Climate-friendly design of the overall EU budget

Discussion Paper – Final Version

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LIST OF ABBREVIATIONS

CAP	Common Agricultural Policy
CBA	Cost-Benefit Analysis
CEF	Connecting Europe Facility
CF	Cohesion Fund
DCI	Development Cooperation Instrument
EAFRD	European Agricultural Fund for Rural Development
EAGF	European Agricultural Guarantee Fund
ECA	European Court of Auditors
EFSI	European Fund for Strategic Investments
ERDF	European Regional Development Fund
EIB	European Investment Bank
ESIF	European Structural and Investment Funds
EU	European Union
EV	Electric vehicle
GHG	Greenhouse gas
H2020	Horizon 2020
IPA	Instrument for Pre-Accession Assistance
LBG	Liquefied Bio Gas
LIFE	L'Instrument Financier pour l'Environnement (The Financial Instrument for the Environment)
LNG	Liquefied Natural Gas
MFF	Multiannual Financial Framework
NDICI	Neighbourhood, Development and International Cooperation Instrument
PCI	Projects of Common Interest
TEN-T	Trans-European Transport Network
VAT	Value-added tax

This discussion paper is the first publication in a series of inputs to stimulate discussions on a more climate-friendly design of the post-2020 EU budget:

1. Climate-friendly design of the overall EU budget (September 2018)
2. Enhancing the implementation and monitoring of the 25% climate mainstreaming target of the next EU budget (December 2018)
3. Climate-friendly design of the Common Agricultural Policy (March 2019)

The analyses and recommendations in these papers served as a basis for discussions during workshops of the Expert Network on Climate Finance in the EU.

The project “Climate-friendly design of the EU budget and financial markets” is financed by the European Climate Initiative (EUKI). EUKI is a project financing instrument by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). It is the overarching goal of the EUKI to foster climate cooperation within the European Union in order to mitigate greenhouse gas emissions. It does so through strengthening across-border dialogue and cooperation as well as exchange of knowledge and experience.

1. INTRODUCTION

1.1 Background

The European Commission recently set out its long-term vision for a 'climate neutral and prosperous' Europe by 2050. EU Member States are already committed to reducing their combined GHG emissions by at least 40% domestically by 2030 compared to 1990, and increasing the share of renewable energy to at least 32% and reducing projected future energy consumption by at least 32.5% by 2030. Fully implemented, EU-level policies could lead to a GHG emissions reduction of around 45% in 2030 (European Commission, 2018).

To ensure that a minimum amount of the EU public finance is spent on climate action to contribute to meeting these targets, the EU Commission has introduced the concept of "climate mainstreaming" to the EU budget in 2014. Climate mainstreaming integrates climate action into all spending areas of the EU budget and requires that at least 20% is spent on climate-relevant measures over the 2014–2020 period. This corresponds to a commitment of around €206 billion (European Commission, 2018a).

While this target has driven integration of climate action across the budget programmes, current analysis by the European Commission and the European Court of Auditors (ECA) show that the climate spending target for the current Multiannual Financial Framework (MFF) is likely to be missed, with an average share of climate-related expenditures of 17.6% between 2014–2016 (European Court of Auditors, 2016) and a forecast of 19.3% for the whole MFF period (European Commission, 2018b). In order to close this gap and to bring the EU closer to achieving its mid- and long-term climate and energy targets, 14 EU Member States of the Green Growth Group urged the European Commission to maintain its commitment to climate-friendly spending. The group also called for an EU budget which is as a whole in line with the Paris Agreement and does not have detrimental impacts on the climate and energy targets (BMU, 2018).

For the next MFF 2021–2027, the EU Commission proposes to raise the level of ambition for climate mainstreaming across all EU programmes, with a target of at least 25% of EU expenditure contributing to climate objectives to implement the Paris Agreement and the commitment to the United Nations Sustainable Development Goals (European Commission, 2018c). Equally, however, a more effective implementation of the new quota is needed according to analysis and recommendations made by the ECA (European Court of Auditors, 2016) and Ecofys (Ecofys/DIWEcon, 2018).

As public funding is limited by nature, it needs to be spent wisely. It is at least equally important that the "remaining" 75% of the next EU budget are consistent with these goals and do not undermine them by subsidising fossil fuel-dependent technologies and infrastructure. Considering that the lifetime of the existing gas infrastructure is estimated to be at least another 50 years[1], investment choices taken today will be critical to achieve the longer-term targets in an economical way and to avoid stranded assets. Although the share of these projects in the current MFF is relatively small (3.3%), negative climate impacts should be avoided in the next MFF period from 2021 to 2027.

This paper will serve as a basis for discussions during the first workshop of the Expert Network on Climate Finance in the EU on ensuring a Paris-compatible EU budget. The recommendations outlined here will be further validated and refined through the workshop.

[1] Generally accepted by accountants and regulators. This is an indication of the financial amortization rate (Ecofys, 2018).

