Reducing the cost of financing renewables in Europe

Report of a multi-stakeholder dialogue on the proposed EU Renewable Energy Cost Reduction Facility

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Agora Energiewende

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Report of a multi-stakeholder dialogue on the proposed EU Renewable Energy Cost Reduction Facility

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Layout: UKEX GRAPHIC, Ettlingen;
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Cover image: rcaucino/photocase.de

127/01-I-2018/EN
Publication: January 2018

Please cite as:
Agora Energiewende (2018): *Reducing the cost of financing renewables in Europe. Report of a multi-stakeholder dialogue on the proposed EU Renewable Energy Cost Reduction Facility*

www.agora-energiewende.de

Preface

With climate change progressing at rapid pace, it is imperative to rapidly reduce power sector emissions. Fortunately, wind (both onshore and offshore) and solar photovoltaics can today be realized in many regions of Europe at lower cost than any other type of generation technology.

However, not all EU Member States stand to fully reap the benefits of low-cost renewables. Particularly in Central and South-Eastern Europe, high financing costs stand in the way of unlocking the vast low-cost renewable energy potential. Indeed, in some countries in the region renewables still seem un-competitive vis-à-vis new investment into coal-fired generators – just because the capital costs are too high. Innovative thinking to unlock the full potential of low-cost renewable energy across the European continent is thus needed.

The draft EU Renewable Energy Directive recognizes this. Article 3.4 of the proposed Directive would oblige the Commission to create an enabling framework for reducing the cost of capital of renewable energy projects and thereby support high ambition of Member States. Against this background, Agora Energiewende organized a Multi-Stakeholder Dialogue with representatives from EU institutions, public and private finance, project development and think tanks. Building on our report from September 2016, *"Reducing the cost of financing renewables in Europe"*, the dialogue concentrated on the concept of a European Renewable Energy Cost Reduction Facility that would help to lower the financing costs for renewable energy investments in select EU Member States with high cost of capital. This report is the result of that dialogue. It presents a concrete proposal for placing the Renewable Energy Cost Reduction Facility into the EU legislative framework and the EU budget.

We look forward to discussing this proposal with decision-makers and stakeholders involved in the Clean Energy for All Europeans-Package and the future EU-budget.

Best wishes,
Dr. Patrick Graichen
Executive Director of Agora Energiewende

Key findings at a glance:

1. **Europe needs a "Renewable Energy Cost Reduction Facility (RES-CRF)" to fill the high-cost-of-capital-gap which currently exists in many member states in Central and South-Eastern Europe.** Wind and solar are today cheap technologies that are on equal footing with coal and gas. However, high cost of capital oftentimes hinders renewables projects from going forward, even when there is excellent potential. Bridging that gap, a RES-CRF will bring significant cost savings to consumers and taxpayers in those countries.

2. **The RES-CRF would provide a fifty-fold leverage of private-sector finance and will phase-out automatically as market confidence in high cost of capital Member States increases.** The risk of the financial guarantee underpinning the RES-CRF ever being called is very small. We propose a set of concrete safeguards to ensure only high quality renewable energy investments will benefit and to avoid over-commitments.

3. **The next EU Multiannual Financial Framework should be used to finance the RES-CRF as a cheap support for the 2030-targets.** Committed public funds to implement Article 3.4 of the new EU Renewable Energy Directive would create scope for establishing the RES-CRF. This would help Europe to meet its 2030-renewable energy target and enable all Member States to benefit from low-cost renewable energy.

4. **A pilot project should be launched before 2020 for proof of concept.** A key design feature of the RES-CRF is its flexibility. Being largely based on contractual arrangements, it can be tested in specific sectors or Member States before a wider roll-out. Launching a pilot project before 2020 would help strengthen confidence in the instrument. A pilot can be financed from the running EU budget.

Content

Executive Summary

Europe has decided to increase the deployment of renewables to 27 Percent of overall energy demand by 2030. The recast of the EU Renewable Energy Directive identifies reducing the cost of capital for renewable energy investments as a way to support high ambition of EU Member States in developing their renewable energy potential and hence to jointly achieve the European target. Consequently, Article 3.4 of the proposed Directive obliges the Commission to create an enabling framework for reducing the cost of capital of renewable energy projects.

This paper proposes to establish an EU Renewable Energy Cost Reduction Facility (RES-CRF). It will complement and facilitate the implementation of the proposed Directive via a targeted EU-level intervention to reduce the cost of capital for renewable energy investments. This intervention will ensure that the dramatic declines in the costs of onshore and offshore wind technology, and in particular for solar PV, translate into declining costs for concrete renewable energy projects all throughout the European Union.

Beneficiaries of such an intervention will primarily be high cost-of-capital Member States in Central and South-Eastern Europe. The RES-CRF will make investment into renewable energy cost-competitive with investment into any other generation technology in this group of Member States. It will thereby enable decision-makers in these countries to move faster and further in developing their respective domestic renewable energy potential at lower cost to consumers and taxpayers.

However, it should also be emphasized that the benefits of the renewable energy capacity supported through the RES-CRF go beyond making renewable energy more affordable. These co-benefits include cleaner air, less respiratory diseases, economic growth from lasting investments in local economies, reduced dependence on fossil fuel imports and reduced economic vulnerability to fluctuating fuel prices.

The RES-CRF will enable banks, investors and project developers investing in higher risk Member States (e. g. Croatia or Greece) to assess the risks of renewable energy projects in a similar way as with projects in lower risk Member States (e.g. Germany or France). This is achieved by shifting the enforcement risk for a specific tariff commitment from the project developer to the EU Cost Reduction Facility. The basic idea is similar to export credit guarantees.

The RES-CRF offers a balanced package of privileges and commitments. Beneficiary Member States will (i) commit to repaying the EU facility in case a guarantee is drawn, (ii) will likely provide a share of the financing needed to set up and operate the facility, and (iii) will take on specific commitments to reform their regulatory and administrative frameworks for renewables towards achieving best practice standards. The RES-CRF would be financed from the EU budget, whereby this financing could be complemented by collateral financing from beneficiary Member States.

We propose specific options in this regard. The RES-CRF is a transitional mechanism. It will phase out automatically when markets pick up confidence and risk premiums go down. This will come as a result of scaling up high-quality, low-cost and economically sustainable RES investments in Member States currently perceived as higher risk. The RES-CRF can be established through contractual arrangements based on existing rules. We propose that interested Member States and the EU Commission re-commit unused funds from the current EU budget to test the concept and its benefits. This would help deliver the EU 2020 renewable energy target at a lower cost and provide confidence and experience that will be beneficial when setting up, staffing and funding the RES-CRF.

Introduction

In September 2016 Agora Energiewende published its "Reducing the cost of financing renewables in Europe" report in which it proposed an EU Renewable Energy Cost Reduction Facility ("RES-CRF") aimed at reducing the overall cost of capital for RES investments in Europe and equalising the cost of capital for RES investments between different Member States.[1]

Following a positive response from various stakeholders to that report and the RES-CRF idea, Agora Energiewende organised a multi-stakeholder dialogue process involving key players in RES investment and RES policy in order to discuss the concept and its potential implementation in more detail.

The dialogue group included stakeholders from industry, finance, EU institutions, trade associations, Member States and think-tanks. The group met four times in Brussels between March and June 2017.

Building on the discussion in the group, this report presents a refined proposal for a RES-CRF, suggesting concrete steps for its implementation, and also includes a record of the discussion at the different meetings.

The report is structured as follows:

→ Section 2 presents the refined proposal for an EU Renewable Energy Cost Reduction Facility, placing it in the context of the ongoing discussion on the Clean Energy for All Europeans package and the upcoming multiannual EU budget. Section 2 also includes recommendations for the way forward and an extensive FAQ (Frequently Asked Questions) section. The FAQ section was found to be a good way of capturing the results of the debate in the dialogue group and answering key questions about how the RES-CRF will work.

→ Section 3 briefly describes the main topics discussed and issues raised in each of the dialogue group meetings.

A list of participating organisations can be found at the end of the report

This report has been reviewed by the participants in the dialogue group, but it has not been endorsed or approved by the participants or their organisations. As such, any opinions or recommendations made in this report are the views of Agora Energiewende only and do not purport to represent the views of the participants in the dialogue group or their organisations.

As organisers of the dialogue, we want to express our heartfelt thanks to all participants for taking their time, offering their expertise and good spirits, for challenging some of our initial assumptions and thereby helping to advance and refine the proposed EU Renewable Energy Cost Reduction Facility.

Matthias Buck, Andreas Graf, Ian Temperton, and Robert Brückmann

1 I. Temperton (2016), Reducing the Cost of Financing Renewables in Europe: A proposal for an EU Renewable Energy Cost Reduction Facility ("RES-CRF"). Study on behalf of Agora Energiewende.

The basic concept of the EU Renewable Energy Cost Reduction Facility

The problem

It is well documented that renewable energy is highly capital-intensive and hence the cost of capital is a major determinant of the levelized cost of renewable energy (LCOE).[2] Furthermore, due to their capital intensity, the cost competitiveness of renewable energy investments (RES investments) is more sensitive to variations in the cost of capital than fossil-fuel based alternatives (see Figure 1).

