NER 300 and Innovation Fund

TAKE AWAY MESSAGES

The key take-away messages from the experience of the industry with the EUR 2.3 billion NER300 program up to **March 2020** are:

1. NER300 prescribed technologies and minimum capacities, thereby excluding many projects and technology options.
2. The cost-per-unit-performance (CPUP), i.e. emissions reduced per EUR of public funding, was the main criterion in the selection, other factors such as the long-term impact potential being of less weight.
3. NER300 failed to promote several promising technologies from the pilot/demonstration to First-of-a-Kind (FoaK) plants.
4. Support funding, unless the project obtained a Member State (MS) guarantee, was only paid out to generate revenues after the installation had come into operation and managed to fulfill a substantial part of the performance targets. Even in the cases when a pre-payment had been obtained there was a claw-back if the performance was not met. Therefore, the support was not assisting in de-risking the project in the planning, development and construction phases.
5. Only in the cases when MS guarantees were obtained, the support would assist the cash flow during the investment phase.
6. The program flow (e.g., its design, the calls, evaluations, operation) was complex and involved many institutions.

TAKE AWAY MESSAGES

7. As of March 2020, only 12 out of 42 projects have yet come in, or partially in, operation or in construction. These projects only represent 20 % of the budget.
8. In particular, NER300 was not the right tool for advanced 2nd generation biofuels technologies. Only two projects from the first call, out of 14 awarded, have come into operation.

The Innovation fund (IF), expected to raise EUR +10 billion represents an improvement in many aspects:

1. The technology scope is more inclusive and no formal capacity cut-offs are present.
2. The funding rate has been increased from 50 % to 60 % of relevant cost, i.e. the additional cost of an innovative project relative to a conventional production.
3. Of the support, up to 40 % is payable before the installation comes into operation.
4. There are provisions for supporting good and strategic projects that are yet not mature enough for an award.
5. There will also be dedicated opportunities for small projects (i.e. below EUR 5-7.5 million).

However, there are factors in the design of the IF that may not favor alternative renewable transport fuels. Specifically:

1. Although the IF is 5 times larger than NER300, the technology scope is expanded even more and, thus, more competition is to be expected across the whole industrial board.
2. Other industrial branches that are large emitters of high carbon intensity and not in the front-line of GHG reductions may, therefore, have low hanging fruit projects and also benefit from the evaluation criteria.
3. Even if the support conditions are more favorable, a significant fraction of the support is again only payable after an installation has come to successful operation, i.e. rather a bonus than an assistance in the de-risking projects during the early planning, construction and commissioning stages.

NER300 INSTITUTIONAL BACKGROUND[1]

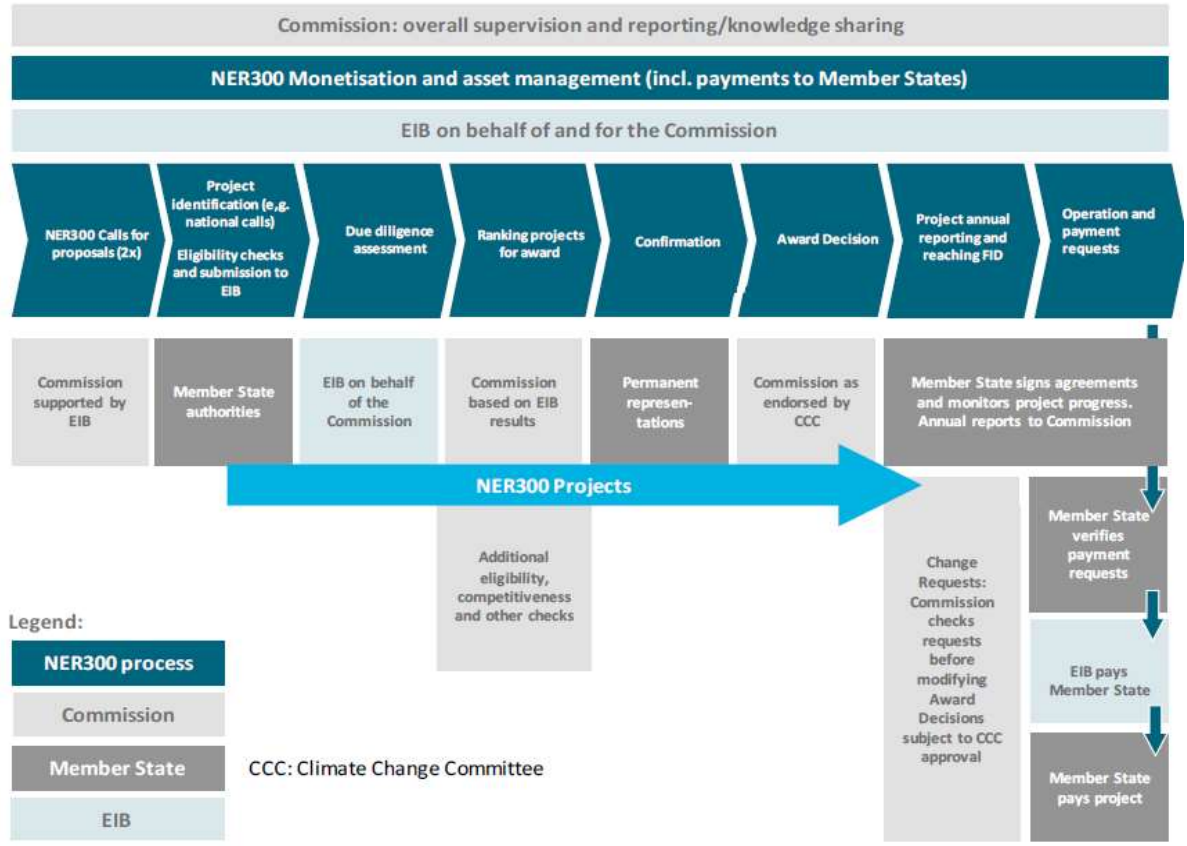
NER300 was an instrument offering grants to installations of innovative renewable energy projects, grid integration projects and CCS projects. It was created by the European Council and the European Parliament as part of the revision of the Emissions Trading Directive[2] (ETS) in 2008. The funds for the NER300 grants were obtained by the sales of up to 300 million European Emission Allowances (EUA, within the EU-ETS system rights to emit 1 ton of CO_2) from the set-aside for the New Entrants' Reserve (NER, i.e. new industries established after the ETS system was implemented). Each of the EU MSs could be granted at least one project and no MS would be granted more than three projects in total.

[1] http://ec.europa.eu/clima/policies/lowcarbon/ner300/index_en.htm
[2] 2008/101/EC

NER300 INSTITUTIONAL BACKGROUND[1]

The NER300 program was governed by a Commission Decision[3]. The decision defined the operations of the program, e.g., technical areas eligible for support, that there would be two calls for proposals, the procedure for submission and evaluation of the proposals, the estimation of relevant cost for the proposals that were the basis for the support funding, the award decision, fund disbursement and obligation for knowledge sharing for awarded projects, etc. The procedures for this are schematically shown in Figure 1 and are further described below.

Figure 1 Key steps in the NER300 process and assigned roles and responsibilities[4]



The sales of the EUAs generated in total EUR 2.15 billion; EUR 1.65 from the first tranche of 200 million EUAs sold in 2011-2012 and EUR 0.55 billion from the second tranche of the remaining 100 million EUAs sold in a in 2013-2014[5]. Overall, this meant an average price of EUR 7.19 per EUA, with a slightly higher price achieved for the first tranche compared to the second tranche. However, these sales occurred just after a drop from a stable level of just below EUR 20 per EUA such that the program did not raise as much funds as was expected at its conception, when the expected total sums floated were 6-9 billion. This also caused the Commission to limit the support for a single project to EUR 300 million; a figure lower than discussed at an earlier stage. The money from the first tranche was allocated to mainly finance projects selected from a first call for proposals in 2011, with the remainder was disbursed in a second call in 2012.

[3] Commission Decision 2010/670/EU
[4] Demonstrating carbon capture and storage and innovative renewables at commercial scale in the EU: intended progress not achieved in the past decade. European Court of Auditors. Special Report 24, 2018
[5] NER300 MONETISATION. Summary report on the monetisation of 300 million EU allowances (EUAs). EIB. November4, 2014.

THE NER300 ELIGIBLE TECHNICAL AREAS

The projects eligible for NER300 program funding were within pre-defined categories of innovative energy installation including renewable energy, smart grids and CCS. These technical areas are shown in Table 1.

Table 1 NER300 eligible main categories

Bioenergy category	
Lignocellulose	**Min. product capacity**
to solid, liquid or slurry bioenergy carriers via ***pyrolysis***	40 kt/y
to solid, liquid or slurry bioenergy carriers via ***torrefaction***	40 kt/y
to Synthetic Natural Gas or synthesis gas and/or to power	40 MNm^3 /y or 100 GWh/y
to biofuels, bioliquids and/or to power include. via directly	15 million Ml/y or 100 GWh/
to electricity with 48 % efficiency based on LHV @ 50 %	> 40 MWe
to ethanol and higher alcohols via **chemical and biological**	40 Ml/y
Lignocellulose and/or household waste	**Product capacity**
to biogas, biofuels or bioliquids via **chemical and biological**	6 MNm^3/y of CH_4 or 10 Ml/y
Lignocellulosic raw material (e.g. black liquor, pyrolysis or	**Product capacity**
to any biofuels via ***entrained flow gasification***	40 Ml/y
Algae and/or micro-organisms	**Product capacity**
to biofuels or bioliquids via ***biological and/or chemical***	40 Ml/y
Other categories (sub-categories and min. production capacities not included)	
Concentrated solar power	
Geothermal power	
Photovoltaic power	
Wind energy	
Ocean energy	
Smart grids	
Carbon capture and storage (CCS)	

In addition to the main categories, there were also sub-categories such that, in total, 38 different types of technologies were included in the main and sub-category.

NER300 GOVERNANCE

The Role of the European Commission

The Commission initially defined the institutional setting and regulations for the NER300 as described in the "NER300 Institutional Background" section and also formulated the calls for proposal. The main Commission organization responsible for the program is DG CLIMA.