1.2 Climate mainstreaming under the next MFF

To achieve the target of 25% climate-related expenditures under the next MFF, the following climate mainstreaming changes have been proposed for key funds and programmes:

Programme	Changes compared to MFF 2014–20
CEF	• 60% target for climate-relevant spending (under the current MFF, there is no such target) • Mandatory cost-benefit analysis during project appraisal (only for renewable energy projects) • 40% climate Rio marker can be applied to gas infrastructure if "enabling increased use of renewable hydrogen or bio methane"

ERDF, CF	• Indicative 37% target for climate-relevant spending for CF (under the current MFF, there is an implicit target of 28.4%)
	• Indicative 30% target for climate-relevant spending for ERDF (under the current MFF, there is a target of at least 12% for less developed regions, 15% for transition regions and 20% for developed regions)
	• No longer eligible for funding:
	  • Investment related to production, processing, distribution, storage or combustion of fossil fuels except for investment related to clean vehicles
	  • Investment in airport infrastructure except for outermost regions

Horizon Europe (Horizon 2020)	• No clear target for climate-relevant spending (under the current MFF, there is a 35% target which is likely to be missed)
InvestEU (EFSI)	• Indicative 30% target for climate-related investments for the total InvestEU budget, 50% target for sustainable infrastructure policy window for implementing partners • Climate-related investments will contribute to overall MFF climate quota (for EFSI, this was not the case) • No conditions for road projects (under EFSI 2.0, road projects were only eligible for funding under certain conditions, e.g. in cohesion countries, in less developed regions or if electric charging stations are established)
LIFE	• Indicative 61% target for climate-related investments (under the current MFF, 25% shall be spent on the climate action sub-programme) • Project-level output and impact indicators for CO_2 emissions and other environmental impacts shall be reported • Climate-related investments shall be tracked through an EU climate marker system at an appropriate level of disaggregation, including the use of more precise methodologies where these are available (under the current MFF, there are combined markers for climate and biodiversity expenditures) • Overall increase of LIFE budget by 60%, but mainly due to a shift of Clean Energy Transition funds from Horizon 2020 (former Intelligent Energy Europe Programme)

Programme	Changes compared to MFF 2014–20
EAGF, EAFRD	• Indicative 40% target for climate-related investments for the overall CAP budget (under the current MFF, 30% of the direct payment budgets should be used for green direct payments that benefit the environment and the climate and at least 30% of the EAFRD budget should be spent on climate and environmental issues) • In their CAP Strategic Plans, Member States will have to spell out how they intend to meet climate and environment objectives • A new system of "conditionality" will link all farmers' income support (and other area- and animal-based payments) to the application of environment- and climate-friendly farming practices • A new system of so-called "eco-schemes" to address the CAP environment and climate objectives, funded from national direct payment allocations, will be mandatory for Member States, although farmers will not be obliged to join them

1.3 Methodology

This discussion paper provides a closer look at the current MFF for the 2014–20 period and how EU funds and programmes partly support fossil fuel production and consumption, including associated research and subsidies to infrastructure. The findings for the 2014–20 period will feed into recommendations for the currently negotiated MFF period post-2020 with the aim to achieve an ***EU budget that is compatible with the Paris Agreement***.

Our definition of Paris-incompatible funding is focussed on fossil fuel-related spending in order to identify elements of the budget that have potentially negative impacts on the climate to then provide recommendations on how to minimise effects that would undermine climate-related investments under the EU budget. To assess Paris-compatibility and provide recommendations for each funding type, we define the following three categories:

Low climate compatibility:
Fossil fuel-dependent technologies and associated infrastructure that are unlikely to be compatible with low-carbon pathways in the medium to long term
E.g.: Fossil fuel power generation or coal boiler replacement projects

Medium climate compatibility:
Fossil fuel-dependent technologies and associated infrastructure that are to a certain degree compatible with low-carbon pathways in the medium to long term
E.g.: Gas infrastructure or road infrastructure projects

High climate compatibility:
Clean technologies and associated infrastructure that are fully compatible with low-carbon pathways in the medium to long term
E.g.: Renewable energy, energy efficiency or EV charging infrastructure projects

For the purpose of this study, we only focus on expenditures that have a low or medium climate compatibility, i.e. the “remaining” 80% of the current MFF, as expenditures with a high climate compatibility contribute to achieving the climate mainstreaming target.

2. PARIS-INCOMPATIBLE FUNDING UNDER THE CURRENT MFF

The EU budget is used to pay for policies in areas such as agriculture, protecting the environment, improving transport, energy and communication links between EU countries, and fostering competitiveness and research. The annual budgets must remain within the limits set in advance by the Multiannual Financial Framework (MFF) (European Commission, 2018d). The MFF budget for the current 2014–20 period is around €1,087 billion (in current prices), representing about 2.1% of EU Member States' total government expenditure and 1.04% of EU gross national income (GNI).

At least 20% of the EU budget in the current MFF shall be spent on climate-related issues. This funding is mainly disbursed through the Common Agricultural Policy (CAP) including the European Agricultural Guarantee Fund (EAGF), the Structural and Investment Funds (ESIF), and the Framework Programme for Research and Innovation (Horizon 2020). Further funding for mitigation and adaptation actions comes from the LIFE Programme and the Connecting Europe Facility (CEF).