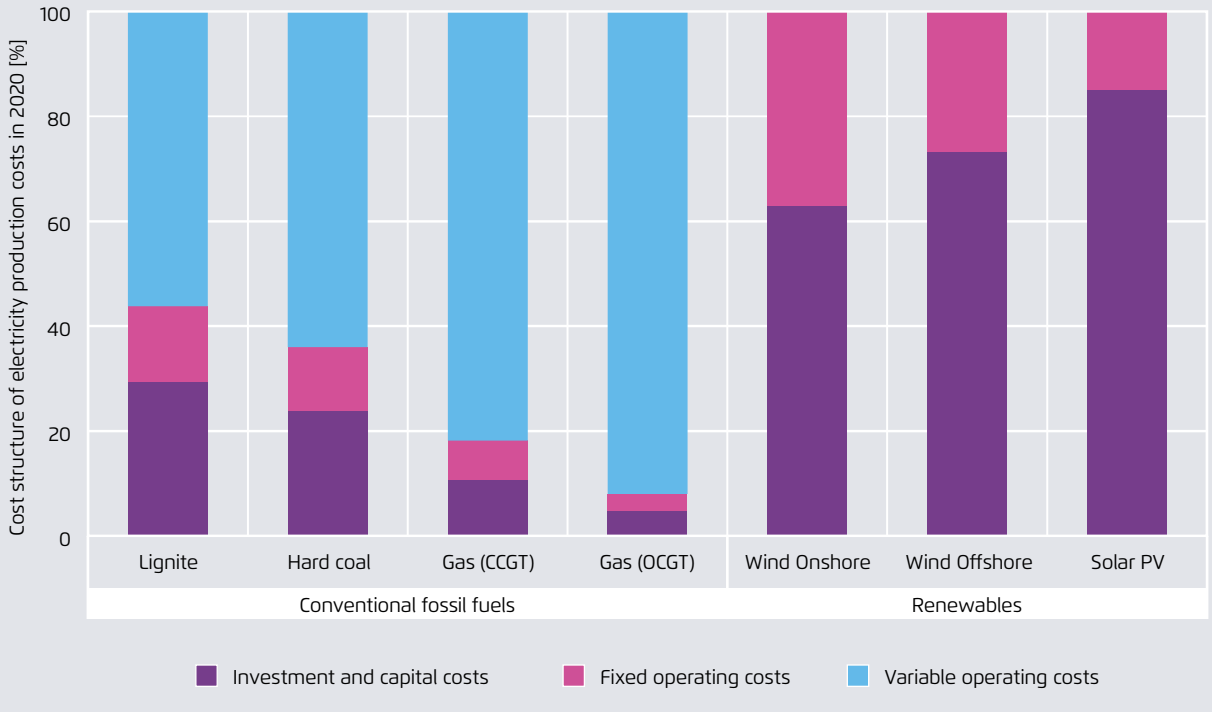
Studies such as DiaCore[3] and PriceTag[4] have shown marked variations in the cost of capital for RES investments between EU Member States. It is expected that more recent studies will continue to show this disparity in the cost of capital between

2 A detailed introduction to cost of capital and its relevance to RES investments can be found in I. Temperton (2016), Reducing the Cost of Financing Renewables in Europe: A proposal for an EU Renewable Energy Cost Reduction Facility ("RES-CRF"). Study on behalf of Agora Energiewende.

3 DIA-CORE (2016) "The impact of risks in renewable energy investments and the role of smart policies".

4 Ecofys & Eclareon (2017) "Pricetag: Mapping the cost of capital for wind and solar energy in south-eastern European Member States".

Comparative cost structure of key power generating technologies — Figure 1



Note: The variable operating costs include, in particular, fuel costs and CO_2-pollution abatement costs (e.g. EU ETS certificates); Fixed operating costs include, in particular, the operation & maintenance as well as personnel costs, Source: Own calculations based on IEA/NEA (2015)

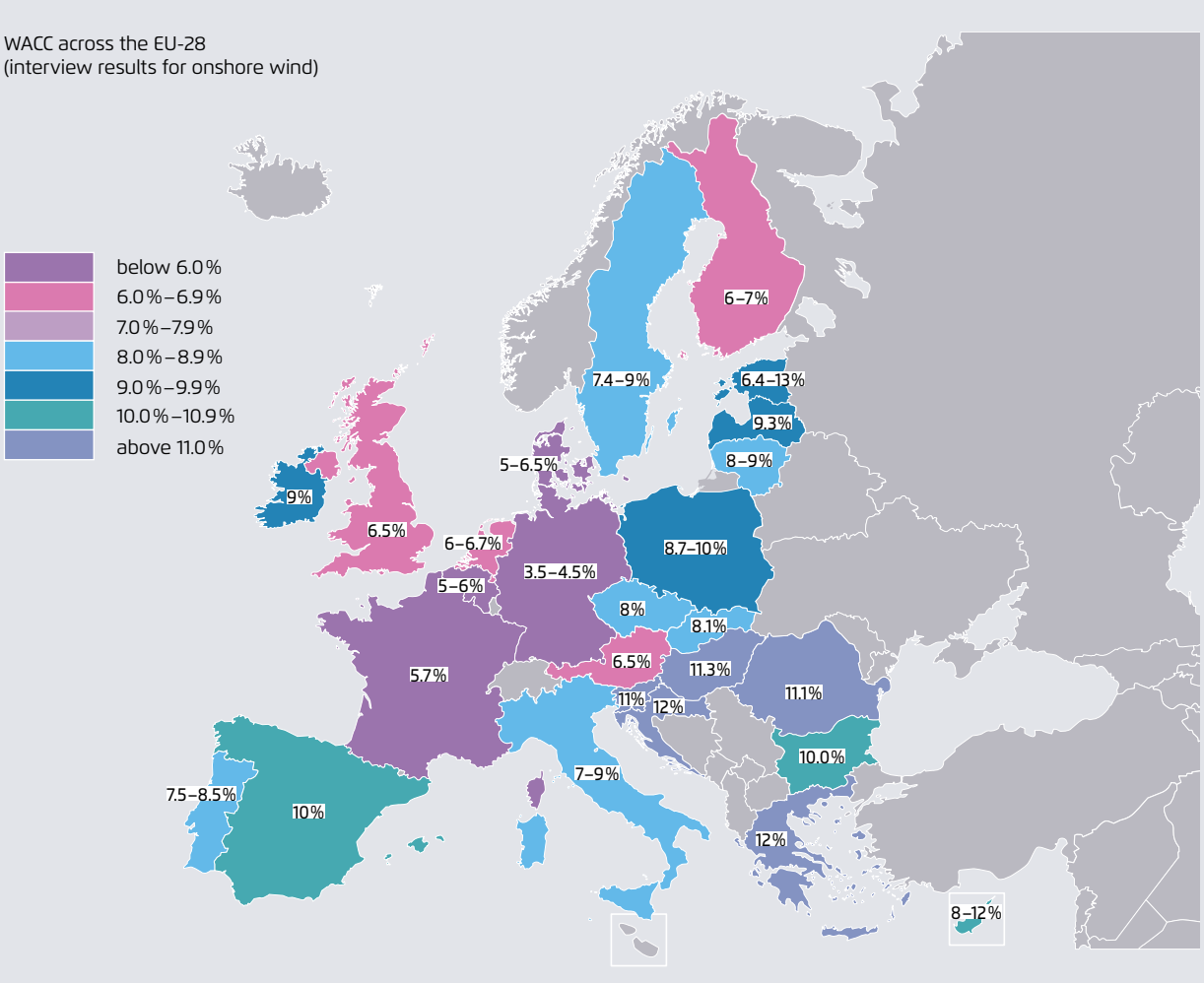
Member States. A summary of the DiaCore work for the cost of capital for onshore wind in the EU is provided below (see Figure 2).

The impacts of this documented variation in the cost of capital for RES investments across Member States are significant: a wind farm built in 2014 which had the same equipment cost and wind resource would have cost twice as much in a Member State such as Croatia which had a cost of capital of 12 per cent according to this research than it would have cost in Germany with a cost of capital of 3.5 per cent. It would also mean that in Germany the wind farm would constitute a competitive investment based on the levelized cost of energy compared with investments in coal-fired power plants or combined cycle gas turbine plants, whereas in Croatia it would not.[5]

The cost of capital reflects the required return on investment in order for a project to be considered beneficial. The required return on investment demanded by an investor varies with the *perceived risk* of the project.

5 For details see I. Temperton (2016), pp. 9–10.

Cost of capital estimations for onshore wind projects in Europe in 2014 Figure 2



DIA-CORE (2016) "The impact of risks in renewable energy investments and the role of smart policies"

As regards renewable energy investments, it is useful to distinguish between *RES-specific risks related to tariffs in a broad sense* (including policy design risk, market design and regulatory risk, sudden change in policy risk, financing risk) and *non-tariff related RES risks* (including administrative risk, grid access risk, social acceptance risk, technical and management risk). – Research such as DiaCore has shown that tariff-related risks are the greatest determinant in terms of the different cost of capital across Member States specific to renewable energy investments.

Higher than necessary and varying cost of capital across the EU increase the overall cost of developing Europe's renewable energy potential and achieving national and EU renewable energy targets. It also means that countries with higher cost of capital (which are often the lower GDP Member States) will have higher costs for meeting their RES aspirations and potentially gain less of the economic and social benefits provided by RES.

Looking at this from a resource efficiency perspective, all other things being equal, projects which are less efficient from a resource perspective will be preferred simply because they happen to be in a low cost-of-capital country.

The solution: An EU Renewable Energy Cost Reduction Facility

The proposed EU Renewable Energy Cost Reduction Facility (RES-CRF) would primarily seek to reduce the tariff-related risk of RES investments in Europe to best-in-class levels.

Under the RES-CRF, a Member State would have the opportunity (not the obligation) to negotiate the terms of its support for specific RES projects or programmes with a designated EU institution, and would contractually agree with that institution to fully fund that commitment to renewable energy. The agreement between the EU institution and the Member State would also include specific commitments of that Member State to reform the most important regulatory and administrative barriers that exist in terms of developing its renewable energy potential at the lowest possible cost.

Back-to-back with this contractual arrangement, the EU institution would, in turn, provide investors in individual renewable energy projects with a payment guarantee. This guarantee would underwrite the commitment to pay the renewable energy project in question under the tariff regime established by the Member State.

The national tariff commitment would thus effectively become embedded in a contractual arrangement between that Member State and a creditworthy EU institution.

