

# Innovative Financing for the Adaptation Fund: Pathways and Potentials

Authors:

Carsten Warnecke, Ritika Tewari, Sönke Kreft, Niklas Höhne

with contributions from Jean Paul Brice Affana and Julia Grimm

# Innovative Financing for the Adaptation Fund: Pathways and Potentials

---

## Project number

16025

© NewClimate Institute / Germanwatch e.V. 2017



## Authors

Carsten Warnecke<sup>1</sup>, Ritika Tewari<sup>1</sup>, Sönke Kreft<sup>2</sup>, Niklas Höhne<sup>1</sup>  
with contributions from Jean Paul Brice Affana<sup>2</sup> & Julia Grimm<sup>2</sup>

<sup>1</sup> NewClimate Institute, Am Hof 20-26, D-50667 Köln

<sup>2</sup> Germanwatch e.V., Dr.-Werner-Schuster-Haus, Kaiserstr. 201, D-53113 Bonn

This report is prepared and published in collaboration between Germanwatch e.V. and NewClimate Institute as part of the Adaptation Fund NGO Network project.

This project is part of the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.

Supported by:



Federal Ministry  
for the Environment, Nature Conservation,  
Building and Nuclear Safety

based on a decision of the German Bundestag

More information about the AF NGO Network on:

[www.af-network.org](http://www.af-network.org)

This website also contains resources  
such as the Germanwatch Adaptation  
Fund Project Tracker, briefings and  
reports on the meetings of the  
Adaptation Fund Board and other reports.



## Disclaimer

The views and assumptions expressed in this report represent the views of the authors and not necessarily those of the IKI or the BMUB.

Cover picture: stocksnap.io / Dan Gold



Download the report

<http://newclimate.org/publications/>

---

## Executive Summary

The Adaptation Fund has emerged as an important body in the multilateral adaptation finance landscape. It has pioneered novel approaches such as direct access, has streamlined project cycles to allow participation of small institutions and holds an impressive track-record of delivering results-based adaptation finance. Demand for its services are high among vulnerable developing countries. Continued interest was clearly visible during COP 22, where Parties showed willingness to carve a role for this Kyoto Protocol climate fund under the Paris Agreement. However, this potential is constrained by a continuous resource crunch in the Fund after its primary revenue source – a 2% share of proceeds levy from mitigation projects registered under the Clean Development Mechanism (CDM) - dried up. The resulting revenue gap has been partially covered by donor contributions to the fund. Since such contributions are limited and come with vagaries on their own, the access to innovative finance sources needs to be restated to meet countries' continuous and growing adaptation needs. With this background in mind, this study follows the history and experiences of the CDM levy and focusses on options deriving from different carbon pricing instruments and approaches.

This study aims to provide **analytical support to the Adaptation Fund** in charting a way forward to explore which adaptation finance mechanisms exist and can be pursued to meet its immediate and future financing needs. Seven **innovative finance options are assessed** for their climate finance potential using a multi-criteria assessment approach. The focus is on options deriving from different carbon pricing instruments and approaches. These relate to:

- » International instruments; including share of proceeds on international crediting and from international unit transfers as well as contributions from the Carbon Offsetting and Reduction Scheme (CORSA) under the International Civil Aviation Organisation (ICAO),
- » National instruments; including earmarking auctioning revenues from national emission trading schemes (ETSs) and from national carbon taxes,
- » Instruments from non-state actors; including share of proceeds from voluntary carbon markets and earmarking auctioning revenues from sub-national ETSs.

The assessment presented in this study shows that **none of the options have any fundamental technical limitations** which would exclude them from further consideration. In other words, from a pure technical perspective, all these options can be pursued. Further, all options can be designed in a way to lead to fair contributions. The overall climate impact of all options on mitigation achievable in their underlying instruments is also neutral. Minor indirect positive and negative impacts do exist for some options but they most often cancel each other out. Each of these options can provide a decent predictability of revenue. Moreover, if the design assumptions we have discussed would hold, all options can provide a steady stream of revenue without time-taking and bureaucratic procedures of disbursement and transfers. However, **all options face uncertainty due to lack of political willingness of relevant decision makers** which is pushing down the feasibility of some options.

In addition, a first-order estimate of the revenue generation potential and timeframe for how soon the option may be available in principle is discussed. The study's estimations show that contributions from non-state actors, especially sub-national ETSs and voluntary carbon markets, are most promising between now and 2020, although their overall revenue potential is the lowest among all options.

The engagement pathways discussed in this study can inform **a dynamic resource mobilisation strategy** which covers both current and future timeframe by the Adaptation Fund Board. While different engagement models will be needed for different actors and instruments, the strategy

should have an overarching vision of establishing a global norm for adaptation share of proceeds from carbon pricing policy instruments – which is phrased as a ‘**2% campaign**’ in this study, keeping in mind the 2% share of proceeds under the CDM. The study recommends the following engagement pathways:

1. First things first, for **the Adaptation Fund** to have any success, it **needs to take up a proactive role on the issue**, esp. through its Resource Mobilisation Task Force.
2. **Follow and engage in developments on operationalization of the Article 6 of the Paris Agreement:** The Adaptation Fund must closely follow and continually engage in the UNFCCC process on markets, especially on a reasonable share of proceeds under Article 6.4 mechanism (Option A.1) and build on fairness arguments to highlight potential adaptation contributions from transfers under Article 6.2 (Option A.2).
3. **Create specific relations with cities and regions:** The Adaptation Fund Board and its secretariat should reach out to frontrunner ETS cities and regions (Option C.2) that are interested in supporting the Fund in its most urgent funding crisis. Leadership examples set by non-state-actors can furthermore push the envelope for countries to act.
4. **Identify proactive countries for national funding schemes:** The Adaptation Fund can initiate direct communication with proactive countries with mature ETSs which already earmark funding to international climate policy purposes to discuss possibilities to pilot earmarking of auctioning revenues (Option B.1) and national carbon taxes (Option B.2).
5. **Achieve share of proceeds from Voluntary Carbon Markets:** The Adaptation Fund should closely engage with actors in the Voluntary Carbon Markets to explore a good practice levy (or price premium) towards adaptation (Option C.1).
6. **Create momentum at the level of ICAO:** Pushing action on the ICAO approach (Option A.3) is essential to tap the future demand coming from aviation. Further, overlaps discussed in this study between this and other options must be carefully considered and can provide alternative routes to cover the potential from aviation.

