Designing effective renewable support schemes

AN ECONOMIC PERSPECTIVE

PRESENTED BY

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PRESENTED FOR

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Disclaimers

I am an economist, not a lawyer. Hence nothing in this presentation should be construed as legal advice, or as giving a view on matters of law

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What is an effective renewable support scheme?

Efficiency

I. We want to achieve the benefits of **Renewable Energy** (RE) at the lowest cost possible
   A. Most countries designed support schemes to achieve several goals – for example reduced carbon emissions, but another benefit could be creating jobs in specific technologies or geographic regions
   B. What might be a low-cost technology now might not be low cost in the future. Hence, there could be trade-offs between present and future costs

Stability

I. The support should be stable for a given project. Unstable support schemes can undermine investor confidence, compromise the ability to attract future investment and trigger arbitration claims

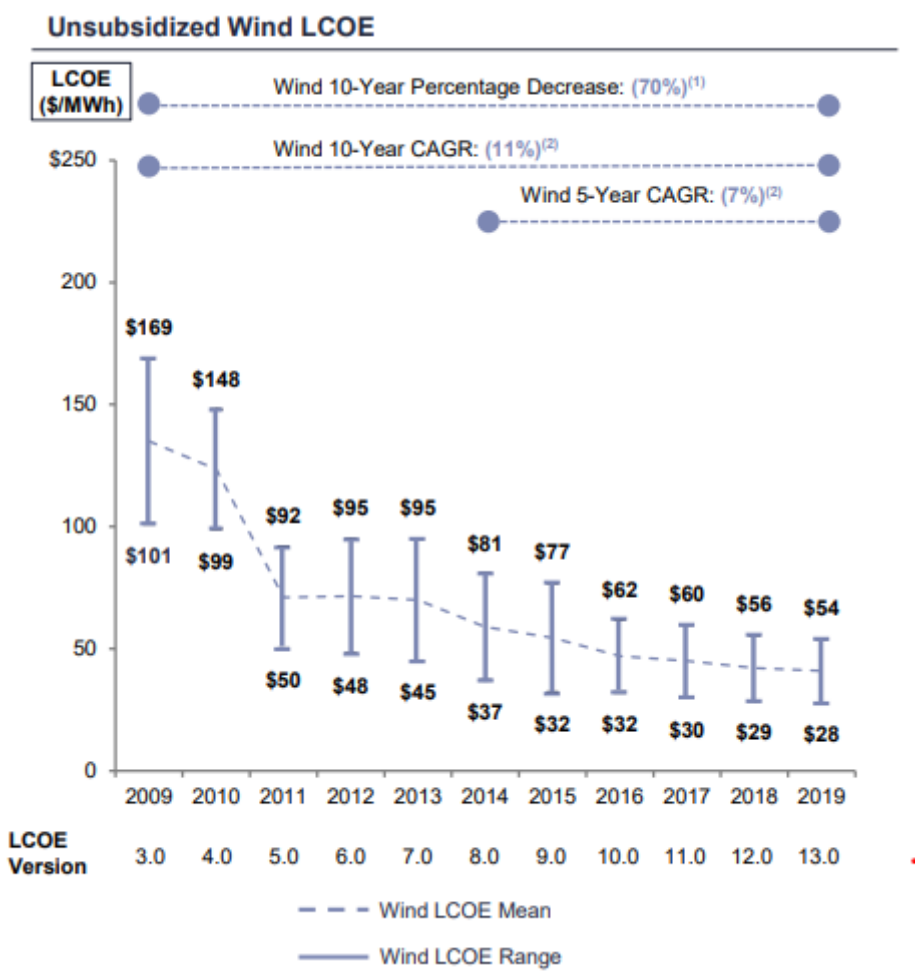
II. The government can make reforms, but they should not be retroactive