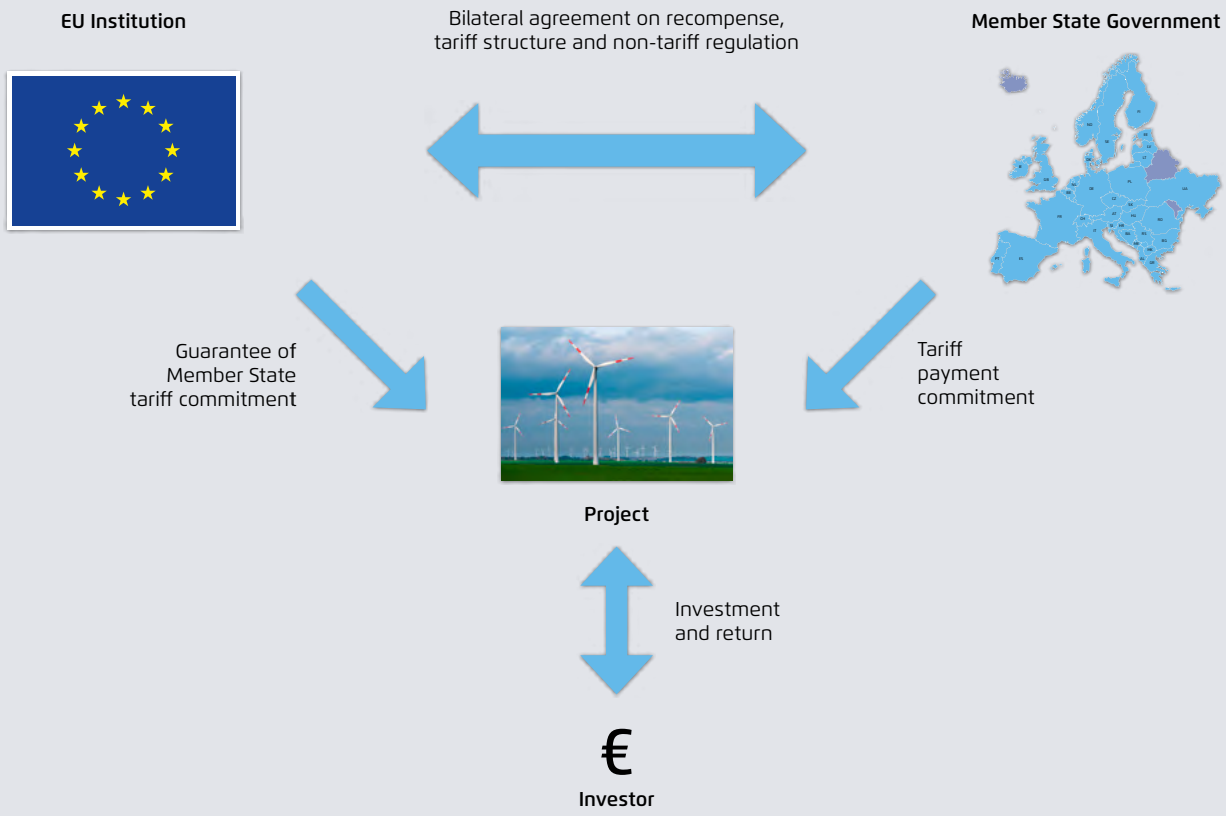
Hence in the expected scenario where regulation in the given Member State is consistent, fair and transparent, the project would then operate as it would without the RES-CRF and it would receive tariff payments from the Member State mechanism in question. However, investors would know that should there be a problem with the performance of the Member State, there would be immediate recourse to a creditworthy EU institution. Investors could therefore be expected to reduce the interest rates they expect to achieve to an EU minimum cost of capital (for RES tariff related risks) commensurate with this lower risk.[6]

The basic relationship between the investor, the Member State and the EU institution administering the RES-CRF are shown in the diagram below (see Figure 3).

The proposed RES-CRF would make investing in renewable energy across Europe much more consistent and create the investment environment that is today only present in the lowest cost-of-capital

6 The types of risks proposed to be covered by the RES-CRF are described in more detail in I. Temperton (2016), pp. 20–21.

The basic relationships governed by the RES-CRF Figure 3



Own illustration

Member States across all Member States. It would do so simply by changing the ex-ante risk of investors.

If a Member State maintains regulatory stability, this removal of cost from the system would come at no cost to the EU or the Member States.

We see multiple benefits to such an approach:

- From the perspective of a *beneficiary Member State*, investments in renewable energy will come at a lower cost to taxpayers and consumers
- From the perspective of *other Member States*, a beneficiary Member State is likely to make a higher contribution to the collective EU renewable energy target for 2030.
- From the perspective of a *project developer*, the availability of the RES-CRF for backing a project would enhance ex ante confidence and thus lower the required return on investment for a project to be considered profitable.
- From the perspective of *an investor*, the availability of a project guarantee by the RES-CRF would be a signal of confidence and would allow requiring only an EU minimum cost of capital.

The RES-CRF as originally proposed was applied on an EU-wide basis, and analysis showed it had the potential to reduce approximately € 34bn of the economic deadweight cost from the delivery of the EU's 2030 RES target.

The RES-CRF: Revised proposal and key considerations

The dialogue group process has confirmed the problem of the varying cost of capital for renewable energy projects in the EU. Hence there is a problem to be solved.

The process has also confirmed the merits of the RES-CRF as a mechanism for addressing some of the most important drivers of those differences in the cost of capital.

A major benefit of the dialogue group process is that is has helped to advance our understanding on the detailed implementation of the proposal and to better see its place in the context of the Clean Energy for All Europeans package and the upcoming discussion on a post-2020 EU Multiannual Financial Framework.

Our main insights from the discussion can be grouped under the following headline messages:

- → The Clean Energy for All Europeans package creates scope for establishing an RES-CRF
- → The RES-CRF will complement and facilitate implementation of the recast EU Renewable Energy Directive
- → The RES-CRF will have a more regional focus based on Member States in Central and South-Eastern Europe
- → Establishing the RES-CRF will involve the creation and funding of three distinct facilities: an Operating Cost Facility, a Liquidity Facility and a Programme Guarantee Facility
- → The funding requirement for the first two of these facilities will be approximately € 209m
- → Member States benefitting from the RES-CRF must demonstrate a sustained political and financial commitment to renewable energy
- → The funding and underwriting of the RES-CRF should be linked to the Union's Multiannual Financial Framework (MFF)
- → There are a number of ways in which this link to the MFF could be achieved
- → The risk of the guarantee underpinning the RES-CRF ever being called is very small
- → A simple cost benefit analysis of the RES-CRF suggests an approximately fifty-fold leverage of committed EU funds
- → The RES-CRF fulfils a specific need not covered by other policy interventions and has an important role to play where a substantial proportion of capital is expected to come from the private sector
- → The recent dramatic falls in the cost of renewable energy are very welcome, but they do not negate the need for the RES-CRF – in some respects these developments make it even more imperative that cost of capital is equalised across EU Member States
- → The RES-CRF fits well with forms of power market design which themselves provide for the lowest cost of capital for RES
- → The RES-CRF is a transitional mechanism that should phase out automatically as confidence in investing in RES across the EU increases
- → A key design feature of the RES-CRF is its flexibility. Being largely based on contractual arrangements, it can be tested in specific sectors or Member States before a wider roll-out and could also be applied to existing projects to reduce future costs to consumers while maintaining investor returns

Each of those headline messages is discussed in detail in the following section.

The Clean Energy for All Europeans package creates scope for establishing the RES-CRF

The Clean Energy for All Europeans package sets out the rules that will shape investor choices in the European clean energy transition for years to come. And while financing is not the focus of the package, it seems important that the issue of the cost of capital for renewable energy investments and the potential for innovative financing to reduce the cost of capital is explicitly acknowledged in the Commission's proposal for a re-cast of the EU Renewable Energy Directive.

Article 3.4 of the proposed Directive stipulates: *The Commission shall support the high ambition of Member States through an enabling framework comprising the enhanced use of Union funds, in particular financial instruments, especially in view of reducing the cost of capital for renewable energy projects.*

From the perspective of the proposed RES-CRF, the provision seems significant in five respects:

- *First*, it identifies higher than necessary cost of capital for renewable energy projects as a potential impediment to the high ambition of the Member States in regard to renewables.
- *Second*, the provision would oblige the Commission to take enabling measures to incentivise the high ambition of Member States when these develop their renewable energy potential. Enabling measures would include Union funds and financial instruments. However, they could go beyond financial incentives and comprise a package of measures that in their entirety reduce the cost of capital to best-in-class levels throughout the Union, which is the explicit aim of the proposed RES-CRF.
- *Third*, Article 3.4 is worded openly as to the sources, nature or amount of financing available to Member States. This reflects that the concrete availability of EU funding cannot be determined in the context of the recast EU Renewable Energy Directive, but depends on political choices on the existing or future EU budget.
- *Fourth*, the provision also maintains flexibility on the legal nature and architecture of the "enabling framework". It would clearly allow for establishing the proposed EU Renewable Energy Cost Reduction Facility.
- *Fifth*, incentivising "high ambition" can be understood to relate to the overarching renewable energy goals of each Member State (i.e. the percentage share of renewables in the final energy consumption that it seeks to attain). However, it can also be understood to refer more broadly to the quality of the investment environment offered to investors and project developers. Also in this latter sense, the RES-CRF would make a positive contribution by establishing concrete commitments from beneficiary Member States to reform their regulatory and administrative frameworks to best practice standards.

The political appetite to establish the proposed RES-CRF would certainly be helped if interested Member States and the Commission would test the concept for specific renewable energy projects or programmes before 2020 in order to garner experience and gain confidence. We will return to this point later.