After receiving the results of the appraisal of the funding applications from European Investment Bank (EIB), the Commission ranked the projects on the basis of the results of the EIB appraisal, while also considering other criteria, e.g., coverage of the technical areas, number and position of projects from a particular MS in the ranking etc., to ensure technical and geographical coverage of

NER300 GOVERNANCE

projects. The next stage was to have the confirmation of support for the high-ranking projects by the permanent diplomatic representation of the MS in question.

After having obtained this confirmation, the Commission organized consultations with the Climate Change Committee, publicized the award decisions and invited the listed projects to negotiate the award contract. The negotiations with the MS and successful applicants were delegated to EIB.

The Role of the NER300 Implementing Agent, EIB

In 2010, the EC appointed the EIB as the implementing agent for the NER300 initiative. The EIB had several roles in the program. Initially, EIB managed the sales of the of the 300 million EUAs and thereafter also managed the funds raised through these sales.

At the application stage, projects submitted by the MS were subjected to a technical and financial due diligence by EIB followed by an appraisal (i.e. feasibility, funding, organization, comparator, cost of performance) to establish the basis for the rankings.

Following the Commission's award decision, EIB negotiated with successful applicants and MS to establish the award contracts and was/is also responsible for the contract management and disbursements of the funding installments to the contractors, via the MS.

The Role of the Member States

The MS were given a fairly important role in NER300. The MS collected and confirmed support to projects submitted by the MS. The rationale was the consideration that most projects, in addition to NER300 funding, would rely on some form of MS financial support, e.g. investment grants, incentivized tariffs tax interventions, etc. This was considered a safeguard against applications claiming yet uncommitted MS support that was unrealistic or unlikely to be awarded in the end. Furthermore, such support would in many cases fall under the State Aid regulations[6], and therefore oblige the MS to notify the Commission. Expectations were that State Aid assessment could be in parallel to the application appraisal and thereby save time.

In addition, the MS were given the role to propose the reference plant/product to the applicants for the estimation of the relevant cost (see "Estimation of Relevant Costs And Funding Rate" section), however, under the guidance of the Commission.

Following the appraisal, the MS should re-confirm their support for their successful applicants and be the intermediate for contractual management and reimbursements of funding installments between the Commission, represented by EIB, and the projects.

ESTIMATION OF RELEVANT COSTS AND FUNDING RATE

The funding was based on "relevant cost" so as the support to subsidize only the additional cost related to the innovative part of the project.

The relevant cost of a RES demonstration project was estimated as the cost difference between the sum of investment costs and the net present value of operating costs, less any benefits arising for

[6] https://ec.europa.eu/competition/state_aid/legislation/compilation/index_en.html

ESTIMATION OF RELEVANT COSTS AND FUNDING RATE

the first five years of operation, respectively, for the innovative project and for a conventional production unit used as a reference, e.g., a conventional power plant. This could be further simplified by using an established product price, in most cases gasoline. The relevant cost of CCS demonstration projects was estimated in the same way but for the first ten years of operation.

The MS, under the guidance of the Commission, were giving the applicants advice on the suitable technology/product for the reference plant. For biofuels, in most cases the projected product price for diesel and gasoline was used. To produce bio-methane, coal gasification or conventional biogas plants with upgrading could be used. It was typically more favorable to compare with a fossil-based comparator (e.g., lignocellulosic ethanol as a gasoline substitute), as the relevant cost would be higher than this arising from the comparison to a conventional bio-based technology (e.g., conventional crop-based bio-ethanol production).

The level of funding awarded to a project was capped at 50 % of the relevant cost (as estimated from the methodology described in the "Estimation of Relevant Costs and Funding Rate" section) and the rational was that such a support would neither distort the market nor give an over-compensation to the project proponents. Therefore, support from the NER300 program was not seen as State Aid and projects could in addition complement NER300 support with other forms of public funding to a total level below the limitations of the State Aid regulations.

EVALUATION CRITERIA

The primary evaluation for the ranking was the cost-per- unit performance, i.e. CPUP. CCS demonstration projects and RES demonstration subcategories were initially ranked on this criterion separately as CPUP was based on CO2 saved and on energy produced, respectively.

The CPUP was calculated as the sum of the total request for public funding, i.e. the sum of the relevant investment costs minus any contribution to those costs from the project developers and the best estimate of the net present value of additional benefits resulting from public support schemes, i.e. the funding and other incentives provided by public sources. This "public cost" was then divided by the performance being CO2 stored during the first 10 years of operation for the CCS projects or the amount of energy produced during the first 5 years of operation for RES projects, respectively. So, this criterion essentially expressed the effect in CO2 savings in energy produced per Euro of public spending on a particular project.

With regard to the first round of calls for proposals, other evaluation criteria were that proposals subject to an award decision at the end of 2011 must demonstrate an expected entry into operation by the end of 2015 and that all relevant national permits must be in place or, alternatively, that permit procedures are sufficiently advanced to meet this operating date. In analogy, the award decision was expected at the end of 2014, the entry into operation by the end of 2018, and a permit status in alignment with the operating date. The projects were also subject to a due diligence and appraisal by EIB to establish a ranking from which the successful applicants were selected by the Commission as described in the "NER300 Governance" section.

DISBURSEMENT

The NER300 support funding awarded to a project was not received directly in the beginning of a project, neither in proportion to the project spending during the implementation period. Instead, the support funding was only paid out once the plant had been constructed and had come into operation. Then, performance-based, annual installments were paid out during the first five years of operation for RES project and ten years for CCS project. The annual disbursement was calculated on a pro rata basis as the actual production (measured in energy terms for RES or CO2 quantities for CCS) achieved divided by 75 % of the nameplate production capacity, thereby giving a 75 % allowance for reduced capacity factor for new technologies. Thus, in order to obtain 100 % of the funding allocated to a project, the actual accumulated production over the first ten years for a CCS project, or the first five years of operation for a RES project, must reach 75 % of the nominal output.

However, there was one exception regarding the disbursement of the NER300 support funding; that of the fact that up to 60 % pre-payment of the grants could be obtained before the project had come into operation, subject to that the MS in question provided guarantees for the full value of such payments.

THE NER300 CALLS FOR PROPOSALS AND THEIR OUTCOME

The calls we organized as one-stage calls, i.e. the applicants would have to make the effort to provide the full information required to be eligible and pass the due diligence check. This was a considerable effort to invest for the applicants, at a time when the competitive conditions and requirements were not fully known.

The first call of the NER300 Initiative with a submission deadline of May 2011 resulted in 79 funding applications for which the EIB completed the technical and financial due diligence, and a selection of these was made based on CPUP and other factors. The MS having successful application were informed and were requested to give a re-confirmation of their support to these projects. Once the confirmations were in place, the award decisions for 23 projects were made official[7] in December 2012, i.e. over 1½ years after the submission and one year later than foreseen in relation to the date of projects coming into operation. The selected projects are shown in Table 2. The projects awards amounted to EUR 1,222 million, i.e. less than the money available from the first tranche of selling emission rights. Of these 23 projects, 8 were in the bioenergy category and accounted for 52 % of the overall budget of projects awarded.

The second call had a deadline in July 2013. It resulted in 33 submitted funding applications, and following the same appraisal procedure, in July 2014 the EC published the award decisions for 19 projects[8] (see Table 3) Table 2. The projects awarded sum up to EUR 1,015 million. In this call, 6 out of the 19 projects were in the bioenergy category and accounted for 30 % of the overall budget for this tranche of awards.

[7] Commission Implementing Decision of 18.12.2012. Award Decision under the first call for proposals of the NER300 funding programme. C (2012) 9432 final

[8] Commission Implementing Decision of 8.7.2014. Award Decision under the second call for proposals of the NER300 funding programme. C (2014) 4493 final

THE NER300 CALLS FOR PROPOSALS AND THEIR OUTCOME

In total, 112 applications were submitted, and 42 projects received award decisions representing EUR 2.24 billion relative to the 2.15 billion available. Bioenergy holds a large share of the overall funding, i.e. 48 % of the combined first and second call funding for 14 projects, whereas 37 % of the budget was awarded to 27 other Renewable Energy (RE) projects and 15 % allocated to one single CCS project. Following the CCS project, bioenergy projects have on average received more funding than other RE categories. Looking at individual projects, the CCS project White Rose was awarded EUR 300 million followed by three bioenergy gasification projects at EUR 208, 199 and 170 million, respectively, and then as last in top five, but highest in the non-bioenergy RE area, a wind project at EUR 112 million.

The average budget allocation per project type was EUR 300 million to this single CCS project, EUR 66 million to seventeen bioenergy projects and EUR 44 million for other areas, but with a considerable spread within many of the individual areas (e.g., bioenergy with projects ranging from 3.9 million and 204 million and smart grids with projects from 8 to 85 million EUR).

INFORMATION EXCHANGE

The requirement for information management and knowledge sharing, as an obligation in return for receiving the support, was initially a discussion point as the extent of this obligation was not known and it was feared that it could be detrimental to the possibilities to fully exploit the know-how and IPR created for the parties engaging in the pioneering projects. As it was implemented, there were two levels, i.e. one for information shared with the EC and other contractors in the same category of projects, e.g. wind, and a second, public level with aggregated anonymized information, although this beard some difficulties due to the limited number of projects of each type.

DEVELOPMENTS AFTER THE AWARD DECISIONS

There have been changes since the award decision. In early 2014, changes to projects, end dates for the funding and the award of pre-funding were announced[9]. Also in February 2015[10], an up to 2 years extension of the time up to Final Investment Decision (FID) and another one of up to 4 years to operation after the award were given, i.e. to 2018, and 2020, for the first and second call, respectively. A one-year period of grace beyond these deadlines was also granted. The award decision has since been modified to reflect withdrawals, but the time of entry into operations has remained.

