUATION OF THE RENEWABLE ENERGIES

The present situation of the each renewable energy resources for technological progress up to 2010 can be summarized as follows:

Hydro: Hydroelectric plant is capital intensive. Unlike other most of the renewable energies, hydroelectricity is a well-structured and widely used technology. The growth rate from 2006 to 2015 is 2.3 %.^[2] There are two kinds of hydros, all of which are large and small hydros. For the large hydro powers, at present, there is no prominent object for further cost reductions. Small hydro dominates being considered as superior per unit of output compared to large scale hydro. Capital costs are high, but they are tending to reduce as the new construction techniques develop.^[3]

[1] Stasiek, Jan A., *Renewable Energy Resources: Energy for the Future*, AGNI Publishing, Printed in AGNI, 1999

[2] Figures from the Earth Policy Institute (Solaris); see: http://www.earth-policy.org/index.php?/data_center/C23/- 2010.

[3] Lewis, Carol, *International Energy Agency, Renewable Energy Policy in IEA Countries*, Volume: II Country Reports, 1998

Wind Turbine: World installed wind electricity-generating capacity has grown to be 26,963.^[4] The average costs of this renewable energy have dropped by 30% from 1990 to 2004. However, both the further technical developments like, larger turbines and the significant developer consolidation are highly likely to affect the choice of financing structures for future projects. Additionally, lenders and tax investors are strongly thought to be becoming more willing to finance projects using new wind turbines. It is also believed that, the development of high potential off shore sites will reduce costs further.^[5]

Solar photovoltaic: It is one of the fastest growing power-generation renewable sources. The photovoltaic (“PV”) world production market at the end of 2008 had reached 19,200 MW, with an average annual growth of 48 per cent since 2002.^[6] The costs have reduced by 25% as the technology and manufacturing have been improved and increased. Even though the “credit crunch” has a noteworthy shock on the project financing market commonly and with countless deals postponed or put on hold in some specific sectors, photovoltaics projects still come into view a secure harbour for long term investments.^[7]

Solar thermal heating: This is becoming one of the attractive, profitable businesses and challenging models amongst renewable energy sources. Up to date, good quality solar thermal systems have a life of 20-25 years, with extremely low maintenance needs and clearly no costs at all for fuel.^[8] It is most likely to reach marketability as the costs are expected to reduce and production techniques are improved.

Biomass: This employs a variety of fuel that can be stored and used for electricity generation when necessary, particularly fossil fuel. It can be a cost-effective industry. In most cases; in addition to private financing, the support of the government is needed. Over the next 20 years, it is highly likely, efficiencies of biomass is expected to increase.^[9]

Bio fuel: The production capacity of bio fuel is approaching reality on a commercial basis. Most of the developed countries have established advanced production tracking databases. Additionally, bio fuel can compete with the

[4] Figures from the Earth Policy Institute (Solaris); see: http://www.earth-policy.org/index.php?/data_center/C23/- 2010.

[5] Sathyajith, Mathew, *Wind Energy: Fundamentals, Resource Analysis, and Economics*, Springer, 2006

[6] Figures from the Earth Policy Institute (Solaris); see: http://www.earth-policy.org/index.php?/data_center/C23/- 2010.

[7] Sferruzza, Arturo, *Solar Revolution*, Sweet & Maxwell is part of Thomson Reuters, 2010

[8] European Renewable Energy Council, *Renewable Energy in Europe: Building Markets and Capacity*, James and James Ltd., 2004

[9] Smith, Kimberly K., *Powering Our Future: An Energy Sourcebook for Sustainable Living*, Alternative Energy Institute, 2005

taxed price of oil and/or petrol as this kind of renewable source is set by excise tax which could result in providing a lower cost.^[10]

Geothermal: This energy is independent of the sun and having its source within earth's core. It is suggested that the resource of the geothermal power is adequate to supply human's need, but it is expensive to install. It remains constrained by the capital costs. However, for the past few years, interest in geothermal energy is growing. World cumulative installed geothermal electricity-generating capacity has become 10,500 MW according to 2009 data base.^[11] As the technology develops, and economic advantages of resources rise; providing a good return on capital, interest has increased, and geothermal has become more competitive. Knowledge and experience play an essential role for the development of the geothermal source since these projects bears multiple risks.

Tidal power: The moon and sun's gravitational field's basis the natural increase and decrease of coastal tidal waters. It is not broadly used yet; however, it is strongly believed that it will possible future source of renewable energy. The costs are higher than the competitive level because of the expectation of the long capital payback and higher rates.^[12] On the other hand, once it has been established it will generate profit for a long time (at least 100 years). Though, it only contributes 10% of the world's total hydro power, it represents a significant resource.

Wave energy: The wind over the surface of the sea causes the gradual transfer of energy into the water to produce waves. In some parts of the world where the wave climate is energetic and where predictable energy sources are expensive, wave power can be competitive. It is not a widely used technology and it is expensive compared to other renewable sources. It has high capital costs, but low operating costs.^[13] Some powers have been established throughout the world. However, there is a significant question as to how the wave energy fits in the EU's plan to get 20% of its energy from renewable energy by 2020.

Waste: General waste burning has been exempted; however, the biodegradable part of waste can be considered as renewable.^[14] Waste is a growing source of energy.

[10] Rajagopal, Deepak & Zilberman, David, Review of Environmental, Economic, and Policy Aspects of Bio fuels, 4341, Policy Research Working Paper, 2007

[11] Figures from the Earth Policy Institute (Solaris); see: http://www.earth-policy.org/index.php?/data_center/C23/- 2010.

[12] Smith, Kimberly K., Powering Our Future: An Energy Sourcebook for Sustainable Living, Alternative Energy Institute, 2005

[13] Nisbet, E. G., Leaving Eden: To Protect and Manage the Earth, Cambridge Press University, 1991

[14] European Renewable Energy Council, Renewable Energy in Europe: Building Markets and Capacity, James and James Ltd., 2004

According to current statistics^[15], it is probable that, particularly oil and gas, coal, still to have been considered as contributing the largest percentage of the energy source in the world. However; for reasons such as reluctance to depend on fossil fuels, climate change concerns, safety, and social cohesion during the 1990s the development of the electricity generation from renewable energy sources became one of the top priorities of the European Union attain the CO2 emissions reduction targets of the Kyoto Protocol.^[16] For this purpose, “in 2001, the EU Directive 2001/77^[17] set out, inter alia, indicative targets for each Member State for the promotion of electricity from RES-E, required Member States to produce national action plans setting their own targets for RES-E and to eliminate barriers to the market in relation to administrative authorisation procedures, and allowed Member States to establish support schemes to boost renewable energy sources.”^[18] Thus, in March 2007 the European Union introduces a target that 20 percent of the European electricity consumed would be produced from renewable energy sources by 2020.^[19] To achieve this target, the European Union embodied another Directive on renewable energy sources in April 2009. It sets out individual objectives for each member state by 2020. This incentive to commercialization and an upward improvement of renewable energy sources led to important European Directives to be transposed into national legal systems in Member States. Not only in the EU, but in other countries like USA, Turkey, and Brazil renewable energy has become one of the hot topics and so many projects have been stand waiting to be financed.

3. THE ROLE OF THE PROJECT FINANCE IN RENEWABLE ENERGY PROJECTS

Project finance is a form of financing a capital-intensive project through a special project vehicle.^[20] It can be categorized into nonrecourse or limited recourse financing structure which is consists of debt, equity, credit enhancement for

[15] Figures from the Earth Policy Institute (Solaris); see:

http://www.earth-policy.org/index.php?/data_center/C23/- 2010.

[16] The Kyoto Protocol was opened for ratification on March 16, 1998, and entered into force in February 2005. It has so far been ratified by 172 countries.

[17] Directive 2001/77 of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market [2001] OJ L283/33.

[18] Sferruzza, Arturo, *Solar Revolution*, Sweet & Maxwell is part of Thomson Reuters, 2010

[19] Great Britain, Great Britain, Parliament, House of Lords, European Union Committee, *The EU's Target for Renewable Energy: 20 % by 2020*, 2008

[20] Tan, Willie, *Principles of Project and Infrastructure Finance*, Taylor & Francis, London and New York, 2007

the construction, operation and maintenance. The requirements for enormous debt and capital, together with the risks taken part of the large projects, result in the project financing one of the hardly any obtainable financing alternatives in the energy sector. At the present time the technology, using for the hydro, wind, biomass, is commercially viable.^[21] However, these renewable sources are not enough to reach the target of 20 % of production of the renewable sources by 2020. That is why; as the other renewable sources appear, such as small hydro, geothermal, solar electric technologies and tidal and wave powers, financial incentive to reduce long pay back periods would be necessitated. At this stage, project finance plays an essential role in renewable energy projects as the industry grows, the need for financing also grows and like any infrastructure project, renewable energy needs to raise long-term finance economically and with tenors that reflect the asset's life.^[22]

However, still, renewable energy projects have been struggling with some problems about raising finance. Lenders and sponsors are in nature reluctant to take risks which boost to unforeseeable variations in a project's cash flow. "Risk finance approaches, alternative risk transfer products, credit enhancement instruments and indexed derivatives can be adapted to meet the needs of the renewable energy sector in terms of new financial risk management."^[23] From the project finance's standpoint, debt and equities provided by the lenders and sponsors generally are assurance by credit rating off-take agreements. However, in the case of renewable energy projects, they are arranged as Power Purchase Agreements. Generally, long-term off take agreements facilitate non-recourse finance for so many years.^[24] Since the assurance of the investors are decisive, the subject of finding a way to encourage the investors comprise one of the way leading part of project finance. That being the case, this essay aims to discuss the question of what can be done in order to provide the 20% of production of renewable energy by 2020 in terms of possible financial routes. In the first chapter, real problems of renewable energy projects will be stated, in the second chapter commercial bank debts and capital market debts which form huge part of the financial way of renewable energy will be analyzed. In the third chapter,

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- [21] Stasiek, Jan A., *Renewable Energy Resources: Energy for the Future*, AGNI Publishing, Printed in AGNI, 1999
- [22] Haggard, M.E., *Exploring the capital market and securitization for renewable energy projects*, Harwell Laboratory, Energy Technology Support Unit, 2000.
- [23] United Nations Environment Programme, Division of Technology, Industry, and Economics, *Financial Risk Management Instruments for Renewable Energy Projects: Summary Document*, Paris: United Nations Environment Programme, Division of Technology, Industry and Economics, First Edition, 2004,
- [24] Buljevich, Esteban C., & Park, Yoon S., *Project Financing and the International Financial Markets*, Kluwer Academic Publishers, Second Edition, 2002

other financial sources will be examined and in the last chapter insurance and their possible instruments will be discussed.

CHAPTER I

1. REAL PROBLEMS

The renewable energy projects are considered to be quite expensive and complex. That is why; many investors do not want to put in money into the projects. As the cost of the project rises, the risks in that projects increase. There is no doubt that; in order to persuade the investors, the risks pre and post completions of the projects have to be determined, allocated and additionally mitigated. In terms of the barriers that the parties of the renewable energy project have been dealing, can be categorized under four titles at the broadest macro-economic level: market barriers like lack of financial frameworks, political barriers like, policy issues, analytical barriers like carbon emission permits, and cognitive barriers like risk management instruments.^[25] Compared to developed countries, the barriers especially 'market barriers' are more vulnerable in emerging countries as they have inadequate and unbalanced markets in terms of financial and legal structures.^[26] Especially, by means of renewable energy projects, the risks split into two categorizes: pre completion risks which consist of technology risk, delay risk and capital cost overrun and post completion risks which are operating risk, market risk, financial risk and raw material/fuel supply risk.^[27] Among the various kinds of risks some of which issues associated with the renewable energy projects can be seen below.

- Geothermal power: In geothermal power projects, risks can be numbered as drilling expenses risks, exploration risk, critical component failures, and long lead times.^[28]

[25] Beck, Fred, Renewable Energy Policies and Barriers; Martinot, Eric Renewable Energy Policy Project; Cleveland, Cutler J. Forthcoming in Encyclopaedia of Energy, ed., Academic Press, Elsevier Science, 2004

[26] Priscilla, Anita Ahmed, Xinghai, Fang, Project Finance in developing Countries International Finance Corporation, 1999

[27] A. Brandler, Project Financing: Renewable Energy Schemes, Harwell Laboratory, Energy Technology Support Unit, 1993.