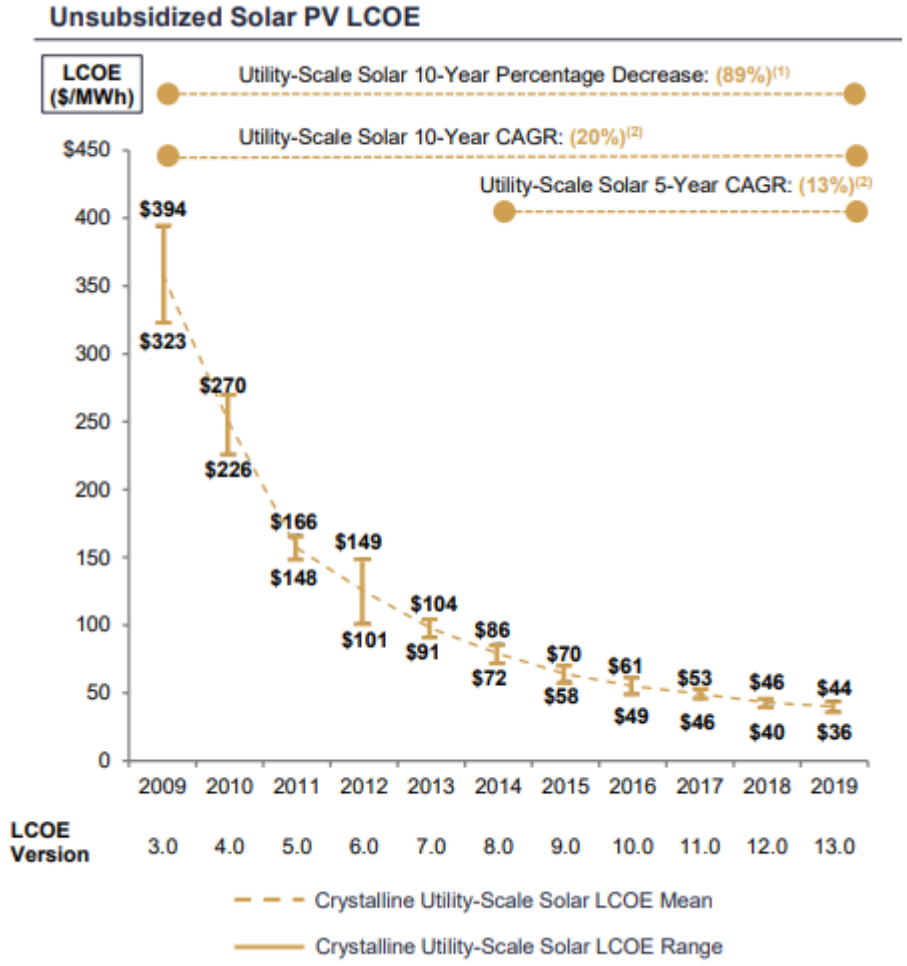
Why have RE Support Schemes been so controversial?

There is a tension between the long-term certainty that a developer needs, and the constant improvement of RE technology

- A developer of a RE project needs to have certainty regarding support
  - This could be a fixed Feed in Tariff (FIT) either a fixed price or a fixed premium over the market price
- If the promised support is modified, the project could systematically lose money
- However, the levelised cost of electricity from renewable energy has fallen consistently over time
- Projects that seemed cheap several years ago can now look expensive
  - For example the UK offshore wind farm 'Hornsea One' agreed a fixed price of **140 £/MW in 2014**. That is about **three times the current price for offshore wind** in the UK

Historical Reductions in Cost of RE





Today vs Tommorow

The temptation is for governments to reduce support for old projects, as the cost of new projects falls