In 2017, it was decided that any non-disbursed means from the first call, i.e. at least EUR 623 million at present, should be used within the EU InnovFin demonstration program[11] while remaining funds

[9] Commission Implementing Decision amending Commission Implementing Decision C (2012) 9432 so as to modify the Award Decision under the first call for proposals of the NER300 funding programme, C (2014)383

[10] Commission Decision (EU) 2015/191 of 5 February 2015 amending Decision 2010/670/EU as regards the extension of certain time limits laid down in Article 9 and Article 11(1) of that Decision and Commission Implementing Decision of 13.10.2015 amending Commission Implementing Decisions C(2012) 9432 and C(2014) 4493 so as to modify the Award Decisions under the first and second call for proposals of the NER 300 funding programme. C (2015) 6882

[11] Commission Implementing Decision (EU) 2017/2172 of 20 November 2017 amending Decision 2010/670/EU as regards the deployment of non-disbursed revenues from the first round of calls for proposals

DEVELOPMENTS AFTER THE AWARD DECISIONS

from the second call, i.e. at least EUR 735 million at present[12], will be used within the Innovation Fund framework. In early 2018, further adjustments were made[13].

The status of the projects in March 2020 is included in Table 2 and Table 3 based on EC and other sources. However, information on many projects is inconclusive as in many cases the projects are officially cancelled far later than when the developers are no longer actively pursuing the project, or the developers are delayed but still indicate that they are waiting for financing to be committed or to receive permits, before starting the implementation. The details about individual projects that are either not in operation or not yet in construction are therefore very uncertain. However, the latest decision is that projects should come to operation by the end of December 2018 and June 2020, for the first and second calls, respectively. Unless new extensions are granted, most of these projects will be unable to meet these deadlines if not in construction at present, even when considering the one-year period of grace. In fact, the deadline – considering the grace period - for the first call projects has already expired.

From the first call only 8 projects, two bioenergy (i.e. BEST on cellulosic ethanol and VERBIO on biogas), five wind projects (i.e. Blaiken, Handalm on land and Nordsee, Veja Mate and Windfloat at sea) and one ocean energy (i.e. Stroma), are operative, in construction or being implemented today. These eight projects, however, only represent 25 % of the total support budget allocated by award decisions, of which only 4 % is in bioenergy. In fact, only 8 % of the allocated support budget for bioenergy went to projects now in operation, whereas for the other RES categories, 44 % of the support budget for this category were allocated for projects being implemented.

For the second call, two geothermal projects (i.e. Geothermae and GEOSTRAS) and one smart grid project (i.e. Puglia Active Network) seem to have come to some level of implementation. These projects only represent 16 % of the second call budget. The only CCS project of the program, i.e. White Rose, of the second call was stopped. The UK Government in 2015 withdrew the GBP 1 billion capital budget allocation for the Carbon Capture and Storage (CCS) Competition started in 2012, where White Rose was one of the two contenders. This was only some months before the Front-End Engineering Design (FEED) documentation was due, this being the basis for the selection of the winner of the competition. Subsequently, the White Rose consortium was reported to dissolve[14] in early 2016.

So, overall, out of 42 successful funding applications, this far only 11 projects (i.e. 2 bioenergy, 5 wind, 2 geothermal, 1 ocean energy and 1 smart grid) appear to have come to some form of implementation. These projects only represent 20 % of the allocated support budget and where support to bioenergy is contributing just over 2 %.

Looking at it from other aspects, the BEST project, where operation was for some time stopped due to a bankruptcy, has been taken over by Versalis who has recently announced that the operation will be resumed shortly. The technology used in the Verbio project has been duplicated

[12] https://ec.europa.eu/clima/policies/innovation-fund/ner300_en
[13] Commission Implementing Decision of 29.1.2018 amending Commission Implementing Decisions C(2012) 9432 and C(2014) 4493 so as to modify the Award Decisions under the first and second call for proposals of the NER 300 funding programme
[14] http://www.constructionnews.co.uk/markets/sectors/infrastructure/energy/white-rose-2bn-ccs-plant-abandoned/10001861.article

DEVELOPMENTS AFTER THE AWARD DECISIONS

by Verbio in a second plant in Germany. The company has also bought the former Dupont cellulosic ethanol plant in the USA with the intention to produce "renewable natural gas" from local agricultural residues, i.e. possibly a further replication of the technology.

Table 2 NER300 First Call Award Decisions[7]

First call						
RES Category	**Project.**	**Product**	**Member State**	**Max. funding (MEUR)**	**Op. date**	**Status**
Bioenergy	Ajos BTL	FT liquids	Finland	88.5	12.2018	Cancelled?
Bioenergy	BEST	Ethanol	Italy	28.4		Operating
Bioenergy	CEG Plant Goswinowice	Ethanol	Poland	30.9		Cancelled
Bioenergy	UPM Stracel BTL	FT liquids	France	170.0	12.2018	Cancelled
Bioenergy	Woodspirit	Methanol	Netherlands	199.0	11.2016	Cancelled
Bioenergy	Gobigas phase 2.	Bio-methane	Sweden	58.8	12.2020	Cancelled
Bioenergy	Pyrogrot.	Pyrolysis oil	Sweden	31.4	12.2018	Cancelled
Bioenergy	Verbiostraw.	Biogas	Germany	22.3		**Operating**
Total allocated funding				**629.3**	**Summing up: 52 % of total allocated funding. Cancelled projects 92 % of Bioenergy allocated funding**	
RES Category	**Project.**	**Product**	**Member State**	**Max. funding (MEUR)**	**Op. date**	**Status**
CSP	HeliosPower	RE Power	Cyprus	46.6	12.2018	Received pre-funding 2*14 M€ 2017, 2018
CSP	Maximus	RE Power	Greece	44.6	12.2018	On-going, but not yet in construction
CSP	Minos	RE Power	Greece	42.1	12.2018	On-going, but not yet in construction
CSP	PTC50-Alvarado	RE Power	Spain	70.0		Cancelled
Smart grids	SLim	Grid mgmt.	Belgium	8.2		Cancelled
Geothermal	S. Hungarian Enhanced Geothermal System (EGS)	RE Power	Hungary	39.3	12.2018	Web page says "Estimated to come into operation in 2020". No further information found
Ocean	Stroma (fka Kyle Rhea) Tidal Turbine Array	RE Power	UK	18.4	12.2017	**Operating**
Ocean	Sound of Islay	RE Power	UK	20.7	12.2018	Cancelled
Ocean	Westwave	RE Power	Ireland	19.8		Cancelled
Wind	Nordesee One (fka Innogy)	RE Power	Germany	70.0	12.2017	**Operating**
Wind	Veja Mate	RE Power	Germany	112.6	07.2017	**Operating**
Wind	PGL *fka* Vertimed	RE Power	France	34.3	12.2018	On-going not yet in construction State Aid decision Feb. 2019 C(2019) 1458 final
Wind	Windfloat	RE Power	Portugal	30.0	12.2018	**In construction**
Wind	Windpark Blaiken	RE Power	Sweden	15.0		**Operating**
Wind	Windpark Handalm	RE Power	Austria	11.3		**Operating**
Total allocated funding				**582.9**	**Summing up: 48 % of total allocated funding. Cancelled projects 20 % of Other RES allocated funding.**	

Table 3 NER300 Second Call Award Decisions[8]

Second call						
RES Category	**Project.**	**Product**	**Member State**	**Max. funding (MEUR)**	**Op. date**	**Status**
Bioenergy	MET	Ethanol	Denmark	39.3		Cancelled
Bioenergy	Fast pyrolysis	Pyrolysis oil	Estonia	6.9		Cancelled
Bioenergy	TORR	Torrefied fuel	Estonia	25.0	06.2020	EPCM selected in 2018. No news on start of construction etc. webpage baltania.ee
Bioenergy	CHP Biomass pyrolysis	Pyrolysis oil	Latvia	3.9	06.2020	Cancelled
Bioenergy	W2B	Ethanol	Spain	29.2	06.2020	Cancelled? Abengoa bankruptcy 2016
Bioenergy	Bio2G	Biomethane	Sweden	203.7	06.2020	Cancelled
Total allocated funding				**308.0**	**Summing up: 30 % of total allocated funding. Cancelled projects 92 %? of Bioenergy allocated funding.**	
RES Category	**Project.**	**Product**	**Member State**	**Max. funding (MEUR)**	**Op. date**	**Status**
CCS	White Rose	CO_2 stored	UK	300.0		Cancelled?
CSP	EOS GREEN ENERGY	RE Power	Cyprus	60.2	06.2020	On-going Received state guarantees in Jan. 2020
CSP	Mazara Solar	RE Power	Italy	40.0	12.2018	Problems with permits in 2015. No recent information on the project or the developer "Insoletion"
Geothermal	Geothermae	RE Power	Croatia	14.7	06.2019	**Operation**
Geothermal	GEOSTRAS	RE Power	France	16.8	06.2020	**On-going** Partially implemented.
Ocean energy	NEMO	RE Power	France	72.1	06.2020	On hold Requesting extension
Ocean energy	WestWave	RE Power	Ireland	23.3	06.2020	On hold Requesting extension
Ocean energy	SWELL	RE Power	Portugal	9.1	01.2020	Cancelled
Photovoltaics	Santa Luzia Solar Farm	RE Power	Portugal	8.0	07.2019	Cancelled
Smart grids	Green+	RE Power	Cyprus	11.1	06.2020	No information on developer EAC's web page
Smart grids	Puglia Active Network	RE Power	Italy	85.0	06.2018	**On-going** Partially operative, partially in implementation
Wind power	BALEA	RE Power	Spain	33.4	06.2020	No information on developer EVE's web page
Wind power	FloCan5	RE Power	Spain	34.0	06.2020	" In progress" on Grupo Cobra web page
Total allocated funding				**707.7**	**Summing up: 70 % of total allocated funding. Cancelled projects 62 %? of Other RES allocated funding.**	

INNOVATION FUND (IF) INSTITUTIONAL BACKGROUND

The Innovation Fund is an initiative within the EU-ETS Phase 4 in the period 2021-2030[15]. It is a direct successor of the NER300 program active during EU-ETS Phase 3. It also retains many of its features, while also trying to improve by adapting to the lessons learned from NER300.

The objective is to accelerate deployment of CCS and CCU facilities, new renewable energy technologies and industrial innovation in low-carbon technologies and processes, i.e. an expanded scope relative to NER300 which only addressed CCS and renewable energy technologies. Both large and small projects (< EUR 5-7.5 million) can be considered as there are no pre-defined capacity ranges.