The remaining 80% of the 2014-2020 MFF that are not spent on climate-relevant measures are partly used for projects and programmes that support fossil fuel production and consumption, including associated research and subsidies to infrastructure.

Table 1: Overview of Paris-incompatible funding under the current MFF[2]

Sector	Type	Fund/ Programme	Amount	Share in Paris-incompatible funding	Paris compatibility
Energy	Gas infrastructure	CEF	€2,195.1 m	6.3%	Medium
		ERDF	€927.2 m	2.6%	
		Total	**€3,122.3 m**	**8.9%**	
	Fossil fuel power generation	DCI	**€50.0 m**	**0.1%**	Low
	Fossil fuel power technology research	H2020	**€12.1 m**	**< 0.1%**	Medium
	Shale gas research	H2020	**€11.5 m**	**< 0.1%**	Low
	Coal boiler replacements in residential buildings	CF	**€5.4 m**	**< 0.1%**	Low
Transport	Road infrastructure	ERDF	€15,168.6 m	43.2%	Medium
		CF	€14,781.0 m	42.1%	
		CEF	€1,526.6 m	4.4%	
		Total	**€31,476.2 m**	**89.6%**	
	Airport infrastructure	CF	€298.7 m	0.9%	Low
		ERDF	€140.3 m	0.4%	
		Total	**€439.0 m**	**1.3%**	
	Internal combustion engine research	H2020	**€10.0 m**	**< 0.1%**	Medium
Total			**€35,126.5 m**	**100.0%**	

[2] An overview of the sources and assumptions of this assessment can be found in the Annex.

Table 1 provides an overview of all EU funds and programmes that partly finance fossil fuel-dependent technologies and infrastructure and shows the (low/medium) climate compatibility of these investments.

At least €35.1 billion, which is equivalent to a share of 3.2% of the entire EU budget under the MFF 2014–2020, is used for projects that undermine climate-related investments under the EU budget and the EU climate targets to a certain degree. However, it should be considered that the majority of these investments have a medium climate compatibility. Around 90% of the Paris-incompatible funding under the current MFF is allocated to road infrastructure which, of course, can also be used by non-fossil fuel powered vehicles.

The Paris-incompatible funding is dominated by the European Structural and Investment Funds: The Cohesion Fund has a share of 42.9% in these expenditures, while the ERDF funds 46.2% of the Paris-incompatible funding. A more detailed overview of the main EU funds can be found in Table 2.

The overview in Table 1 does not include Paris-incompatible funding under the EFSI. Although these investments are not directly financed through the EU budget, they are based on a €26 billion guarantee from the EU budget which is complemented by a €7.5 billion allocation by the EIB (European Investment Bank, 2018). Our recommendations in the following section therefore also cover the InvestEU Programme, the successor of the EFSI under the next MFF.

Our fossil fuel-focussed analysis also did not include any quantified assessments of spending under the Common Agricultural Policy (CAP) that accounts for 38% of the EU budget and has been criticised to partly support emissions- and resource-intensive practices (BirdLife International, 2017; NABU, 2018). For example, most direct payments are not tied to climate-friendly land management. The challenge of a more climate-friendly design of the agriculture budget is addressed in more detail in a separate discussion paper by Navigant.

Table 2: Overview of main EU funds and programmes with Paris-incompatible funding (in current prices): Share of funding by climate compatibility in total fund/programme budget in brackets[3]

Fund/ Programme	Objective	Budget	Funding by climate compatibility			
			High	Medium	Low	Medium + Low
ERDF	• Aims to strengthen economic and social cohesion in the EU by correcting imbalances between its regions • Focus areas: Research and innovation, digital agenda, support of SMEs, energy efficiency and energy supply security	€281.0 bn	€36,724 m (13.1%)	€16,096 m (5.7%)	€0.140 m (< 0.1%)	€16,236 m (5.8%)
CF	• Aims to strengthen the economic, social and territorial cohesion of the EU by providing financial resources to Member States with a Gross National Income per capita below 90 % of the EU average	€75.4 bn	€21,121 m (28.0%)	€14,781 m (19.6%)	€304 m (0.4%)	€15,085 m (20.0%)
H2020	• Aims at securing Europe's global competitiveness, strengthening its position in science and its industrial leadership in innovation by providing major investment in key technologies, greater access to capital and support for SMEs	€79.4 bn	€19,662 m (24.8%)	€22 m (< 0.1%)	€12 m (< 0.1%)	€34 m (< 0.1%)
CEF	• Supports the development of high-performing, sustainable and efficiently inter-connected trans-European networks in the field of energy, telecommunications and transport; building missing cross-border links and removing bottlenecks along main trans-European transport corridors	€30.4 bn	€11,539 m (38.0%)	€3,722 m (12.2%)	–	€3,722 m (12.2%)
DCI	• Aims at the reduction of poverty in developing countries • Contributes also to fostering sustainable economic, social and environmental development as well as promoting democracy, the rule of law, good governance and respect for human rights	€19.7 bn	€4,595 m (23.4%)	–	€50 m (0.3%)	€50 m (0.3%)
Total		**€1,066.4 bn**[4]	**€205,816 m (19.3%)**	**€34,621 m (3.2%)**	**€506 m (< 0.1%)**	**€35,127 m (3.3%)**

[3] Sources: European Commission (2018b), European Commission (2018e), European Commission (2018f), European Commission (2018g)

[4] The total budget that is used as a basis for the climate quota calculation is based on the “operational appropriations” paid out by the EU Commission, i.e. “Section III” of the total EU budget.