## Table of Contents

Executive Summary.....	i
Table of Contents .....	iii
List of Figures .....	iv
List of Tables .....	iv
List of Abbreviations .....	v
1 Introduction .....	1
2 Methodological approach.....	3
2.1 Options for innovative adaptation finance .....	3
2.2 Assessment framework .....	5
3 Assessment of adaptation finance potential of selected options.....	8
3.1 Share of proceeds on international crediting (Option A.1) .....	8
3.2 Share of proceeds from international unit transfers (Option A.2).....	11
3.3 Contributions from ICAO's CORSIA scheme (Option A.3).....	15
3.4 Earmarking auctioning revenues from national ETSs (Option B.1).....	18
3.5 Earmarking revenues from carbon taxes (Option B.2) .....	22
3.6 Share of proceeds from voluntary carbon market (Option C.1) .....	24
3.7 Earmarking auctioning revenues from sub-national ETSs (Option C.2) .....	27
4 Discussion.....	29
5 Way forward for the Adaptation Fund.....	33
6 References.....	35

## List of Figures

Figure 1:	Methodological framework for assessment of innovative adaptation finance options ...	5
Figure 2:	Pathways for innovative finance for the Adaptation Fund .....	32

## List of Tables

Table 1:	Options for innovative adaptation finance .....	4
Table 2:	Summary of assessment results for innovative adaptation finance from share of proceeds on international crediting (Option A.1) .....	10
Table 3:	Summary of assessment results for innovative adaptation finance from share of proceeds on international unit transfers (Option A.2) .....	13
Table 4:	Summary of assessment results for innovative adaptation finance from contributions from ICAO's CORSIA scheme (Option A.3).....	16
Table 5:	Summary of assessment results for innovative adaptation finance from earmarking auctioning revenues from national ETSs (Option B.1).....	20
Table 6:	Summary of assessment results for innovative adaptation finance from earmarking revenues from national carbon taxes (Option B.2) .....	23
Table 7:	Summary of assessment results for innovative adaptation finance from a share of proceeds from Voluntary Carbon Markets (Option C.1) .....	25
Table 8:	Summary of assessment results for innovative adaptation finance from earmarking auctioning revenues from sub-national ETSs (Option C.2) .....	28
Table 9:	Comparison of assessment results for all options.....	30

## List of Abbreviations

<b>AAU</b>	Assigned Amount Units
<b>ACR</b>	American Carbon Registry
<b>CAR</b>	Climate Action Reserve
<b>CCB</b>	Climate, Community and Biodiversity certification
<b>CDM</b>	Clean Development Mechanism
<b>CER</b>	Certified Emission Reductions from CDM projects
<b>CORSIA</b>	Carbon Offsetting and Reduction Scheme (ICOA)
<b>EKF</b>	Special Climate and Energy Fund
<b>ETS</b>	Emission Trading Scheme
<b>EUC</b>	Emissions Unit Criteria
<b>EUR</b>	Euros
<b>GS</b>	Gold Standard
<b>ICAO</b>	International Civil Aviation Organisation
<b>IMO</b>	International Maritime Organisation
<b>ITMOs</b>	internationally transferred mitigation outcomes
<b>JCM</b>	Joint Crediting Mechanism
<b>LDCs</b>	Least Developed Countries
<b>LLDCs</b>	Land Locked Developing Countries
<b>NDC</b>	Nationally Determined Contributions
<b>ODA</b>	Official Development Assistance
<b>PMR</b>	World Bank's Partnership for Market Readiness
<b>RGGI</b>	Regional Green House Gas Initiative
<b>SIDS</b>	Small Island Developing States
<b>SOP</b>	Share of Proceeds
<b>USD</b>	US Dollars <sup>1</sup>
<b>VCS</b>	Verified Carbon Standard

<sup>1</sup> The report uses September 2016 exchange rates, unless otherwise stated.

## 1 Introduction

Climate change poses an imminent threat for sustainable development, especially in developing countries. The Paris Agreement establishes a global goal on adaptation to enhance global adaptive capacities and resilience. The Paris Agreement in addition emphasizes prioritising adaptation action, asks for a people centric approach to adaptation action and upsurges countries' responsibility to start adaptation planning and implementation processes. However, there is a recognized **funding gap** - in the order of hundred millions of US dollars (USD) annually - to put this vision into reality, and this gap is projected to grow (UNEP, 2016). One institution that - conditional to further decisions by the UNFCCC - could play an important role in delivering adaptation outcomes under the Paris Agreement is the Adaptation Fund. The Adaptation Fund is an established institution under the Kyoto Protocol that supports developing countries in managing impacts of climate change, with special attention to the needs of the most vulnerable communities. The fund has pioneered innovative financing models such as **direct access** - the oversight of project implementation by national institutions - in the climate finance world. It has a streamlined project cycle with specific provisions to allow participation of small institutions and an increasing track-record of result-based implementation of adaptation projects.

Clarification of the future of the Adaptation Fund was the centrepiece of political attention at COP 22 in Marrakesh. Developing countries especially made clear the importance for including it as a serving fund of the Paris Agreement. In the end, Parties decided that the Adaptation Fund should serve the Paris Agreement (UNFCCC, 2016a)<sup>2</sup>, contingent on further decisions on subjects of governance and institutional arrangements, safeguards and operating modalities at COP 24 in 2018 (UNFCCC, 2016b)<sup>3</sup>. The final decision on the "how to serve" is therefore part of deciding the 'rule-book' of the Paris Agreement - a set of decisions in 2018 that are to detail the operationalization of the Paris Agreement.