The IF is, like NER 300, predominantly financed by the sales of EU emission allowances (EUA). The final decision on allocation was 450 million EUAs (i.e. 325 million from the quota, 75 million from the auction quota, 50 million from the market stability reserve) plus remaining NER300 funds from the second call , which at present amount to least EUR 723 million [12]. DG CLIMA estimates conservatively that the fund will amount to "over 10 billion €", but, as was the case with the NER300 funding, it depends on the price of EUAs. At the current pricing, IF could be worth maybe 10-20 % more than the cited figure above.

The overarching governance of the IF is set by the ETS Directive[15] and by a delegated regulation by the Commission[16]. The former defines the scope, objectives and the basis for the funding while the latter defines the rules of operation of the IF, including funding modalities, calls for proposals, application procedures, selection procedures and criteria as well as on the management of the program and the funds, the interaction of the fund with the MS, etc.

THE INNOVATION FUND ELIGIBLE TECHNICAL AREAS

The objective of the IF is to support innovation in low-carbon technologies and processes that contribute substantially to mitigating climate change, including environmentally safe carbon capture and utilization ("CCU"), innovative renewable energy and energy storage technologies, as well as products substituting carbon intensive ones in the ETS industrial sectors, and to help stimulate projects that aim at capturing and geological storing ("CCS") of CO_2. The established industrial sectors are primarily those included in the ETS system (listed in Annex 1 to the cited Directive[15]), in the NER300 program (renewable energy, CCS) plus energy storage . A list of the industrial sectors is presented in Table 4.

IF GOVERNANCE

The Role of the Commission in the IF

[15] ETS DIRECTIVE (EU) 2018/410 (Consolidated)
[16] Commission Delegated Regulation (EU) 2019/856 of 26 February 2019 supplementing Directive 2003/87/EC with regard to the operation of the Innovation Fund

IF GOVERNANCE

The Commission initially defined the institutional setting and regulations for the IF as described before. The main Commission organization responsible for the program is DG CLIMA.

The Commission can delegate certain tasks to implementing agents via a Commission decision. The implementation of the program and the management of awarded projects will be delegated to the Innovations and Networks Executive Agency (INEA) while the monetization of allowances and the management of the Innovation Fund revenues, as well as support to proposals selected for Process Development Assistance, will be delegated to the EIB.

Table 4 IF eligible categories

Innovation fund sectors	
ETS directive, Annex 1, low carbon processes, CCU, products	**Min. product capacity**
Combustion installations 20 MW (except hazardous or municipal waste installations)	20 MW thermal
Mineral oil refineries	
Coke ovens	
Metal ore (including sulfide ore) roasting or sintering instalTable 4 IF eligible categorieslations	
Production of pig iron or steel (primary or secondary fusion) incl. continuous casting	2.5 ton/hr
Production and processing of ferrous metals (incl. ferroalloys)	Aggregated 20 MWth
Production of secondary aluminium	Aggregated 20 MWth
Production or processing of non-ferrous metals	Aggregated 20 MWth
Production of cement clinker in rotary kilns Production in other furnaces	500 tons/day 50 tons/day
Production of lime or calcination of dolomite or magnesite	50 tons/day
Manufacture of glass including glass fiber	20 tons/day
Manufacture of mineral wool insulation material using glass, rock or slag	20 tons/day
manufacture of ceramic products by firing	75 tons/day or 4 m^3 kilns
Drying or calcination of gypsum or production of plaster boards	Aggregated 20 MWth
Production of pulp from timber or other fibrous materials	
Production of paper and board	20 tons/day
Production of carbon black	20 MWth input
Production of nitric acid	
Production of adipic acid	
Production of glyoxal and glyoxylic acid	
Production of ammonia	
Production of bulk organic chemicals by cracking, reforming, partial or full oxidation	100 tons/day
Production of hydrogen (H2) and synthesis gas by reforming or partial oxidation	25 tons/day
Production of soda ash (Na2CO3) and sodium bicarbonate (NaHCO3)	
Capture of greenhouse gases from installations in Annex 1	
Transport of greenhouse gases by pipelines for geological storage	

IF GOVERNANCE

Geological storage of greenhouse gases in a storage	
Aviation	
Other categories	
Renewable energy (e.g. wind, solar, ocean, hydro, geothermal, bioenergy, biofuels)	
Carbon capture and storage (CCS), carbon capture and utilization (CCU)	
Energy storage	
Production of components for innovative RES and energy storage technologies.	
Cross-cutting projects	

The Commission also formulates the calls for proposals and, following the evaluation and ranking of these, takes the decision on which projects to be awarded. There will be several IF calls (i.e. every single or every second year) in the period 2021-2030 (number is not fixed yet), while NER300 had only two calls defined. IF calls will be based on a two-stage procedure as opposed to NER300 that had only one stage. Based on the evaluation and ranking made by the Implementing agent INEA (read "Evaluation Process" section) and on considerations of other aspects, the Commission will take the award decision.

Support from the IF can come in two forms, i.e. either as monetary support to projects selected for award of support, or as support to project development assistance (PDA) for proposals deemed to be of interest but not yet mature enough to be considered for a full support. PDA aims at improving the proposal in view of a re-application in future calls.

The Commission is also responsible for the contacts with the MS (e.g., consultations on the content of the calls), the award decisions and regarding follow up of the program and awarded projects.

The Role of the Implementing Agents

EIB will receive the delegated responsibility for the sales of the 450 million EUAs, the management of the revenues from the sales and the unspent funds received from the second call of the NER300 program. Furthermore, EIB will manage and support projects selected for PDA.

INEA, which was formed in 2014, is one of the agencies that implements various EU programs. INEA is in charge of the Connecting Europe Facility (CEF) and the Horizon 2020 program areas "Smart, green and integrated transport" and "Secure, clean and efficient energy" and by legacy from predecessors also the programs TEN-T and Marco Polo. INEA has a staff of 300 and the project portfolio holds over 1 500 projects with a budget of more than EUR 34 billion.

The initial role of INEA in the program cycle is the overall management of the call for proposals, the application procedure, the project selection and evaluation to arrive at a ranking. It will advise the Commission on the projects to be awarded support, selected for the reserve list and selected for PDA. Following the award decisions, INEA will then prepare the contractual documentation and sign the award contracts on behalf of the Commission. Following award contract signatures, INEA will monitor the progress of the projects and arrange the disbursement of the support when milestones are met as well as arrange for the knowledge sharing.

IF GOVERNANCE

INEA will also provide the Commission with program progress reporting and feedback for the further development of the IF and be responsible for communication activities in relation to the IF.

The Role of the Member States in the IF

The Regulation[16] states that the Commission should consult with and be assisted by the MS. The MS should be consulted on the content of the call for proposals before they are launched, including the call volume and the volume set aside for PDA and small projects, respectively, as well as the types of solicited projects or sectors and the modalities for the application, evaluation procedures, and associated criteria.

Furthermore, the MS should also be consulted prior to the award decision on the projects that are pre-selected, have been added to the reserve list and are awarded PDA. The Commission will also inform the MS on the progress of the implementation of the award projects.

In addition, and upon request from the Commission, the MS can advise and assist the latter with setting general orientations for the Innovation Fund. A MS can also be requested to assist with addressing existing or emerging project implementation problems and issues.

ESTIMATION OF IF RELEVANT COSTS AND FUNDING RATE

DG CLIMA has published a Discussion Paper[17] on the estimation of relevant cost prior to a workshop on March 6, 2020.

Relevant cost of a project will be calculated in very much the same ways as in the NER300 program, i.e. the additional costs for the project applicant arising from the use of an innovative technology compared to a conventional technology. More specifically, relevant cost will be calculated as the difference between the best estimate of the total capital expenditure, the net present value of operating costs and benefits during the first ten years of operation, compared to the result of the same calculation for a conventional production with the same production capacity of the same final product.

If a relevant conventional production cannot be found, relevant cost is the best estimate of the total capital expenditure and the net present value of operating costs and benefits for ten years.

As a simplification, for small-scale project relevant cost is the total capital expenditure.

To cover price risks, relevant cost could be calculated compared to current market prices and adjusted, if significant changes occur, at disbursement milestones. Output risks could be considered by conservative assumptions in the initial years of operation.

The funding rate is 60 % of the relevant cost, estimated as already described in this section. This pay-out of this funding is - in addition - split into a 40 % grant and 60 % performance-based annual payments for a period between three to ten years when in operation (see "Disbursement" section). This is higher than the 50 % funding rate applied in NER300, which was only received as performance-based annual payments.

[17] https://ec.europa.eu/clima/sites/clima/files/innovation-fund/20200205_costs_en.pdf

CALLS FOR PROPOSALS

The IF Regulation[16] describes how the calls for proposals will be organized.

The calls are launched by a Commission decision which shall include at least the following:

- the overall amount of the IF support available for the call
- the maximum amount of the IF support available for PDA
- the types of solicited projects or sectors
- a description of the application procedure and a detailed list of information and documentation to be submitted at each application phase (EoI or Full Application)
- detailed information on the selection procedure, including the methodology for evaluation and ranking
- any specific application and selection procedures applied for small-scale projects,
- the amount of the IF support available in the call reserved for small-scale projects
- any additional selection criteria applied to achieve a geographically balanced distribution of the IF support.

The application procedure will be two stage, i.e. an initial Expression of Interest (EoI) and the Full Application. The EoI application content is limited to the documentation required for the first stage evaluation (see "Evaluation criteria" section), i.e. the greenhouse gas emission avoidance potential, the degree of innovation of the project and project maturity. Project that meets all three criteria sufficiently well go to the Full Application phase where the documentation, in addition to expansions of the same points as above, should also allow assessment of also technical and market potential and the support efficiency. These criteria are further described in the "Evaluation process" section.

At the EoI stage, if a project application meets the criteria greenhouse gas emission avoidance potential and degree of innovation of the project but fails on the maturity criterion, it can under conditions also described the "Evaluation process" section be awarded PDA to improve its maturity in view of a re-application in a later call.

DG CLIMA plans to launch annual or biennial calls between 2020 and 2030, starting from 2020.