[28] Committee on Ways and Means, Subcommittee on Select Revenue Measures, Tax Credits for Electricity Production from Renewable Sources, 2005

- Large PV: Risks which can be faced are component breakdowns, weather damage, theft, vandalism.^[29]
- Solar thermal: A typical risk of this kind of renewable energy is technology risks such as the issue of combining with the other solar towers, delays in construction due to the licensing procedure, accidents.^[30]
- Small hydropower: Flooding and seasonal resource availabilities are some key risks that the small hydropower projects encompass.^[31]
- Wind Power: Risks arising in wind power projects can be considered as long lead times, critical component failures, wind resource and offshore cable laying.^[32]
- Biomass power: Fuel supply availability, resource price variability and environmental liabilities are regarded to be the main risks.^[33]
- Tidal/ Wave power: Small scale and long leads, technology risks and survivability in harsh marine environments are the types of risks that tidal/ wave power projects contain.^[34]

Except than the risks that are numbered above, another problem is to finance the renewable energy projects as they are high-priced and investors are reluctant to finance it. Most of the renewable energy projects are highly capital intensive and thus, will need the developer of the project to increase large amounts of finance well beforehand of the start of operations.^[35] The large scale introduction of renewable energies is the present scarcity of obtainable capital and a lack of sufficient financing measures.^[36] That is why; the way that is adopted to increase the finance will have a main bearing on the manner where the entire project will be developed. In that sense, it is imperative that available financing options should be specified at an early stage.

[29] Kurokawa, Kosuke & Komoto, Keichi & Van Der Vleuten, Peter & Faiman, David Practical Proposals for Very Large Scale Photovoltaics Systems, Earthscan,2007

[30] Vogel, Werner & Kalb, Henry, Large Scale Solar Thermal Power: Technologies, Costs and Development, Wiley-VHC, 2010

[31] Beriatis, Élias & Brebbia, C. A., Brownfields IV: Prevention, Assessment, Rehabilitation and Development of Brownfield Sites, 2008

[32] Sorensen, Bent & Breeze, Paul & Da Rosa, Aldo V., Renewable Energy Focus Handbook, Elsevier Inc., 2009

[33] Sayigh, A. A. M., Renewable Energy: Renewables: The Energy for the 21th Century, World Renewable Energy Congress VI, Elsevier Science Ltd, 2000

[34] Ferrey, Steven & Cabraal, R. Anil, Renewable Power in Developing Countries: Winning the War on Global Warming, 2006

[35] 11. Ibid.

[36] LTI-Research Group, Long-term Integration of Renewable Energy Sources into the European Energy System, 1998

Sources of finance have an essential role for the financing the projects as the scales and types of risks show varieties by means of every different sources. For example, while export credit agencies do not cover commercial risks, commercial banks are by far the largest providers of project finance in terms of credit risks. Mainly, in project financing, the sources of finance can be determined as commercial banks, capital market, export credit agencies, government grants, financial lessor, special investment institutions, equipment vendors and multilateral agencies.^[37]

CHAPTER II

1. COMMERCIAL BANK DEBT AND CAPITAL MARKET DEBT

The bottlenecks for the large scale introduction of renewable energies are the present shortage of available capital and a lack of adequate financing measures. The need for capital will be greater than for energy supply systems since the technologies for the use of renewable energy sources are more capital intensive with only low operation and maintenance costs and the total internal energy costs will be higher than for most conventional alternatives. This will create a higher demand for capital by the energy, supply sector which may lead to at least slightly increasing costs of financing.^[38] This chapter will analyze the both commercial bank and capital market financing of renewable energy projects and will answer the question of which sources would be the most efficient way to finance the projects.

1.1 Commercial Banks

Prior to 1990, most of the banks were unwilling to lend renewable energy projects on a recourse basis as somewhat to the unproven technologies, unsure and hesitant regulations and lack of experience of lenders with project financing of renewable power projects.^[39] That is why; only few project financing subsisted in the world and the ones that were existed had a tendency to be undersized with margins and costs were rather high. However, technological,

[37] Vinter, Graham D., *Project Finance*, Third Edition, Sweet & Maxwell, 2006

[38] LTI-Research Group, *Long-term integration of renewable energy sources into the European energy*, By,1988

[39] Gish, Peter A., *Project Financing of Renewable Energy Projects in Europe: An improving Market*,1999

political and economic improvements have been enabling to generate enhanced market for project financing of renewable energy. For instance, by the time the European Union has adopted directives; banks have gained experiences lending to renewable energy projects in member states. As the expectations have met-even surpassed- by the lenders, the renewable energy targets have begun to be supported by incentives.^[40] Banks become more and more secure financing the renewable energy projects, so the numbers of the banks have been quadrupled over the years and long term bankable power contracts for developers so as to finance the projects have been raised.^[41] This augmentation also has resulted in growing the size of projects brought to market.

Commercial bank loans are the most important source for project financing. Depending on a project, commercial bank loans may include a single lender, several lenders or be syndicated.

Especially, in the renewable energy projects, construction loan^[42] and working capital loans^[43], which are one form of commercial bank loans, are one of the most common loans that are used. For example; GreenHunter Energy has closed a \$43.5 million financing with WestLB for a Houston biodiesel project which the initial financing breaks down into a \$38.5 million term loan and \$5 million working capital loan with a seven-year term.^[44] Again, in Illinois, for the Seneca biodiesel, Nova BioSource has closed a \$41 million financing which consists of a nine-month \$36 million construction loan that converts into a five-year term loan and a \$5 million working capital and letter of credit facility.^[45]

Four alternative types of bank credit facilities might be arranged to finance a project and can be classified as; revolving credit, term loan, standby letter of credit or performance bond, bridge loan.^[46] First of all; revolving credit is a lawful promise on the part of a bank to enlarge credit up to an utmost amount

[40] 39. Ibid

[41] Bulman, David, Exploring the Private Finance Initiative as a Route to Finance for Renewable Energy Projects, Harwell Laboratory, Energy Technology Support Unit, 2000.

[42] Halpin, Daniel W., Bolivar A., Senior, Financial Management and Accounting Fundamentals for Construction, John Wiley & Sons Inc., 2009. A construction loan is a loan to diminish these risks is to need the borrower to assign his intended contractor and design architect and it can be bonded as well according to the lenders request. It enlarges to an progress of their financial positions, technical ability and present workloads

[43] Nevitt, Peter K., & Fabozzi, Frank J., Project Financing, Seventh Edition, Euromoney Books, 2000 capital loan renders the business that cash it requires to keep growing till it compensates all operating expenses out of revenue.

[44] Renewable Finance, A product of Project Finance Magazine, February 2008

[45] 44. Ibid.

[46] Akintoye, Akintola, Beck, Matthias & Hardcastle, Cliff, Public-Private Partnership: managing risks and opportunities, Blackwell Publishing, 2003

for a definite term.^[47] As notes become due, the borrower can renew the notes, borrow a lesser quantity or borrow quantity up to the specific maximum throughout the term of promise.^[48] Revolving credit agreements are for two years or longer and regarded as an intermediate loan.^[49] Secondly, term loan is a credit from a bank for a precise quantity that has a specified repayment plan and a floating interest rate and does not go beyond 10 years following completion of fundamental facilities, but longer repayment periods are possible when project economics are adequately compelling or the project is very long-lived.^[50] Amounts repaid according to a term loan cannot be reborrowed.^[51] Other type of bank credit is standby letter of credit which is a guarantee obligation provided by a bank (the issuing bank) at the request and for the account of a bank client (the account party) and for the benefit of a third party beneficiary (the beneficiary) to guarantee the payment or performance of an obligation assumed by the account party to the beneficiary in a separate transactions.^[52] Standby letter of credits are normally used in project finance dealings as a credit enhancement to bear project participants' contractual duties with regard to a project and its financing.^[53] For example, standby letters of credit are usually used in project financing to guarantee the contractor's obligations under EPC (engineering, procurement, and construction) contract.^[54] The final loan, which is one of the types of bank credit facilities, is bridge loan. Bridge loans are a temporary financial support credits product that can be used by having a loan of firms to bridge the waiting time between receiving permanent financing.^[55] They have a briefer term than the permanent loans. For that reason; a project that is perceived as very risky is a likely candidate for bridge loan, using the bridge financing until it can prove its value and secure a long-term loan at a

[47] Nevitt, Peter K., & Fabozzi, Frank J., *Project Financing*, Seventh Edition, Euromoney Books, 2000.

[48] Delmon, Jeffrey, *Project Finance, BOT Projects and Risk*, Kluwer Law International, 2005

[49] 17. *Ibid.*

[50] Finnerty, John D., *Project Financing: asset based financial engineering*, Second Edition, John Wiley & Sons, Inc. 2007

[51] Bagley, Constance E. & Dauchy, Craig E., *The entrepreneur's guide to business law*, Thomson West, Third Edition, 2008

[52] Buljevich, Esteban C., & Park, Yoon S., *Project Financing and the International Financial Markets*, Kluwer Academic Publishers, Second Edition, 2002

[53] Inadomi, Henrik M., *Independent Power Projects in Developing Countries: Legal Investment Protection and Consequences for Development*, Kluwer Law International, 2010

[54] 23. *Ibid.*

[55] Nagarajan, K., *Project Management*, Second Edition, New Age International Publishers, 2004

reasonable rate.^[56] Bridge loans are naturally extended on a floating rate basis until they are replaced by enduring or long-term financial support, which is frequently at a fixed-rate cost.^[57]

Documentation for commercial bank loans come out of the loan agreements, promissory notes (in the United States), guarantees and security documents.^[58] Loan agreements regularize the relationship between the borrower and the bank.^[59] They define and regulate the financing instruments and interrelations amongst the various parties participating in the project financing. Loan agreements may be supplemented with an inter-creditor agreement which defines the right that the project creditors will have in a default, including step-in and foreclosure. Another role of loan documentation is to ensure that the initial credit risk profile remains uncharged over the life of the facility. This is achieved by implementing various conditions and covenants in the loan agreement which define what the management can and cannot do. Loan agreements, via financial or ratio covenants, can also be used to obligate the borrower to maintain certain parameters such as liquidity, cash flow, and other elements which may adversely impact the borrower's (and project's) risk profile. The typical project finance loan agreement will govern several elements including 'mechanistic provisions' (e.g. loan payments and repayments)^[60] A simple loan agreement should include such provisions: conditions precedents such as delivery of certified copies of the borrower's constitutional documents of key documents, conditions precedent to each drawdown such as obtaining a completion certification, drawdown mechanics such as approvals, an interest clause such as which bank's base rate is being used, a repayment clause such as instalments of fixed or variable amounts, margin protection clauses which are gross up clause, the increased costs clause and the market disruption clause, the illegality clause such as in the case of determination, representations and warranties, undertakings which are negative pledge, an undertaking not to dispose of assets and un undertaking by the borrower not to change its business, events of default such as non payment.^[61] As for the all projects in the framework of project financing, loan agreements play an essential role in renewable energy projects in order to secure the lenders. The more loan agreement is stable and transparent and allocated in terms of risks, the more the lenders participate to

[56] Dittmar, Hank & Ohland, Gloria, *The New Transit Town: Best Practices in Transit-Oriented Development*, Island Press 2009

[57] Colquitt, Joetta, *Credit Risk Management: How to avoid Lending Disasters and Maximize Earnings*, Mercy College, 2007

[58] 17. Ibid.