Meanwhile, demand for support from the Adaptation Fund has been tremendous - at its last meeting in October 2016, Adaptation Fund Board received more than 20 project submissions (Adaptation Fund, 2016). Near- and medium-term **funding needs of the Adaptation Fund** can be projected in the order of **USD 130 million**<sup>4</sup> annually, only for the Adaptation Fund's national programmes.

This potential is contrasted by the continuous resource crunch faced by the institution. Share of proceeds from the Kyoto Protocol market mechanisms, which were the Fund's intended main funding source, have lost relevance now due to crashed CO<sub>2</sub> certification prices. This revenue loss could only partially be compensated through donor contributions. While this price decline is unfortunate, it does not change the need for an increase in adaptation finance and adequate mechanisms for its provision. Such finance can be partly delivered through donor contributions (the Adaptation Fund itself met its mobilization target of annually USD 80 million in 2016 and has a similar target for 2017). However,

---

<sup>2</sup> Decision 1/CMA.1, Para 11

<sup>3</sup> Decision 1/CP.22, Para 15

<sup>4</sup> Assuming the Adaptation Fund will accredit eight implementing entities/year, and these entities will submit project proposals. This estimate does not include the fund's regional programmes; or any decisions that alter the amount that each country can access from the Adaptation Fund. Such decisions have the potential to increase the demand by as much as 50%.



such contributions are limited and come with vagaries on their own. Therefore, innovative finance sources need to be established to meet countries adaptation needs.

The entry into force of the Paris Agreement as well as its accompanying boost to national and regional climate policy presents a major opportunity to scope new avenues to establish innovative sources for adaptation finance. The Adaptation Fund is uniquely positioned to do so: Firstly, it (unlike other international funding institutions such as the Green Climate Fund, or the Global Environmental Facility) has the mandate and structure (through its Resource Mobilization Task Force) to pursue efforts to establish innovative finance mechanisms and drive them politically. Secondly, the Adaptation Fund already has the institutional experience to administer innovative sources of finance on which it could build in exploring new options. And thirdly, the Adaptation Fund also needs visibility and proof of added value to the climate finance architecture in the post Paris era. Work on innovative sources can deliver these. The need to establish innovative sources was also politically acknowledged in Marrakesh negotiations, which encouraged the Adaptation Fund Board "in implementing its resource mobilization strategy, to further consider all potential sources of funding" (UNFCCC, 2016c)<sup>5</sup>

This study aims to support the Adaptation Fund in charting a way forward to explore which adaptation finance mechanisms exist and can be pursued, by providing an analysis of different innovative finance options, their potentials and pathways of implementation. While the major addressee of this report is the Adaptation Fund and its Board members, it includes many insights relevant for wider climate policy circles in enhancing adaptation finance at the international and national level. The paper is structured as follows. *Section 2* discusses the methodological approach taken to arrive at the options and the assessment framework used to assess the adaptation finance potential of the options. *Section 3* presents the assessment results for each of the seven options discussed in this paper. This is followed by a discussion of results in *Section 4*; and a proposed way forward for the Adaptation Fund and other relevant decision makers in *Section 5*.

---

<sup>5</sup> Decision 2/CMP12, Para 10

## 2 Methodological approach

Supporting the adaptation agenda set out in the Paris Agreement requires a re-imagination of innovative avenues within the spheres of public climate finance<sup>6</sup> and beyond it. Previous publications have associated 'innovative climate finance' with being 'independent of the general budgets', 'beyond conventional ODA funding', 'not dependent on donor's discretion' and 'new' (Brown et al. 2009; Harmeling et al. 2009; Müller 2008). To this effect, the 2% adaptation levy generated through the Clean Development Mechanism (CDM) has been widely considered as an innovative tool for adaptation finance. We build on this definition to **include; a. adaptation finance options from new carbon pricing instruments developing at an international and domestic level; b. potential sources of adaptation finance from non-state actors such as the private sector, cities or regions; as sources of innovative adaptation finance.**

Innovative climate finance for adaptation purposes can be generated from public or private sources. When generated through public sources, finance should be outside public budgets and regular donor contributions to be considered innovative. Although generation from other public policies is reasonably possible, this paper focusses on innovative finance sources that can be generated from climate policy instruments which set a price on carbon (e.g. different forms of crediting, emission trading schemes (ETS), carbon taxes). Thus, **this paper follows the history and experiences of the CDM levy and focusses only on options deriving from different carbon pricing instruments and approaches.**

Innovative climate finance options evaluated in this study relate to:

- A. **International instruments:** carbon pricing instruments that are developed under international agreements and involve interaction between two or more Parties.
- B. **National instruments:** those public carbon pricing instruments where decision-making rests within a Party to an international agreement such as UNFCCC. These do not involve interaction with another Party.
- C. **Instruments by non-state actors:** carbon pricing instruments that are developed by and where decision-making rests within the private sector, cities or regions.

### 2.1 Options for innovative adaptation finance

Based on the type of instrument they relate to (international, national, non-state), this paper identifies and evaluates the options listed in Table 1 for their potential as innovative sources of climate finance for adaptation.

The international instruments we discuss are international crediting, international unit transfers and contributions from the International Civil Aviation Organisation (ICAO). For all three, a share of proceeds (SOP) for adaptation is discussed. A SOP is a levy charged on the emission reduction units generated or used in a carbon pricing instrument. In the CDM, 2% of the emission reduction credits (CERs) generated by a mitigation activity were directed to the Adaptation Fund. A similar SOP was agreed for the international crediting mechanism established under Article 6.4 of the Paris Agreement

---

<sup>6</sup> 'Public climate finance' is typically arranged from domestic public budgets and collected from money raised through taxes and carbon pricing mechanisms (Buchner et al. 2011).