EVALUATION PROCESS

Instead of the complex evaluation process in the NER300 program, the evaluation process in the IF will be managed by the implementing agent INEA. In principle, the evaluation process will follow the procedures used for competitive evaluations of proposals submitted in other programs, e.g. the H2020 program.

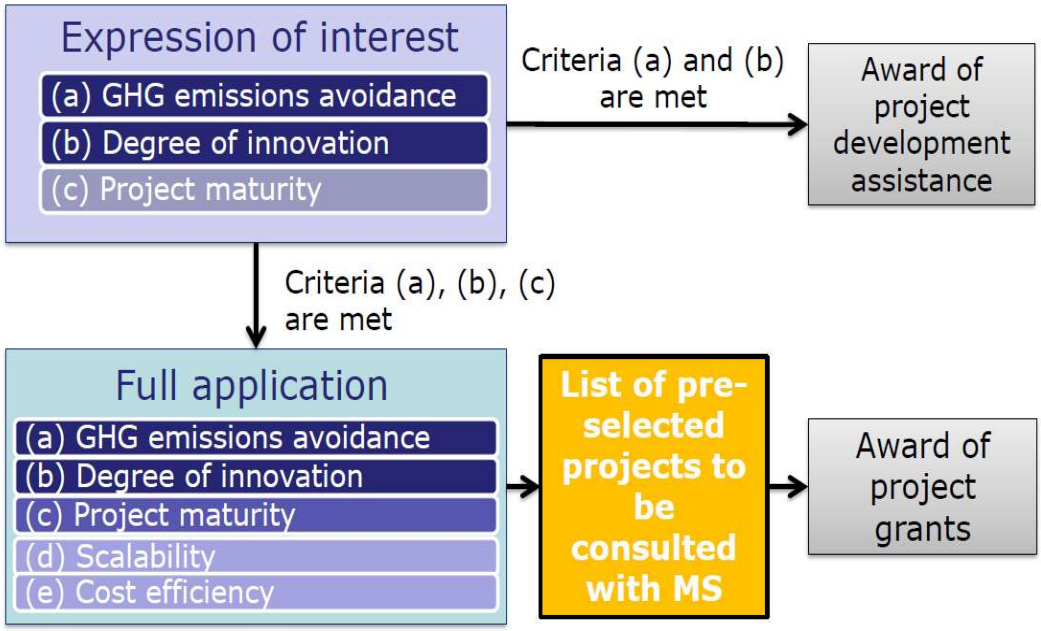
EVALUATION PROCESS

During the first stage, INEA goes through the applications and removes those which are not eligible on formal grounds. The second stage evaluation involves a panel of typically five independent experts. These are selected from a pool of self-registered experts based on their CVs. Initially, the experts work remotely and independently of each other and provide their individual comments and scores in a report template. Following this, the experts meet and discuss on the proposals to come to a consensus for both comments and scoring. This will be the basis for the ranking made by INEA, which will serve as the recommendation for awarded projects made to the Commission.

EVALUATION CRITERIA

The IF Regulation[16] defines also the evaluation criteria, shown in Figure 2. There is on-going work by DG CLIMA and its consultants on the methodology to evaluate these criteria. The main points of that discussion are also presented thereafter.

Figure 2 The IF evaluation procedures



Evaluation Criteria applied either at the EoI Stage or at both Stages.

For the EoI stage, only three criteria (i.e. (a), (b), (c) in Figure 2) will be evaluated. The outcome could be an invitation to the second, full stage application where the same criteria will be re-evaluated (more or less in the same way) on top of 2 additional criteria (i.e. (d), (e) in Figure 2). The criteria are described thereafter.

Effectiveness: GHG emission avoidance potential

This will be a quantitative criterion. At the EoI stage, it is proposed that there will be a minimum threshold in GHG avoidance potential that an application needs to meet in order to be eligible for the Full Application stage, or to be considered for PDA. For the Full Application stage, this will be

EVALUATION CRITERIA

one of the ranking criteria. How projects of different technologies and/or capacities will be compared using this criterion is not clear.

For the calculation of GHG emission avoided, a Discussion Paper[18] was presented at a workshop on March 5, 2020. As a general rule, the emissions savings from projects applying for funding under IF will be the difference between the emissions from the project activity, and the emissions that would occur in a reference scenario, which - in the case of ETS industries - would be the ETS benchmark process. However, emissions of the project may not always be considered as attributional (i.e. "rigid" in the DG CLIMA terminology), i.e. have no effect outside of the project boundaries. In some cases, also a consequential approach (i.e. "elastic" in the DG CLIMA terminology) will be used, i.e. the emission changes are associated with changes in inputs and other products of the process that need to be considered by balancing them in the reference scenario. Emissions from construction of the plant and equipment will not be counted/included, neither will emissions from changes in land use from non-biological sourced processes, unless this has been identified as an issue. No account will be taken of changes in emissions attributed to employees or dependents.

The project applicants will make an ex-ante estimates of the GHG avoidance of the project during the first ten years of operation. Since the start of that period is some 4-5 years away from the date when the application is made and then spans a decade into the future, a basis of assumptions on the situation in this period is required. For the general methodological framework, the assumption is that the future EU's energy system will develop in line with current EU Regulation (in particular EU's Clean Energy for All Europeans Package and the updated EE and RE targets, the submitted Member States National Energy and Climate Plans (NECPs) and the Ten-Year Network Development Plans).

In addition, a further use of a similar assumption is in a "2050 world" calculation, which will be an input for the degree of innovation selection criterion (see "Evaluation criteria" section) and a quantitative evaluation criterion for the ranking at the Full Application stage.

Regarding the specific case of biofuels, the cited document describes four proposed methodologies:

- NER300 approach: use the energy produced as the measure, disregard emissions
- simplified approach: put all emissions related to the innovative process as zero
- sensible simplifications approach: make an estimate of the main significant emissions related to the innovative process. The REDII estimation methodology is an example of such an approach
- detailed approach: all the environmental inputs and outputs associated with the production of the renewable energy and also the reference process should be mapped.

The first two approaches are simple in their estimation and monitoring but since all other projects except biofuels define GHG emissions based on the third or fourth methodology, these would be disadvantaged relative to biofuel projects. The third, simplified approach, requires development of a framework for many options and the use of default values. The accuracy is seen as sufficient but

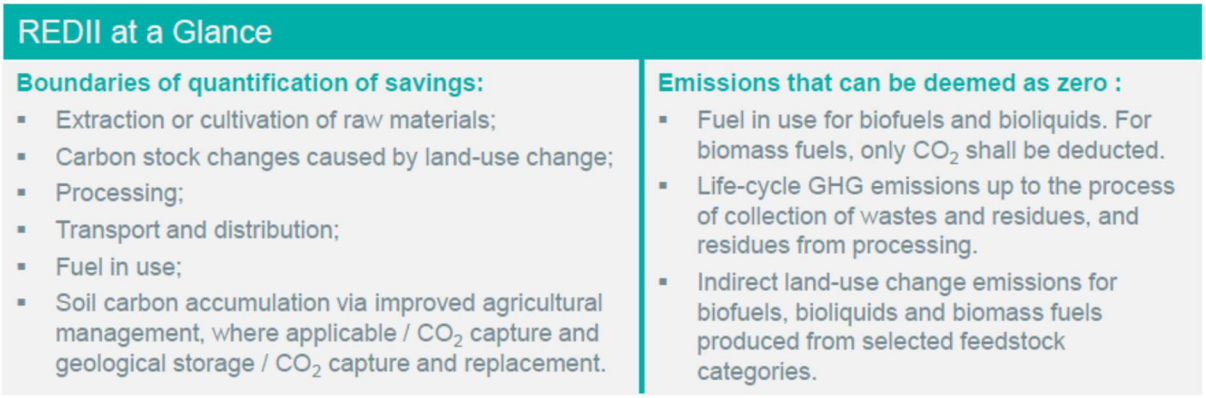
[18] https://ec.europa.eu/clima/sites/clima/files/innovation-fund/20200205_ghg_en.pdf

EVALUATION CRITERIA

has limitations due to the use of default values. The detailed approach, on the other hand, is seen as very resource-intensive, and since there is limitations in the data set for all inputs and outputs, the accuracy may not be in balance with the resources required.

The impression is that there is a preference for the simplified approach aligning to REDII (see Figure 3).

Figure 3 REDII boundaries and simplifications.[19]



However, in the end it is possible that a complete alignment with REDII is not achieved, as the results of the GHG estimation must also be in line with the assumptions and estimation methodologies made for other types of projects within the IF. The NER300 approach to relate the energy produced was practical in the setting of predefined technologies, but since the IF is both more open in terms of the nature of the projects and broader in terms of technical coverage, there is more of a need for a common and comparable performance indicator across the whole board.

Regarding the use of electricity for PtX projects, the proposal on how to calculate GHG emissions avoidance indicates that for projects utilizing electricity the emission factor should be considered to be an average of the national emission factor and the average for the EU as a whole. The reasoning is that if MS emission were to be used, certain countries would benefit and this would go against the intention of geographical spread of the technologies. However, this would in principle make almost all PtX projects high GHG emitters and, therefore, become significantly disadvanteaged in relation to other types of projects. AFF has sent comment to DG CLIMA on this matter.

Project degree of innovation compared to the state of the art

This criterion is needed as the IF has a life span of ten years and involves many industrial sectors and many technologies while also considering the 2050 perspective. Therefore, it must be assured that the low-carbon technologies selected for funding have a high degree of innovation and potential after the completion of the IF program. This is based on the NER300 lessons learned.

The degree of innovation is proposed to be measured against two sub-criteria. The first one is a qualitative assessment of the degree of innovation based on two sub-points:

[19] https://ec.europa.eu/clima/sites/clima/files/innovation-fund/20200207_ghg_icf_en.pdf

EVALUATION CRITERIA

- Extent to which work is beyond state of art
- Quality of analysis of product/process/business innovation

The second sub-criterion is the extent to which projects are consistent with EU policy targets and 2050 emission avoidance potential. At the EoI stage, the assessment will be made on a qualitative basis (low, medium, high) but at the Full Application stage the GHG emissions avoided in 2050 will be quantitively assessed. This second sub-criterion has five sub-points:

- consistency with EU's long-term strategy
    - 2050 emission avoidance calculation and supporting qualitative description
- consistency with the SET plan
- consistency with Industrial Policy Strategy from 2017 and any subsequent
- consistency with updates/new EU industrial policy as relevant
- consistency with the UN sustainability goals (SDGs).