3. RECOMMENDATIONS FOR A MORE CLIMATE-FRIENDLY DESIGN OF THE NEXT MFF

Projects that focus on fossil fuel-dependent technologies and infrastructure differ with regard to their climate compatibility. For example, projects can save emissions compared to a scenario without the action, if a road project helps to reduce the distance travelled for most of the traffic or if R&D investments help to develop cleaner, highly efficient Diesel powertrains and technologies. However, subsidies for fossil fuel-dependent technologies and associated infrastructure can undermine the development and commercialisation of alternative technologies that might ultimately become more environmentally as well as economically attractive. As a consequence, fossil-fuel subsidies can lock-in technologies and create barriers to the adoption of cleaner alternatives (OECD, 2010).

It is therefore necessary to ensure that the support of relatively carbon-intensive technologies and associated infrastructure does not counteract the effects of climate-related investments achieved through the climate quota of the EU budget, especially when bearing in mind that public resources are limited and should be spent wisely.

For a fully Paris-compatible MFF, all current funding with counteracting effects should be avoided. This implies that all projects with a low climate compatibility should no longer be eligible for funding, see **negative list** below:

Low climate compatibility funding	Fund/Programme MFF 2014–20	Current commission proposals for MFF 2021–27
Airport infrastructure	CF, ERDF	Funding not eligible in regulation proposal except for airport infrastructure in outermost regions
Fossil fuel power generation	DCI	Funding eligible in regulation proposal
Shale gas research	H2020	Funding eligible in regulation proposal
Coal boiler replacements in residential buildings	CF	Funding eligible in regulation proposal

Furthermore, projects with medium climate compatibility should only be financed under specific circumstances, see **extended negative list** below:

Medium climate compatibility funding	Conditions	Fund/ Programme MFF 2014–20	Current commission proposals for MFF 2021–27
Gas infrastructure	• Projects should lead to substantial emission reductions compared to a situation without the project • Projects should contribute to complete well interconnected and shock resilient gas network by 2025	CEF	No conditions in regulation proposal
		ERDF	Funding not eligible in regulation proposal
		IPA	No conditions in regulation proposal
		ESIF	No conditions in regulation proposal

Medium climate compatibility funding	Conditions	Fund/ Programme MFF 2014–20	Current commission proposals for MFF 2021–27
Road infrastructure	• Projects should reduce the distance travelled for most of the traffic • Projects should include measures to support sustainable road transport infrastructure	ERDF, CF	No explicit requirements in regulation proposal
		CEF	No explicit requirements in regulation proposal
		IPA	No explicit requirements in regulation proposal
Fossil fuel technology-related research	• Power and transport technology research should be dominated by funding for low-carbon technologies	H2020	No explicit requirements in regulation proposal

Enhancing road infrastructure is a fundamental tool to stimulate the overall economic development of regions, in particular in newer EU member states (European Commission, 2014). The EU should continue to fund such infrastructure projects but should facilitate a low-carbon transition in the transport sector by e.g. setting up EV charging infrastructure when new roads are built.

Although not in the focus of our analysis, it is important to stress that the current design of the CAP also includes elements that are not fully compatible with the Paris Agreement. The European Commission proposal for the CAP under the next MFF (see Section 1.2) already foresees positive changes, but has been criticised for not setting the safeguards necessary to ensure, that the Strategic Plans that Member States are required to define, protect public health, the environment and the climate (Greenpeace, 2018).It was further criticised that the Commission proposal fails to specifically address the environmental and health impacts of the intensive meat and dairy sector in the EU.

If projects and activities with a low climate compatibility should continue to be financed in the next MFF to a certain extent or if conditions for projects with medium climate compatibility should not be fully met, we recommend the following requirements:

- All negative emission impacts should be tracked. This procedure should build on the relevant section of the Cohesion Policy CBA Guide (European Commission, 2014) which is based on the EIB Carbon Footprint Methodology (European Investment Bank, 2014).
- If gas infrastructure should continue to be financed under CEF, InvestEU or IPA, we recommend that scope 3 emissions, i.e. downstream emissions from the later combustion of the gas in homes, industry or power stations, should always be tracked and considered in the cost benefit analysis during project appraisal.
- The 25% climate quota should be defined as a net target, i.e. additional climate-related expenditures should compensate all investments with negative climate impacts.

A more detailed discussion for each type of Paris-incompatible funding and resulting recommendations can be found in the Annex.

4. SUMMARY OF EXPERT DISCUSSIONS

This section summarises the discussions during the first meeting of the Expert Network on Climate Finance in the EU on “Ensuring a Paris-compatible EU budget” held in Brussels on 17 September 2018. The previous chapters of this report have served as a background for the discussions of the expert network group.