(**Option A.1**). Further, the Paris Agreement keeps doors open for other ways of cooperation among countries to meet their nationally determined contributions (NDCs). Although these ‘cooperative approaches’ remain undefined in Article 6, the agreement text does point towards transfer of mitigation units – internationally transferred mitigation outcomes (ITMOs) – between countries. Such Article 6.2 transfers can be in the form of direct transfer similar to the AAU transfers in the Kyoto Protocol or through bilateral or linked instruments (e.g. Japan’s Joint Crediting Mechanism and linked ETSs). The option we discuss is a SOP type levy applied the first time a unit is transferred between countries (**Option A.2**). A third option from international instruments comes from the recently agreed carbon offsetting scheme for the international aviation sector under ICAO. The Carbon Offsetting and Reduction Scheme (CORSIA) is designed to be a pure offsetting instrument in which obligated aircraft operators would buy eligible emission reduction units to offset their emissions. Our assessment discusses a SOP type contribution applied at the point of use of the offset credits in CORSIA, either as a price premium on the units bought or as a deduction of a percentage of the offset units bought, which would be directed for adaptation action (**Option A.3**).

Table 1: Options for innovative adaptation finance

International instruments	Option A.1	Share of proceeds on international crediting
	Option A.2	Share of proceeds from international unit transfers
	Option A.3	Contributions from ICAO’s CORSIA scheme
National instruments	Option B.1	Earmarking auctioning revenues from national ETSs
	Option B.2	Earmarking revenues from national carbon taxes
Instruments by non-state actors	Option C.1	Share of proceeds from voluntary carbon market
	Option C.2	Earmarking auctioning revenues from sub-national ETSs

Like ICAO, the International Maritime Organisation (IMO) has also been discussing market based measures since 2006. However, IMO discussions have not advanced much and currently focus on the development of a data collection system for recording CO<sub>2</sub> emissions from international shipping. While a carbon pricing instrument from IMO cannot be ruled out for the future, we consider it farther in the horizon and hence do not discuss it explicitly in this paper. However, we assume that the assessment results of such an approach would correspond to similar developments under ICAO.

At the level of national carbon pricing instruments, we discuss innovative adaptation finance options from national emission trading schemes and carbon taxes. Uptake of these instruments has seen a 200% increase since 2012 and currently over 40 countries are implementing or are in an advanced stage to design an ETS or carbon tax (World Bank 2015a, p.10). Revenues are generated in an ETS by distributing emission allowances in auctions; and in a carbon tax through the tax. We assess the potential of earmarking a portion of this auctioning and taxation revenue (**Option B1 and B.2**).

In addition to these instruments, we discuss two options from instruments designed by non-state actors. The past years have seen significant mobilisation of these actors. Commentators have agreed on their significance as players in global climate governance owing to their agile decision-making, replication potential of innovative actions and, most importantly, as sources of additional finance to support public climate finance. We discuss two initiatives as a matter of example, viz. a. voluntary carbon markets, and b. ETSs in cities and regions. The voluntary markets operate independent of those created to comply with mandatory national or international carbon pricing policies (e.g. the EU ETS) and are used primarily by voluntary buyers such as businesses, organisations and individuals. A SOP type levy on emission reduction credits generated in the voluntary carbon markets can be a source of adaptation finance (**Option C.1**). Sub-national actors, particularly city and regional governments, have

also been increasingly developing carbon pricing instruments, particularly ETSs. We discuss the potential of adaptation finance generated by earmarking of auctioning revenue in sub-national ETSs (**Option C.2**).

## 2.2 Assessment framework

The potential of the above discussed options as possible sources of innovative adaptation finance is assessed based on three criteria, further divided into a set of sub-criteria (cf. Figure 1). The chosen criteria and sub-criteria reflect considerations regularly stated in multilateral discussions on climate finance and build on innovative finance experience under the Kyoto Protocol. The potential of an option is a function of how reliable it is for generating adaptation finance (i.e. its **financial performance**). The financial performance works in tandem with how introduction of an option influences mitigation under the parent instrument and its performance vis-à-vis principles of fairness (i.e. its **impact**). Lastly, as options presented are yet to be realised, we discuss the probability of their realisation from an operational and political standpoint (i.e. **feasibility**).

For each option, the assessment provides a qualitative rating to the sub-criteria. Options are then compared with each other based on this qualitative yardstick.