As a minimum cut-off to be eligible to continue to the Full Application stage or to be considered for PDA, it is proposed that the applications should exclude technologies and products deemed to already be commercially available and that applications must be deemed to conform with at least the EU's long-term strategy and the SET plan.

Maturity: planning, business model, financial and legal status

Again, referring to the lessons learned from the NER300 program and the many projects not reaching the construction stage, there is more emphasis on this criterion, as it has been recognized that potentially very good proposals, i.e. with a high GHG reduction and innovation, must be realized in order to stimulate a wider deployment. The objective of this criterion is to ensure that projects are mature enough to come to financial close within four years after the award decision. There will be ten sub-criteria:

- feasibility study available
- business plan available
- FEED study available
- regulatory framework required for project
- acquisition of project site
- project management
- due diligence report available
- commitment by investors
- permits cleared

EVALUATION CRITERIA

- conditional final investment decision FID and full third-party investment commitment available in writing with IF support as only (major) condition

The first seven criteria are applied at the EoI stage and are proposed to be assessed on a three-level scale (e.g. available, partially available, not available).

Regarding the commitment of investors, the evaluation will be based on the percentage of the funding from investors for which conditional commitment is available in writing.

The "permits cleared" criterion is based on the share of necessary permits and other environmental clearance granted + 25% of share of other necessary permits applied for. Furthermore, the plan for permitting should be assessed as sufficiently clear, detailed and realistic. The "conditional final investment decision" involves assessing if FID and full third-party investment commitment are available in writing with IF support as only (major) condition.

For projects that have passed the two previous evaluation criteria, at the EoI stage there is a proposed cut-off to go, or not go, to the Full Application if the assessment concludes that the information provided by the applicant is not convincing in that the project is likely to reach financial close within four years.

For projects that are less mature, these could be considered for PDA. The projects should -in that case- have a feasibility study and an indicative business plan of sufficient quality as a minimum requirement. Furthermore, it should also be assessed that PDA support improves the maturity of the project sufficiently, i.e. re-application of an improved proposal in a later call that is likely to result in that it goes to the Full Application stage.

Considering the Full Application stage, the successful proposals will be assessed in the same way as for the EoI stage for nine of the above criteria, while the due diligence becomes a separate criterion with equal weight as the other nine together. It should be noted that it is discussed whether the applicants due diligence report should be used, or if the due diligence needs to be provided by a third party and, in the latter case, if this should apply to both stages or only to the Full Application stage.

The increased weight of the due diligence, and also the thoughts that a third-party assessment may be less positively biased than the proponents own due diligence, stems from the criticism of the NER300 evaluation of this point and that projects were delayed.

Additional Evaluation criteria at Full Application stage.

For projects that have passed the EoI to come to the Full Application, two more criteria will be added to the above and used at this stage.

Technical/market potential: replications, future cost reductions

This is a forward-looking criterion and considers the opportunities and barriers to the deployment potential up to 2050 and, therefore, also the potential overall GHG emission reduction impact. In the NER300 program, the program itself had defined the technologies with a high potential. When the technical scope is opened up, there is a need for an indicator to compare, to the extent possible, widely different projects and technologies on a level playfield.

EVALUATION CRITERIA

There are seven sub-criteria under this criterion, which will be judged on a three-level scale (e.g. high, medium or low, equivalent) are:

- scalability at the project level, i.e. extent of scalability short term after the demonstration
- scalability of technology/ product towards 2050, i.e. extent of scalability mid and long-term
- regions potential, e.g., global, EU, national
- synergies, i.e. the extent that the project supply chain is established
- production cost in 2050 compared to current level
- resource limitation, i.e. can scalability have bottlenecks due to resource imitations
- knowledge sharing plan quality

Support cost efficiency

This second criterion is only evaluated at the Full Application stage. The cost efficiency is a quantitative assessment of the project RELEVANT COST less the contribution to those costs from the project proponent including their third-party financing, divided by the projected amount of GHG avoided/ energy or CO_2 stored for the first ten years of operation. This is a key performance indicator that relates the public funding support to the project to the expected GHG emissions avoided, i.e. what is the cost per kg avoided emissions. This is similar to the CPUP estimate used in NER300, which was the main ranking factor for this program.

Other Criteria

There are also additional criteria that can be applied by the Commission to, e.g., achieve a geographic balance in the awards. The NER300 program also had such possibilities.

DISBURSEMENT

Awarded Projects

The support to an awarded project, i.e. 60 % of the relevant cost (see preceding "Estimation of IF relevant cost and funding rate" section), is disbursed in two forms, up to 40 % as a grant and 60 % as annual instalments for three to ten years related to the performance of the plant after its entry into operation, i.e. actual recorded GHG savings (Figure 4).

All payments of the 40 % part of the support that are made available before the entry into operation are based on contractual milestones. The regulation defines two compulsory milestones, i.e. financial close and entry into operation, respectively. The base case would be that the 40 % is paid at financial close and the 60 % in several annual installments after entry into operation based on the recorded GHG savings. However, the regulation also holds the possibility for installments at additional milestones both before and after financial close, depending on how it is more adequate for the project in question. In addition, also parts of the 60 % performance-based support can be paid out before the entry into operation. However, in the latter case, suitable guarantees for the

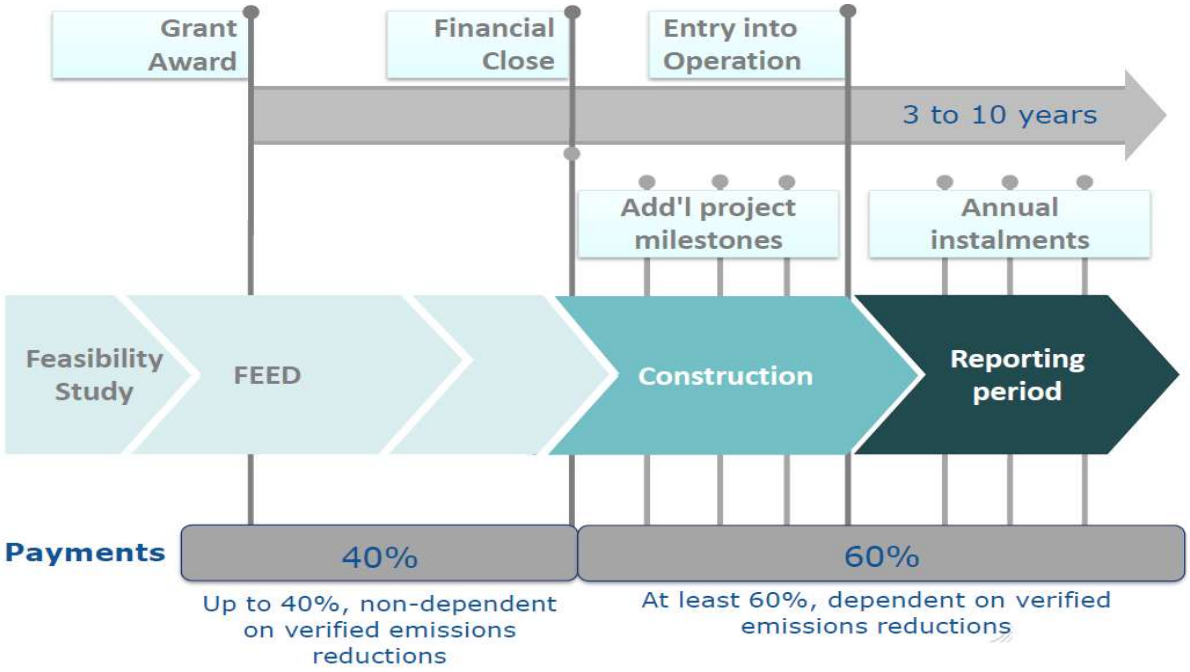
DISBURSEMENT

full value of such pre-payments must be given by the project developers. Whether this is, just like in the NER300 case, limited to MS guarantees or whether other forms of guarantees are also accepted is not clear.

After entry into operation, the annual installments reflect that a minimum of 75 % of the estimated GHG reductions in the contract should be achieved over the ten-year operational period to ensure full payment of these 60 %. In the opposite case, the payments are reduced in proportion to the achieved GHG versus this target.

If the plant does not come into operation, any of the 60 % payments received before this milestone will be recovered. If a shorter period than ten years is used for the annual instalments, the project developer is still obliged to fulfill 75 % of the GHG savings over ten years to avoid repaying some of the support already received.

Figure 4 The IF disbursement schedule[20]



Disbursement for Projects Awarded PDA Support

In this case, the support is -in the base case scenario- paid out from the 40 % part of the support at milestone at financial close. But in this case also, milestones preceding financial close can be defined in the contract. If a project has used PDA support and then is successful in a future, the awarded support will include any support already received at the PDA stage.

ESTABLISHING THE IF AND THE PREPARATIONS FOR THE FIRST CALL

The IF was institutionalized in 2015 as part of the legal proposal by the Commission for the revisions to the fourth phase ETS Directive that was decided in 2018. This also initiated preparatory work

[20] https://ec.europa.eu/clima/sites/clima/files/innovation-fund/20190328_ifp_en.pdf

ESTABLISHING THE IF AND THE PREPARATIONS FOR THE FIRST CALL

within DG CLIMA. Already in 2017, the Commission initiated consultations with mainly stakeholders within the ETS industries[21] and had a public consultation in the first quarter of 2018. In mid-2018, DG CLIMA formed an Expert Group composed of various industrial stakeholder representatives as a bounce-board for developing the regulations. The Expert Group has had four meetings this far. In late 2018, the draft for the delegated regulation was available and subject to a second meeting, and the Expert Group was then given an opportunity to give feedback. The Regulation[16] was adopted in the beginning of 2019. In the third meeting, in the first quarter of 2019, the push from DG CLIMA was to initiate outreach activities via the stakeholders to communicate the IF opportunities. This has resulted in some thirty workshops with industrial sectors and MSs. Inside and outside of these workshops, a large number of projects has been presented. Figure 5 gives an indication of the sectors and number of projects identified in these sectors.