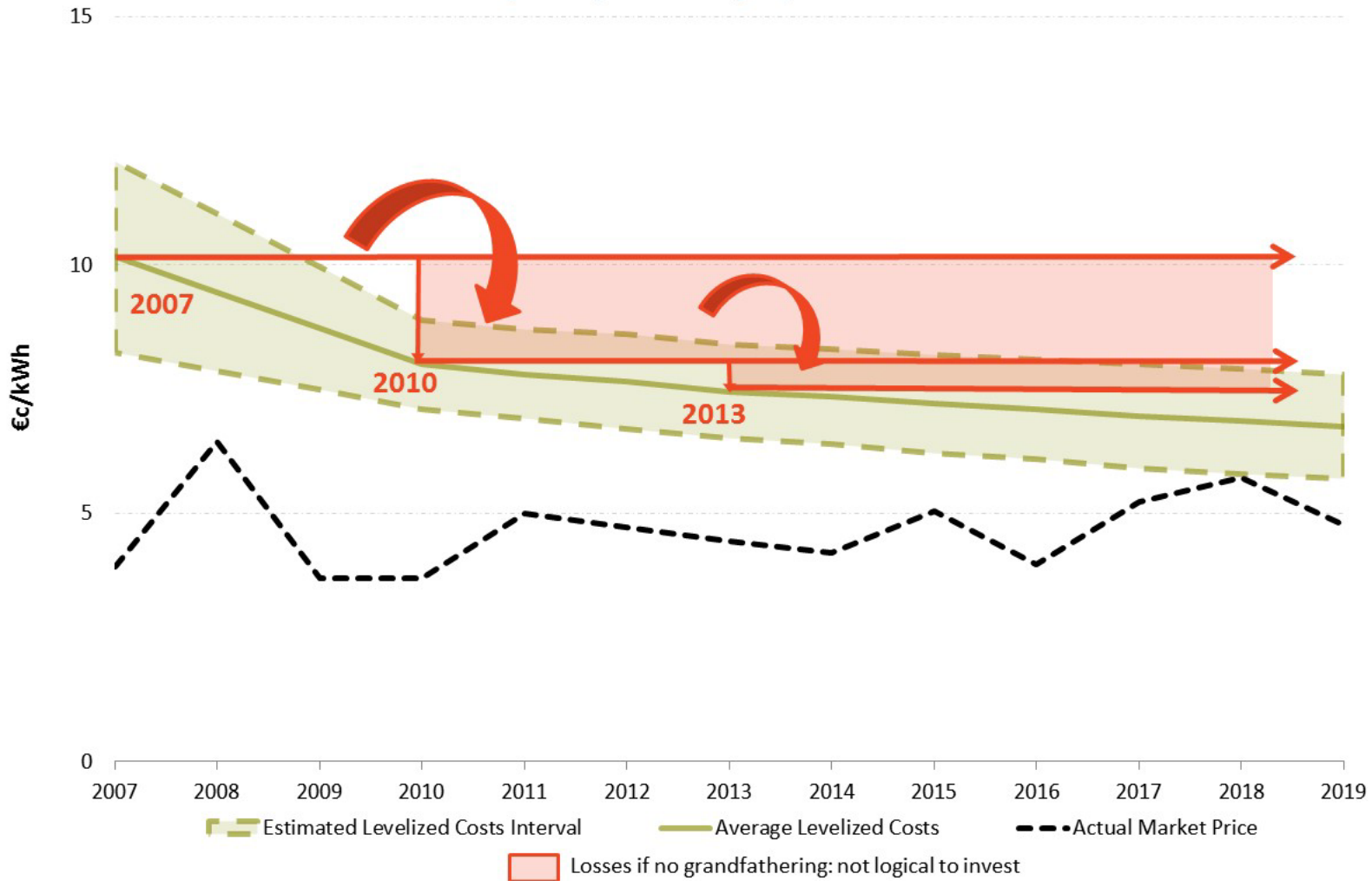
However, in the long-term, **retroactive changes would be a mistake**

- If a government cuts support to existing RE projects, potential investors will not trust the government's future promises
- To attract renewable investment, the government may have to pay a risk premium in the future

Hence, while breaching a promise to past investors might *seem* like it saves money for consumers today, in the longer-term **it could be more costly for consumers**