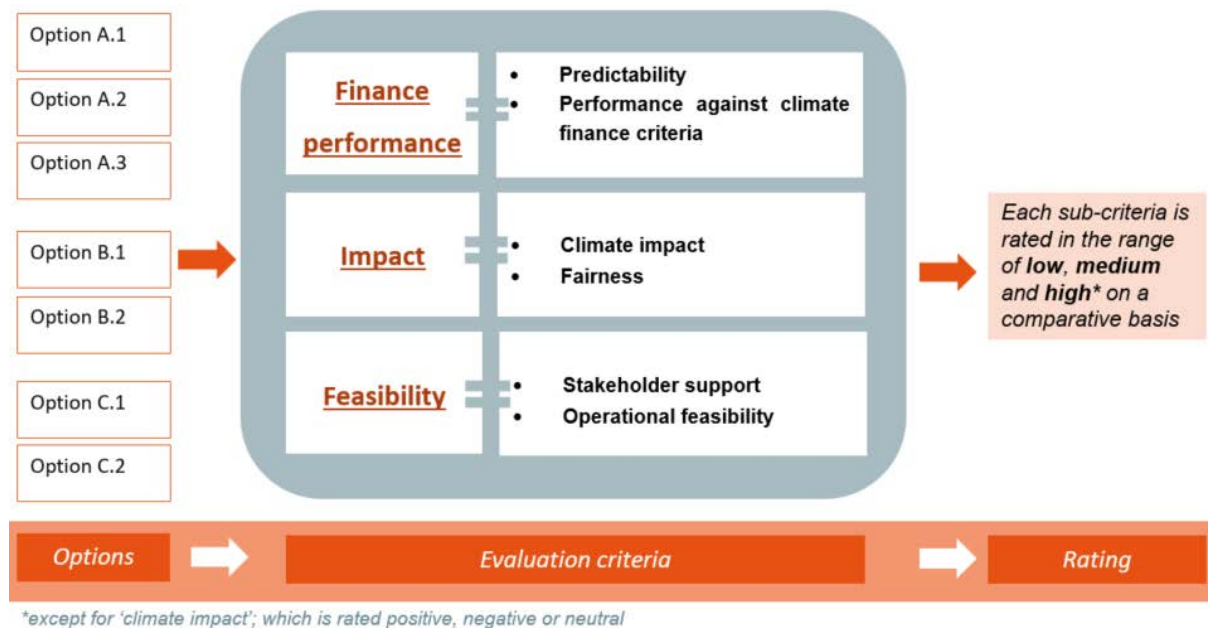


Figure 1: Methodological framework for assessment of innovative adaptation finance options

The sub-criteria that underpin the assessment along the three main criteria are defined as follows:

### Criteria 1: Finance performance

**Predictability:** Funding streams should be sufficiently predictable to allow for a manageable adaptation project cycle. For the direct access pathway under the Adaptation Fund, an average of three years - from institution building to finalizing the project proposal - has been observed. Hence, to raise the confidence of countries to endeavour such project initiation, predictability of revenue streams must be achieved. In addition, a given finance instrument needs to provide the certainty to realize the predicted financial flows.

All options discussed in this study provide some predictability of finance by virtue of the assumptions taken on their design (i.e. an obligatory levy or revenue earmarking) and the instruments they come from (i.e. all carbon pricing instruments). Thus, the options are compared for the following market aspects of revenue predictability:

- The process of generation and transfer of adaptation finance by the option is fairly automatic (i.e. as was in CDM).
- The option can generate a steady stream of revenues (i.e. revenues are generated at regular intervals over a longer time-period).
- There is some degree of certainty in the predicted revenues. For example, an instrument with obligatory participation would have a higher certainty of generating some adaptation finance at all times as opposed to a one with voluntary participation.
- The underlying carbon price for the revenues for adaptation is entirely volatile, volatile in a defined bandwidth or fixed.

**Performance against climate finance criteria:** Finance performance is linked to how innovative financing options perform against commonly defined climate finance criteria. Performance is assessed on the following aspects:

- Adaptation revenues from the option come from a new source.
- Adaptation revenues are additional to internationally agreed climate finance obligations and additional to existing pledged amounts towards Adaptation Fund.
- The option avoids competition for or overlaps with Official Development Assistance (ODA).

### **Criteria 2: Impact**

**Climate impact:** In order to avoid distortion between adaptation and mitigation initiatives, the innovative financing option should at least be neutral in terms of competition to mitigation. Climate impact of an innovative financing option is assessed as positive if the option encourages mitigation in the underlying market or pricing instrument, negative if the option discourages mitigation, or neutral if the option has no direct negative or positive impact on the mitigation outcome in the underlying instrument.

**Fairness:** Another criterion is the allocation of the financial impact vis-à-vis climate fairness considerations. Fairness is assessed on the following aspects:

- The option should not put an unfair burden on the provider of **innovative adaptation finance** as compared to peers with equal capability and circumstances to contribute.
- The option should not come as a burden to people and countries that stand to benefit from the Adaptation Fund.
- The option should be in line with the polluter pays principle.

### **Criteria 3: Feasibility**

**Stakeholder support:** Stakeholder support is assessed by considering how decision makers (e.g. national/city/regional governments, multilateral bodies such as UNFCCC and ICAO, businesses) and other agents (e.g. academia and civil society) currently view the option. Stakeholder support is key for the probability that a given policy/option will receive sufficient political push and support to be approved and implemented. Stakeholder support is, for example, rated “low” if at least one essential stakeholder or decision maker showed resistance against the option. The rating does not assess the likelihood for certain stakeholders to give up their resistance.

**Operational feasibility:** Operational feasibility assesses if implementation of an option is possible from a technical standpoint and is assessed in terms of enabling factors such as prior experience or precedence of similar use and presence of institutional architecture for development of the option.

In addition to the assessment, a first-order estimate of the **revenue generation potential** and **timeframe** for implementation of options is discussed. Revenue generation potential is provided for all options based on current estimates and outlook of the underlying instrument. For options where the instrument is already under operation (e.g. ETS and carbon taxes), information on current finance and outlook is collated from literature to derive the estimates. Where the underlying instrument is still at the design stage (e.g. Article 6.4 mechanism), reasonable assumptions are made keeping in mind the experience of similar instruments and observations in literature on participation in the instrument. As the underlying assumptions differ for all options, the final estimates provide an indication towards the magnitude of finance one can expect from that option and are not necessarily comparable to each other. For avoidance of misrepresentation, these are defined separately from the criteria 'finance performance'.

Further, knowing the **timeframe** for implementation of each option is relevant for discussing its potential to serve as an option that can meet the urgency of finance needs under the Adaptation Fund. To this effect, whether an option can be implemented immediately i.e. pre-2020 or after 2020 is identified.

### 3 Assessment of adaptation finance potential of selected options

The qualitative yardstick provided in Chapter 2.2 is applied to the seven options in the following. For each option, we first discuss the context of the option, its underlying instrument, and state upfront the assumptions taken on the option's design. Based on these assumptions, the revenue generation potential of the instrument and the timeframe in which it can be realised are provided. For each option, analysis is presented, broken down into sub-criteria, followed by a summary table outlining the rating provided to each sub-criterion and the rationale behind the rating.