The RES-CRF will complement and facilitate the implementation of the recast EU Renewable Energy Directive

Some of the measures set out in the proposed recast EU Renewable Energy Directive would contribute to mitigating investor risks. These include:

- General market integration principles for renewable energy (Article 4)
- A prohibition of retroactive changes to the support granted (Article 6)
- An obligation to provide at least a three year-ahead visibility for RES project developers in terms of the timing, capacity and expected budget for the allocated support (Article 15)

- Measures to simplify permitting and ease administrative barriers (Articles 15, 16, 17)
- New rights for self-generation and self-consumption (Articles 21, 22)

However, the package also adds new elements of risk:

- The obligatory opening of national support schemes to installations located in other Member States is not yet understood in terms of how this impacts on the project risk (Article 5)
- The new Electricity Market Regulation would entail an immediate phase out of provisions shielding RES investors from some market risks (e.g. through priority dispatch), while only gradually phasing in measures to make markets RES ready
- The proposed new rules on capacity mechanisms could result in an approach that is too permissive, thereby reducing the ability of RES producers to compete on an equal footing with conventional generators

While it is too early to judge the potential outcome of the legislative discussion, it seems clear the RES-CRF would complement and facilitate the implementation of the recast Renewable Energy Directive:

- It would complement the implementation, since some types of risk mitigated by the RES-CRF are out of reach for EU renewables legislation. This in particular applies to replacing the country-specific creditworthiness by the creditworthiness of the EU
- It would facilitate implementation, since the foreseen specific commitments of a beneficiary Member State to reform non-tariff barriers will make it possible to push for the comprehensive convergence of the national RES framework towards best practice standards, including on topics not addressed in the Directive (e.g. auction design, tariff design)

Focussing the RES-CRF on the regions where it is most appropriate

The original proposal for the RES-CRF envisaged a pan-European application of the instrument to all countries with a high cost of capital as revealed by the Diacore and Pricetag studies. Of the €34bn worth of economic deadweight cost identified as potentially avoidable due to implementing the RES-CRF, two thirds came from its application in Spain, Italy and Sweden.

There is some evidence that the market is delivering lower cost of capital for these large economies without intervention. In addition, the current methods for supporting RES chosen by some of these countries do not lend themselves to the application of the RES-CRF.

However, there continues to be strong evidence that there is a problematic high cost of capital in many Central and South-Eastern Europe Member States. Hence, without excluding the wider application of the RES-CRF in the future, it is recommended that it currently focuses on Central and South-Eastern Europe.

This means that the economic deadweight cost that can be saved through applying the RES-CRF solely in these regions is roughly € 10bn.[7] It also means that the scale of funding required from the EU to implement the RES-CRF is much less.

7 In addition to our own calculations, this assessment is further validated by European Commission modelling for the RED Re-cast Impact Assessment in preparation for the CE4All-Package Proposal. In comparing Commission scenarios with differentiations in the cost of capital in line with DiaCore results (i. e. CRA vs. CRA_countryspec), the Impact Assessment modelling estimates that an intervention leading to a 15 % reduction in the cost of capital for high-risk Member States will reduce the total energy system costs in the period 2020–2030 by € 1.5 billion and the investment expenditure by € 10 billion.

Funding structure of the RES-CRF

The funding structure of the RES-CRF corresponds to three distinct challenges:

- **Establishment and Operation:** This is the cost of establishing the RES-CRF and its ongoing annual operating costs
- **Providing Liquidity:** For the guarantee to be effective it will be important to make payments to investors while resolving a delay or default in payment. For this reason, the RES-CRF will require funding that can be immediately drawn upon. This funding would be sized to cover a period of payments on the basis that any issues are resolved or money reclaimed from the defaulting Member State within a certain time period
- **The Programme Guarantee:** This involves funding (via the EU budget and possibly some collateral from beneficiary Member States) that amounts to the theoretical totality of the guarantees issued under the RES-CRF.

Funding requirements

Establishment and operating costs

Although no detailed business plan has been produced for the RES-CRF, we consider € 3m per year for the operating and establishment costs to be roughly what would be needed to run the RES-CRF programme.[8]

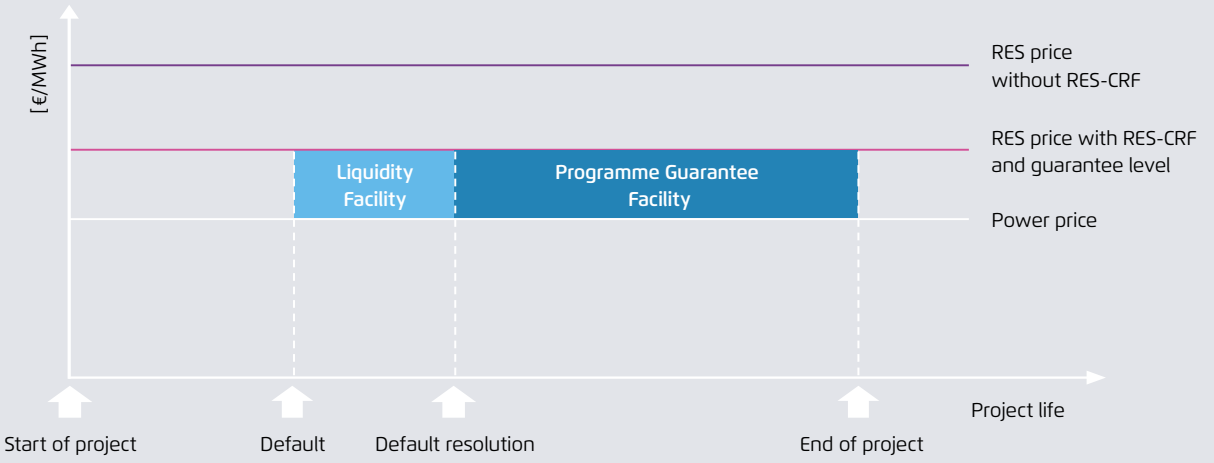
Based on charging projects a fee of € 1/MWh for the project guarantee provided by the RES-CRF, the annual operating costs will then be covered once 3 TWh/year of renewable energy projects are signed up. This is approximately 5 % of what we believe to be the target market for the RES-CRF between 2020 and 2030 (i. e. for achieving the 2030 target).

The EU would have to budget these costs initially. We propose that the cost for operating and establishing the facility is sized at three full-year costs or € 9m.

8 To arrive at this estimate we have assumed that 7 full-time salaried employees are employed at a cost of €150k p.a., multiplied by a factor of three to account for overheads, systems and external support to achieve a total of €3m per annum. These operating costs could reduce once the RES-CRF has been firmly established, assuming that Member States do not default on their commitments.

A schematic overview showing the sizing of the Liquidity and Programme Guarantee Facilities

Figure 4



Own illustration

Liquidity Facility and Programme Guarantee

Providing liquidity while an issue is being resolved and providing a programme guarantee is best done through two distinct entities: a Liquidity Facility and a Programme Guarantee Facility

The cash flows involved are illustrated in the diagram above (see Figure 4). The purple illustrates the potential cost of renewable energy without the RES-CRF and the pink line shows the cost with the RES-CRF in place. As illustrated this is at a premium to the prevailing market per price shown in white.

If there is a default by the Member State part way into the lifetime of the project then the project guarantee between the EU and the project will pay out immediately. If the default is resolved or the guarantee payments are reclaimed from the Member State in a timely manner, then only the light blue Liquidity Facility is needed.

Should the default remain and the EU fail to resolve the default or reclaim the money it is owed from the Member State, then the Programme Guarantee Facility potentially needs to meet the difference between the RES-CRF guaranteed price and the prevailing power price for the rest of the life of the project (shown in dark blue).

The size of the Liquidity Facility needed is determined by the volume of the RES subject to default in a Member State, the amount of the premium over the prevailing power price, and the time that is considered reasonable to resolve a default or reclaim the cost of the RES-CRF under the EU-Member State contract.

Of the Central and South-Eastern Europe Member States on which the RES-CRF should be focused, there is a smaller group of Member States with a large potential of up to 10 TWh each year that could be covered under the RES-CRF (e. g. Romania, Poland and the Czech Republic); and a larger group of Member States with a smaller potential of up to 2 TWh each year that could be covered.

For the premium over the market price we will assume a range from € 10/MWh to € 30/MWh, and we will assume that any default takes either one or two years to resolve or reclaim the money from the Member State.

The table below therefore gives a range of scenarios for the size of the required Liquidity Facility based on the size of each Member State and the overall programme, which we have calculated to potentially be up to 60 TWh/year of RES if all the identified Member States participate to the fullest extent.

Illustrative scenarios of the size of the RES CRF Liquidity Facility — Table 1

Volume	One year to resolve / reclaim			Two years to resolve / rec		
	€10/MWh premium	€20/MWh premium	€30/MWh premium	€10/MWh premium	€20/MWh premium	€30/MWh premium
Large country (10 TWh/yr)	€100m	€200m	€300m	€200m	€400m	€600m
Small country (2 TWh/yr)	€20m	€40m	€60m	€40m	€80m	€120m
Full Programme (60 TWh/yr)	€600m	€1,200m	€1,800m	€1,200m	€2,400m	€3,600m

Own calculations

We recommend that the Liquidity Facility be sized at € 200m, whereby the green shading above shows all the scenarios which this covers. Effectively only a full default by a large Member State following the full implementation of the RES-CRF with a premium in excess of € 20/MWh to the market price will prevent this from providing more than one year's cover.

The size of the Programme Guarantee Facility is calculated in the same way, but involves potential losses for the remaining life of the projects in question. The table below shows a calculation for the Programme Guarantee using a similar method to the one shown above, but assuming that respectively five and ten years of the tariff remains.

It should be noted that while the tariffs sometimes extend longer than ten years, it is highly unlikely that the volumes shown above could be achieved while still having the full – say – 15 years of tariff remaining on all projects. The periods in the table above should therefore be considered as average remaining project lifetimes.

It should also be noted that the tables above and below show undiscounted figures for the full period. The maximum annual exposure is approximately € 1.8bn per year for default across the entire RES-CRF programme applied to the maximum level in all applicable Member States. We would also recommend that the EU sets a cap on the volume of guarantees given to a particular Member State as well as an overall cap on its financial exposure.

Preventing moral hazard in the implementation of the RES-CRF

Throughout discussions on the RES-CRF, there have been concerns about a potential moral hazard when offering a tariff underwritten by a trustworthy EU institution for renewable energy projects in Member States where investors are asking for higher risk premiums.

It is important to be explicit about the risk of a moral hazard and to take it seriously. Indeed, safeguards that give comfort to Member States, in particular those that are net contributors to the EU budget, seem central to garnering political support for setting up the RES-CRF.