[59] World Bank, *Procurement under IBRD loans and IDA credits: guideline*, 1995

[60] Fight, Andrew, *Introduction to Project Finance, Essential Capital Markets*, Elsevier, 2006

[61] 44. Ibid

the renewable energy projects and the amounts of the renewable energy projects raise. Therefore; guarantees establish an important part of the loan agreement. Particularly, during this period in which the investor's banks, sponsors and other financial sources are reluctant to finance the renewable energy project, reinforcement of loan guarantees may have no ignorable impact on the project financing. The reason is; loan guarantee persuades an investor to raise its debt share. This can come about in two ways: Primarily, given that a lender does not face as a large amount risk from a default at what time a loan guarantee exists, the lender is less likely to charge extra for loans or to limit the size of a loan when the investor look for to increase its debt share.^[62] For the reason that the investor's cost of debt capital does not increase as much at what time it search for to raise a higher debt share, the investor selects a higher debt share if it can. Second of all, although the government makes available close oversight, the cost of debt capital that the investor deals with its preguarantee debt share has dropped.^[63] Consequently at that debt share, its risk of default has dropped as for any realised profile of project cash flow it can now productively service more debt. In return, the investor may come to a decision to enlarge its debt share to balance more successfully that costs and risks that it faces.

In conjunction with the loan agreements, commercial bank also draws up an agreement named interest hedge agreement. It is an agreement between a bank and the SPV (project company) whereby the hedging bank consent to make payments to the SPV and amount equivalent to the floating rate interest that the SPV must pay on its loan from the bank syndicate of lenders and the SPV consent to pay the hedging bank an amount equal to an agreed fixed rate on a loan of the same quantity.^[64] The goal of this is agreement is to grant the SPV with confidence of interest rate so that this can be inputted into the financial form for the financing that forecast revenues and costs. The typical provision that this agreement contains can be numbered as; the period of hedging, defaults and/or illegality, security granted to the banks, interest payment to the banks under the cascade clause for the ladder of payments out of the proceeds, voting of the hedge party which will according to market change, pro rata sharing clause in the syndicated credit agreement.^[65] In the circumstance in which there is no hedging then the risk might be handled with

[62] Camm, Frank A. & Bartis, James & Charles, T. & Bushman, J., & Bushman, Claudia L., *Federal Financial Incentives to Induce Early Experience Producing Unconventional Liquid Fuels*, RAND Corporation, 2008

[63] 62. Ibid.

[64] Wood, Philip R., *Comparative law of Security Interest and Little Finance*, The Law and Practice of International Finance Series, Volume 2, Second Edition, Sweet & Maxwell Limited, 2007

[65] 64. Ibid.

a fixed rate loan or by the purchaser of the project product consenting to pay a price that varies according to interest rate changes. In the renewable energy projects, there are various kinds of risks and additionally the interest rate might be a problem and a preventive factor for a lender to finance a project and they have to be brought under control by the commercial banks by the agreement. Interest hedge agreement is an efficient way to handle with the risks. However, as it will be touched upon below, in order to encourage the investors to invest in large-scale renewable energy projects fixed interest rate should be applied.

1.2 Capital Market

Capital market is a market where people, companies and governments can raise long-term funds and it consists of stocks and bonds.^[66] “Stock is a security which stands for partial ownership of a company bought as an investment.”^[67] Whereas, when a company or a governmental body is in need of capital increase, then such establishments issue bonds in order to borrow money from the investors. For the governments and firms, the bond markets have the indispensable role in raising finance. For instance, in 2005, the Cape Wind Associates had engaged Lehman Brothers as financial adviser for its Cape Wind project that is a 130 turbine, 420 MW offshore project approximate cost of 890 million, so as to be working on raising both equity and debt, the latter wither as a bank or bond deal.^[68] As it can seen from this example for the long-term high cost projects, bond deals have been also considered as a source. It is highly likely to say that the bonds are representing funds from the largest source of capital in the world.^[69] A distinction ways for a sponsor to finance the renewable energy projects under capital market debts exist in many ways. Though there are various kinds of bonds, project bond, corporate bond, energy bond and securitization will be discussed below as they are more common in renewable energy sector. They underline the attraction of such investment opportunities which are by tradition the preserve of the public sector for private sources of capital.^[70] In this section; the types of bonds in the lights of renewable energy projects will be discussed. Subsequently, the bond markets and the commercial markets will be compared by mean of renewables.

[66] Whoepking, James, International capital markets and their importance, International Monetary Fund, 2001

[67] Fontanills, George A. & Gentile, Tom, The stock market course, Wiley Trading, 2001

[68] Renewable Finance, June 2005, Number 2, A product of Project Finance Magazine

[69] Choudhry, Moorad, The bond & Money Markets strategy, trading, analysis, Securities Institute, Professional Reference Series, 2001

[70] Stafford Johnson, Bond Evaluation, Selection and Management, Blackwell Publishing Ltd, 2004

1.2.1 Bond Risks

1.2.1.1 Project Bonds

Project bonds are potentially a foremost basis of long-term private debt capital related straight to financial growth. First of all, they draw attention to the attraction of such investment occasions, which are the preserve of the public sector of capital for private sources and therefore; secondly, they tender asset diversification and investment opportunities predominantly to institutional investors as their long-term liabilities attuned to the long-term tenor of project bond.^[71] A key aspect conducive to investor attention has been the design of the debt securities' legal structures such as selective guarantees, and agreement terms to mitigate risks and maintain contractual security to bond holders.^[72] These types of bonds are normally issued for the long-term in nature projects^[73] and they hold tax advantage which provides the funding at lower rates. However; they don't have cross-insurance mechanism which means that in the case of in which the set of cash flows becomes unavailable for debt service, in other words, the moment the single source of cash flows ceases to exist, the issuer experiences a liquidity crisis that might force it to default on its bonds.^[74]

The capital markets have been a chief source of financing for businesses; nevertheless, the use of bonds to finance projects is a comparatively new development. Though the project bonds expanded in the early 1990s as a basis of capital for long-term infrastructure projects, as the commercial banks became more aggressive about pricing their loans early 2000s, project bonds fell out of favour because of the sponsors.^[75] Sponsors were capable to acquire plentiful long-term project loans on terms favourably to those they could acquire in the bond markets.^[76] After the first half of the 2008, as the financial credit crisis came off and the ability of the bank market contracted, project bonds resurfaced on the global financial stage. At the end of the 2008, banks were not issuing new project finance loans. Many projects have turned to bridge loans since their merely basis of liquidity so as to fund construction start-up costs. However, with continued force on the commercial bank market throughout

[71] Dailami, Mansoor, & Hauswald, Robert, The emerging Project Bond Market, Covenant Provisions and Credit Spreads, The World Bank Development Prospects Group, July 2003

[72] Gatti, Stefano, Project Finance in Theory and Practice, Designing, Structuring, and Financing Private and Public Projects, Academic Press Advanced Finance Series, 2008

[73] Haggard, M.E., Exploring the capital market and securitization for renewable energy projects, Harwell Laboratory, Energy Technology Support Unit, 2000.

[74] Finnerty, John D., Project Financing: asset based financial engineering, Second Edition, John Wiley & Sons, Inc. 2007

[75] Watkins & Latham, Finance Department, Client Alert, Number 914, 2009

[76] 45. Ibid.

the 2009, project sponsors have more and more searched for the project bond market to fund future projects and to refinance existing projects. In the summer of 2008, Marcus Hook, a US power project, issued a \$525.0 million 10-year, senior secured project bond priced at 350 basis points higher than US Treasury bonds.^[77] This deal was the first investment-grade bond contribution for a power plant in almost a decade and helped to re-ignite interest in the project bond market.^[78] Thus, for instance, in may 2009, Black Hills has closed a power plant project in United States costs of 250 million dollars, and therefore, during the first six months of 2009, as a minimum seven project bonds were issued, raising more than \$4.7 billion.^[79]

1.2.1.2. Corporate bond

A corporate bond is “a loan made by a corporation in return for a specified amount of interest and the repayment of the face value of the bond at a specified maturity date.”^[80] The maturity date is usually performed to longer-term debts, in the main with a maturity date at least a year. Therefore, at the end of the year, the buyer waits for to obtain a fixed income so as to receive the complete value of the corporate bond. Most of the corporate bonds are tradable after the original sale to the buyer. One advantage of corporate bonds compared to project bonds is that corporate bonds are protected by the firm’s a range of assets and cash flows which offer risk variegation, and cross-insurance mechanism which means that if some of cash flows would not be able for debt service, companies have other sources of cash to overcome the liquidity crisis.^[81] That is why; in the case of a corporate borrower, the protection is subjected against the companies’ broad credit and several bases of cash flows.

There are two points of corporate bonds need to be discussed by means of renewable energy projects: First of all, as it is mentioned above, corporate bonds buyer receives a fixed income at the end of the fixed year. However, in renewable energy projects, the money is spent on the capital assets from the start and the return is expected after a long period depends on the production of the electricity or heat.^[82] Hence, since renewable energy projects would be

[77] 75. Ibid.

[78] 51. Ibid.

[79] 45. Ibid.

[80] Faerber, Esmé, *All About Bonds, Bond Mutual Funds and Bond ETFs*, Third Edition, 2009

[81] Dailami, Mansoor, & Hauswald, Robert, *The emerging Project Bond Market, Covenant Provisions and Credit Spreads*, The World Bank Development Prospects Group, July 2003

[82] Dealler, Dr. S. Chair of the Economics Group of Transition City, Lancaster, *The Issue of Initially-local guaranteed Corporate Bonds For the Funding Of Capital Renewable Energy Projects*

expected to be high tenor (generally more than 7 years), they are considered to be value more than their capital cost increased from the sale of bond and yet would be expected to keep on producing energy from an extensive period.

Secondly, new companies, for which there is modest verification to market that they would achieved, could arrange the bonds.^[83] Demand for the issued bonds could be less and since there would not be evaluation criteria before, it is most likely to say that bonds could be unsecured. For example, cost which is planned for electricity generated by wind power where the tower is expected to last for 20 years, and for the wind to be at an average speed to be around 3.1p/kWhr would be acceptable currently using the Renewable Obligation Certificate (ROC) system or a guaranteed price using the Feed in Transfer (FIT) system.^[84] However, when the company is new, these manners might not be known. Among these two types (corporate and project) of bonds, it can be stated that bondholders of project bonds have a further dynamic role than bondholders of corporate bonds in terms of renewable energy projects.

1.2.1.3 Energy Bonds

In terms of financial aspect, some big companies are unwilling to invest in renewable energy projects for several reasons, such as, difficulty with borrowing availability from international markets and the gas, coal, and oil prices have fallen to a level at which the price of any power that they produce is often now lower than that of renewable energy. However, though big companies may not want to invest in renewable energy, there is another way to finance renewable energy named 'energy bond'. United States is one of the countries that support energy bonds. Clean energy bonds can make available electric cooperatives with an encouragement comparable to the production tax credits that are accessible for the private sector, and; therefore, they are based upon a "tax credit bond" under the "qualified zone academy bond" program.^[85] It provides better returns on savings at a time of historically low interest rates. In this spirit, a clean energy bond would maintain cooperatives and public power systems with interest-free loans for financing capable energy projects.^[86] The Clean renewable energy bond had been created in the provisions of the

[83] Dealler, Dr. S. Chair of the Economics Group of Transition City, Lancaster, *The Issue of Initially-local guaranteed Corporate Bonds For the Funding Of Capital Renewable Energy Projects*

[84] Buljevich, Esteban C., & Park, Yoon S., *Project Financing and the International Financial Markets*, Kluwer Academic Publishers, Second Edition, 2002

[85] Committee on Ways and Means, Subcommittee on Select Revenue Measures, *Tax Credits for Electricity Production from Renewable Sources*, 2005

[86] 59. *Ibid.*

2005 Act. However, that act has been expanded in 2008, and according to this new law, the national limitation on the issuance of new clean renewable energy bonds have been increased by 1.6 billion dollars to finance qualified renewable energy facilities that generate electricity.^[87] Up to one-third of the 1.6 billion authorised will be available to qualifying public power providers; up to one-third will be available to qualified projects of governmental bodies, and up to one-third will be available to qualifying projects of electric cooperative companies.^[88] The law that the USA government have been applying quite works as the tax credit bond makes available tax credit instead of maintaining a tax-exempt interest rate for the investor which encourage investor. Other advantage is the providing interest-free loans. It is most likely to be said that, it can persuade the investors in Europe or in Asia. That is why; similar law can be made throughout the Europe or Asia.