#### 3.1 Share of proceeds on international crediting (Option A.1)

**The potential for innovative adaptation finance from international crediting instruments in the form of a SOP is evaluated as Option A.1.** Since such an option is already established in Article 6.4 of the Paris Agreement, we consider international crediting that is built on Article 6.4 for our assessment.

Based on voluntary cooperation between Parties, Article 6.4 establishes an international crediting mechanism which ‘...contributes to the mitigation of greenhouse gas emissions and support sustainable development...’ (UNFCCC, 2015). Under this mechanism, emission reductions generated in one Party can be used by another towards meeting its nationally determined contributions (NDCs). In a departure from flexibility instruments under the Kyoto Protocol, any country can be a credit supplier or buyer in a mechanism based on Article 6.4. Further, the mechanism must go beyond pure offsetting, leading to overall mitigation in global emissions (Article 6.4d).

Parties already agreed to establish a SOP for the Article 6.4 mechanism to assist vulnerable developing countries in meeting the costs of adaptation (Article 6.6). However, elaboration of the design aspects of the SOP would happen in future. These include important aspects such as the nature of proceeds (e.g. on % of generated credits or on % of revenue from credit sale), the point of application (on generated credits or on credits bought), and the percentage contribution of a proceed.

For our assessment, we assume that the SOP is implemented in a similar way as it was done for the CDM although differences might materialise in the future design. This includes the assumption that the SOP will be taken from the generated units and not generated revenues; will be in the same relative range as in the CDM SOP, i.e. 2% of the generated credits, and will exclude most vulnerable countries, as undertaken in the CDM.

##### **Revenue generation potential and timeframe**

The **revenue generation potential** by monetisation of SOPs from an international crediting instrument depends on the use of the underlying instrument and on the market price of the generated credits, which in turn depends on their future supply and demand. While it is too early to reasonably predict this, the situation appears less promising if one goes by the reference of markets in INDCs. Some of the largest emitters either clearly negate (EU, USA) or do not specify (China) the use of international credits towards achieving their NDCs pointing to a reduced demand scenario. A large part of the 86 Parties that mentioned the use of markets in their INDCs claimed to be ‘sellers’ of credits (Oberghassel and Gornik, 2015). However, sellers may face a trade-off between exhausting comfortably realisable

---

Potential adaptation finance from international crediting based on Article 6.4 lies between **0 to greater than USD 20 million annually.**

---

mitigation opportunities towards international crediting as opposed to using it towards their own NDCs, leading to uncertainties also in the supply scenario.

Keeping these uncertainties in mind, the revenue generation potential from an international crediting mechanism based on Article 6.4 can be estimated as a range, with a lower limit being a low/no demand scenario where the realised number and price of units for SOPs would be negligible. The upper limit is an optimistic scenario in which the use of this instrument can be assumed to be greater than the CDM due to its expected sectoral nature. CDM SOPs contributed USD 197.01 million to the Adaptation Fund (World Bank, 2016a). Assuming a 10-year period, this translates to an average annual contribution of USD 20 million<sup>7</sup>. Based on this range, the potential revenue estimates from an Article 6.4 SOP can be expected to be between 0 to greater than USD 20 million.

However, Article 6.4 will not be operationalised before 2020 and no other international crediting instrument that can replace the Article 6.4 mechanism is expected to develop in this timeframe. Hence, it must be noted that innovative adaptation finance from international crediting instruments based on Article 6.4 cannot serve Adaptation Fund's immediate financing needs.

Based on the assumptions made in the preceding paragraphs, we assessed this option against the criteria which form the assessment framework as described in the previous section. Table 2 summarises the assessment results for each sub-criterion and presents, besides the qualitative rating, the rationale for the rating as well.

The general feasibility for innovative adaptation finance from international crediting instruments in the form of a share of proceeds is high according to our approach and the assumptions taken for this option. Both sub criteria **stakeholder support** and **operational feasibility** are rated high since this is the only option where an adaptation contribution has already been agreed multilaterally and ample historical experience exists to guide its operationalisation through the CDM. In addition, the capacity developed for receiving, holding and transferring SOPs under the CDM registry can also be used for development of a similar capacity for Article 6.4 mechanism. However, general feasibility might be rated differently if the actual modalities and procedures agreed for an instrument based on Article 6.4 deviate substantially from our assumption.

The share of proceeds for adaptation finance from this option is expected to be neutral in terms of its direct **climate impact**. A more detailed assessment of potential indirect climate effects leads to nuances that point into either one or the other direction. In general, the implementation of a procedure for a SOP for adaptation finance increases the costs for the use of the crediting instrument. This increase is considered to be small but might not be negligible in all situations. In a scenario of increased costs potential buyers might find it less attractive to engage in a crediting instrument and reduce more emissions domestically; this leading to a slight long-term advantage for the climate. On the other hand, a crediting instrument based on Article 6.4 will not be designed as pure offsetting instrument but should lead as well to actual reduction in global emissions. On the other hand, a crediting instrument based on Article 6.4 will not be a pure offsetting one but should lead to overall reduction in global emissions.

---

<sup>7</sup> These values are the total actual revenues generated from CDM SOP monetisation by the World Bank Group which serves as the Adaptation Fund Trustee till November 2016 (World Bank, 2016a); Number of CER's monetised till date: 34,283,864 (UNFCCC, 2016d); Timeframe is not provided in either sources. Hence, for arriving at the average annual volume, a 10-year period is assumed.



