Journal of Electrical Engineering & Electronic Technology

Commentary A SCITECHNOL JOURNAL

Risk Management Methods Applied to Renewable and Sustainable Energy

Johnson Jay*

Journal of Electrical Engineering and Technology, University of Berlin, Linden, Berlin, Germany.

***Corresponding Author:** Johnson Jay, Journal of Electrical Engineering and Technology,University of Berlin, Linden, Berlin, Germany.E-mail: jaynson74@gmail.com

Received date: 16 May, 2022, Manuscript No. JEEET-22-54776;
Editor assigned date: 18 May, 2022; PreQC No. JEEET-22-54776(PQ);
Reviewed date: 27 May, 2022, QC No. JEEET-22-54776;
Revised date: 09 June, 2022, Manuscript No. JEEET-22-54776(R);
Published date: 20 June, 2022, DOI: 10.4172/jeeet.1000911.

Description

Renewable energy policy has always been recognized as a major incentive to the growth of renewable energy and market. In particular, in the last decade, renewable energy sources are considerably increased due to the supportive renewable energy policy worldwide. Policymakers keep on updating and revising policies in response to market changes and advances in technologies. At the same time, policymakers have shifted their perspectives from cost and benefit to risk and return so as to align with investors perspectives. As a result, risk management has to be kept accordance with the changing policy of renewable energy. The dynamic process is important to make certain that major risks are not unattended and managed. The intent of the research is to provide stakeholders in renewable energy projects, including policymakers, financiers, developers and risk management instrument providers, a thorough review of risk management of renewable energy policy and to better define those risks so that they can be adequately mitigated to attract future investment. Five major risks which include market, credit, operational, liquidity and political risks associated with renewable energy developments and markets have been identified.

Renewable energy policy risk is investigated and commonly used risk management tools are reviewed and proposed to address the associated risks and uncertainties faced by financers, developers and investors. It is also intended to setup a place for stakeholders to start, either when they want to replicate current or trying to develop new, workable risk management measures for renewable energy policy. The renewable energy industry was investing $244 billion annually. Around the world, developed and developing countries are continuously seeking to boost renewable energy investment. The development of renewable energy is important to address concerns about climate system change and energy diversification. Renewable energy policy has been recognizedas one of the main credits of the growth. In the absence of level playing ground, national, state and provincial policies have taken an important role in turning renewable energy resources to be more competitive. Detailed design and proper implementation are always the keys to success. Consequently, policymakers continue to update and revise policies in response to changing environment. At the same time, policymakers have adopted risk and return perspectives in supporting investments, rather than traditional cost and benefit perspectives. Simply relying on the evolution of renewable energy policy, but still using the same risk management paradigm, will potentially leave risks unmanaged.

Fundamental Renewable Energy

Appropriate risk management instruments are undoubtedly essential to financers, developers and investors. In this system major merits and deficiencies of each renewable energy policy are identified. Uncertainties due to the deficiencies are individually investigated and handled with suitable risk management instruments. This paper considers the fundamental renewable energy policies to evaluate the five key risk factors which include market risk, credit risk, liquidity risk, operational risk and political risk. It provides an overview of renewable energy policy and a classification of risks. It investigates the deficiencies of renewable energy policies and recommends some of corresponding risk management methods. Renewable energy policy is a vital element for development and deployment of renewable energy. Policies aimed at supporting renewable energy developments are often adopted to capture a wide range of benefits. Reducing reliance on non-renewable energy sources. Reducing emission of greenhouse gases and other air pollutants as well as their impacts. Reducing environmental impacts enhancing the diversification of electricity generation mixes. Enhancing renewable energy involvement. Enhancing competitiveness of renewable energy sources. In addition, return and risk are always the primary concerns for financers and developers. To align with their perspectives, the rationales of renewable energy policies are often set to either increase revenues or reduce uncertainties.