Figure 5 Summary of DG CLIMA project mapping[22]

[21] https://ec.europa.eu/clima/events/articles/0115_en

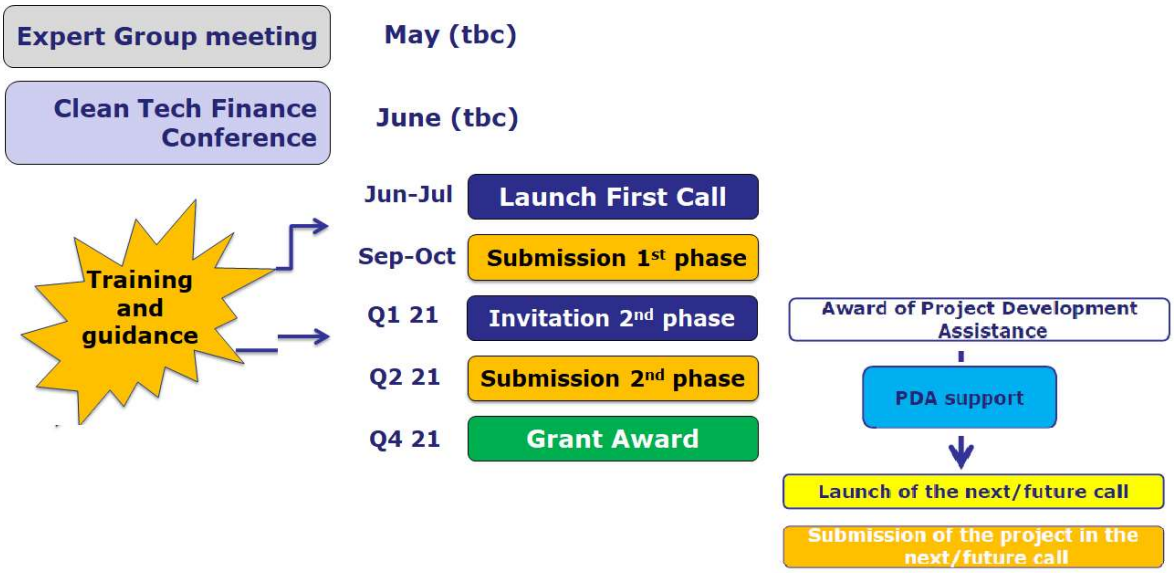
[22] Presentation by DG CLIMA, INEA and EIB. 4th Innovation Fund Expert Group meeting, Brussels, 18 December 2019. (https://ec.europa.eu/clima/sites/clima/files/innovation-fund/ifeg18dec_en.pdf)

ESTABLISHING THE IF AND THE PREPARATIONS FOR THE FIRST CALL

In late 2019, there was a fourth meeting with the Expert Group to give the status of the work regarding the first call. In this meeting the workshops on the details of the evaluation of the various criteria in the beginning of 2020, cited in the "Evaluation Criteria" section, was announced.

The first call was planned (pre-COVID-19) to be launched in mid-2020. The funds available, emanating from the 2nd call of NER300, amounts to the order of EUR 1 billion. The call will address projects with a large capital investment, defined as above EUR 7.5 million. The planned schedule is shown in Figure 6.

Figure 6 IF First call (pre-Corona) tentative schedule.



The first call will be launched in mid-2020 with an EoI deadline for Q3/Q4. The evaluations are then scheduled to be finished by Q1 2020, when invitations for the Full Application will be sent to the successful applicants. This is also when PDA contracts can be finalised for those applicants deemed to benefit from this form of support.

The Full Application deadline is planned for Q2 2021, and the evaluations and contractual discussion will take up to Q4, or more to finalize such that projects can be initiated by 2022.

OVERALL EXPERIENCE OF THE NER300 PROGRAM THIS FAR

In conclusion, the NER300 program has not achieved the expected impact of pushing several promising technologies into a wider demonstration and deployment status at industrial scale or first-of–a-kind-plants.

In the first place, the funds raised from the sales of EUAs only raised just over EUR 2 billion and did not reach the "€6-7 billion, the bare minimum needed but it's enough to do the job", as stated by the EP rapporteur at the time of negotiations in 2008[23].

[23] http://chrisdaviesmep.blogspot.com/2008/12/morning-after.html

OVERALL EXPERIENCE OF THE NER300 PROGRAM THIS FAR

After seven years, based on the best information that has been possible to collect, only 12 out of 42 projects are being implemented or already in operation, and these only represent a small fraction of the budget allocated to projects, i.e. only 20 %. At present, most of the projects selected have already been cancelled or are significantly delayed and, thus, in severe risk of cancellation unless further time extensions beyond end of June 2020 are granted.

The requirement for information exchange that was initially a discussion point seems to have been accepted. However, in the ECA report[4], it is noted that this mainly related to the operational phase of the projects. Since few projects have come to operation, this has limitations and it gives no or very limited information on the various barriers and issues that have prevented projects from going forward into construction and operation.

There are obvious external factors that have prevented realization of the projects. The investment climate has, in general, not been good in the period since 2010 and some MSs in particular have seen severe economic difficulties. Considering biofuels, the ILUC debate generated significant uncertainty, putting investment decisions on hold. In the end, the conditions set in 2009 in order to fulfill the biofuels target in 2020 were to quite some extent redefined in 2015. Furthermore, the drop in energy prices since 2014, and also in the EUAs already before 2014, have made the investment decision-making more complex and also have widened the cost gap between the business-as-usual cases and the use of innovative RE and CCS technologies beyond what has been covered by the RELEVANT COST calculations being the basis for the support.

In the case of RE, and for biofuels in particular, an additional external factor is that in many MSs the longevity of the support system (e.g., mandate, green tickets, tax breaks, etc.) commitment is shorter that the time span required to recover the capital invested, i.e. the long-term market situation is not clear.

The production of renewable electricity has for a long time benefitted from preferential tariffs or other incentives in the MSs that, compared to biofuels, have made the market situation more predictable. Even so, economic issues and policy measures from the Commission favoring market-based support systems over fixed incentives have also caused governments to reduce or abandon support mechanisms for renewable energies, such as feed-in tariffs, etc.

However, there were also other factors more related to the program itself. At least three evaluations have been made, i.e. an evaluation for DG CLIMA[24], an academic study[25] and a third one by the European Court of Auditor's (ECA)[4]. As noted above, the program was inadvertently slashed when EUA prices dropped to only correspond to 25-30 % of what was expected when decided in 2008, which affected the number of projects possible to finance.

The predefined technology main and sub- categories (38 in total were defined, awarded projects represented 20) resulted in a technical diversity and supported technologies of different maturity,

[24] NER 300 lessons learnt. Executive Summary. Jonathan Lonsdale, Jerome Kisielewicz, Yann Verstraeten, Martin Blaiklock (ICF), Monique Voogt, Sergio Ugarte (SQ Consult), Erwin Cornelis (VITO), February 2017, European Union, 2018

[25] Demonstrating climate mitigation technologies: An early assessment of the NER 300 programme. M. Åhman et al. Energy Policy 117 (2018) 100–107

OVERALL EXPERIENCE OF THE NER300 PROGRAM THIS FAR

but it also excluded various innovative solutions, e.g., hybrids between categories and cross-cutting projects[4, 24].

The capacity thresholds criteria resulted in that the capacity of a number of projects became larger than needed for the strict purpose of a demonstration[24], while it also excluded smaller projects that would have been well in line with the objectives of the program.

Two distinct call deadlines meant that in order to have the chance of receiving the support, projects proponents had to divert from their own project timelines and conform to the NER300 deadlines for proposal submission, regardless of their readiness, or lose this huge funding opportunity, causing the maturity of some of the applications submitted lower than desired. In the first call, the proposals were required to be submitted to the MS within three months after launch of the call, and the MS would then have three months for its assessment before submitting some of the proposals to DG CLIMA. In the second call, this overall period was reduced to only three months. Given that the program structure was new and the fairly high demand on the detailing of the applications, this must be seen as a relatively short time for the applicants. In addition, the MS had to make a choice on which projects to submit to DG CLIMA, which in most cases was not a very transparent process.

The definition of the reference plant, to be used as a comparison with project costs and then used to arrive at the relevant cost, caused issues for some applicants. In many cases, and in particular when electric energy was not the product, it was not self-evident what to compare to and find relevant economic data for this comparison.

Furthermore, the time between the application deadline and the award decision was 1½ years for the first call and one year for the second call. During this period, communication with EIB on various matters was required. During such a relatively long assessment period, both the boundary and internal conditions of the investment decision may change. Furthermore, the uncertainty on the outcome of the evaluation process may slow down the project activities in this period to avoid spending resources on an uncertain outcome.

After the submission of the applications by the Member States, the Commission delegated to EIB to carry out the due diligence assessment according to a Procedures Manual[26]. It resulted in detailed reports for each project submitted, but the outcome was only binary and did not grade to which extent the proposal met the sub-criteria of evaluation procedure. Out of the total amount of submitted proposals, 88 % were assessed to meet the evaluation criteria and the Commission considered these for award[4].

However, and surprisingly, the due diligence procedure did not require the EIB to assess the economic viability of the proposals, i.e. its bankability[4, 24]. Effectively, despite a positive NER300 due diligence assessment for a certain proposal, this appeared not be a sufficient condition to qualify for other forms of financing available to EIB outside of NER300. It appears that this limitation of the due diligence was not fully understood by many stakeholders.

[26] https://ec.europa.eu/clima/sites/clima/files/ner300/docs/procedure_manual_en.zip

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In fact, ECA notes that ten NER300 projects had applied to EIB for InnovFin loans before the end of 2017 but none of these had yet signed a loan agreement when the ECA report was published in September 2018. There were difficulties in meeting the standard requirements of EIB as the NER300 projects where characterized by high technical and financial risks, as well as uncertainty about performance and also about revenues [4].