Hence, the issue of cutting renewables support to existing investors is not 'investors versus the State'. It is **today's consumers versus future consumers**

Losses due to Tariff Cuts



Grandfathering

To attract projects at the lowest costs, Governments need a credible commitment that they will continue to pay a given price, even if the cost of RE falls in the future

The concept of maintaining a price to an existing project, even if newer projects get a lower tariff, is called **grandfathering**

- Grandfathering allows the original regulation or scheme to apply to existing investors while any new regulation will apply to all future investors

Law and Contracts

TWO MAIN METHODS OF GRANDFATHERING

Law: a country could pass a law promising to maintain tariffs for existing projects

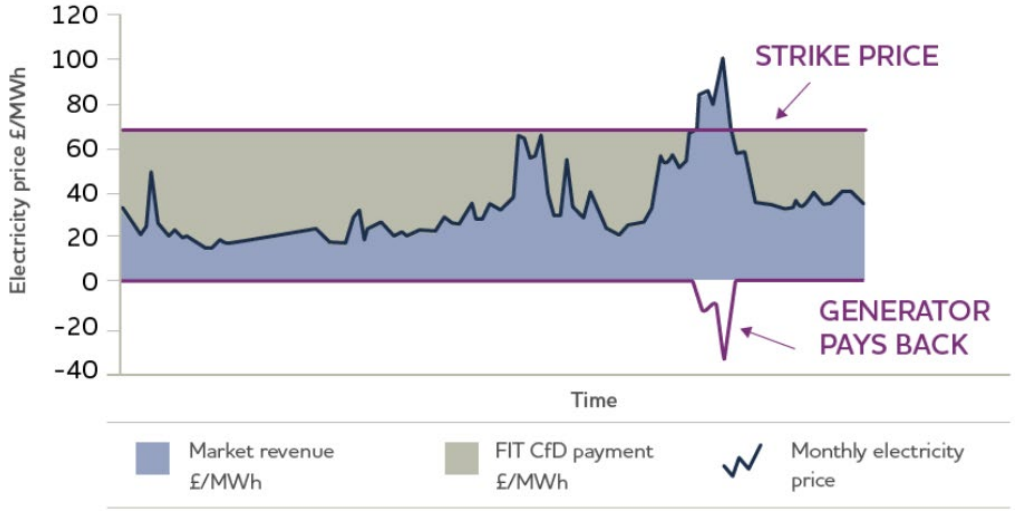
Contracts: a government agency could sign a contract with the project

Example: UK Contracts for Differences

- A CfD is a long-term contract between a UK RE electricity generator and the **Low Carbon Contracts Company** (LCCC)
- The UK CfDs protect the investor with a '**Qualifying Change in Law**' clause. This provides for an adjustment to the strike price if there is a change in the regulation/law
- The definition of a qualifying change in law is intended to capture discriminatory and specific changes in law, that is, ones that apply to generating plant supported by the CfD regime.

Contract for Difference scheme in UK

- The CfD offers a fixed price (**the Strike Price**) for the duration of the contract.
- The CfD makes up the difference between the prevailing market price and the fixed Strike Price
- The Contract incentivizes investment in renewable energy, by providing developers of projects with high upfront costs and long lifetimes with protection from volatile wholesale prices



Source: https://www.emrsettlement.co.uk/about-emr/contracts-for-difference/

How to reduce conflict in future?

If a government has a large capacity of relatively old RE projects, with tariff prices above current market prices, this could prompt complaints from consumers

- The size of support in consumer bills, relative to the electricity price, could be significant
- This could tempt a government to reduce tariffs for existing RE projects

Governments could minimise this problem by tendering for **controlled** amounts of RE capacity at **regular intervals**, as opposed to buying large amounts of capacity at one point in time

This would reduce the chance of being stuck with large amounts of RE 'legacy' capacity that may look expensive in the future

As RE technologies get cheaper, the support needed will reduce over time. Hence, the potential for **future conflict should diminish**.