Climate mainstreaming

EC proposal for the next MFF

The European Commission plans to increase the climate-related expenditures in the next MFF to 25%. It was stressed that this implies a high ambition in key funds to compensate for the lack of contribution from other EU funds. However, it was also made clear that the current proposal might change during the upcoming negotiations if the focus or size of a fund or the tracking methodology were to change. The EC intents to reach a substantial agreement on main funds by the Sibiu summit on 9 May 2019 to avoid uncertainties during the beginning of the actual funding period.

In the proposals of the EC, tracking rules are mainly defined in the ESIF Common Provisions Regulation (Annex I) but climate markers are also defined in e.g. the CAP regulation.

Fund-specific climate quotas

Participants recommended that climate targets should be binding for individual funds or budget boxes to avoid watering down of these targets in the future due to a lack of clear links. A split between adaptation and mitigation related expenditure targets was also seen as being desirable.

Some participants were sceptical about the high climate contribution which is foreseen for the CAP funds and would like to discuss this in more detail in the coming workshops. It was also suggested that there could be a more ambitious contribution by the regional funds. Participants stressed that these funds play a fundamental role for infrastructure investments in some Member States and that they have a significant potential to promote already established low-carbon technologies. However, it was flagged that there are also obstacles because e.g. large scale renewable energy projects are not eligible for funding under the Cohesion Fund. The EU's external funds have been recognised for their fundamental role in shaping climate action outside Europe.

Energy Efficiency First

Further input to the discussion stressed that there should be a greater focus on results by implementing the Energy Efficiency First principle in all plans and programmes. This approach could reduce the need for new supply side investments in the energy sector.

Linking the MFF to NECPs

It was brought up in the discussions that the NECP review period overlaps with the MFF review timeline. Participants recommended that the NECPs should be closely aligned with the sectoral regulations and vice versa.

Climate proofing

The Common Provisions Regulation includes a reference to resilient infrastructure while InvestEU includes requirements for climate and environmental proofing (e.g. cost-benefit analysis incl. GHG impacts). However, participants stressed that the EC should provide a more transparent definition of climate proofing.

The level of the climate quota

Participants pointed out that integrity should be ensured, i.e., the EC should not overpromise and later underdeliver in terms of climate commitments. Some argued that the climate quota can be scaled up. Proposals were shown on how a 30% or 40% target for climate-related expenditures could be achieved by increasing ambition in key EU funds. Another proposal is a 30% target along with a

greater focus on air pollution and biodiversity. On the other hand, some participants flagged that other objectives are also important and should not be compromised. It was also mentioned that the EU budget can be used more wisely rather than being expanded.

Impacts of climate quota

Participants stressed that the EU funding is usually small compared to national government budgets but especially in Central and Eastern Europe it does play an important role for public investments and, generally, the EU budget has an important signalling role. Since the international community is currently not on track to stay below a 2°C global temperature increase – and far off track to meet a 1.5°C target, commitments to scale up climate-related expenditure matter. Besides its signalling function, the EU budget has a leverage role due to co-financing requirements in certain funds. Participants agreed that mobilising support from national and regional governments as well as private finance is crucial to ensure substantial impacts. In general, sectoral decarbonisation pathways depend on EU budget inputs. Some argued that the EU budget is already well placed to reduce emissions in all sectors. However, participants also stressed that climate-related expenditures are difficult to link to emissions reductions and that the mitigation impact of the EU budget in EU ETS sectors ultimately depends on the annual caps of the ETS.

The remaining 75% of the budget

Paris-incompatible funding

Most participants agreed that Paris-incompatible technologies and infrastructure should no longer be eligible for funding. It was proposed that negative lists should be consistent across regulations, but participants recognised that this can be challenging because there are few forums to discuss alignment of climate standards across sectors and regulations. Participants also stressed that NECPs, the EU's new long-term GHG reduction strategy, the Operational Programmes of the ESIFs and the CAP Strategic Plans will play a crucial role in increasing the Paris compatibility of the MFF. Some also warned that Paris-incompatible infrastructure investments should not be greenwashed through "green add-ons".

By focussing funding exclusively on projects that are fully aligned with the Paris Agreement, innovation pressure for a low-carbon transition could be increased while at the same time avoiding absolute budget expansions and ensuring consistency of the overall EU budget. This approach should be framed in a positive way, i.e. it should be asked how the remaining budget can help catalyse low-carbon development. It was also noted, however, that remaining fossil fuel investments are small in size and can serve as political capital to e.g. increase overall climate-related expenditures.

Participants agreed that the EU budget is just one component of public funding in the EU and that Paris-incompatible funding should thus also be avoided in national budgets. NECPs can be a tool to steer these developments.

Gas infrastructure

Participants agreed that stranded assets should be avoided and that past forecasts have repeatedly overestimated gas demand. However, it was recognised that gas infrastructure phase-outs pose a substantial challenge. For example, experience from the Dutch buildings sector shows that phasing out gas infrastructure can take many decades as the dependency on gas is still high. Some participants suggested that gas can also be part of a cost-effective transitional solution in countries such as Poland, but others warned that gas demand and supply scenarios should not rely on technologies such as CCS that are not readily available yet at reasonable costs. It was also recommended that loopholes should be avoided. For example, the ERDF regulation proposal would allow CNG/LNG infrastructure investments if related to "clean vehicles".