Table 2: Summary of assessment results for innovative adaptation finance from share of proceeds on international crediting (Option A.1)

Option A.1: Share of proceeds on international crediting		
<b>Revenue generation potential</b>	<b>Between 0 and greater than USD 20 million (average) annually</b> Range estimate based on 'no demand' and 'optimistic demand and supply' scenarios	
<b>Timeframe</b>	<b>Post 2020</b> Implementation timeframe based on start year of Article 6.4 mechanism	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	Medium - Low	<ul style="list-style-type: none"> <li>Can ensure <i>fairly automatic</i> and <i>steady stream</i>.</li> <li>Revenues are variable (unit price depends on markets).</li> <li>Participation is <i>uncertain</i> since dependent on government decision due to voluntary nature of instrument.</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	High	<ul style="list-style-type: none"> <li>New and beyond agreed international obligations.</li> <li>Additional to ODA as independent of national decisions.</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral	<ul style="list-style-type: none"> <li>No direct impact on mitigation.</li> <li>Small indirect effects occur due to slight increase of costs for use of international crediting but may cancel each other out.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High	<ul style="list-style-type: none"> <li>No unfair burden on participants as levy applies equally to everyone and voluntary nature of cooperation between Parties.</li> <li>The option as well as the underlying instrument provides an avenue for polluters to pay.</li> <li>No burden to people and countries that stand to benefit from the Adaptation Fund based on the assumption that most vulnerable Parties are excluded from the SOP following CDM's precedence.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	High	<ul style="list-style-type: none"> <li>The SOP is agreed in the Paris Agreement although modalities are still unclear.</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>Prior experience exists if implemented similar to the CDM.</li> <li>Institutional architecture (at least role model) in place.</li> </ul>

This effect will as well be reduced when the use of the instrument is less attractive compared to a situation without an SOP for adaptation. Based on our assumption for a 2% SOP we conclude that these effects are rather minor and have the potential to cancel each other out. However, this discussion already shows that such effects are possible and that a reassessment might be required if the actual implementation deviates from our assumptions.

Adaptation finance from international crediting instruments in the form of a share of proceeds also has a high **fairness** based on the yardsticks used in our assessment. The levy applies equally to everyone who voluntarily participates in the mechanism, hence does not put an unfair burden on any participant. Additionally, being a mechanism for polluters to purchase reductions, it also broadly aligns with the polluter pays principle. We assume that there will be political consensus among Parties to exclude vulnerable developing countries from the SOP, as was done for the CDM. If not done, the option may unfairly burden vulnerable countries that stand to benefit from the SOP in the first place.

The overall finance performance of this option shows a mixed picture. The **performance against climate finance criteria** is rated high since the option would be a new source of money, additional to existing climate finance and ODA obligations of countries as it lies beyond the scope of national interferences once established, which makes it desirable to many developing countries. Despite rating favourably on many sub-criteria, the uncertainty around the **predictability** of generated revenues lowers its overall potential as a revenue source. Based on our assessment yardstick, if adequate and balanced demand and supply of credits exists, Option A.1 is expected to generate a steady stream of revenues which are fairly automatic (like in CDM). However, predictability of revenues could be lower as actual revenues depend on the extent of participation in the instrument and the future supply and demand of credits; which remains unclear as already discussed for the estimation of the revenue generation potential of this option.

### 3.2 Share of proceeds from international unit transfers (Option A.2)

**In this option, we evaluate the potential for innovative adaptation finance from a SOP on international transfer of units using Article 6.2 of the Paris Agreement.** As outlined for the previous option, Parties under the Paris Agreement recognized that some Parties can choose to pursue voluntary cooperation with each other in achieving their NDCs (Article 6.1). Parties engaging in cooperative approaches are enabled to exchange ITMOs based on provisions in Article 6.2. Opposite to the crediting instrument established by Article 6.4, the agreement text does not further outline the nature of these cooperative approach/es, keeping it open for international transfers similar to AAU transfers in the Kyoto Protocol as well as through instruments such as transactions in internationally linked ETSS and bilateral crediting instruments such as Japan's Joint Crediting Mechanism. Article 6.2 based unit transfers would be on a bilateral basis, guided by multilaterally agreed rules on accounting and transparency. Design aspects such as the rules and frequency of such transactions (e.g. yearly or linked to the update of NDCs<sup>8</sup>) remain undefined in the Paris text and would be agreed in future.

---

<sup>8</sup> Parties will be required to update their actions every five years under the Paris Agreement. Each update must make the NDC more stringent.

Initial drafts of the Article 6 text included a share of proceeds on all international transfers (Marcu, 2016). However, this was dropped from the final text which limited the SOP for adaptation finance to the Article 6.4 mechanism. Our assessment still considers the potential of a SOP under Article 6.2 as we expect transfers under Article 6.2 to be a more tangible source of innovative adaptation finance than Article 6.4 mechanism for the immediate future. Going by the experiences of slow progress achieved on agreeing on the design elements of the New Market Mechanism between COP 17 and COP 21, operationalisation and uptake of a functional Article 6.4 mechanism would take time. More so, as discussed under Option A.1, there are uncertainties around the uptake of this mechanism.

For our assessment, we assume Option A.2 to be implemented in the same way as a SOP on JI and AAU transfers agreed in the Doha amendment to the Kyoto Protocol<sup>9</sup>. The SOP will be taken from the first transfer of ITMOs in the form of units and not revenues and it will be in the same relative range as in the CDM SOP (2%). For this direct transfer of ITMOs between Parties, robust domestic accounting structures would be needed to undertake corresponding adjustments to NDCs. Thus, we posit that the potential use of Article 6.2 would be limited to countries with robust domestic accounting and not accessible to the same country group as Article 6.4.

### **Revenue generation potential and timeframe**

As with Option A.1, the revenue generation potential of Article 6.2 transfers is linked to interest of countries to participate in such transfers in addition to their domestic mitigation efforts towards meeting their NDCs. With all Parties taking up mitigation commitments, the supply picture of ITMOs would be quite constrained, or taper off soon after developing countries have exhausted the easy mitigation options. Optimistically speaking, if countries raise their mitigation ambition and adequate demand exists for ITMOs, then the quantum of such transfers and, consequently, the adaptation finance generated from an SOP on transfer of ITMOs can be expected to be higher than that under Article 6.4 mechanism.

