

# Green Energy Revenue

As the cultural and pragmatic shift towards the utilisation of renewable energy accelerates across the world, an understanding of the different methodologies countries utilise to incentivise green energy generation is important for Insurers to be able to accurately predict the income of assets they are insuring and what the impact of indefinable downtime could be.

It remains to be seen if government subsidies will continue at the same level when renewable assets increase their share of the electricity generation market and the renewables market transitions into the next stage of its life-cycle.

Setting aside incentives that concentrate on financing the initial project costs, we provide an examination of the composition of current and future green electricity sales revenue and its impact on Business Interruption ('BI') Claims.



Renewable facilities selling generated electricity to national grids would normally be under a long-term Power Purchase Agreements ('PPA') with either the National Grid itself or an Aggregator. This agreement contains the Terms and Conditions under which the facility would supply electricity and also how the electricity sales price be calculated. The methodologies of how the PPA sales price is contracted depends on the markets and regions which the specific facility operates in. Examples would include an indexed fixed price ('Feed-In-Tariffs') and prices based on the electricity spot market. Under fixed price contracts, government incentives are usually built into contract prices and have price guarantees.

Historically, fixed price PPAs incorporating 100% of generation were preferred in the sector which made sales revenue more predictable and only dependant on weather conditions. The recent volatility in the electricity sales spot market has seen a large number of onshore facilities renegotiate their PPA contracts to take advantage of increasing market electricity prices. This essentially starts to move the industry away from incentivised prices and shows that the renewables electricity market is beginning to start its transition to a more mature market. This change has been observed in onshore wind facilities across the UK and Europe and has introduced the uncertainties surrounding the use of electricity market instruments to hedge sales prices, methodologies which have been more prevalent in conventional power facilities.

The stage of the transition is based on the type and age of a facility with the different subsets of renewable generators (onshore/offshore wind, solar, hydro etc) traveling at their own pace. In the UK for example, offshore wind is currently seeing growth reduced due to the low fixed price contracts being offered. This can be observed in





the recent boycott by developers of new offshore contracts in the latest renewable contracts auction.

The introduction of Battery Energy Storage System (BESS) into renewable facilities will also allow these assets to start trading in the secondary and auxiliary electricity markets, adding both additional revenue streams and new risks. This will have a considerable impact on the revenue achieved per MWh.

As BESS becomes more prevalent, there will also be a need for a reconsideration of how PPAs are negotiated. PPAs currently encompass all generation from a renewable asset but due to the requirement to charge the BESS and the possible participation of other markets, assets will need to start apportioning capacity (and electricity) to be utilised for purposes other than direct sales.

Apart from Feed-in-Tariffs, other incentives that are offered around the world are Tradable Renewable Certificates. Examples of these include the Renewable Obligation Certificates (ROC) in the UK and Renewable Energy Certificates (REC) in the US.

The value of these certificates and subsequently the percentage of a renewable asset's revenue are vastly different and dependant on the individual region's ideological and fiscal strategy. In the UK, the ROCs can be worth around the same value as the Feed-in-Tariff whereas in the US, REC revenue is only a small proportion.

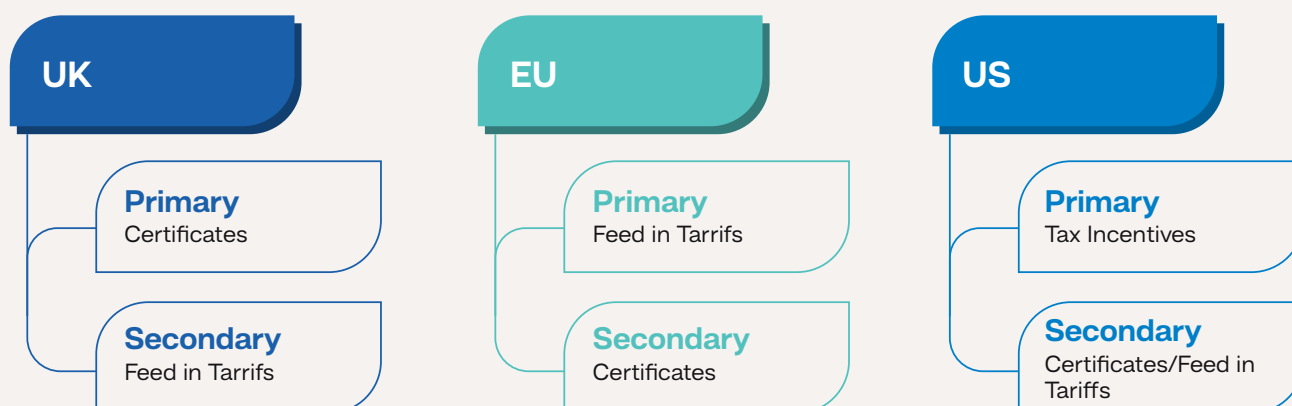
In the EU, energy certificates encompass more than just renewable sources and were developed to serve as a standardised system across the union. The voluntary system sees Guarantees of Origin certificates (GOs) issued for end users to understand and trace where their electricity comes from. This allows end users the choice between renewable and non-renewable sources. Not all assets are signed up to this scheme and due to the relatively low tradable price, the percentage of revenue generated from selling these certificates is currently low. This will no doubt change as greater importance is placed on the corporate and societies' view of environmental responsibility.



In the US, tax reductions are also used in order to incentivise the generation of renewable energy. This results in the economic benefit of this scheme being dependant on the state in which the renewable asset is located due to the differing tax systems. The proportion of revenue obtained from this benefit is much higher than that obtained from RECs.



## Green Energy Incentives



As a renewable asset starts to diversify its revenue streams and replace the secure revenue of government subsidies with higher alternative electricity market revenues, macro-economic and systemic risk factors start to be introduced into the valuation of their revenue streams. This increased risk exposure has been observed in BI claims with larger disparity seen between declared Sums Insured and calculated loss valuations. Insurers have responded to this by introducing BI volatility clauses, in particular LMA 5608 (see our prior article in this regard) BI calculations will also increase in complexity as more revenue sources and market hedging efficiency will need to be analysed. The speed of this transition is yet to be determined as it is unclear how much the opportunities provided by the electricity market's recent volatility have driven renewable assets to act. What is clear though, is that technological advancements and the electricity spot market price volatility are giving renewable assets more opportunities to increase revenue and hence, it is vital that those analysing BI claims have a full understanding all the asset's income streams.



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