Airport infrastructure

Most participants agreed that airport infrastructure should no longer be eligible for support, even in outermost regions. Such subsidies - including direct Member State support which is still substantial in certain cases - would disadvantage rail transport and provide poor value for money (also see ECA's publication on EU funded regional airports[5]). It was discussed whether airport infrastructure should be eligible for funding once low-carbon technologies for aviation become more mainstream. Participants stressed that such developments (e.g. biofuels/synthetic fuels for airplanes) are at an early stage but that some progress can be observed e.g. in Finland.

Road infrastructure

Some participants recommended that there should be a greater focus on multi-modal transport instead of continuously high expenditures for road infrastructure. For example, rail investments should be prioritised if not yet established and feasible on the planned routes. It was also proposed that new road infrastructure should rather be financed through user fees.

Cost-benefit analysis

Participants warned that CBA results can be influenced by political will. Additional administrative burdens thus might not be necessarily worth the effort. It was also argued that new road infrastructure will always create new traffic demand no matter what the CBA results show as travel time spent per day should be considered as a fixed component in such analyses.

Just transition/Solidarity

Participants stressed that transition challenges need to be addressed, in particular in newer Member States. It should be ensured that the low-carbon transition has benefits for everyone and not only for the planet. Some participants flagged that newer Member States such as Bulgaria have a high potential for renewable energy but often face higher costs of capital and thus need even more support to implement a successful low-carbon transition.

Adaptation

Some participants highlighted that "Paris incompatibility" should also take into account any funding that is not climate proof from an adaptation perspective. However, it was recognised that adaptation requirements can be difficult to identify as they are not sector specific.

[5] ECA (2014). Special Report No 21/2014: EU-funded airport infrastructures: poor value for money. https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=30441

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ANNEX I RECOMMENDATIONS FOR A MORE CLIMATE-FRIENDLY DESIGN OF THE REMAINING EU BUDGET

I.1 Low climate compatibility

I.1.1 Airport infrastructure (Current funding: €439 m)

Aviation has by far the largest GHG footprint of all passenger transport options when considering both direct emissions and further effects on the climate through e.g. vapour trails and cirrus cloud formations (Umweltbundesamt, 2018). By subsidising airport developments and extensions, the EU contributes to spurring demand for carbon-intensive air travel and further distorting competition at the expense of environmentally friendly alternatives such as rail transport. For example, subsidies enable airports to charge lower user fees which can be passed on to consumers via lower ticket prices (Gössling, Fichert, & Forsynth, 2017). Air transport already fails to internalise all environmental costs and is also heavily subsidised through fuel tax and VAT exemptions across Europe (Transport and Environment, 2018). Our review of CBA results of EU co-funded airport infrastructure projects revealed that monetised climate change impacts of such projects can be substantial compared to investment costs and could be even higher if more recent estimates for carbon costs would be taken into account.

Apart from climate change considerations, EU support for airport infrastructure projects has been criticised as e.g. an ex-ante assessment for the ESIF Operational Programme Infrastructure & Environment in Poland diagnosed air transport as a profit-making branch of transport capable of financing its own infrastructure (Polish Ministy of Economic Development, 2014). The European Commission as well as experts from JASPERS (Joint Assistance to Support Projects in European Regions) also played a significant role in limiting the number and scope of planned airport investments with EU funds in the previous MFF period (Bankwatch, 2012).

Cleaner aviation technologies based e.g. on electric propulsion will take at least another decade to become commercially viable and wider bio-jet adoption is constrained by high costs compared to fossil-based jet fuels (Calder, 2017; IRENA, 2017). Although airport expansions can stimulate the overall development of regions, we recommend that airport infrastructure should no longer be eligible for EU funding, even in outermost regions, as the subsidies would undermine any climate-related investments under the EU budget. Article 6 of the proposed ERDF/CF Regulation partly reflects this view by explicitly stating that the funds *"shall not support […] investment in airport infrastructure except for outermost regions*[6]*"* (European Commission, 2018a). It would be preferable if EU funding would support sustainable low-emission propulsion technologies or strategies to reduce air traffic.

I.1.2 Fossil fuel power generation (Current funding: €50 m)

For a fully Paris-compatible MFF, non-renewable power generation in developing countries[7] should no longer be eligible for EU funding. It should be carefully considered whether more climate-friendly solutions such as renewables in combination with storage or at least hybrid solutions could be deployed even in transitional contexts, i.e. in cases of emergency rehabilitation of fossil fuel

[6] These include Guadeloupe, French Guiana, Réunion, Martinique, Mayotte and Saint-Martin (France), the Azores and Madeira (Portugal), and the Canary Islands (Spain).

[7] The DCI covers through its different programmes all developing countries except countries eligible for the Pre-Accession Instrument.

generators in fragile countries or as a necessary transitionary measure towards the deployment of a more diversified energy mix.