Right from the outset we have therefore conceived the RES-CRF as a package of privileges and commitments. Beneficiary Member States are not getting a free ride. As a precondition for using the RES-CRF they must take on concrete commitments set out in an agreement between the respective national government and the EU institution backing the RES-CRF. Back-

Illustrative scenarios of the size of the RES CRF Programme Guarantee Facility — Table 2

Volume	Five years of project life left			Ten years of project life left		
	€10/MWh premium	€20/MWh premium	€30/MWh premium	€10/MWh premium	€20/MWh premium	€30/MWh premium
Large country (10 TWh/yr)	€500m	€1,000m	€1,500m	€1,000m	€2,000m	€3,000m
Small country (2 TWh/yr)	€100m	€200m	€300m	€200m	€400m	€600m
Full Programme (60 TWh/yr)	€3,000m	€6,000m	€9,000m	€6,000m	€12,000m	€18,000m

Own calculations

to-back with the underwriting of tariff commitments, the RES-CRF requires an unconditional contractual commitment from the Member State to recompense the EU facility in case a guarantee is drawn. Moreover, the measures to enforce the provision of compensation will follow existing and well-established procedures that are already applied by EU institutions, for example within the cohesion or common agricultural policies.

From an economic efficiency point of view, it is preferable to underwrite project guarantees from a common pool of finance that, as such, is backed up by the financial credibility of the EU. Any compartmentalising of the finance envelope used for underwriting or any conditioning of eventual guarantee payments to beneficiary Member States meeting their contractual commitment to recompense the RES-CRF would weaken the credibility of the RES-CRF from an investor point of view, result in higher than necessary risk premiums, and reduce the potential economic benefits of this intervention. This does not, however, exclude the European Commission from expecting collateralisation of the financing risk involved by beneficiary Member States when granting privileges linked to this common pool of finance (see below).

The specific options on how a beneficiary Member State will financially contribute to the RES-CRF will depend on how the financing of the facility is eventually arranged.

The funding and underwriting of the RES-CRF should be linked to the Union's Multi-Annual Financial Framework

Funding for the RES-CRF will have to come from the EU budget, the so called Multi-Annual Financial Framework ("MFF").

On this basis, the dialogue process considered whether the European Fund for Strategic Investments ("EFSI") could be further developed to lower the cost of capital for RES investments or whether a tailor-made solution is needed. Our conclusion on the discussion is that, if the RES-CRF were to be implemented, its funding should be directly linked to the Union budget (the MFF), rather than seeking to develop the RES-CRF as part of EFSI. This is because the RES-CRF would provide another type of "additionality" to EU renewables policy than EFSI.

The main reasons for this are:

- The **RES-CRF addresses a different problem to EFSI**. EFSI is a provider of capital across a broad range of investment classes. The RES-CRF is a guarantee facility dealing with very specific RES risks
- The **RES-CRF pursues a policy objective for which there is no private market solution**. The objective of the RES-CRF is to take deadweight cost out of renewable energy investments in Europe, enabling governments, taxpayers and consumers in Europe to advance decarbonisation further and faster with the same amount of money spent. There is no private market solution for this policy objective. EFSI, in contrast, seeks to incentivise investors to develop projects they would not have been undertaken otherwise. However, its objective is not primarily to lower costs for decarbonising Europe. Thanks to its package-based approach, the RES-CRF would also ensure that the political, regulatory, administrative and finance context for future investments in renewable energy in Member States will progressively converge around best practice standards. – Both aspects are not addressed by EFSI in its current form.
- Finally, using the MFF approach would open various opportunities for striking an appropriate balance between the interests of beneficiary Member States and other Member States:
  - (i) when deciding on the approximate amount of EU finance potentially available for de-risking renewable energy investments,
  - (ii) when deciding on "ex ante conditionalities" for committing specific amounts of EU funds for use in the RES-CRF, and

(iii) when negotiating the agreement between a national government and the EU institution running the RES-CRF on the specific terms of underwriting RES projects.

Options for linking the RES-CRF to the Union budget

Details of the approach to backing the RES-CRF will obviously depend on the structure of the future EU budget. A reasonable balance could, in our view, be struck as follows:

The **Establishment and Operating Costs** would be financed by the EU Commission from its budget for own resources.

The **Liquidity Facility** would also be funded primarily from the EU budget but consideration could also be given to national contributions from beneficiary Member States. The exact arrangements, amounts and mix of funds injected by the EU/ Member State to the pool would then be determined in the agreement negotiated between the RES-CRF and the Member State.

Options for injecting Member State funds into the pool of funds used for the Liquidity Facility include:

- → Contribution from the national budget of a Member State reflecting an agreed percentage share of the underwriting commitment sought by the RES-CRF.
- → A percentage share of the regional funds earmarked for a Member State in the MFF is directly transferred to the Liquidity Facility consistent with an ex ante conditionality that allows for this operation subject to conclusion of an agreement between the RES-CRF and a national government.
- → Revenues from auctioning of ETS allowances.

Resources for the **Programme Guarantee Facility** would not be set aside in cash, but held as a contingent but unfunded liability against the EU budget.

This reflects the very small risk that any form of default of a meaningful size will ever occur (as discussed in the next section). In this context, and once again in regard to the issue of avoiding a potential moral hazard, one option for the EU would be to require some collateral financing from beneficiary Member States by establishing (in the next MFF or the founding act of the RES-CRF) that contractual claims for compensation by the RES-CRF against a Member State will be deducted from that Member State's future rights to EU regional funds if left unsatisfied for a certain amount of time.

Assessing the risk of the Programme Guarantee Facility being called

The willingness to back the Programme Guarantee Facility on an unfunded basis is dependent on the belief that there is only a very low probability of it ever being called. All the steps that will have to occur for this facility to be drawn without repayment are highlighted below:

- → The RES-CRF would have to underwrite large volumes of projects in a Member State; and
- → The guaranteed level must be at a meaningful premium to the prevailing market power price; and
- → The Member State must then default on its tariff for at least one year; and
- → The Member State must then default on its contract with the EU (which only seems possible in the event of a serious financial crisis in that Member State); and
- → The EU must choose not to legally or economically enforce that contract on the Member State.

This seems like a highly unlikely chain of events and its must be noted that the EU must decide to wilfully give up its right to receive compensation, which seems unlikely. Furthermore, the EU could choose to require some type of collateral financing obligation from beneficiary Member States for such situations (see above).

A simple cost-benefit analysis of the RES-CRF

Based on the analysis conducted for this project, implementing the RES-CRF can potentially achieve € 10bn worth of savings in the Central and South-Eastern Europe Member States in attaining the 2030 RES targets. This is provided that € 209m (€ 200m Liquidity Facility and €9m Establishment and Operating Cost Facility) in funding are provided to establish the instrument. This amounts to a fifty-fold leverage on the use of EU funds.

The likelihood of any form of default of any meaningful size under the RES-CRF is extremely small. We furthermore envision a cap on the overall financing volume of the RES-CRF and some collateral financing obligations for the beneficiary Member States. That being said, even in the catastrophic scenario where every Member State defaults with a high percentage of the project life left, the cost of the guarantee payouts is still less than the benefits of the scheme in almost all cases.

Alternatives to the RES-CRF and its additionality

The fundamental premise of the RES-CRF is that the removal of the country-specific tariff risks will drive greater levels of private investment at a lower required cost of capital.

There is currently no alternative instrument that does this in the EU and there is no ability for private investors to manage these tariff risks themselves.

An alternate solution to the cost of capital problem, however, is that states and state-backed financial institutions simply provide the capital required for the RES investment in high cost-of-capital Member States at the same cost of capital as they would for a low-cost Member State. The EIB, for instance, explicitly does not price country-specific risks in the EU, and the EU could award direct low-cost financing to RES projects in certain high-cost Member States directly from its budget.

If low-cost, state-backed financing on these terms was available at the scale required to meet the 2030 RES targets in the high cost-of-capital countries then there would be no role for the mobilisation of material amounts of private sector capital and no material role for the RES-CRF.

However, assuming that the mobilisation of private sector capital continues to be the preferred route for financing the majority of the RES investment in Europe, then the RES-CRF does have a role and is additional to other measures such as EFSI.

RES-CRF in the current market context

Renewable energy has made tremendous advances in terms of its cost-effectiveness in recent years. Recent RES auctions in Germany, Spain, Denmark and the Netherlands have revealed the cost levels for wind and solar-PV projects currently developed over the next few years that would indicate they have become the lowest cost investments for newly built generation capacity. This is the case even with technologies previously considered to be highly cost-intensive such as offshore wind.

With the market delivering such impressive results, there is a question as to whether any further intervention in that market is required: be that the RES-CRF, EFSI or any other policy instrument.

There are three reasons why the RES-CRF specifically and policy intervention generally is still justified despite the welcome successes recently:

Firstly, the evidence continues to show that the Central and South-Eastern Member States of the EU suffer higher cost of capital than other Member States for RES investment and there is still a need to fix this

problem. There is, in fact, arguably a greater need than in the past, as otherwise there is risk that these high-cost, below-average GDP Member States would miss out on the cost savings currently being achieved elsewhere in the EU, and that the EU would become more fragmented in enabling its Member States to access clean and affordable energy.

Secondly, if the RES-CRF enables investors to make bids for RES in high-risk Member States at no premium to the expected wholesale price, there will be no political pressure for retroactive change due to customer costs. In this sense, the RES-CRF would contribute to lowering commitments on premium payments and thereby reduce the risk of over-commitment by Member States. On the other hand, there is also a risk that increasing penetrations of zero marginal cost power generation will drive wholesale costs down even further, which means that what is a zero-premium bid today is not zero premium in the future.

Thirdly, the scale of investment required to decarbonise still requires a very significant increase in the deployment of RES and the mobilisation of capital required to finance that deployment still represents a major challenge.

Hence while the recent developments in RES costs are more than welcome they do not remove the problem of differential cost of capital between Member States and they do not remove the case for innovative policy interventions in the financing of RES in the EU.

Implementing the RES-CRF could drive costs in all Member States to similar low levels and based on recent experience the premium payment over the market price could be very small or even zero, thereby reducing the need for support and the risk of over-commitment by national support schemes.

Overall, we consider that the RES-CRF still saves billions in the cost of implementation of the RES target, while the risk to the EU budget is negligible. The RES-CRF could therefore be self-funding, with the fees for the Facility easily covering and repaying the Establishment and Operating Costs, whereby the Liquidity Facility and Programme Guarantee Facility is not exposed due to the level at which support is given.