National and state policies for establishing an enabling environment for renewable energy developments can be classified into three categories which are regulatory policies, fiscal incentives, and public financing. Feed-in tariff is a policy scheme created to expand the growth of renewable energy technologies. The policy guarantees a sale price for renewable energy resources and grid access. This provides investors, including small-scale and large-scale developers, with incentives by securing the future income streams on their investment. In practical, long-term contracts are often signed and tariff is set high enough to recover the cost and earn an appropriate profit. As of 2013, feed-in tariff had imposed on 71 countries and 28 states provinces. Since feed-in tariff is usually known in advance, this effectively stabilizes the profit of a renewable energy project and hence reduces the market risk faced by renewable energy developers and investors utility quota obligation and mandate are other means to promote renewable energy developments. The policies define the minimum shares of generations that are generated by renewables or specific renewable sources so as to make sure renewable energy developments align with the national target. The policies are effective only if penalties are adequately set and strictly enforced. In addition, literatures revealed that the effectiveness of assigning a renewable energy target relies on both of the framework of overall supporting policies and the design and barriers of electricity market.

In 2013, 22 countries and 64 countries have implemented utility quota obligation and mandate respectively. Since the policies only define the minimum shares of renewable energy generations, the policies neither enhanceg returns nor lower risk. Investors and developers are mainly exposed to market risk. According to the database system and quota obligations policy management shares of management targets had mandate strictly enforce system of renewable energy policy network for the net metering has

been adopted in 32 countries. The policy aims to support distribution level renewable energy developments, which permits customers to offset their electricity consumptions by feeding renewable energy generation back to the grid. Studies have investigated how net metering is effective for rewarding the deployment of renewable energy technologies. The achievement of the policy should not be underestimated, although its target beneficiaries are small-scale developers. For an instance, Germany was dominated in small-scale renewable energy developments in reflecting its attractive net metering. Unlike feed-in tariff, electricity price of net metering is usually unknown to investors. The income received from net metering can only be estimated and hence developers and investors face market risk. REC (Renewable Energy Certificate) is a transferable energy certificate that is represented as every megawatt-hour generated from renewable energy technologies.

Credit Default Swap

Once REC is created, investors are flexible to trade through voluntary market or compliance market to gain additional revenue to finance renewable energy projects. The REC market mechanism has been widely promoted as the solution to drive renewable energy development and investment. According to the database have been applied in 26 countries in which the majority is in Europe lately. Similar to net metering, developers and investors face and attractive developers it also made some of the energy levels and market risk due to the price uncertainty from the sale of RECs. In addition, they also face liquidity risk depending on the type, size and regulation of exchange REC market as well as the activeness of market participants. Instead of providing a one-time incentive, loan programs are revolving and can be used to support renewable energy developments again. Therefore, although the effectiveness of LCOE reduction is lower comparatively, it is treasured by policymakers. Energy production payment and production tax credit are other policies to increase earnings. The former is a direct cash incentive to one unit of renewable energy generation while the latter is tax credit to one unit of renewable energy generation. These two policies aim to reward developers based on projects' performance. Similar to capital subsidy, grant or rebates and investment tax credit, these policies effectively reduce the LCOE. In effect, government subsidies, grants and rebates are less efficient compared to tax incentives. The reason is that government subsidies, grants and rebates are often biased by the ideological positions of the responsible politicians and by the short-term economic benefits of undertaking the project, which ignore the social impact on the entire country and the actual risk return trade off of the project. Under the policy frameworks, developers and investors are mainly exposed policy risk and market risk. Security agreement is one of the risk instruments to mitigate the credit risk. The security requirement can be fulfilled in many ways, including a parent or affiliate guarantee, a stand-by letter of credit or a direct equity contribution. If default or non-performance occurs after the renewable energy project is developed, the developer releases this security and forfeits all rights to the project. Debt financer then becomes the project owner, with access to the power and any revenues generated by the project. Credit default swap (CDS) is another risk instruments to mitigate the risk. CDS is a specific kind of counterparty financial agreement which provides credit risk protection.