1.2.2 Securitization

It is one potential instrument in order to provide the capital markets to finance renewable energy projects. In its widest sense, it implies every process that converts a financial relation into a transaction that generates large volumes of receivables raises capital by selling some or all of those receivables to a special purpose vehicle (SPV).^[89] The SVP is a special type of company that owns the cash flow and is capitalized in a structure that provides several different types of debt and a few layers of equity but occasionally by syndicated loan facilities. Afterwards, those capitals are transformed and traded to the capital markets as securities which are settled to the bond security trustee, for the lenders, the provider of any credit enhancement.^[90] Some examples which have to date been securitised in Europe include commercial mortgages, auto loans and credit-card loans.^[91] In theory, any renewable energy project competent of being project financed and could be categorized into asset pool appropriate for securitization as an SPV for the point of building and operating a large-scale and long term infrastructure project.^[92] In order to protect the SPV from some risks such as:-credit risk (default by the debtor projects), liquidity risk (receipt delayed/

[87] CCH Incorporated, CCH Tax Law Editors, 2009 Tax Legislation

[88] 61. Ibid.

[89] Kothari, Winod, *Securitization: The financial instrument of the future*, Wiley Finance, 2006

[90] Carl S. Bjerre, *Project Finance, Securitization and consensuality*

[91] Davidson, Andrew & Sanders, Anthony & Wolffl, Lan Ling & Ching, Anne *Securitization structuring and investment analysis*, Wiley Finance, 2003

[92] Alles, Lakshman, *Asset Securitization and Structured Financing: Future Prospects and Challenges for Emerging Market Countries*, IMF Working Paper-Research Department, 2001

payments accelerated), currency risk (movements in exchange rates where several currencies are used), and market risk (covers reinvestment risk and market rates moving differently to income returns)—some enhancements are needed. These enhancements might take numerous types like, loan facilities, letter of credit, insurance, contingency funds, swaps, guaranteed investment contracts and top slice agreements.^[93]

The securitization market keeps on developing and accessing an even broader variety of markets. The inventors of assets that have non credit risks have used securitization methods to transport those assets along with the non credit risk to the capital markets. Nevertheless, it is doubtful that securitization would make available a route to finance renewable projects other than following construction. According to the renewables sector, it is implausible that any one party could afford the risk related with starting the direct work on this approach. Additionally, international project financing transactions-including renewable energy projects- are a shape of foreign straight investment and they, hence, stand for a continuing stake in the foreign nation.

1.2.3. Comparison between Bank Debt and Bond Debt

There have been constituted a big question mark, especially, after the 2008 financial crisis by means of financing the long-term high priced projects. This section will analyze the differences between the major financial routes according to the structure of renewable energy projects.

1. Size: In commercial bank debt, there are small numbers of investors, often holding sizeable participations. On the other hand, in capital market debt, there are large numbers of investors with small investment relative to their portfolio. Bank financing are usually able to cope with most transaction sizes and loans are often widely syndicated. In the context of renewable energy this is unlikely to prove a barrier. SembCorp Utilities' Wilton Industrial site in northeastern England can be given as an example. Calyon has concluded the syndication of a 116 million pound biomass project finance facility which will be the largest of its type in the UK. Calyon held 21 million pound of the project's debt, while senior lead arrangers Barclays, DBS Bank, Overseas Chinese Banking Corporation and United Overseas Bank held 17 million. Also Bayerische Landesbank, Credit Industriel et Commercial are partaking in the debt as lead arrangers with 10 million allocations and Arab Bank as arrangers with 7 million.^[94] Therefore, for the largest transactions the bond markets are also often chosen, as these provide the greatest breadth and liquidity.

[93] Asset Securitization, Comptroller's Handbook, Liquidity and Funds Management, 1997

[94] Renewable Finance, June 2005, Number 2, A product of PF Magazine

2. Dealing with the fixed rate: A bond's actual spread is uncertain until the bond is launched due to many factors, some economic, and others due to activity in other parts of the world or even a lack of market appetite for a certain asset class due to many similar issues having reached the market in the preceding months.^[95] Bonds typically provide fixed rates although a number of recent issues have had floating tranches and no need for the project company to enter into separate interest rate hedging arrangements.^[96] However, since commercial banks are thought to make considerable profits when executing interest rate hedging arrangements for a project company, this may therefore remove a premium pricing element from a project's "all-in" financing costs. If a project company seeks to redeem fixed rate bonds otherwise than in accordance with the fixed redemption schedule; it will have to pay the bondholders an amount to compensate them for their foregone investment return.^[97] If a project company takes out a conventional floating rate bank loan to finance a project, it may not be required to hedge all of its floating interest rate exposure. As a borrower can usually prepay floating rate loans without premium or penalty, a project company will have more flexibility to repay his borrowings than under a bond if he is able to avoid the banks imposing a requirement that he must hedge all of his floating interest rate exposure.^[98]

3. Insolvency: Default to bond investor means that a payment has been missed and the cure provisions built into the funding structure have failed. It is then probable that the issuer will be placed in administration, as it may be difficult for a large number of bond holders to agree terms, amongst themselves or with the sponsors.^[99] In contrast, banks are usually able to make flexible approach for the following reasons: relationship with the borrower, syndication loan participation amounts are normally larger than a bond investor's final take; the number of banks in a syndicate is small relative to the individual bondholders in an issue.^[100]

4. Source: The commercial banking market is easily large enough to cope with any renewable energy based transaction. Banks do not have sector lending limits that may constrain their ability to lend to projects. The level of risk accepted by commercial banks is quite low and cannot be increased merely by

[95] Haggard, M.E., Exploring the capital market and securitization for renewable energy projects, Harwell Laboratory, Energy Technology Support Unit, 2000.

[96] 68. Ibid.

[97] Mentré, Paul, The Fund, Commercial Banks and Member Countries, International Monetary Fund, Washington, 1984

[98] Vinter, Graham D., Project Finance, Third Edition, Sweet & Maxwell, 2006

[99] Chorafas, Dimitris N., The Management of bond investments and trading debt, Elsevier, 2005

[100] 72. Ibid.

increasing the interest rate paid. For example, in 2008, Calyon, Caja Madrid, Natixis, Sandater and Société Générale have initiated senior syndication of the Eu462 million Solnova 1 and 3 solar/thermoelectric projects which were sponsored by Abengoa.^[101] The bond market is very large, although this may also suffer from over issuance of certain types of paper.

5. Tenor: Bonds usually suggest long tenors and fixed rates, compared to banks that are likely to suggest shorter tenors and floating rates. “De-mutualisation of the larger building societies and the arrival of continental municipal lenders have brought tough new competition as these institutions can start to match bond market tenors with lending commitments of up to 30 years.”^[102] This has helped increase the tenor offered by the commercial bank market and narrowed some of the difference between bonds and bank lending. Although it is difficult to generalize, the tenor of debt is no longer a particular point of distinction between the international bond and the international loan markets. Both markets race with each other in this respect and maturities in the region 15-20 years should be relatively, without difficulty, possible from both markets for appropriately structured projects.^[103] Both markets have gone beyond 20 years for some UK PFI deals.

Apart from any price or tenor advantages over commercial bank debt, positive features of the bond route generally include documentation with a greater degree of standardization. Commercial bank debt and private placements are more capable to understand complex transactions or unusual technologies. There are disadvantages to the bond market for issuers, penalties for pre-payment and less flexibility in restructuring. The liquidity of the project bond market is still poor compared to government bonds and most corporate bonds, which means investors are not always able to exit the bonds at a price they accept as realistically reflective of the value, which implies higher pricing. On the capital markets, new bonds are originated in the primary market, where the money raised flows directly to the issuers; however, most capital market trading takes place directly between investors and this is known as the secondary market since it does not involve the issuer.^[104] Secondary market represents one of the main advantages for bond investors over commercial bank debt investors, as this is a mechanism that allows investors to efficiently trade their holdings.^[105]

[101] Project Finance Magazine, page 14.

[102] Haggard, M.E., Exploring the capital market and securitization for renewable energy projects, Harwell Laboratory, Energy Technology Support Unit, 2000.

[103] Vinter, Graham D., Project Finance, Third Edition, Sweet & Maxwell, 2006

[104] 75. Ibid.

[105] International Monetary Fund, World Bank, Guidelines for Public Debt Management: Accompanying Document and Selected Case Studies, 2003

As the recent market upheavals, however, the bank market can be as volatile and changeable as the bond market.^[106] Since main banks found themselves with portfolios of overvalued assets carrying underperforming projects, their credit teams began to obtain even harder looks at project arrangements and to require that project sponsors make available stronger support, from time to time in the form of sponsor guarantees, enlarged equity contributions and tighter covenant packages.^[107] Until the financial crisis hit; worldwide banks were deriving loan maturities more than twenty years. Nevertheless, after the crisis, banks and bond investors cut down their maturities. It seems that both banks and bond markets have now settled in the eight-to-thirteen year range for long term debt.^[108]

Capital market is that they are not more recognizable with the technology risks of renewable energies. In the main, for instance, most of the wind farms, hydro's process is comparatively easy, since extensive performance data has been existed to bear cash flow suppositions. On the other hand, for some other renewables, technologies like tidal, wave power and certain photovoltaics, the technologies are not enough proven. That is why; there is a difficulty about investor's comfort. However, in that case, general suitability refers to the degree of stability in the cash flows provided by the assets with the help of a private placement or a rating agency or monoline insurer, to understand the risks involved.^[109] For example, private placement markets might be access approached through commercial or investment bank^[110] and frequently is keen to proffer longer tenors at fixed rates. The private investors stated attention in the renewable energy industry, however; the provisions on fundamental agreement credit strength were no dissimilar to the public markets.^[111] Nevertheless, yet, commercial bank debts are more appropriate for the technical risks as there are many institutions which can cover this risks.

Another disputed issue is confidentiality. The reason is that, lots of contracts which are related to renewable energy projects have confidentiality provisions such as; turnkey contract clauses or performance guarantees which the party would not wish disclosed for a range of commercial reasons, except the confidentiality agreements. In this circumstance, capital market and renewable energy

[106] Latham Watkins, Finance Department, Client Alert, Number 914, 2009

[107] Renewable Finance, A product of Project Finance Magazine, February 2008

[108] 79. Ibid.

[109] Haggard, M.E., Exploring the capital market and securitization for renewable energy projects, Harwell Laboratory, Energy Technology Support Unit, 2000.

[110] Nevitt, Peter K., & Fabozzi, Frank J., Project Financing, Seventh Edition, Euromoney Books, 2000.

[111] Sophie Justice, Private Financing of Renewable Energy- a guide for policy makers, 2009

projects might be conflicted owing to the fact that capital market transactions are mostly transparent.^[112]

CHAPTER III

1. EXPORT CREDIT AGENCIES

Export credit agencies (ECAs) have been established by governments to support the export of goods or services that are based from that nation.^[113] They assist in place of political risk insurance, commercial risk insurance, interest rate support and direct lending by the export credit agencies.^[114] The Export credit agencies who set off the majority of the OECD members are parties to the Arrangement on Officially Supported Export Credit Agencies which contains the so-called “consensus rules” arranging the financial terms that each Export Credit Agencies is permitted to offer.^[115] This arrangement holds particular policies for project finance dealings. According to the first arrangement, the long-term repayment would have considered up to fourteen years and the repayments could be made in unequal instalments and to be made less frequently than semi-annually.^[116] However, in January 2009, after the financial crisis some adjustments have been disciplined in the within the scope of renewable energies and water projects to facilitate the financing of projects.^[117] According to the new arrangement, in the sector of renewable energy, water and nuclear power, up to eighteen years and more flexible definitions of repayment schedule, accompanied by a revised fixed interest rate regime for longer loan durations are accepted in the form of loans with longer repayment terms. According to the new arrangement; “repayments shall be made in equal instalments or repayment of principal and payment of interest combined shall be made in equal instalments furthermore principal and interest shall be paid not less than every six months and the first instalment of principal and interest shall be made not later than six months after the starting point of credit unless there is an exceptional and duly justified

[112] Vinter, Graham D., *Project Finance*, Third Edition, Sweet & Maxwell, 2006

[113] Howard Barrie, Solicitor and Partner, Denton Wilde Sapte, *Asset and Project Finance: Law and Precedents*, Volume 2, Sweet & Maxwell

[114] Yescombe, E.R., *Principles of Project Finance*, Yescombe Consulting Ltd., 2002

[115] Vinter, Graham D., *Project Finance*, Third Edition, Sweet & Maxwell, 2006

[116] Drummond, Richard, *The Role of Export Credit Agencies in Project Financing*, 2008

[117] Organization for Economic Co-operation and Development. It can be found in http://www.oecd.org/document/9/0,3343,en_2649_34169_42396243_1_1_1_37431,00&&en-USS_01DBC.html

basis”.^[118] In that case, first of all, single repayment or series of principal payments shall not be a lesser amount of than 25% of the total of the credit within a six month period. Principal shall be repaid no less than every 12 months and the first payment, which shall be no less than 2% of the sum of the credit, should not exceeds 18 months after the starting point of credit and therefore; interest shall be paid every 12 months and the first interest shall be made within the six months after the starting point of credit.^[119] In terms of the weighted standard; repayment period should not surpass nine years for repayments up to and including 15 years and eleven years for repayment terms greater than 15 years and up to and including 18 years.^[120]

In terms of the project financing, the approach of Export Credit Agencies has altered considerably to the infrastructure projects which are sponsored and financed by the private sector rather than relying on sovereign debt support. This change in the Export Credit Agencies has resulted in their being prepared to assume a wider range of risks.^[121] For example, many ECAs are now prepared to cover both political and commercial risk during the construction phase and can loan projects straight on a fixed rate basis.