Equalising the cost of capital and making RES a no-regrets and cost-competitive source of energy across all Member States is the true prize from implementing the RES-CRF as the EU approaches the next stage of the energy transition.

The RES-CRF and market design

The RES-CRF in effect provides a policy and regulatory credit enhancement to the tariff or support provided by a Member State for RES. As such there are certain forms of market design to which the RES-CRF is able to be applied and some to which it cannot be applied. The RES-CRF can be applied to fixed market premium payments, feed-in tariffs and contracts for difference (variable premium payments), but it does not lend itself to green certificate systems or regulated rate of return systems.

The support mechanisms to which the RES-CRF is best applied are the ones that provide the greatest certainty to investors and hence the lowest cost of capital.

For any given Member State, the application of the RES-CRF will need to be considered in the context of the overall market framework for RES.

Implementation agent, early implementation and fees for the RES-CRF

The group discussed a number of other detailed implementation issues for the RES-CRF and its conclusions are summarised here.

The RES-CRF would require an implementation agent, tasked with negotiating, governing and administering the RES-CRF guarantee structure. The EIB

clearly has the skills and knowledge to implement an RES-CRF. The RES-CRF would not place any risk on the EIB balance sheet and hence the EIB's role would be solely as an implementation agent, not as a provider of capital to back the guarantee. Hence while the EIB is the obvious place within the European family of institutions, there is no reason why the role of implementation agent could not be taken on by an independent entity.

A key design feature of the RES-CRF is its flexibility. This means that it can be implemented in specific sectors or Member States on a preliminary basis before a wider roll-out.

We propose that interested Member States and the Commission use the opportunity to re-commit unused funds from the current EU budget to test the benefits of the RES-CRF in delivering the EU's 2020 renewable energy target at lower cost.

The fee for use of the RES-CRF described above will also provide an incentive for investors to exit the RES-CRF (or to not take it up) as they become more confident about the support systems. The RES-CRF is designed to be a temporary intervention for which, in time, the market will eventually signal there is no longer a need.

Applying the RES-CRF to existing projects

There is potential for the RES-CRF to be applied to existing projects on a voluntary basis where this relates to restructuring historic investments that maintains investor returns but reduces future costs for consumers. This would also provide a very real quantification of the cost savings associated with implementing the RES-CRF and would reduce the burden of existing tariffs for consumers in Member States with high historic RES tariffs. The potential cost savings from such an implementation depend on many factors including the starting tariff in the Member State in question, but a very preliminary assessment by the project team suggests savings of between 6 % and 40 % of the current premium over the prevailing price, or between € 5m and € 100m of the annual cost savings per GW of existing RES capacity to which the RES-CRF is applied.

Frequently Asked Questions

An extensive FAQ section is provided below. Feedback on the original report on the RES-CRF showed that the FAQs were very helpful. They also provide a useful way for summarising the debate that occurred within the dialogue group.

Basic Questions on the RES-CRF

Question	Answer
1. Does the EU institution underwrite the risk of a future Member State government changing the tariff?	Yes, but only for projects covered by tariff-commitments where it has agreed a back-to-back contract with the Member State.
2. Does this mean a Member State government effectively binds a future Member State government through the contract with the EU institution?	Yes, but only for those projects and related tariffs that are part of the back-to-back contract.
3. Does a project developer or investor have to take the guarantee?	No, and there will probably be a small charge for taking a guarantee. Ideally, over time investors will gain confidence in the Member State tariff and stop taking the guarantee. A small fee will encourage guarantees to only be taken when they are needed or have a benefit.
4. What would the Guarantee Facility Fee for participating investors be?	Currently there is no market to price the guarantee facility fee and it should be noted that the objective of the fee is not to establish a fair market price for the risk. The fee should be looked at as an incentive. The fee should not be so high as to act as a barrier to taking up the guarantee, but also not so low as to not be able to cover the costs of operating the facility. It should be noted that once the facility exists, banks in previously high-risk countries will likely insist that it is taken. However, if adequately priced, over time you may find projects giving up the guarantee once the debt of the project is paid off. We suggest that €1/MWh for produced energy may be an appropriate price. This is likely to be roughly 1–3% of LCOE (depending on the location and technology), but 5–10% of the operating and maintenance costs.
5. Is this proposal a way of moving the risk of enforcing RES tariffs in Member States from investors to the EU institution?	Yes. That is the point.
6. Does this represent RES targets for Member States by the back door?	No. Participation in the scheme is entirely voluntary and the volume of projects under the RES-CRF would be entirely determined by the Member State in question.

7. Does the guarantee cover all RES tariffs in a Member State?	No. It only covers projects and tariffs specified in the contract between the EU institution and the Member State.
8. Is this a single EU tariff by the back door?	No. Participation is voluntary. Member States can design their tariffs as they see fit. Having said this, participation is likely to lead to some standardisation of the arrangements concerning best practices, which is to the benefit of everyone.
9. Will the RES-CRF crowd out private investments?	No. It is a guarantee and will not contribute directly to financing RES projects.
10. How would you determine who gets the guarantee and how much volume is supported?	Different mechanisms are possible. However, for the most part the guarantee and volumes of generation capacity supported by it would form part of the design of specific competitive auctions tendered by a Member State in accordance with the contract between the EU institution and the Member State. Investors that agree to pay the fee and successfully bid in the auction would automatically get the guarantee for the volume they had bid in the auction.
11. What is the mechanism by which the cost of capital is reduced by the RES-CRF?	Most importantly, the RES-CRF would change the ex ante risk perception of investors and thereby provide more competition and liquidity in the capital markets of a higher-risk Member State by making investors more willing to enter the market. This would happen via 1) more banks getting approval to invest, 2) banks adjusting the balance sheet risk weighting for lending in certain markets – the less risk, the more they can lend. More competition and liquidity and lower risk premiums will lead to a lower cost of debt and equity, thereby lowering the cost of capital for financing renewables investments.
12. How long would the RES-CRF exist?	The RES-CRF would apply as long as there is a demand for it. In operational terms, the tariff commitment would have to be provided for the period promised to those projects that have been successfully awarded the guarantee. However, both the EU and the respective Member State are free to decide how long they would like to award the guarantee to new projects and what volumes of renewables capacity are eligible. Ultimately, both the use of competitive auctions and the application of an adequately priced fee for using the RES-CRF should lead to the guarantee naturally phasing out over time.

Who and what is covered by the RES-CRF?

Question	Answer
13. What types of risks does the RES-CRF cover?	The RES-CRF covers country-specific renewable energy-related risks, including both tariff risks and non-tariff risks. Tariff risks are covered as a hard commitment. If the Member State fails to make a payment on a given day, the RES-CRF would make the payment to the investor immediately afterwards and unconditionally. The commitment under the RES-CRF for non-tariff risks would be softer, as they are more difficult to guarantee, but would include contractual commitments by the Member State to follow certain best practices in reducing investment barriers. The RES-CRF does not cover either general project risks for renewable energy (e.g. project development, resource risk, equipment capex costs) or general country-specific risks (e.g. general taxation).
14. Would the RES-CRF cover all EU MSs, including low-risk countries?	Use of the RES-CRF by investors will be associated with a fee/payment. If the fee is priced accordingly, investors in low-risk countries might decide that it is too expensive to make use of the guarantee. Moreover, as access to the RES-CRF would be conditional upon an agreement between the Member State and the EU institution (tied to certain conditionalities), the Member State and/or the EU institution is likely to judge that it is not worth establishing such an agreement in the case of a low-risk Member State.
15. What is the potential for using the RES-CRF to restructure much older projects? What is the optimum time when an intervention would be most beneficial?	The savings from its application to existing projects could be considerable, and this has the potential to reduce historically high costs to consumers while reducing risks to investors. We have calculated that these savings could range between €5–100 million per GW of solar or onshore wind capacity, depending on the starting tariff and the tariff reduction applied. There is no optimal time. Old tariffs tend to be higher, but newer, lower tariffs have longer to run.
16. What would a restructuring facility for existing projects look like? What would it cost?	It would be the same as the main RES-CRF, but there would be an explicit requirement for a tariff cut as part of entering into the RES-CRF.
17. Would using the RES-CRF to restructure investments not risk increase financing costs by being politically perceived as the application of retroactive changes? Wouldn't it leave the impression that existing support schemes are not safe?	We do not believe that the application of the RES-CRF to existing assets would be perceived as retroactive changes, as long as the ability to restructure existing projects were to be entirely voluntary, which it would be.

18. Doesn't Article 6 of the re-cast RED proposed by the Commission in the "Clean Energy for All Europeans" package prohibit retroactive changes?	If adopted, yes. However, as proposed, Article 6 leaves the initial legal enforcement to investors, which is uncertain, costly and time-consuming. From an investor point of view, Article 6 of the recast EU Renewable Energy Directive and a project-specific financial guarantee would indeed complement each other.
19. Does the guarantee cover the market power price?	No.
20. Does the RES-CRF cover uncertainty caused by potential future changes to State Aid Guidelines?	No. However, it seems safe to assume that national renewable energy frameworks upon which investment decisions are based will be consistent with State Aid disciplines.
21. Could the facility guarantee a corporate PPA?	No. This is not what the facility is there for. It is a policy guarantee.
22. Could this facility be used to guarantee a green certificate?	The RES-CRF would work for a certificate scheme such as in Belgium where there is a minimum price, but not for those where there is not, such as in Sweden and Poland. It should also be noted that the guarantee facility would likely drive a level of standardisation towards competitive auctions. If the support schemes are too variable/complicated, the EU institution may not be willing to guarantee the arrangements using the facility.
23. The same technology (i.e. wind turbines) can cost more in a high-risk country than a low-risk country. Does the facility cover CAPEX risks?	No. The facility would not underwrite capex risks. Investors themselves are in the best position to mitigate this risk.
24. Why are renewables special? Can the RES-CRF guarantee other types of assets (i.e. energy efficiency, storage, biofuels and transport)?	Technically, a similar facility may be able to cover other types of assets, but the RES-CRF has been specifically designed with only RES investments in mind, as they are the most straightforward to guarantee.