If at all, fossil fuel power generation projects should only continue to be funded by way of exceptions. Limiting the transitional period during which the supported non-renewable power generation can operate to e.g. three years could help to ensure that investments are compatible with low-carbon development objectives in the medium to long term.

I.1.3 Shale gas research (Current funding: €11.5 m)

The European Commission's Energy Roadmap 2050 identifies natural gas as critical energy source for the transformation towards a secure, competitive and decarbonised energy system. With regard to fracking, the strategy states the following:

"As conventional gas production declines, Europe will have to rely on significant gas imports in addition to domestic natural gas production and potential indigenous shale gas exploitation."

However, considering the potential risks for health and environment and the relatively low emission reductions in comparison to conventional natural gas (AEA, 2012), we recommend not to fund any research related to shale gas in future MFFs.

I.1.4 Coal boiler upgrades in residential buildings (Current funding: €5.4 m)

In the Czech Republic, more efficient coal boilers were initially eligible under a scheme to exchange old boilers for heating residential buildings with newer ones to help reduce air pollution. During the current funding period of the ESIF Operational Programme Environment, boilers that work with both coal and biomass are still eligible for support. However, funding should focus exclusively on fully renewable alternatives that link both air quality and climate change mitigation objectives.

I.2 Medium climate compatibility

I.2.1 Road infrastructure (Current funding: €31.5 bn)

Enhancing road infrastructure is a fundamental tool to stimulate the overall economic development of regions, in particular in newer EU member states (European Commission, 2014a). Most road projects are part of the Trans-European Transport Network (TEN-T) policy that aims to close gaps, remove bottlenecks and eliminate technical barriers that exist between the transport networks of EU Member States, strengthening the social, economic and territorial cohesion of the Union and contributing to the creation of a single European transport area (European Commission, 2018b).

However, our review of EU co-funded CBA results of road infrastructure projects revealed that such projects can have negative impacts on the climate if they increase fossil fuel-dependent transport demand. Nonetheless, road infrastructure can also be used by non-fossil fuel powered vehicles, in particular given that road transport will become increasingly electrified in order to meet the EU's decarbonisation objectives in line with the Energy Roadmap 2050 (European Commission, 2012). To facilitate this transition in the transport sector, road infrastructure projects should be coupled with investments focussing on the deployment of infrastructure for charging electric vehicles or for the use of renewable fuels such as liquified biogas (LBG) where possible. The Connecting Europe Facility (CEF) already funds a number of projects that aim to set up LBG fuelling stations and open-access charging networks along TEN-T corridors.[8] Such efforts should be intensified in the future. Road projects that have negative emission impacts, i.e. that do not reduce the distance travelled for most of

[8] See e.g. European Commission (2016a)

the traffic or do not support sustainable road transport infrastructure, should no longer be eligible for EU funding. In order to identify such projects during the appraisal phase, climate impact assessments should be required for road projects from all EU funds and programmes regardless of their funding volume, i.e. also for those ESIF projects that fall below the "major project" threshold of €50/75 million[9] and road projects funded through the CEF, EFSI and IPA. In these cases, the assessment should build on the relevant section of the Cohesion Policy CBA Guide (European Commission, 2014c) which is based on the EIB Carbon Footprint Methodology (European Investment Bank, 2014). However, shadow prices for GHG emissions used in current CBAs are based on EIB recommendations from 2006, suggesting a unit cost of GHG emissions of €35/tCO_2e in 2020 and €45/tCO_2e in 2030 for the central scenario. CO_2 shadow prices should be updated for both CBAs and the climate impact assessments for which no CBA is required to reflect more recent findings by the High-Level Commission on Carbon Prices which recommends carbon prices of US$40–80/t$CO_2$e by 2020 and US$50–100/tCO_2e by 2030 to achieve the Paris temperature target (Carbon Pricing Leadership Coalition, 2017).

I.2.2 Gas infrastructure (Current funding: €3.1 bn)

According to the European Commission's Energy Roadmap 2050, natural gas can act as an important substitute for coal and oil in the short- and medium-term to help reduce emissions with existing technologies. The European Commission estimates that €70 billion in gas infrastructure investment will be required to improve gas energy security (European Commission, 2018c). This includes 53 gas pipelines and 23 other gas projects designated as Projects of Common Interest (PCI) by the European Commission (EEIP, 2016).

However, the Energy Roadmap 2050 also stresses that from around 2030 onwards carbon capture and storage (CCS) will have to be applied to meet the decarbonisation targets and that the role of gas may be limited to a flexible backup and balancing capacity where renewable energy supplies are variable. In addition, the European Energy Security Strategy states that there is a significant cost-effective potential for renewable electricity and renewable heating to further reduce natural gas use in a number of sectors by the end of this decade (European Commission, 2014b). The EU Strategy for Liquefied Natural Gas and Gas Storage further warns that *"care should be taken with regard to investment in LNG or gas infrastructure to avoid the risk of technology lock-in or stranded assets in fossil fuel infrastructure"* (European Commission, 2016b).