Conclusions and final thoughts

- An effective RE support scheme should achieve the desired benefits at the lowest cost possible. It should also be stable
- RE developers need stable support to invest. Changing tariffs post investment will increase the cost of future investment
- Contracts can be an effective way of committing to stable support
- The cost of RE has reduced significantly over recent years. This has made the benefits of RE available at lower cost. But it has also introduced tension and conflict, as governments are tempted to lower tariffs for past projects
- Governments can reduce the chance of conflict by buying smaller amounts of RE at frequent intervals
- Designing RE support schemes will likely no longer be needed in a few years. PV and wind can already operate without support in several European markets

Back-up Slides

Other criteria used to evaluate RE schemes

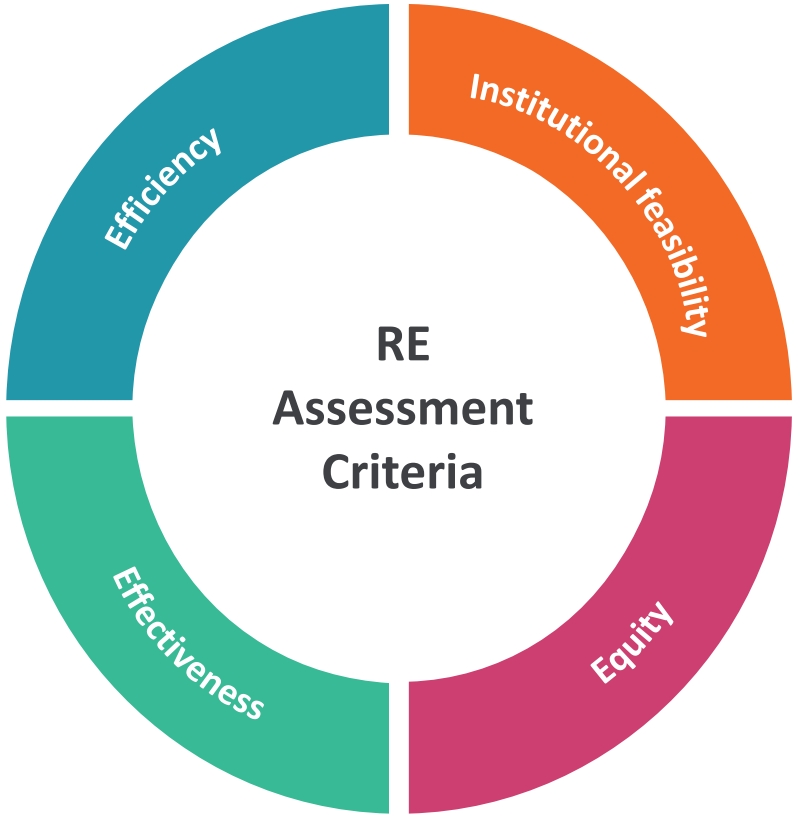
The International Renewable Energy Association describes these 4 criteria to assess RE schemes[1]

Efficiency

- Remuneration Level, Potential Profits and Adequacy indicators
- Total Costs indicator
- Consumer Costs indicator

Effectiveness

- Benchmarks with other countries:
  - Installed capacity
  - Electricity output
- Other sophisticated measurements