In a typical power station financing, the sponsors would have to discuss with the suitable authorities and/or concession, together with the terms of any power purchase agreement.^[122] When Export Credit Agencies take part, they have to depend on negotiated terms into the direct agreements as part of their safety package, however; if the change is needed by means of the change in law or taxation or revocation of appropriate licences, the Export Credit Agencies should look for a memorandum of understanding or letter of comfort to make certain that the government behind the project would not interfere.^[123] The agreement which provides loan to the project company by export credit agencies is inter-creditor agreement and it will be mentioned under the subject multilateral agencies.

[118] 2009 Sector Understanding on Export Credit for Renewable Energies and Water projects, Trade and Agriculture Directorate Participant to the Arrangement on Officially Supported Export Credits

[119] Davidson, Andrew & Sanders, Anthony & Wolffl, Lan Ling & Ching, Anne Securitization structuring and investment analysis, Wiley Finance, 2003

[120] 91. Ibid

[121] Howard Barrie, Solicitor and Partner, Denton Wilde Sapte, Asset and Project Finance: Law and Precedents, Volume 2, Sweet & Maxwell

[122] Drummond, Richard, The Role of Export Credit Agencies in Project Financing, 2008

[123] Nevitt, Peter K., & Fabozzi, Frank J., Project Financing, Seventh Edition, Euromoney Books, 2000.

2. GOVERNMENT GRANTS

As it is mentioned above, by the 2020, European Union lied down a target that 20 percent of the European electricity consumed would be produced from renewable energy sources. Only market forces are not enough to substantiate the recognized target in the EU and do not assist to increase the possible financial support for the entire world in terms of renewable industry. In order to meet this target, governments should increase their support since the target emerging renewable technologies may be neglected and investment most probably would not be targeted over the long term.^[124] Many countries have enforced incentives; for instance, solar energy continues to gain support under the new UK Government renewable grant scheme the Low Carbon Buildings Programme (LCBP), which commits a further 78.5 million pound.^[125]

There are a number of economic support and incentive mechanisms so as to support renewable energy. These are described below in three categories: 1) government support and investment, commonly called feed-in tariff to promote renewable energy^[126], 2) public benefit funds, used in many parts of the USA^[127], 3) tax mechanism^[128].

2.1 Feed-in tariff

It is used for the total amount per kWh obtained by an independent producer of renewable energy, together with production subsidies and/or tax refunds, while in extraordinary cases it adverts to the premium price paid above or extra to the market price of electricity.^[129] In other words, it allows all eligible generators to receive a fixed and known price for their renewable electricity sales.^[130] Even though it is said that feed-in tariffs would set off at a uniform level, they are frequently distinguished relying on the renewable technology

[124] Great Britain, Great Britain, Parliament, House of Lords, European Union Committee, *The EU's Target for Renewable Energy: 20 % by 2020*, 2008

[125] Solar Trade Association, *Renewable Energy Government Grants*, UNEP Handbook for Drafting Laws on Energy Efficiency and Renewable energy Resources, 2007

[126] UNEP Handbook for Drafting Laws on Energy Efficiency and Renewable energy Resources, 2007

[127] Latham Watkins, Finance Department, Client Alert, Number 914, 2009

[128] 51. *Ibid.*

[129] Monthorst, P. E., *Policy Instruments for Regulating the Development of Wind Power in a Liberated Electricity Market*, in: Larsen, G., K. Westermann, and P. Noergaard, eds., *Contributions from the Department of Wind Energy and Atmospheric Physics to EWEC '99 in Nice France*, Riso National Laboratory, Roskilde, Denmark.

[130] Muray, Wiser, & Weston, Hamrin,, *International experience with public benefit funds: A focus on renewable energy and energy efficiency*, 2003

used, such as: wind, PV, biomass, etc.^[131] Therefore, deciding can be fixed either for a certain period so as to maintain producers confidence in the medium or long-term or regularly to provide certain flexibility and to decrease unexpected costs of renewable energy projects productions.^[132] Many countries have put through feed-in tariff to supply government economic support for renewable energy industry. The level and significance of feed-in tariffs can show a discrepancy among countries, depending on the potential and costs of renewable resources or the political preferences. For example, according to the German Renewable Energy sources an act of 2000 and 2004, feed-in tariff, which is charged as part of electricity rates, has been paid by the grid operators, but on the other hand, China's renewable energy law allocates government funding for research and development of renewable energy^[133] Therefore; due to the feed-in tariff, Germany has created the world's most effective system for increasing renewable energy usage and the number of wind turbines, biomass generators, and solar-electric installations has increased significantly since guaranteed feed-in payments were first introduced in the year 2000.^[134] As it is mentioned above, feed-in tariff is quite common in renewable energy projects in terms of government grants. Even though, it has lots of advantages like, risk reduction for investors, dynamic efficiency, proven capability; there are some disadvantages as well. These can be classed as investment capacity, effectiveness, price reductions, market compatibility and competition, administrative demands.

Investment capacity: Investment certainty which proposes a high point of investment by assuring a fixed price over a determined period, for instance 5-15 years; but, this certainty may predominantly apply to the short or medium term since in the long run fixed feed-in tariffs may be unsustainable either on account of high cost-inefficiencies involved or as they are not well-matched with a competitive market and renewable energy policies within the European Union.^[135]

Effectiveness: Except wind power, feed-in tariffs appear to have been far less effective in inspiring other forms of renewable powers as there is a failure

[131] Sijm, J.P.M., *The Performance of Feed-in Tariffs to Promote Renewable Electricity in European Countries*, 2002

[132] Dailami, Mansoor, & Hauswald, Robert, *The emerging Project Bond Market, Covenant Provisions and Credit Spreads*, The World Bank Development Prospects Group, July 2003

[133] UNEP Handbook for Drafting Laws on Energy Efficiency and Renewable energy Resources, 2007

[134] Michel, Jeffrey H., *The Case for Renewable Feed-in Tariffs*, 2007

[135] Sijm, J.P.M., *The Performance of Feed-in Tariffs to Promote Renewable Electricity in European Countries*, 2002

to result in price reductions for renewable energy.^[136] The reason is that, feed-in tariffs are in the main fixed by a regulatory authority that is usually lack of sufficient, up-to-date data related to the production prices of renewable energy from a number of diverse sources and technologies, remarkably in dynamic terms over a determined period.^[137]

Administrative demands: It can be said that one of chief plus of a system of feed-in tariffs is administrative demands which are low and straightforward. However, both the administrative demands and the informational wants of a feed-in tariff system increases quickly if; a payment mechanism covering up all grid utilities is initiated, or the system is extended from the national to the global level, or the system develops into more fine-tuned and complex in so as to meet the efficiency conditions.^[138]

Taken as a whole, it can be said that an arrangement of best feed-in tariffs has exposed to be an effective tool to encourage the generation of renewable energy, especially to make certain a low-level market take-off of wind power at the nationwide point; nevertheless, in the long term, however, that kind of arrangement is highly likely turn into a hard system to maintain since it is might bear from some basic and key disadvantages that are mentioned above. For that reason, the most excellent technique to persuade renewable energy within a free market is possibly to interiorise the external prices and difficulties of non-renewable energy sources like taxation, or to introduce market-relieved tools such as a well-functioning system of tradable green certificates.^[139] Achieving of the most excellent solutions might take some time. In that sense, during this time, feed-in tariffs might probably be warranted in some countries so as to promote the renewable energy, markedly when this amount is still undersized.

[136] Commission of the European Communities, *Electricity from Renewable Energy Sources and the Internal Electricity Market*, Staff Working Paper, Brussels.

[137] 108. *Ibid*

[138] Great Britain, Great Britain, Parliament, House of Lords, European Union Committee, *The EU's Target for Renewable Energy: 20 % by 2020*, 2008

[139] 108. *Ibid*

2.2 Public benefit funds/System Benefit Charge

Another instrument for supporting renewable energy is public benefit or system benefit charge programs which may be used to support renewable energy. According to this policy, electricity customers make payment called a small system benefit charge per kW hour electricity used, which is collected by electricity utilities, and goes into a public benefit fund.^[140] It is commonly used in the United States. The union of concerned scientists' "estimates that these U.S state public benefit funds collectively now provide about 291 million per year for renewable energy, building to total of \$4.3 billion by 2017."^[141] For example, PV projects yielding 300MW have been funded in 2007 and 2008 through California's Solar Initiative program, at a cost of \$775 million in incentives, causing a total estimated project value of almost \$5 billion including private investments.^[142] Outside of the United States, there are other countries that use public benefit fund programs. Such as; Ireland, Brazil, Germany-though they are part of a system used to support feed-in tariff-, Netherlands.^[143] The United Kingdom used to have a successful PBF program in space from 1990-1998, known as the Non-Fossil Fuel Obligation, however, it was transformed and named 'Renewable Obligation' that applies tradable Renewable Obligation Certificates. According to that certificate, power producers who are not succeed to match their obligation can buy out the obligation at a price of 30 pounds/ MWh with the proceeds dispersed to the firms that have met their obligations.^[144] However, this Renewable Obligation, is strongly believed that, affected the renewable energy market in the United Kingdom in a negative way. Shell decision might be relatively an attention-grabbing example of the way that international market interferences have misshapen the United Kingdom market. The Renewable Obligation in the United Kingdom has in all probability put the brakes on offshore wind, therefore taking it away would assist offshore winds, but a most important market involvement in the States has persuaded Shell that they could get higher margins elsewhere.^[145] For the solution of that problem it is suggested to support offshore wind capital grants,

[140] 58. Ibid.

[141] Union of concerned scientists', Table D-1 updated as of 2004 from powerful solutions: Seven ways to switch America to renewable electricity, 2004

[142] National Ac National Academy of Science, National Research Council, Electricity from Renewable Resources: Status, Prospects and impediments

[143] 58. Ibid.