A recent study by Trinomics for the S&D group in the European Parliament found that if the ongoing gas PCIs with Final Investment Decision are implemented on schedule, all Member States, except Malta and Cyprus, should in principle by 2022 have access to three gas sources (Trinomics, 2018). Between 2020 and 2025 most remaining bottlenecks will be addressed through the finalisation of the ongoing PCIs. Consequently, the EU should achieve a well interconnected and shock resilient gas grid once these projects are commissioned by 2025, with limited need for additional investments in trans-European gas infrastructure.

Similarly, DIW Berlin concluded in a recent study that demand for natural gas is expected to decline significantly across Europe, taking into account the agreed climate action goals for 2030 and the long-term goals for 2050 (DIW Berlin, 2018). The analysis also revealed that the use of natural gas in the energy as well as industrial and heating sectors will decrease substantially.

These conclusions are also in line with criticism by the European Court of Auditors which stated that the demand estimates for natural gas lack reliability and that *"the Commission has persistently*

[9] 'Major projects' are usually large-scale infrastructure projects in transport, environment and other sectors such as culture, education, energy or ICT. As they receive more than € 50 million in support (more than € 75 million for projects under thematic objective 7 – "Promoting sustainable transport and removing bottlenecks in key network infrastructure") through the ERDF and/or Cohesion Fund, they are subject to an assessment and a specific decision by the European Commission.

overestimated gas demand [...], and needs to restore the credibility of the forecasts it uses" (European Court of Auditors, 2015).

Since the Green Growth Group recently called on the European Commission to update the EU's Nationally Determined Contribution (NDC) and Miguel Arias Cañete, the EU Commissioner for Climate Action and Energy, announced that the EU will begin a process to increase its pledge (Simon, 2018; Mathiesen, 2018), it is likely that even less gas infrastructure will be needed in the future. Even if the existing natural gas infrastructure should be used for renewable gas, i.e. biomethane and renewable hydrogen, no further investments in gas infrastructure except for collection infrastructure from biomethane production sites would be required according to the Gas for Climate Group (Ecofys, 2018). Furthermore, the Climate Action Tracker (CAT) warns that natural gas investments will lead to significant stranded assets in a Paris Agreement-compatible future and that fugitive emissions during gas extraction and transport are an on-going problem (Climate Action Tracker, 2017).

Article 6 of the proposed ERDF/CF Regulation explicitly lists "*investment related to production, processing, distribution, storage or combustion of fossil fuels*" (except for gasification of transport) as not eligible for funding (European Commission, 2018a). Other programmes and funds such as the CEF, EFSI and IPA should equally not support any funding beyond 2025 when energy security should be widely achieved according to Trinomics (see above). Gas infrastructure projects should also prove that they are consistent with national sector-based decarbonisation strategy including lifetime, operation mode and capacity requirements to ensure compatibility with the Paris Agreement (Umweltbundesamt, 2017). In addition, guidelines should ensure that fugitive emissions from gas infrastructure are reduced to a minimum by requiring frequent inspections for leaks and immediate repairs.

I.2.3 Fossil fuel power technology research (Current funding: €12.1 m)

Horizon 2020 currently funds two projects that aim to foster the integration of renewable energy sources by increasing the flexibility of conventional power plants. As non-renewable power plants are likely to co-exist with renewable energy sources over the coming decades, research can contribute to reduce emissions by improving existing technologies. However, to avoid a lock-in of fossil fuel-based technologies, EU research funding should continue to prioritise projects that focus on the adoption of cleaner alternatives. This recommendation is also valid for EU-funded research into CCS in the power sector[10] which is currently inexpensive and ineffective (Forbes, 2017) and equally competes for limited public funding resources with research projects that focus on fully renewable energy solutions.

I.2.4 Internal combustion engine research (Current funding: €10 m)

Similarly, Horizon 2020 is funding a project to improve the fuel efficiency of Diesel engines. Also in the transport sector EU funding should continue to focus on projects that help develop and deploy cleaner technologies to avoid technology lock-in.

[10] Note that CCS in the power sector has not been included in the scope of this report, as CCS technologies have the potential to make emissions sources carbon neutral.

ANNEX II SOURCES AND ASSUMPTIONS

The overview of Paris-incompatible funding under the current MFF in Table 1 of the discussion paper is based on the following sources and assumptions:

- **European Regional Development Fund (ERDF):**
  - Gas infrastructure, road infrastructure and airport infrastructure: European Commission (2018d)
- **Cohesion Fund (CF):**
  - Gas infrastructure, road infrastructure and airport infrastructure: European Commission (2018d)
  - Coal boiler replacements in residential buildings: Bankwatch (2018)
- **Connecting Europe Facility (CEF):**
  - Gas infrastructure: Estimate based on the share of gas in the CEF Energy portfolio as of May 2018 (European Commission, 2018c)
  - Road infrastructure: Estimate based on the share of general road investments in the CEF Transport portfolio as of 2017 (European Commission, 2017; European Commission, 2018e)
- **Horizon 2020 (H2020):**
  - Shale gas research: European Commission (2018f)
  - Fossil fuel power technology research: European Commission (2018g), European Commission (2018h)
  - Internal combustion engine research: European Commission (2018i)
- **Development Cooperation Instrument (DCI):**
  - Fossil fuel power generation: Estimate based on personal communication with DG for International Cooperation and Development

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