Institutional feasibility

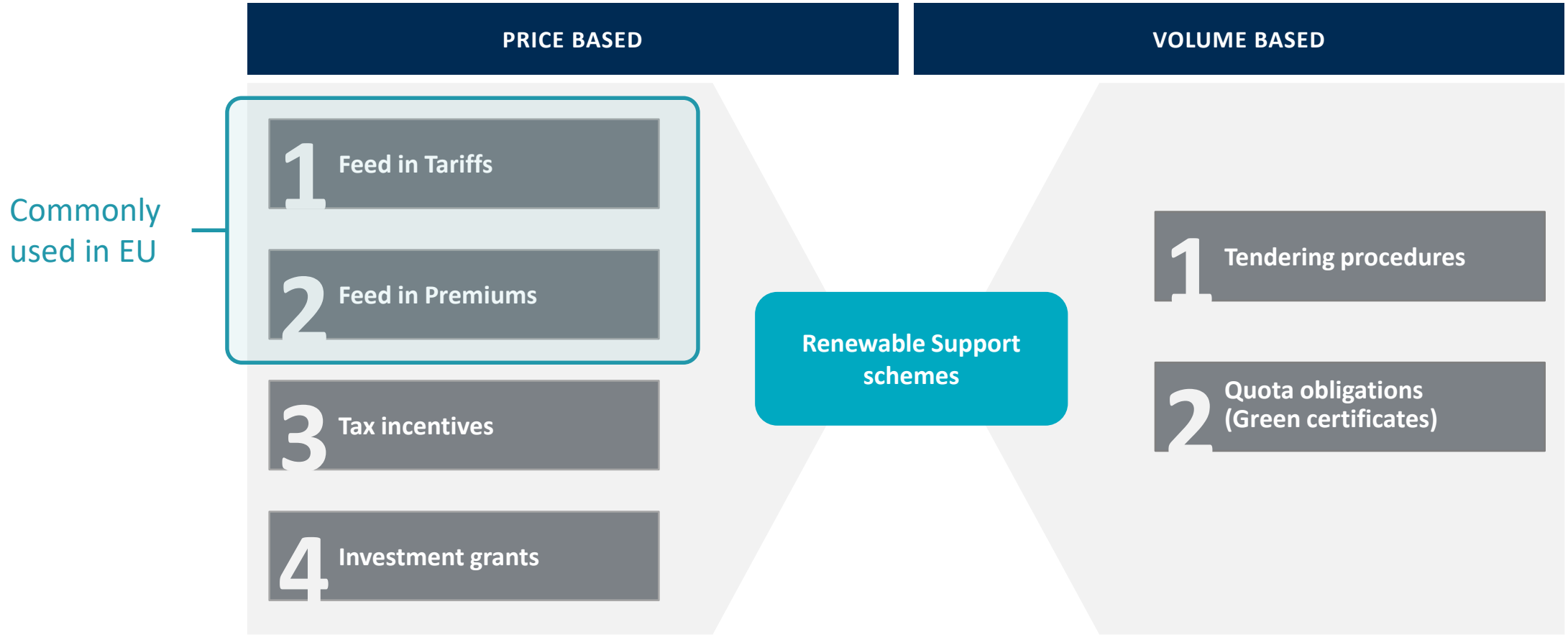
- Political viability
- Organizational capacity
- Indicators affecting both political viability and organizational capacity

Equity

- Changes to energy consumption
- Targeting of consumer subsidies
- Energy access metrics

[1]https://www.imperial.ac.uk/media/imperial-college/research-centres-and-groups/icept/Evaluating_RE_Policy.pdf

Introduction: Price based vs Volume based schemes



Schemes in Europe

- Feed-in Tariff (FIT)
- Feed-in Premium (FIP)
- Quota
- Tenders

Note: This map does not include secondary support instrument like tax incentives, investment grants, etc.