[144] It can be found in <http://www.renewable-energy-policy.info/relec/unitedkingdom/policy/greencertificate.html>

[145] Great Britain. Parliament, House of Lords, Select Committee on Economic Affairs, The Economics of Renewable Energy: Evidence, 2007-2008

as with increasing fossil fuel prices, large energy firms would invest in offshore wind at a high wind site as a way of expanding their portfolio and hedging against raising fossil fuel prices. ^[146]

2.3 Production tax credits

Tax mechanism can be applied so as both to support renewable energy by taking away fossil fuel tax funding and by supplying tax credits to renewable energy producers and/or buyers. ^[147] It supports renewable energy projects by permitting firms which invest in renewables to write off this investment against other investments they make. Throughout the world, most of the countries use tax credits. For example, India has used a combination of investment tax credit, financing assistance and accelerated depreciation to spur a boom in renewable energy. India is now the world's fifth-largest producer of wind power. ^[148] Therefore; many USA states, tender tax incentives, including state production incentives, as well as corporate tax incentives to allow corporations to receive credits and in 2008, in Grant Country West Virginia, BBVA and Fortis closed syndication for the \$185 million debt financing for Shell and Dominion's NedPower Mount Storm wind project with the help of the 15-year debt facility payback from strong levels of sponsor back up by buying renewable energy credits and production tax credits from the project, under five-and 10-year contracts. ^[149]

Consequently, it is more likely to say that, tax credits supply constancy to producers and lessens uncertainty and capital cost. Nevertheless, in practice, tax credits have tended to be vulnerable to political conflict regarding their maintenance in the long term. In addition, tax credits also have a propensity to limit investment in renewable energy projects to large firms with momentous portfolios against that they can write off the tax credits they make. A significant example is that, at the end of 2008, the tax equity market has desiccated as a result of the 2008 financial credit crisis, which has caused increased cost of energy from renewable energy projects. ^[150]

[146] 118. Ibid.

[147] Buljevich, Esteban C., & Park, Yoon S., *Project Financing and the International Financial Markets*, Kluwer Academic Publishers, Second Edition, 2002

[148] Savin J., *National Policy Instruments Lessons for the Advancement & Diffusion of Renewable Energy Technologies Around the World*, Thematic Background Paper for the International Conference on Renewable Energies, Bonn, 2004

[149] *Renewable Finance*, A product of Project Finance Magazine, February 2008

[150] *New Energy Finance*, *Global Trends in Sustainable Energy Investment: Analysis of Trends and Issues in the Financing of Renewable Energy and Energy Efficiency*, 2009

3. SPONSOR

The project sponsor is the body that organizes the progress of the project.^[151] Depending on a project, either one or more than one project sponsors might be taken part. Sponsors can be categorised into four: industrial sponsors, public sponsors, contractor/sponsor, and purely financial investors.^[152] In the project financing, the sponsors are by and large a combine of parties with a particular interest in the project, such as construction contractor, or a power company or an oil company or a mining company, or independent investors such as a local investment bank.^[153] In the case of financing the project company, the sponsor and the project company make an agreement which is called 'shareholder agreement'^[154]. It classifies how the project company runs, how costs and revenues allocate and how prevailing events can be faced during the concession period.^[155] The shareholder's agreement, all along with the clauses of law appropriate to the special purpose vehicle, identifies the relationship between the shareholders, their rights, duties and function in management of the project; in a sense, the shareholder agreement states how decisions are to be made within the project company, how incomes and expenses are to be shared, whether and how shares can be bought or sold and other such matters basic to the organization of the project company.^[156] The project sponsors by and large grant their share of capital either by way of equity or subordinated debt or a mixture of both.^[157] Preferably the project sponsor capital should be supported earlier than the banks loans; however, a substitute is for the banks to lend money to the project company guaranteed by the sponsors.^[158] An additional option is for the banks to make a subordinated loan to the project company instead of the equity, but on the basis that the sponsors severally assurance these loans; nevertheless, the common procedures are for the project sponsor to go into an equity agreement with the banks whereby they concur to

[151] Hoffman, Scott L., *The Law and Business of International Project Finance*, Third Edition, Cambridge University Press, 2008

[152] Gatti, Stefano, *Project Finance in Theory and Practice, Designing, Structuring, and Financing Private and Public Projects*, Academic Press Advanced Finance Series, 2008

[153] Wood, Philip R., *Project Finance, securitisations, subordinated debt*, *The Law and Practice of International Finance Series*, Volume 5, Second Edition, Thomson, Sweet & Maxwell, 2007

[154] Jeffrey Delmon, *Project finance, BOT projects and risk*, 2005.

[155] E.R. Yescombe, *Principles of Project Finance*, Yescombe Consulting Ltd., 2002

[156] Jeffrey Dalmon, *Private Sector Investment in infrastructure: Project Finance, PPP, Projects and Risks*, Kluwer Law International, 2009

[157] 71. Ibid

[158] Wood, Philip R., *Project Finance, securitisations, subordinated debt*, *The Law and Practice of International Finance Series*, Volume 5, Second Edition, Thomson, Sweet & Maxwell, 2007

subscribe capital in the project company and which sets out amounts, timing and procedures.^[159] If a project sponsor failure to pay, the remedies of the bank are usually for damages which are assumed if it can be shown that the finance would not have been repaid, though the sponsors had subscribed their capital.^[160] Occasionally the equity agreement is exclusively between the project sponsor and the project company. The project company then allocates the benefit of this to the banks in place of security as part of the security package. By means of renewable energy projects and the 2008 financial credit crisis, it would be wisely to declare that, arranging the equity support agreement between the project company and the project sponsor would be secured in a way that the risks and the payback clauses can be allocated in a secured way for the parties of the agreement.

4. FINANCIAL LESSORS

Financial lessors are one of the financial sources of the renewable energy projects. They are disturbed to recover their investment in equipment in conjunction with an income from that investment and any returns to be derived from the sale of supplementary services to the customer.^[161] This structure is used to transfer tax benefits from an entity, which cannot utilize the benefits, to another entity that can and to provide better collateral protection for lenders in nations with no sufficient collateral security laws.^[162] Therefore, it is occasionally used for the reason that the financial lessor can arrange the capital costs of the equipment against its returns.^[163] In the commercial arrangement of a finance lease, the lessee who is either a customer or borrower decides on an asset and the lessor who is a finance company buys that asset. During the use of the asset, the lessee pays rentals or instalments. The payments made by the lessee set off a large part or all of the cost assets and also provide interest to the lessor. In addition to this process, the lessee has the chose to obtain ownership of the asset. The finance company is the lawful owner of the asset for the duration of the lease. Nevertheless, the lessee has have power over the asset supplying them the benefits and risks of ownership.^[164]

[159] 126. Ibid.

[160] Vinter, Graham D., Project Finance, Third Edition, Sweet & Maxwell, 2006

[161] Boobyer, Chris, Leasing and asset finance: the comprehensive guide for practitioners, Forth Edition, Euromoney Institutional Investor PLC, 2003

[162] Hoffman, Scott L., The Law and Business of International Project Finance, Third Edition, Cambridge University Press, 2008

[163] 68. Ibid

[164] 72. Ibid

The obstacle for the renewable energy project finance is that, finance leases would typically only be able for certain types of equipment (e.g. turbines). If financial lessors have possession of a significant piece of equipment used in particular project, the other financiers lending to that project have to deal with the fact that what might happen if the project company fails to make a leasing payment and the lessor threaten to repossess the equipment.^[165] In that case, the senior lenders might be arranged to assure the leasing payments and keep hold of all of the risks on the project company and the project themselves so that the banks would be available to ensure that rental payments continue to be made; however, if a finance lessor does not require a bank guarantee, the banks would search for to negotiate inter-creditor terms with the lessor which required to lessor to give the banks notice of default in any rental payments and a chance to remedy that failure to pay before the lessor exercised his remedies.^[166]

5. SPECIALIST INVESTMENT INSTITUTIONS

These institutions play a less important role compared to commercial banks and sponsors. That is why, they are extraordinary projects. They are providing high-yield subordinated finance and yet their loans would be subordinated to the senior bank loans, in return for which they receive a very high rate of interest.^[167] Private equity companies can be shown as an example for specialist investment institutions.

6. EQUIPMENT VENDORS

Equipment suppliers may be a constructive source of funds, and this is likely to be the case more in some sectors, particularly in renewable energy sector. (e.g. power plant)^[168] Vendor finance would typically not be tenable on the other assets forming part of a project or commercial banks would as a rule persist that the vendor is subordinated to their interest, in addition to that, a vendor has to, after all, be making a commercial income on the sale of his equipment well in overload of the profit commercial banks will be making by simply lending money.^[169]

[165] Vinter, Graham D., *Project Finance*, Third Edition, Sweet & Maxwell, 2006

[166] 76. *Ibid*

[167] Wood, Philip R., *Project Finance, securitisations, subordinated debt, The Law and Practice of International Finance Series*, Volume 5, Second Edition, Thomson, Sweet & Maxwell, 2007

[168] 76. *Ibid*

[169] 77. *Ibid*.

7. MULTILATERAL AGENCIES

They consist of a range of international and local development banks and funds. These agencies include the World Bank and other regional banks such as the Asian Development Bank and The European Bank for Reconstruction and Development. For example, the International Finance Corporation that is part of the World Bank Group makes available credit on its own benchmark forms. Often, one part of its loan is made directly and the other part as a conduit loan via the commercial banks. The IFC lends to the commercial banks who in turn lend to the project company. Therefore; if the project company cannot pay the banks, then the banks do not have to pay International Finance Corporation so that IFC takes the risk. In addition to the International Finance Corporation, The European Investment Bank can provide long-term fixed rate funding. Multilateral agencies comprise a crucial role in renewable energy projects. For example, European Investment Bank supplied more than 2 billion Euros for renewable energy projects throughout the EU and world.^[170] In fact, they are frequently the only source obtainable for financing renewable projects in emerging markets.^[171] In crude terms, they take political risks. Nevertheless, it does not point out the fact that their money is made available on especially subsidised terms. They can provide either direct loans or guarantee in cases in which commercial banks would not be willing to take the risk.^[172] In terms of multisource project finance, especially in the case where both multilateral agencies, banks and/or Export Credit Agencies are together involved; project sponsors, borrowers and financiers should not undervalue the struggles that may arise when coping with the altering interests of the different classes of financier in a project financing. For that reason, all parties in a project financing should deal with the inter-creditor issues as early as possible so as to reduce the risk of financial close being late by these issues. In that respect “Inter-creditor agreements are used when there is more than one class of debt and where those classes of debt have different interest in the same collateral.”^[173] Under the inter-creditor agreement, one agent bank may have the permission to negotiate in support of the contributing banks. It embodies provisions for coordinating priorities of loan repayment, and accelerating the maturity of loans, establishing loss sharing, offset sharing, coordinating foreclosure of any collateral security for the benefit

[170] Singh, Gurmit, *Exploit Nature- Renewable Energy Technologies*

[171] Chaturvedi, Pradeep, *World Energy Council, Financing of Energy Sector in Developing Countries*, World Energy Council, 1999

[172] Howard Barrie, *Solicitor and Partner*, Denton Wilde Sapte, *Asset and Project Finance: Law and Precedents*, Volume 2, Sweet & Maxwell

[173] Fight, Andrew, *Introduction to Project Finance*, Essential Capital Markets, Elsevier, 2006

of all lenders.^[174] There are no standard provisions for inter-credit agreements and their terms depend upon the circumstances and the negotiations; however, other than the provisions that are numbered above, other typical provisions that the agreement contains are: common terms applying to all creditors (warranties, covenants, events of default, currency, indemnity, assignments, set-off, notices, confidentiality, jurisdiction, governing law, and other boiler-plate, provision for pro rata drawdown's, provision for disbursement of payments pro rata or in an agreed hierarchy out of the proceeds account, provision for management and monitoring by a single agent (conduit pipe for payments, voting), limitations on creditor power to vary their credit agreements (changes in financial terms), voting powers for waivers, consents, default acceleration and security enforcement, notification of defaults known to agents of groups of creditor, no action by creditors without specified approvals(insolvency petitions, judicial declarations), and sharing of recoveries pro rata or in a prescribed hierarchy.^[175] According to the inter-creditor agreement, one lender is not legalized to take legal action unless half or two-thirds of the lenders based on the balances is compulsory so as to act.^[176] In a large project financing containing several creditors, including renewable energy projects, the inter-creditor agreement should be established at an early date.^[177] Since the renewable energy projects are complex and high-priced projects, numerous lenders, sponsors and/or agencies are setting off the projects. Especially, before the second part of the 2008, investors were willing to lend money and/or equity into the renewable energy projects. However, especially after the 2008 financial credit crisis, the investors have become reluctant to finance the project. That is why, in such a market, agencies have more important role to finance the large-scale renewable energy projects as they lend money especially in which the other investor such as private investors do not able to finance. That is why, the provisions of the inter-creditor agreements have to be arranged in an efficient way where such as the risks, obligations, and payments are allocated appropriately.