Why have an RES-CRF?

Question	Answer
25. Why would a Member State take on the guarantee / participate in the RES-CRF?	To save money! According to a number of studies, the cost of capital for renewable energy investments in some Member States is likely to remain above market leader rates for the foreseeable future. The cost of capital would ideally be lower in lower-GDP Member States, but currently this is the other way around. As a result, many lower-GDP Member States will have either higher costs for developing renewables, or lower industrial opportunity. Participation in the RES-CRF is not imposed, it is completely voluntary.
26. Why wouldn't a Member State take on the guarantee / participate in the RES-CRF?	A Member State may choose not to take on the guarantee because it is unwilling to agree to the conditionality that is a prerequisite to accessing the guarantee. The agreement/negotiations between the Member State and the EU will include "hard" tariff-related commitments, as well as "soft" non-tariff related commitments for the specific RES capacity covered by the facility. However, the RES-CRF would provide that RES investments are, in principle, as low-cost as possible throughout Europe. And we expect that all Member States of the Union will contribute something to achieving the EU 2030 renewable energy target.
27. Why would Member States not participating in the RES-CRF agree to establish the facility?	Under the RES-CRF there is no direct monetary transfer from one Member State to another. Theoretically the RES-CRF should also be cost-neutral, as the guarantee only kicks in should a Member State default, and operating expenses are covered by a fee paid for by the investors. However, depending on how the RES-CRF is structured, there is a small risk that EU funds used for financially backing the facility might eventually be lost. Member States will accept this pay-out risk if they believe that the benefits outweigh these risks. For some, these benefits will be about the economic efficiency this system brings, or about fairly spreading the benefits of the energy transition. For others, the RES-CRF will be attractive because it allows other Member States to contribute more effort towards meeting the EU RES target. Furthermore, the EU could choose to require some collateral financing obligation from beneficiary Member States.
28. Why would an investor agree to make use of the RES-CRF if there is a fee associated with its use?	One of the key benefits for the investor is the transfer of responsibility for enforcing tariff-commitments on Member States to the European institution and away from them.
29. Why wouldn't an investor agree to make use of the RES-CRF?	In high-WACC countries it is unlikely that they would not agree to participate. However, the fee for participating in the guarantee should provide an incentive for investors to stop using the guarantee once the financial/regulatory risks in a Member State have been adequately reduced.

30. Why would the EU establish a RES-CRF?	To meet ambitious 2030 RES targets at the lowest possible cost. To avoid a 2- or 3-speed Europe by enabling poorer Member States to share in the benefits of RES development. To establish a true Internal Energy Market for RES funding by helping to homogenise the market to RES providers and financiers, thereby increasing competition and driving down cost. It will also help to spread best practice in terms of the support scheme design in line with State Aid Guidelines and provide additional expertise in assessing which support schemes would cost ex ante in order to avoid windfall profits for investors and detrimental retroactive changes.
31. Why wouldn't the EU establish a RES-CRF or enable it to be applied to a particular Member State?	If there isn't adequate assurance on the part of the Member State in terms of financial collateral/commitments, establishing best-practice support schemes and reducing RES related risks (i. e. administrative barriers), the EU institution tasked with the RES-CRF may determine it is not possible to justify establishing the guarantee that would represent a risk for EU taxpayers. Tariff-related risk guarantees are hard, non-tariff risk guarantees are soft. Both form part of the negotiations between the EU institution and the respective Member State.
32. If I get a lower return in a low-risk country and then in a higher risk country in the future, why would I invest in that high-risk country?	Because the RES-CRF makes the risk difference much less. We are, however, not expecting complete convergence of the risk and cost of capital. Competition among investors is growing, so your returns are likely to still (at least initially) be higher in a high-risk Member State.
33. Why throw good money after bad? If a Member State is high risk, debt-laden and defaults on its loans, why would RES get special treatment?	The RES-CRF does not provide loans, it provides a guarantee and the EU will have recourse measures laid out in the agreement between the EU institution and the Member State.
34. Why would an investor agree to a reduction in their guaranteed support on an existing asset in return for access to the RES-CRF?	The RES-CRF would provide further protection for the investment and would allow for financial restructuring of the assets. Restructuring could allow the investor to get more (cheaper) debt and tenor, and free up capital for further investments. The decision to restructure would likely always be with the equity.
35. Why do you need a RES-CRF to address the country risk? Wouldn't the country risk reduce for these countries over time regardless whether the countries apply the RES-CRF?	Maybe. Theoretically the cost of capital could come down by itself over time if the Member State demonstrates that it has tackled investment barriers and risks. But in countries that have experienced retroactive changes it will take a significant time before investors regain trust. This facility can kick-start and fast-track that process, which will certainly be needed if the EU is to achieve its ambitious climate and energy targets for 2030 at the lowest cost.

36. Why would you choose a Commission entity to operate the RES-CRF as opposed to a separate, non-EU agency?	The RES-CRF needs to come from an institution without a profit motive and good credit worthiness, i.e. the Commission. Generally, to establish the operations the main thing you would need is a hard guarantee by the Commission that it would pay back in case the project contributions do not cover the costs.
37. Why do you need a RES-CRF to address investment barriers? Isn't the reduction of investment barriers for RES already covered by the European Commission's proposed Clean Energy for All Europeans package?	There are new additions in the Clean Energy for All Europeans package that would, if properly transposed and implemented, reduce the investment barriers in the Member States and set a minimum standards baseline. At the same time, some proposals (i. e. abolishing priority dispatch) potentially add risk for investors. It is also arguably slower to phase out barriers to the RES market entry than to phase in/enhance the RES market discipline. The RES-CRF would complement and facilitate the implementation of EU renewable energy laws by mitigating some types of risk that cannot be addressed in EU energy legislation (e. g. country-specific risks) and by pushing comprehensively for convergence of national RES frameworks towards best practice standards, including on topics not addressed in the Directive (e.g. auction design, tariff design).
38. The RES market is undergoing a radical transformation. Recent auction results have demonstrated that a declining share of revenues is needed from outside the market in order to finance RES investment. RES investments may soon be funded on a fully merchant basis without the need for support schemes. If the main days of getting money from outside of the market are over, is this instrument still necessary?	The cost of RES projects is getting undeniably cheaper, resulting in a reduction in the amount of support needed to fund new renewable energy investments. This is good news. However, it is not true that we have reached a world in which renewables can be developed at large volumes on a fully merchant basis. For the most part, RES projects still require support and a long-term offtake agreement in order to be bankable, in particular in countries with a high cost of capital. As a result, without adequate financial instruments to ensure RES investors that they will recoup their investment over time, the EU is highly unlikely to reach its GHG emission reduction and renewables targets at optimal cost. At the same time, these changes in the market also make the RES-CRF a much lower risk undertaking for the EU than it might historically have been. In fact, since the RES-CRF fee provides an incentive for the instrument to be phased out over time, the RES-CRF would help serve as an instrument to lead high-cost-of-capital countries to a merchant world, if this should ever exist.
39. What added value does this bring over and above other instruments such as EFSI?	EFSI and similar instruments offer hard capital to RES projects in order to leverage public funds and provide liquidity into the market by supplementing capital from other investors. However, EFSI and the extension of EFSI (as currently discussed) are not designed to provide policy insurance and are, therefore, unlikely to be a suitable fit for the type of projects the RES-CRF is designed to target.

What will it cost, and how will it be paid for?

Question	Answer
40. What if the Member State refuses to pay the EU institution under the agreement it has signed?	Firstly, it is contractually obliged to do so and so the EU institution will be able to enforce the contract through the courts if necessary. Secondly, if the EU institution considers this a high risk when the RES-CRF facility is established then it could put in place collateral arrangements, perhaps based on offsetting future payments from the EU budget.
41. What would be the overall cost from Member State to Member State to guarantee them with the RES-CRF?	Ideally, the guarantees will never be used. The actual cash you would need to set aside to operate the RES-CRF on a day-to-day basis is, therefore, only equal to a certain period of payments in order to provide sufficient liquidity in order to be able to guarantee that payments will be quickly forthcoming in case of default. We estimate that you would need enough cash to pay out a certain volume of guaranteed payments for 6 to 12 months. For purely illustrative purposes, we have calculated that the annual operating costs for the facility with 7 fully employed staff, including overhead and external support costs, would be roughly €3 million for the initial 3 years when the fund is being established. These operating costs would decline once the fund has been established, assuming that Member States do not default on their commitments. We recommend the Liquidity Facility be sized at €200m, assuming a maximum default of 10 TWh covered at a €20 / MWh premium for 12 months, which would cover the default of a large MS with a moderate premium covered by the facility. Some or all of these costs may ultimately be raised through the participation fee, but some of the initial capital will have to come from EU or Member State budgets. The overall cost in the "worst case scenario" would be the total cost of the agreed payments over the full lifetime of the support scheme.
42. What can be done ex ante to avoid the Member State defaulting on its commitments?	The EU institution is tasked with making a proper assessment of the risks involved. The EU-to-Member State contract is designed to ensure that the Member State will pay if it reneges on its renewable policy. The risk of the MS defaulting on its commitment to pay the EU is no different to them failing to honour any other contract they have with the EU.