Best practice guidelines by EC

Summary of some key best practice guidelines by the EC

Reform process constitutes	• Long term legal commitments on the timing and phasing out of support • Clear commitments to avoid changes that alter the return on investments • already made and undermine investors' legitimate expectations • Wide and public consultation on scheme design (e.g. 4-6 weeks for routine changes) • Keep costs transparent and separate from other system costs
Best practice for feed in premium schemes	• Preference for feed in premiums over feed-in tariffs for technologies that are approaching maturity • Form of premium - floating or fixed – as function of desirable exposure of producers to price risk • No payment of premiums for production in hours where the system price is negative or above the level of remuneration deemed necessary • Use of competitive allocation mechanisms for granting premiums • Planned volume based premium reductions for new installations, dependent on when they are approved, connected or commissioned • Regular, planned and inclusive reviews of premiums for new installations
Best practice for quota obligation schemes constitutes:	• Technology neutral schemes that promote cost efficient deployment or banded schemes to avoid over compensation of cheapest technology and to reflect explicit technology innovation and diversification goals • Schemes based on long term transparent and planned quotas • Adequate non-compliance penalties • Market data available to all stakeholders
Best practice for feed in tariff schemes	• Phase out of feed in tariffs (may be appropriate if combined with a pre-set capacity cap (per technology or market segment) for small scale activities and/or in non-developed markets) • Tariffs need built-in cost-based or expected cost-based reductions in tariff levels for new installations (in line with learning curves and expected future cost reductions in various technologies) • Planned volume based tariff reductions for new installations, dependent on when they are approved, connected or commissioned
Timeframe for support	• Limiting support to comparable periods (10/15 years)) or to a pre-set number of full-load hours calculated based on reasonable expectations for capacity utilisation over a defined period.
Investment support	• Where feasible, favour investment over operating support so as to avoid distorting efficient production decisions based on market price signals • Ensure cumulative investment support does not over compensate producers
Maximising competition	• Avoidance of using Green House Gas emissions, including from transport, as isolated criteria for support schemes (but as part of holistic EU sustainability schemes) • No unjustified restrictions or limitations affecting the access of renewable energy producers to the markets for energy products • Avoidance of territorial constraints on the use of particular technologies, equipment or feedstock
Process for determining costs	• Rely on competitive allocation mechanisms to force market players to reveal their real production costs • Cost base calculation should be based on project costs, and operating support. • Caps and floors that influence the level of support • Differentiate between technologies and site qualities respecting principle of competition between producers, technologies and locations • The support level based on LCOE calculations • Analysis of cost parameters based on transparent country-specific studies and validated through stakeholders. • Support levels aligned with other support instruments (e.g. EU regional funds) limit the aid to the minimum.

Source: https://ec.europa.eu/energy/sites/ener/files/com_2013_public_intervention_swd04_en.pdf

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Mr. Dan Harris has nearly twenty years of experience as an expert in valuation and quantification of damages.

He has been retained by major law firms and their clients to testify on damages and quantum in international arbitration proceedings in a variety of forums, including the International Centre for Settlement of Investment Disputes, the International Chamber of Commerce, and the Permanent Court of Arbitration. Mr. Harris has particular expertise in the energy industry and regularly acts as an expert in disputes involving natural gas and LNG in long-term contracts both in Europe and Asia. He has also testified in disputes concerning energy infrastructure, including petroleum distribution assets, power stations, and LNG import terminals. Mr. Harris is listed as one of the world's leading arbitration experts in *Who's Who Legal*'s Arbitration Expert Witnesses.

Mr. Harris has consulted on developing tariffs and access arrangements for gas and electricity networks and has authored reports on the cost of capital for gas, electricity, water distribution, and telecommunications networks. He is a co-author of a major textbook on the cost of capital in regulated industries.

Mr. Harris is a regular speaker at gas and electricity conferences, and he lectures at the Florence School of Regulation. Prior to joining The Brattle Group in 2002, Mr. Harris worked for Shell's upstream oil and gas business in the Netherlands for five years in a variety of roles, including the development of economic models for new oil and gas field developments.

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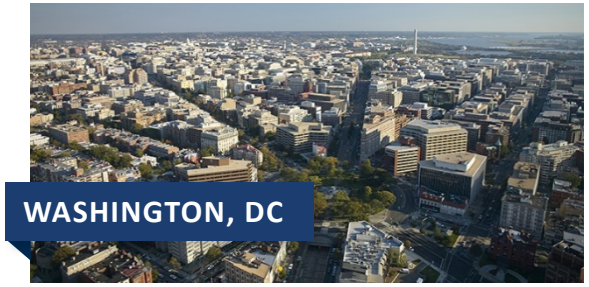
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