8. POWER PURCHASE AGREEMENT

The fundamental function that agreements engaged in the market economy is eminent. Agreements protect necessary expectations, increase predictability, and guarantee competent allocation of resources. These tasks turn into predominantly

[174] Nevitt, Peter K., & Fabozzi, Frank J., *Project Financing*, Seventh Edition, Euromoney Books, 2000.

[175] 153. Ibid

[176] 126. Ibid

[177] 147. Ibid

significant in the context of infrastructure industries that have need of long-term planning scopes, engage high cost expends, and are greatly exaggerated by perceptions of the public interest^[178]. Power purchase agreement is an agreement between a seller (often a state-owned electricity utility) and an in private possessed power supplier (the 'company') constructing a power plant.^[179] The long-term power purchase agreements stand at the centre of any project finance arrangements and stay one of the few options accessible to developing nations to modernize their power industry^[180]. Therefore, "According to Redlinger, reliable power purchase contracts are perhaps the single most critical requirement of a successful renewable energy projects."^[181] Clear, and steady pricing all the way through long-term power purchase agreements have been most efficient way to draw investors' attention to renewable energy, and making possible legal and regulatory structure can guarantee impartial and open grid entrance for independent power producers.^[182] In the United States and other developed countries, electric utility companies, by and large have considerable internal resources and broad access to capital markets and government subsidies to finance the structure of power plants.^[183] However; on the contrary, developing countries are lack of the resources and technical knowledge to carry out large-scale growth projects as capital markets are poor and government-owned utilities financed with public funds.^[184] That is why, project finance arrangements change the borrowing burden onto the developer and count on long-term power purchase contracts to extend payments over time, generally signify an efficient substitute to public financing. Power purchase agreements mitigate the buying utility from the liability to finance the essential generation capacity. From that point of view, leading completion, the developer or 'sponsor' retrieve its investment throughout a guaranteed of payments suitable for a long-term power purchase agreements with the buying utility who takes action as the buyer of power from the project. This future payment has been used by the sponsor to maintain the financing which is required to build the projects on a non-recourse or limited recourse basis. Additional guarantees are often provided by the host government

[178] Bonbright Al, & James. C. Principle of Public Utility Rates, Public Utilities Report, 1988.

[179] Kerf, Michel & Gray R. David, & Irwin, Timothy, & Lévesque, Céline, & Taylor, Robert R., Concessions for infrastructure: a guide to their design and award, World Bank, 1998

[180] Zhang, Nan, Moving Towards a Competitive Electricity Market, The Dilemma of Project Finance in the Wake of the Asian Financial Crisis, 9 inn. J. Global Trade (2000)

[181] Volkmar, Lauber, Switching to Renewable Power: A framework for the 21th Century, Earthscan, 2005

[182] World Bank, World Development Report 2010: Development and Climate Change, 2010

[183] William M. Stelwagon, Financing Private Energy Projects in the Third World, 37 CATH. LAW. 45, 62-63 (1996).

[184] See id. at 45-46, 49.

and multilateral institutions. Some examples about the execution of the power purchase agreements can be given throughout the world: in Canada, Western Wind Energy Corporation had closed a 23.5 million dollars financing for its Dark Harbour wind project which had a 20-year power purchase agreement with New Brunswick Power.^[185] Another example is, Morocco's Office National de l'électricité had issued a demand for offers for 300 MW of new wind capacity, and the winning bidder had signed a 20-year power purchase agreement with ONE, which is also close to issuing an RFP for a 1,300 MW coal-fired power plant, for all of the project's capacity.^[186] The significance of reasonable and steady allocation of project risks is crucial to the accomplishment of the long-term power project agreements and the whole project. In the power purchase agreements, counter parties can accomplish their undertaking in the case of where risks of the long-term relationship are properly allocated and, therefore, the relationship should remain adaptable enough to allow essential alteration through the contract term. The power project engages of risks which can be categorized as follows: commercial, political and force majeure. Commercial risks contain the commercial relationship between the counterparties. They can be counted as market risks, construction risks, environmental risks, currency-related risks and operational risks. Political risks are the regulatory and governmental risks, political changes of the host country such as expropriation, legislative risks.^[187] Finally, force majeure risks are certain events which restrain the counterparties from fulfilling their responsibilities and compulsions under the project agreements.^[188] These risks can be considered either as acts of God (e.g. earthquake) or human intervention (e.g. strikes).^[189] Whereas the risk allocation is in the main a role of the relative negotiating positions of the parties, an unequal allocation highly possible make the agreement impracticable in the future. In order to keep away from such struggles, every group of risk is by and large allocated to the party according to their ability to manage and mitigate the risk. Although the risk allocates carefully in the agreement, it does not insulate counterparties to a long-term power purchase agreements from the need to renegotiate of the certain points. On account of the power purchase agreements' extensive terms, they have enlarged disclosure to all main groups

[185] Renewable Finance, Number 02, A product of Project Finance Magazine, June 2005

[186] Renewable Finance, A product of Project Finance Magazine, March 2008

[187] Collier, Paul, M. & Ampomah, Samuel Agyei, Cima Official Learning System Management Accounting Risk and Control Strategy, Cima Publishing, 2008

[188] Delmon, Jeffrey, Project Finance, BOT Projects and Risk, Kluwer Law International, 2005

[189] Wolter, Ursula Katharina, BOT-Projects in Asia: Impact Study of an Efficient Risk Management During Build-Operate-Transfer Projects in the Infrastructure Sector, GRIN Verlag, 2009

of risk and “vulnerable to disruption from unforeseen events or events which the parties—for whatever reason—did not and perhaps could not deal with in the contract with sufficient time and in sufficient detail.”^[190] That is why; consequently, the basic suppositions underlying the relationship between the counterparties may alter, yet to the point of making the agreement unworkable or no longer economically feasible. In the circumstance of where, the agreement is unworkable or unable to continue, two options are more likely to come up; either terminating the agreement or renegotiation.

In terms of termination of the power purchase agreements, there are two options for the parties. One option enables the parties for the circumstance where the advantage of the bargain has been cancelled to voluntarily terminate the contract. Another option is for the party troubled by its continuing performance to withdraw. Whilst counterparties have a right to terminate a contract under these options, such termination is not often friendly in the cases in which the benefit of the bargain is cancelled and it usually means the obliteration of the whole relationship. Therefore, one-sided withdrawal or “cancellation” is yet more challenging and is guaranteed to activate dispute resolution provisions, and it might cause costly arbitration or litigation. In the long-term agreements like power purchase agreements, the ability to renegotiate the contract is important and in the interest of the parties. While a party’s eagerness or reluctance to engage in renegotiation will be based on an evaluation of the costs and pay-backs of such an option compared to those of the available legal remedies,^[191] there are several reasons why renegotiation can be regarded advantageous. First of all, options other than renegotiation are pricey and unsure. For example, does not matter whether arbitration or litigation, will need the promises of considerable financial and/or other resources whereas committing no guaranteed of compensation continued and profit lost. Second of all, the agreement engages fixed assets which cannot be separated simply and hence could have to be discarded if the commercial relationship terminates. Lastly, the goodwill over years during the agreement of joint experience is highly probable to fade away. Additionally, the effort of the sponsors’ in the host country and/or other countries would be prejudiced. However, instead of the possibility of future renegotiation, project finance arrangements in general do not obtain alteration to provide these changing cases. Project finance agreements mostly arranged as ‘to predict possible events and reject the option of changing. However, as

[190] Waelde, Thomas & Kolo, Abba, Renegotiation and Contract Adaptation in the International Investment Projects: Applicable Legal Principles & Industry Practices, 5 *Cepmlp Internet J.* 3 (1999), at <http://www.dundee.ac.uk/cepmlp/journal/html/vol5/vol5-3.html>.

[191] Salacuse, Jeswald W., Renegotiating International Project Agreements, 24 *Fordham Int’l l. j.*, 2001

the nature of the project finance arrangements-including power purchase agreements-assumptions of contractual constancy can be captious from time to time. For that reasons, the approach of the power purchase agreements should be “think of an international deal as a continuing negotiation”^[192] and grant for settled contractual mechanisms to assist such renegotiation in the future. Instead of dismissing the possibility of renegotiation and then be put on at a later time to review the whole agreement between the counterparties, it might be better to carry out the possibility of renegotiation at the beginning. As long-term power purchase agreements are an integral element of competitive power markets and restructured power industries, the recognition of the renegotiation with fair and attentive risk allocation would maintain the necessary contractual flexibility to many project finance agreements and permit the agreements to accomplish their commit.

“The first Power Purchase Agreement between Enron and the Congress-ruled state government of Maharashtra for a 695 MW power plant was signed in 1993”^[193] would be given as an example to the cancellation and renegotiation of the power purchase agreement. It is signed by the parties showing that they are free to produce power at exorbitant rates that no one can afford.

The opposition parties are the BJP and the SHIV SENA, set up a ‘swadeshi’ protest, and started legal proceedings against Enron and the state government stating that they had been abused at the maximum level. After a year, in consequences of the state elections BJP-SHIV SENA alliance won the elections and they cancelled the project. Soon after the annulling of the agreement, the US government started to force the Maharashtra government. In November 1995, the BJP-SHIV SENA government of Maharashtra announced a ‘re-negotiation’. In August 1996, the Maharashtra government had agreed on a fresh agreement with Enron. The old contract had mixed up annul payments to ENRON OF US \$430 million for phase I (695 MW) of the project, with phase II (2,015 MW) being optional. Therefore, the new power purchase agreement which was re-negotiated legally binds the Maharashtra State Electricity Board (MSEB) to pay Enron a sum of US \$30 billion. There is a big gap between the prices of the two contracts. For the increase of 18 per cent, Maharashtra State Electricity Board had to set aside 70 per cent of its revenue.

The power that the Enron plant produces is twice as high-priced as its competitors and seven times as expensive as the cheapest electricity available in Maharashtra. In May 2000, the Maharashtra Electricity Regulatory Committee

[192] 191.Ibid.

[193] Roy, Arundhati, *The Reincarnation of Rumpelstiltskin and Power Politics*, Volume 2001, Part 2, Second Edition, South End Press, 2001

ruled that temporarily, until as long as was absolutely necessary, no power should be bought from Enron.^[194] It was based on a calculation that it would be cheaper to just pay Enron the mandatory fixed charges for the maintenance and administration of the plant that they are contractually obliged to pay than to actually buy any of its exorbitant power.^[195] As a result, industrialists in Maharashtra have begun to produce their own power at a much cheaper rate, with private generators and the demand for power from the industrial sector has begun to turn down quickly.^[196]

CHAPTER IV

1. INSURANCE

Insurance has an imperative function in backing up investment in Renewable Energy projects by providing financial security from deferral or harm throughout the construction, or operational stages of a renewable energy projects. The insurance proceeds are used to restore production or repay loans^[197]. Unfortunately, insurance is an area of project finance which rarely receives the attention it really deserves. Cover for loss of returns can be a decisive matter from a point of view of lender, since it influences a project's legal responsibility to make payments to its construction loan. The sector is knowledgeable about considering many risks related to dissimilar steps of conventional energy and infrastructure projects. The usual instruments that insurance companies take action comprise such as: delays in start up/business interruption, political risks, currency convertibility and default.^[198] Insurance can subordinate a corporation's cost of capital and boost liquidity by decreasing the financial collision of risk events.^[199] Naturally, insurance is issued according to the case and requires reasonably advanced prices and restricted terms and conditions. That is why; mostly, projects, not more than USD 15 million, have complicatedness obtaining insurance cover.