However, on an aggregated basis, the EIB informed the Commission that many projects contained significant financial risk issues, regarding, in particular, large shares of debt and additional public financing or other forms of support expected, but insufficiently supported by commitments. EIB also flagged for a high uncertainty in the CPUPs due to the uncertainty in the underlying cost and performance figures for these novel technologies at this level of development. Since CPUP was the main selection criterion, this meant that uncertainties in its estimation from, e.g., overestimation of emission reductions and underestimation of costs could result in a very competitive application but with difficulties when the numbers were revisited.

The CPUP was a reflection of the saved GHG emission in relation to the public spending, i.e. "tax-payers money", but did not really consider the replication potential neither the need for the applicants to receive support for the development of innovative technologies facing technical, regulatory and market risks.

Nevertheless, after the due diligence, the Commission ranked the successful projects mainly according to the CPUP, made a preliminary award list after also considering the technology and geographic spread and then requested re-confirmations of the awards by the MS. According to ECA report[4], the reconfirmation by the MS occurred before these had accessed the confidential EIB assessments of their projects, i.e. was not fully aware of the results of the due diligence at the time of re-confirmation. Most MS requested these files only after the reconfirmation.

In the ECA audit report[4], the complexity of the overall management of the program is also identified as an issue. The commission had the responsibility of most decisions, but also the MS were very influential in promoting projects.

It is noted with some criticism that, from the Commission's perspective, the MS support was not up to expectations. Some MSs did not fully support the awarded projects as expected in the as-evaluated application. In some cases, other public supports, e.g., the feed-in tariff systems, were changed after the award decision to the detriment of some projects. Furthermore, the MS authorities or agencies involved in NER300 could, in general, not control or influence independent procedures under the responsibility of other authorities and agencies involved in the MS with regard to, e.g., permitting.

The MSs were also obliged to take the role as middlemen between the developers of awarded projects and the Commission services, causing difficulties when conditions of a project were changing. Since changes in various aspects of the contracts could only be decided by a Commission decision, this made the implementation and management of change cumbersome.

Furthermore, and very importantly, the lack of support during the planning of construction and commissioning phase of the project, i.e. the phases of highest risk and capital exposure, was one very important factor and resulted in a small fraction of the awarded projects coming to

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implementation. As discussed already, the grant was solely payable based on the CO_2 saved or sales of energy products, unless the MS provided full guarantees for any pre-payments, which was not the case for many MS. Thus, for most projects, there was no element of cost sharing in the investment phase, neither for equipment or any form of engineering or project work. The grant support, therefore, failed to off-set the initial risk in the project development (i.e. the technical and market risks), neither did it contribute to the cash flow during the project development, construction and commissioning. This conclusion is common to the three evaluations cited[4, Error! Bookmark not defined.].

It also appears that the projects that were awarded the highest potential support in absolute terms were also more susceptible to negative external influences, e.g., market conditions, which caused difficulties and delays in coming to financial closure, as those projects were suspended until market conditions would improve, which in particular applies to biofuels and CCS projects, but less to wind projects that require less investment and enjoy better market conditions[24].

The ECA report[4] also notes that, for projects awarded, the communication in term of progress reports had limitations in the details reported and the procedures for management of changes to awarded project was cumbersome and finally required a Commission Decision to amend project deadlines and budgets.

NER300 LESSONS LEARNED REFLECTED IN THE IF

There is a number of examples where experiences from NER300 have influenced the procedures planned for the IF.

In the NER300 program, the technical scope of the innovative projects was already defined within the program itself. By pre-defining technologies, the NER300 program became less flexible and, thus, excluded potentially good projects that did not fit to one of these pre-defined categories or tried to combine such categories. The IF is both more open in terms of the nature of the projects and broader in terms of technical coverage.

Regarding the overall operational procedures, the management has been simplified. Naturally, the overarching responsibility still lies with the Commission and the financial management is again delegated to EIB, as in NER300. However, the contractual management is delegated to INEA that will handle the projects from the application submission, through evaluation and contract award as well as during project initiation, installation and operation. INEA will follow the progress of the projects and, while being in dialogue with the projects, can more easily decide and implement any correctional amendments necessary due to developments arising, or terminate contracts, if needed.

In addition, compared to NER300, where the MS had a more central role in defining the calls the role of the MS is now limited to consultations, i.e. considerably watered down in the IF compared to NER300. In the latter case, the MS were responsible of a sort of pre-selection among the national proposals to single out the few that were then submitted as applications. The grounds for this selection was more or less well-defined in the different MSs.

NER300 LESSONS LEARNED REFLECTED IN THE IF

After the award decision, MS authorities or agencies were obliged to take the role as middlemen between the developers of awarded projects and the Commission services, causing difficulties if independent policy or governance decisions by other bodies within the country were affecting a project and interpreted as non-supportive, or if the conditions of a project were changing. Any significant changes had to be confirmed by a Commission decision. This role is no longer there and INEA will be in charge of the project management follow-up as described in the "IF Governance" section.

At the same time, the SET-plan will be guiding the IF development. The former is a forum where the MS can still have a strong influence on the scope of the IF, but without being directly involved in more than on role in the project selection and operation (in contrast to NER300).

While NER300 had a one-stage full application process, the IF calls will be based on a two-stage procedure, i.e. Expression of Interest (EoI) and Full Application. This will require less recourses for the application when there are many competing applications and for those continuing to Full Application stage there is a better balance between resource usage and the chances to receive an award.

Furthermore, unlike the NER300, IF funds can be awarded for PDA to some projects with high potential but less ready to go to a demonstration project. This may help such projects to develop and participate in a subsequent call when those will be more ready to find other forms of financing.

Regarding the calculation of relevant cost, as opposed to NER300, now all projects (i.e. CCS and the other) have a uniform time period for the calculation of relevant cost, i.e. ten years of operation. There is also an opportunity for some flexibility to cover price risks, as relevant cost could be calculated based on current market prices and adjusted, if significant changes occur, at disbursement milestones.

The funding rate in the IF is 60 % of the relevant cost, and the pay-out of this funding is in addition split into a 40 % grant and 60 % of performance-based annual payments for a period between three and ten years when in operation. This is higher than the 50 % funding rate applied in NER300, which in addition was received in total as performance-based annual payments. This change is in line with the recommendations to better assist in de-risking the project and in providing cash flow during the investment phase.

Also referring to the lessons learned from the NER300 program, the evaluation has changed. In the case of performance, all projects will be based on GHG emission reductions. The adopted NER300 approach to relate the energy produced for RES was practical in the setting of pre-defined technologies, but since the IF is both more open in terms of the nature of the projects and broader in terms of technical coverage, there is more of a need for a common and comparable performance indicator across the whole board. This common approach is also necessary for the evaluation of other aspects of the evaluation, e.g., regarding potential.

However, while the CPUP is still a central criterion for the award selection, IF also includes more forward-looking criteria relating to the long-term replication and emission reduction potential,

NER300 LESSONS LEARNED REFLECTED IN THE IF

thereby not only looking at the first-of-a-kind project but also at the potential impact of promoting such a project in relation to other potential projects.

The higher emphasis on the evaluation of the project maturity, and in particular on the due diligence evaluation, is also a change compared to NER300. The increased weight of the due diligence, as well as the consideration that a third party assessment may be less positively biased than the proponents own due diligence, stems from the criticism exercised on the NER300 evaluation, where projects were given awards while not having secured all the necessary conditions to come to financial close. In turn, this resulted in that many projects never got to the construction stage and that less than 20 % of the support funding came to use.

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IF is improved in many aspects compared to the NER300 program. The major improvement is in the reimbursement conditions and that 40 % of the support is a non-recourse grant payable before the installation comes into operation, i.e. improves the cash flow in the investment phase.

Also, the application, evaluation, contractual and project management as well as monitoring via one focal point, INEA, is clearer and simpler.

In addition, the PDA facility is an improvement as it allows supporting projects from strategic consideration even if not sufficiently developed at the first instance. It will also indicate and give support to technology changes that could otherwise have gone under the radar for longer time.

Furthermore, the window for small projects below EUR 5-7.5 million also allows smaller enterprises to get involves than in the NER300 to develop technologies.

However, there are also aspects that from an AFF perspective of alternative transport fuels may involve difficulties. For example, although the expected funds are more than five times the amount made available by the NER300 program, the number of eligible technologies has increased many times more than the funding. This results in that the (mathematic) probability of funding for any project, including a bioenergy project, is actually decreased.

Making the GHG emission reduction potential of the project itself a quantitative evaluation criterion is not fully explained, as without any qualification relating to technology and capacity, it will just favour large projects, even if specific emission reduction could be better in a smaller project for the same technology. The same GHG reduction quantity is also the numerator in the support efficiency evaluation (CUP), i.e. affects the scoring twice for the Full Application Phase.

Furthermore, many of the industries eligible are of high-carbon intensity and maybe not vanguards in reduction of GHG emissions, whereas on the other hand, the technologies developed could have a high replication and deployment potential. There is a risk that in such industries there are low-hanging fruit projects ready to be implemented with high GHG reduction potential and since they are in many cases brownfield, they come with lower cost than greenfield projects. In addition, project promoters will, in many cases, be large industrial companies with high resources that may also take a large share of the investment costs from their balance sheet or use other favourable

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financial solutions. In this way, such projects could rate high in ranking criteria such as GHG reduction achieved, 2050 potential and CPUP support efficiency and come out more favourably than projects promoted by less resourceful companies or more complex projects such as, e.g., greenfield biofuel plants.

The evaluation of the GHG emission reduction potential for biofuels, and in particular renewable fuels, is likely to be more complex in the IF procedure compared to the NER300 case, were only the energy generated was considered. Although it appears that the REDII procedures will be the backbone of the procedures, already at this stage there has been significant deviation proposed, e.g., on how to evaluate the GHG carbon intensity of the electricity used for renewable fuels. This is an area which requires attention as these procedures are key elements of several of the evaluation criteria.

Although the funding rate is increased to 60 % of the relevant cost, of which 40 % can in the general case be used prior to the installation comes into operation and is, thus, more favourable than the NER300 support, still, it remains to be seen whether this is sufficient to effectively de-risk biofuel projects.

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