43. What would be the cost of the "worst case scenario"? Who would pay for it?	Using the same logic as above, if 10 TWh/year were covered in a Member State, and the support level were to be €30/MWh above the market (unlikely these days hence note the conservatism), and if the tariff arrangements had an average of 10 years left to run, then the "worst case" exposure for that Member State defaulting and the contract with the EU failing to be enforced would amount to €300m per year or €3bn in total over the 10 years.
44. Wouldn't a RES-CRF just lead to a backing of expensive support schemes / RES subsidies and consumers overpaying for their electricity?	RES technologies are becoming increasingly competitive relative to conventional generation technologies at a lower cost of capital. In the medium term, many RES investments may no longer need support in addition to market revenues. However, to make this possible, the cost of capital in high-risk countries will have to come down to rates seen in low-risk countries. This is particularly relevant for eastern Europe, where compared to western and northern Europe the conventional generation fleet is significantly aged. Replacing this older generation capacity with the most cost-effective generation technologies (i.e. wind and solar) would lead to significant cost savings for consumers. Moreover, through Commission conditionality, basic policy design errors for supporting renewables investments can be avoided. For example, the Commission will likely mandate that the Member State apply best practice for the support scheme design and account for/assess what the support schemes would cost ex ante to ensure the financial sustainability of the support scheme. We believe the best model for RES-CRF is a long-term fixed price (CfD) model via tenders, optimised through proper auction design.
45. Wouldn't a pay-out like that, which has occurred in Spain or Italy as a result of retroactive tariff changes, create enormous liabilities for the EU institution?	Yes, in principle, but there are two reasons why this is not an issue now. Firstly, support costs for RES are now substantially smaller, as the technology is cheaper. Secondly, the EU institution will place a limit on the volume of guarantees it will issue under the contract with the Member State. Therefore, the exposure will always be limited and sustainable. A pay-out such as in Spain or Italy will not happen.
46. What impact will Brexit have on the upcoming budget negotiations and the ability to include the RES-CRF in the upcoming MFF?	The implications of Brexit are not entirely clear yet when it comes to budget negotiations, but they have the potential to significantly impact on the strategic vision of the European Commission, the remaining EU budget, as well as the type of financial instruments and conditionality that may be used. An initial proposal for the next MFF would generally need to be adopted by 1 January 2018, and will be formally adopted by the next parliament.
47. This facility would have to be tailored to every MS, as opposed to covering the whole of the EU. Wouldn't it then be a costly, inefficient instrument?	It is expected to be very cheap to establish in regards to its impact. It is also likely to lead to a high degree of standardisation. Much of the overall benefit comes from applying it to a small number of MSs.

Dialogue group discussions

The dialogue group met four times between March and June 2017 in Brussels.

This section sets out a brief summary of what was discussed in each meeting and any key elements of the discussion between the participants.

Meeting One: The RES-CRF concept

Focus of the meeting

The focus of the first dialogue group meeting was to bring the group up to date on developments and to debate both the central premise of having a wide variation in the cost of capital for RES investments across the EU and the merits of the RES-CRF as a solution at a high level.

Summary of topics discussed

Four formal presentations were given during the meeting on the following topics:

- → An introduction to the dialogue group process and objectives
- → A presentation and comparison of the DiaCore and PriceTag findings on the variation in the cost of capital in the EU for RES investments
- → A summary of the RES-CRF concept and some high-level design considerations
- → A short summary of the state-of-play of the policy process for RES in the EU

Each of these presentations stimulated substantial debate among the participants in the group.

Outputs / conclusions

There was a discussion on the differences in the definitions of the cost of capital used in the policy-making arena and in the commercial market, and hence how studies such as DiaCore and PriceTag should be interpreted by investors. There was, however, a strong consensus – particularly among the industrial and financial participants in the group – that the cost of capital does vary widely across the EU.

It was also noted that investors in RES are largely powerless against policy change and the financial risk associated with it. Even when recourse through the courts exists, and is attained, the process is lengthy and costly, and by the time any compensation is awarded the damage is done.

There was a debate about the scope of the RES-CRF both in terms of the risks covered and the Member States and sectors to which it might be applied. There was a discussion about the potential application of the RES-CRF to existing assets in countries with high historical but enduring tariffs, where there is a case for a restructuring of the sector to reduce future costs to the consumer.

The feedback was that the key concern of policy-makers in most Member States, even those perceived as being low risk and hence with an existing low cost of capital, was the cost to consumers. The political perception or reality of the cost to consumers is therefore a major concern of investors, but one that they can do little about – other than abstaining from investing in a given market.

Meeting Two: Detailed barriers and design issues

Focus of the meeting

The second meeting focussed primarily on driving the discussion on risk in RES investments and the application of the RES-CRF to another level of detail.

Summary of topics discussed

Four formal presentations were made during the discussion on the following topics:

- → The barriers to reducing WACC in RES investments as revealed in the DiaCore, PriceTag and associated processes
- → The potential for reducing the cost of capital in the context of the Clean Energy for All Europeans package
- → The potential for applying the RES-CRF to existing assets
- → Detailed design considerations for the RES-CRF

Each of these presentations stimulated substantial debate among the participants of the group.

Outputs / conclusions

The discussion recognised that there are many barriers to cost-effective investment, but also that the tariff risk in its various forms is the major contributor to cost-of-capital differentials. The differentiation in the RES-CRF between a "hard" guarantee of the tariff risk and a "softer" approach to non-tariff risk was discussed, and it was felt that this was the right way to approach each of these risks practically.

The work on applying the RES-CRF to existing assets showed a meaningful economic return based on the potential reduction in existing tariffs. The RES-CRF structure lends itself to selective application where there is the potential for cost savings for consumers with respect to existing tariffs. It was recognised that such an application of the RES-CRF, while unlikely to yield the full benefit in reducing the cost of capital, would provide a valuable benchmark as to the real savings that could be achieved by the RES-CRF.

The discussion on the detailed design focussed on the award process for RES-CRF support, recognising the need for the use of RES-CRF to be known to investors ahead of making investment decisions. It also looked at the cost of implementing the RES-CRF and how the various funding needs of the facility might be structured.

While the obvious home for the RES-CRF within the European institutions is the EIB, the EIB's role would solely act as an implementation agent, not as a risk taker, and hence an alternative implementation agent could be procured with no change to the amount and little change to the structure of the funding arrangements needed.

The transitional nature of the RES-CRF was discussed and the merits of a fee for the RES-CRF project guarantee were recognised, particularly as part of a structure designed for the long-term phasing out of the facility as investor confidence equalises across investments in various Member States.

There was a substantial discussion on how the EU would ensure payment in circumstances where the project guarantee is called and compensation is due from a Member State.

Meeting Three: Policy context and funding

Focus of the meeting

The third meeting focussed on the policy context of the RES-CRF and finding the right policy vehicle for its implementation.

Summary of topics discussed

Three formal presentations were made during the discussion on the following topics:

- → A recap of previous discussions on the RES-CRF's detailed design and wider application
- → The state-of-play of EFSI (European Fund for Structural Investment) and its potential as vehicle for implementing the RES-CRF
- → The state-of-play of the MFF (Multi-year Financial Framework), the EU budget, and its potential use as a vehicle for implementing the RES-CRF

Each of these presentations stimulated substantial debate among the participants of the group.

Outputs / conclusions

There was broad support for the conclusion that the MFF was a much better vehicle for implementing the RES-CRF than the EFSI. It was also clear to the group that the RES-CRF is quite a different instrument, addressing a different problem, via a different mechanism than the EFSI.

There was a substantial debate on whether the RES-CRF was needed given the latest results of RES auctions in Europe, which in some cases have seen technologies previously considered to be quite expensive (i.e. offshore wind) bid for on a "subsidy-free" basis (always depending, of course, on how you define subsidy-free).

While there is an argument that this makes the RES-CRF redundant, there is also an argument that it increases the need for an instrument that equalises the cost of capital across the EU, or otherwise those markets which have achieved "subsidy-free" status already will leave those continuing to suffer high costs even further behind. In a Europe where tariff support is increasingly close to the prevailing market price, the RES-CRF is a relatively cheap option for ensuring equality of cost and opportunity across Member States.

There was a continuation of the debate from the second meeting on the mechanism for ensuring the EU can enforce the obligations of a Member State to repay any guarantee payment. Various security and collateral mechanisms were debated which would provide an assurance for the EU over and above the recourse via the contract it would have with the Member State.

There is no commercial market for the RES-CRF form of guarantee and hence no reliable benchmark for its cost. It is a policy instrument, the cost-benefit of which should be assessed against the EU's policy objectives for achieving the 2030 targets for renewable energy.

It is important that collateral arrangements do not negate the achievements of those policy objectives. In regard to recent reductions in the cost of RES investments it was also noted that if the cost of capital could be reduced in some markets, then the risk of the project guarantees might be very limited and hence the RES-CRF would be in effect self-funding if it achieves its objectives.

Meeting Four: Consideration of the draft report

Focus of the meeting

The final meeting of the dialogue group debated the contents of this report.

Summary of topics discussed

The contents of this report were debated and valuable comments incorporated into the final version.

Outputs / conclusions

Participants were not expected to approve the report and it does not purport to be the agreed position of the members of the group or their organisations.

However, there was another valuable debate on the merits and implementation of the RES-CRF, which allowed the concept to be taken forward in an improved form.

Participants and the basis for participation

Participants in the dialogue group

Representatives of the following organisations participated in some or all of the dialogue group meetings. Agora Energiewende would like to thank all of them for their time and valuable contribution to the discussion.

Participating Organisations
European Commission, DG Energy
European Commission, DG ECFIN
European Investment Bank
Falck Renewables
SolarPower Europe
WindEurope
Ecofys
Centre for European Policy Studies
European Climate Foundation

Agora Energiewende project team and consultants present throughout the dialogue process:

Name	Organisation
Matthias Buck	Agora Energiewende
Andreas Graf	Agora Energiewende
Robert Bruckmann	Eclareon
Ian Temperton	Independent consultant

Basis for the participation

This report has been reviewed by the participants in the dialogue group, but it has not been endorsed or approved by the participants or their organisations. As such, any opinions or recommendations made in this report are the views of Agora Energiewende only and do not purport to represent the views of the participants in the dialogue group or their organisations.

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About Agora Energiewende

Agora Energiewende develops evidence-based and politically viable strategies for ensuring the success of the clean energy transition in Germany, Europe and the rest of the world. As a think tank and policy laboratory we aim to share knowledge with stakeholders in the worlds of politics, business and academia while enabling a productive exchange of ideas. Our scientifically rigorous research highlights practical policy solutions while eschewing an ideological agenda. As a non-profit foundation primarily financed through philanthropic donations, we are not beholden to narrow corporate or political interests, but rather to our commitment to confronting climate change.

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Agora Energiewende is a joint initiative of the Mercator Foundation and the European Climate Foundation.