[194] Roy, Arundhati, *The Reincarnation of Rumpelstiltskin and Power Politics*, Volume 2001, Part 2, Second Edition, South End Press, 2001

[195] 194. *Ibid.*

[196] 194. *Ibid.*

[197] Priscilla, Anita Ahmed, Xinghai, Fang, *Project Finance in developing Countries* International Finance Corporation, 1999

[198] Skipper, Harold D., & Kwon, W. Jean, *Risk Management and Insurance: Perspectives in Global Economy*, Blackwell Publishing, 2007

[199] Mehr, Robert Irwin, & Gustavson, Sandra G., & Harrington, Scott E., *Insurance, Risk Management and Public Policy*, Kluwer Academic Publishers Group, 1994

2. INSURANCE TOOLS

This section revolves around possible financial routes to find a way to raise the amount of renewable energy projects in the framework of insurance. The reason is that, there are other kinds of routes to securitize the financing of the projects such as guarantee; but, insurance plays an essential and must role to indicative the investors as it brings into more safety to the renewable energy projects. Insurance procedure necessitates applying financial tools to move certain risks away from the project sponsors and lenders to insurers and/or other parties who would be well again capable to guarantee or deal with the risk exposure. If the risk management tools, which will be examined below, apply accurately, they can be helpful to lessen the risks related to renewable energy. Nevertheless, there are some restraints on the accessibility of some risk management tools that associate with the issues like the keenness and capability of insurance and capital markets to respond. Some progresses of insurance products have been materialized appertaining to financial security of renewable energy projects. These tools can be regarded as; alternative risk transfer, weather derivatives, credit derivatives^[200], political risk insurance, public sector, governments by reinforcing ‘learning by-doing approach’ and supports can be offered to financial investors like small to medium-sized expert risk and/or finance firms.^[201]

Alternative Risk Transfer: It offers potential for innovation and enlarging the limits of insurability. Alternative risk transfer is product which comprises derivatives, securitization, insurance, and reinsurance^[202] and planned as ‘agreements, structures and solutions’ and habitually embraces mixture of both risk finance mechanism and risk transfer.^[203] It engages non-traditional types of re/insurance and methods in which risk is transmitted to the capital markets.^[204]

Weather Derivatives: Renewable energy projects have a usual weather position and straight or ultimately, this is frequently the largely momentous source of day-to-day financial uncertainty. They are financial tools that can be utilized by associations or persons as part of a risk management scheme to diminish risks such as unforeseen weather circumstances.^[205] They are used to protect

[200] Derivative: A financial agreement and its value is acquired from another asset, like equity, bond or commodity.

[201] UNEP Sustainable Energy Finance Initiative, Public finance mechanisms to catalyze sustainable energy sector growth, 2005

[202] Gray, Dale & Malone, Samuel W., Macro financial Risk Analysis, Wiley Finance, 2008

[203] Frenkel, Michael & Hommel, Ulrich & Dufey, Gunter & Rudolf, Markus, Risk Management: Challenge and Opportunity, Second Edition, 2005

[204] UNEP Sustainable Energy Finance Initiative, Public finance mechanisms to catalyze sustainable energy sector growth, 2005

[205] Icon Group International Inc., Differentiating: Webster’s Quotations, Facts and Phrases, 2008

renewable energy projects revenue streams against the financial uncertainty associated with wind, precipitation and temperature variability which is still the most commonly traded weather product but other risks are gaining prominence.^[206] Consequently, weather derivative is important, because as the product becomes transparent, it would be more cheaper to be used.

Credit Derivatives: According to the UNEP (United Nation Economic Programme), with the weather insurance, credit derivatives are the mainly broadly risk-mitigation tools for renewable energy projects.^[207] Credit derivatives permit investors to enclose again the small and not liquid credits into tradable securities which can be dispersed to a number of investors. Credit derivatives have lots of uses in the renewable energy sector. For example; counterparty, can get hold of credit security with regard to its exposure to the Reference Entity and can acquire outstanding debt such as s loan of the Reference Entity, and use it in the circumstances of Reference Entity's inability to perform its obligations so that a party can desire to decrease this risk in exchange for giving up part of its return.^[208] In that spirit, the credit derivative is, above all, constructive if a developed repo or securities lending market in the Reference Obligation. Ultimately, the application of derivatives methodology smooth the progress of the running of credit exposure on a portfolio basis throughout improvement of ways of measuring and overseeing credit risk and pricing illiquid bank loans to borrowers that might or might not have public debt outstanding.^[209] That is why, it can be said that, a commercial bank especially currently has the aptitude to move credit risk of an asset to another party desiring to obtain that exposure and to regulate its loan portfolio in the same way that it regulates its trading portfolio.

Credit Derivatives is conquered by two main tools: The Credit Default Swap which are the largest industry of the credit derivatives in which the buyer pays a fee to the protection seller in exchange for the right to get a payment conditioned upon the occurrence of a credit event by the reference entity^[210] and Synthetic Collateralized Debt Obligation which means that the tranche

[206] United Nations Environment Programme, Division of Technology, Industry, and Economics, Financial Risk Management Instruments for Renewable Energy Projects: Summary Document, Paris: United Nations Environment Programme, Division of Technology, Industry and Economics, First Edition, 2004

[207] Ferrey, Steven & Cabraal, R. Anil, Renewable Power in Developing Countries: Winning the War on Global Warming, PennWell Corporation, 2006

[208] Hudson, Alastiar, Credit Derivatives: Law, Regulation, and Accounting Issues, Sweet & Maxwell, 2000

[209] 190. Ibid

[210] Fabozzi, Frank J. & Davis, Henry A. & Choudhry, Moorad, Introduction to structured finance, John Wiley & Sons, Inc, 2006

purchases have no compulsion to make additional cash investments albeit credit defaults are widespread.^[211]

Political Risk Insurance: Investors in project companies do not essentially formulate use of political risk insurance although their lenders (ECAs, IFIs or the private sector) want it on the debt side.^[212] Nevertheless, the high profile political character of many project finance investment makes such insurance needed and sensible. An insurer or guarantor has the right to take over the assets that were assured or guaranteed, although Export Credit Agencies typically entail the commercial bank lenders to keep on to try to recover the loan on behalf of their as do private insurers.^[213] Political risk insurance can be investigated under two categories: political risk insurance from government agencies and private political risk insurance.

-Political risk insurance from government agencies: Various capital-exporting countries have demonstrated government corporations which render political risk insurance, like the United States Overseas Private Investment Corporation (OPIC). They supply insurance at rates which do not embrace a momentous profit for the insurer. Nevertheless, the capacity of insurance is occasionally depending on politically encouraged circumstances which exclude many projects. For example, OPIC also present fondness's to investments in countries with moderately low per capita annual income that targets the insurance exposure to the poorest countries, which unintentionally also have the least viable infrastructure.^[214] An alike however globally based investment insurance company is the Multilateral Guarantee Agency (MIGA). It circulates insurance guarantees to secure foreign investors from losses with reference to currency, transfer restrictions, expropriation, and breach of contract.^[215]

-Private Political Risk Insurance: It has lots of advantages. First of all, private insurers have no political schedule and thus have no special political fundamentals for issuing insurance. In addition, the private insurance approval procedure might be quicker than is the case with public agencies.

However, private insurers are in business for returns and their exposure might be fairly high-priced as measure up to the government programs. Another issue is that numerous private syndicates would not come into politically unpredictable areas devoid of a public agency as a partner. The last problem is

[211] Tavakoli, Janet M., *Collateralized Debt Obligations and Structured Finance, New Development in Cash and Synthetic Securitization*, John Wiley & Sons, Inc., 2003

[212] Yescombe, E.R., *Principles of Project Finance*, Yescombe Consulting Ltd., 2002

[213] 194. Ibid.

[214] Schaffer, Richard, & Agusti, Filiberto, & Earle, Beverley, *International Business Law and its Environment*, Seventh Edition, 2009

[215] Lida, Akira, *Multilateral Investment Guarantee Agency: The Standard Seter*, 1997

that the provision of private insurance policies is by and large restricted to five to seven years, too short for an adequate return from larger capital-intensive construction projects which would be a huge problems for the renewable energy projects as they are larger capital-intensive projects.

Learning by-doing approach: The purpose of this approach is to release creativity and responsiveness up the renewable energy financing range in main financial centres, whilst transferring capacity, credit strength and distribution system back down.^[216] The needs to display long-term policy interference are essential to maintain a more enabling environment for financing desirable new technologies. The ongoing capital markets and new financial routes are bringing some new abstract possibilities for raising capital and managing risk in the renewable energy market. However, quite a lot of key fundamental institutional operating restrictions need to be conquered to develop the commercialization of products and market embracement of public sector investment engagement. In that spirit, a learning-by-doing approach plays an important role by decreasing the cost of producing, installing and maintaining renewable energy technologies.^[217] Learning-by-doing approach suggests that technologies exhibit cost reductions usually between 10% and 20% with doubling of global installed capacity.^[218] For example, in photovoltaics industry, after three decades of successful learning-by-doing when the cost was reduced by the factor 100, the price suddenly stalled in the last four years. As a result, a global interest of policy makers to support deployment programs multiplied demand.

Public Sector: The official Bilateral Insurers counting OBI, OPIC, NEXI, HERMES, Coface, ECAs and the ECGD present considerably the largest quantity of investment insurance against the three fundamental political risks: expropriation, war and currency as well as other non-commercial risk insurance.^[219] Amongst the insurers numbered here, OBIs have encompassed slight practice with renewable energy support. Nevertheless, still OBIs engage project risks that private and MFI insurers would not, above all in emerging countries in which there are noteworthy opportunities for technology exports. There is a great function for these bilateral insurers to be on the game in future public-private connections planned to boost investment into renewable energy sector.^[220] As a result, it can be said the tools that are being mentioned above

[216] Sovacool, Benjamin K., *The Dirty Energy Dilemma: What's Blocking Clean Power in United States*, Greenwood Publishing Group, 2008

[217] 121. *Ibid.*

[218] Great Britain, Parliament, House of Lord, Select Committee on Economic Affairs, *The Economics of Renewable Energy: Evidence*, 2008

[219] 188. *Ibid.*

[220] United Nations Environment Programme, Division of Technology, Industry, and Economics, *Financial Risk Management Instruments for Renewable Energy Projects:*

are positively latent to smooth the progress of a greater number of bankable renewable energy projects.

CONCLUSION

As a result, renewable energy is one of the energy sources in the world. Most of the governments have been trying to encourage the people and the companies to invest into the renewable energy on account of the climate change concerns, safety, and reluctance to depend on fossil fuel. For that purpose, European Union has embodied a directive and according to that, 20 per cent of the Electricity consumed would be produced from renewable energy sources by 2020. First of all, 2020 is a close future and to guarantee constant investment in renewable energy projects and in emerging technologies especially the Government and European Union should think about agreeing an aim 2030. Though feed-in tariff is a good way of encouraging investors and has resulted in augmentation of the renewables, in the long term, as it is mentioned above, they would not be enough. That is why; government should work on improving the tax incentives. Additionally, the governments should amplify their support for research into renewable technologies and make certain that the work of government-funded research organization is correctly synchronized. On the other hands, the uses of international capital markets have been enlarged. Especially, several kinds of bonds have been used like project, corporate and energy bond by the investors in the financing of renewable energies. Nevertheless; comparing to commercial banks, familiarity with nonrecourse renewable energy project finance debt is still inadequate and restricted among bond investors and their enthusiasm has been critically dulled by the current financial chaos, especially, in parts of the developing world.

No doubt that power purchase agreements are in the middle of renewable energy projects. The more the power purchase agreements are transparent and allocated the more renewable projects can be establish and increase. They have a direct connection with the financial of the projects since the agreements guarantees the pay back to the investors. In the paper, different credit enhancements according to the different types of financial sources have been mentioned and discussed under the subjects. However; one type of credit enhancement, which is insurance, nearly includes all the subjects. It plays an important role in renewable energy projects as it is used to restore production or repay loans. Cover for loss of returns can be a decisive matter from a point of view of lender, since it

Summary Document, Paris: United Nations Environment Programme, Division of Technology, Industry and Economics, First Edition, 2004

influences a project's legal responsibility to make payments to its construction loan. For that purpose; the insurance tools that are mentioned above have to be conceived and used in the renewable energy projects. As it is discussed in the paper, there are still things to do, especially governments have to provide more grants and exports and multilateral agencies' role have to be increased. They may finance more projects and the may provide long-term fixed rates so as to persuade the investors.

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