---

In an optimistic scenario, adaptation finance from an SOP on international transfers can be expected to be higher than that generated under international crediting instruments.

---

With all decisions on the guidance for Article 6.2 transfers as well as on accounting and transparency requirements still under discussion, operationalisation of the transfer of ITMOs is possible only after 2020. Thus, Option A.2 is not suitable for fulfilling the immediate demand under the Adaptation Fund.

Based on the assumptions made in the preceding paragraphs and applying the assessment criteria, we assess the potential of Option A.2 as a suitable source of adaptation finance. Table 3 summarises the results of our assessment.

---

<sup>9</sup> Decision1/CMP08/para 21 (UNFCCC, 2012)

Table 3: Summary of assessment results for innovative adaptation finance from share of proceeds on international unit transfers (Option A.2)

Option A.2: Share of proceeds from international unit transfers		
<b>Revenue generation potential</b>	Enormous theoretical revenue generation potential but trade volumes that would be materialised are uncertain.	
<b>Timeframe</b>	<b>Post 2020</b> Implementation timeframe reflects the period when international transfers are possible under the Paris Agreement.	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	Medium - Low	<ul style="list-style-type: none"> <li>Can ensure <i>fairly automatic</i> and <i>steady stream</i> (once option is implemented).</li> <li><i>Variable</i> revenues (unit price depends on trade agreements).</li> <li>Participation is <i>uncertain</i> (government decision due to voluntary nature of instrument).</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	High	<ul style="list-style-type: none"> <li>New and beyond agreed international obligations</li> <li>Additional to ODA as independent of national decisions</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral	<ul style="list-style-type: none"> <li>No direct impact on mitigation.</li> <li>Potential indirect impacts depend on the underlying instrument/agreement that results in the transfer of units and may level out each other.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High	<ul style="list-style-type: none"> <li>Robust accounting requirements for the use of Article 6.2 narrows participation and benefits to Parties with higher capabilities.</li> <li>Polluter pays principle applies since mainly Parties with insufficient domestic reductions act as buyers of units.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	Low	<ul style="list-style-type: none"> <li>Parties couldn't agree to include a SOP for transfers under Article 6.2 in the Paris Agreement.</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>Parties had agreed for an SOP on JI and AAU transfers in CMP 8 in Doha.</li> <li>Institutional architecture could be built/defined without any major burden due to existing experience with unit exchange platforms and SOP transfers.</li> </ul>

Adaptation Finance potential of a SOP from international transfers under Article 6.2 parallels Option A.1 for most criterion except for the **stakeholder support** it has received. Lack of agreement on this option in the Paris text leaves out instruments such as Japan's Joint Crediting Mechanism (JCM), assuming transfers would be operationalised via Article 6.2, which can implement such a levy on a trial basis fairly soon and build some experience for larger scale implementation in future.

While political obstacles exist, developing such an option should not come as a major technical burden. A similar SOP was already agreed under the Doha amendment of the Kyoto Protocol<sup>10</sup>. Institutional capacity and technical know-how for unit exchange developed under the Kyoto Protocol in the form of the international transaction log can also be valuable to develop platforms for unit transfers and SOP from international transfers under the Paris Agreement. Therefore, the **operational feasibility** of such an SOP is rated high.

International transfers under Article 6.2 will be guided by multilaterally defined accounting rules. To this effect, Parties would need to have a robust domestic accounting infrastructure in place. Most importantly, it can be assumed that countries would have to set up (electronic) national registries. These would account for the issuance, transfer and acquisition of ITMOs and support adjusting the NDC due to transfers. Moreover, country registries would be synchronised with those of other countries and with multilaterally agreed accounting framework under the UNFCCC. We argue that presence of this institutional framework may be a limiting factor for widespread participation and benefit from Article 6.2 transfers and, consequently, would limit its utilization to only those Parties which have or can develop such an infrastructure fairly soon. Thus, we expect that the SOP would not come as a burden to developing countries that are most vulnerable and require most urgent adaptation support from funds like the Adaptation Fund. Further, the transfers are an avenue through which Parties or actors in Parties with insufficient own mitigation pay for reductions generated elsewhere. Thus, such international transfer of units would be compliant with the polluter pays principle. Therefore, we rate adaptation finance from an SOP on international unit transfers high on **fairness** considerations.

Moreover, like option A.1, no direct **climate impact** is expected from a SOP on international transfers. Small secondary negative and positive mitigation impacts could exist but these are small and might mostly cancel each other out. For instance, in case of direct trade of ITMOs, potential impact of a SOP on increased price of ITMOs may discourage participants from using them and instead increase their domestic mitigation efforts. In case ITMOs are transferred as a result of bilateral crediting approaches or due to domestic ETSs which are internationally linked through Article 6.2, participation is discouraged in a similar way. Slight increases in transaction costs might lead to higher incentives to reduce emission internally in case of ETSs, while increase in transaction costs might also result in reduced international cooperation. Such pros and cons exist for all forms of international unit transfers but existence of actual effects is uncertain and effects are expected to be minimal due to the very small increase in costs. The overall climate impact of the SOP on mitigation is expected to be neutral.

Conclusions on the overall finance performance of this option is not straightforward. Option A.2 is rated high on its **performance against climate finance criteria** as it will be a new source of money which is beyond the current climate finance obligations of countries. Moreover, we assume the SOP design would be such that it would be applied automatically at the point of transaction of units and would not be channelled through national treasuries. Therefore, it is expected to be independent of national decisions. Further, this would lower possibility of compromising existing climate finance and ODA obligations. A multilaterally negotiated option also increases the **predictability** to provide a steady and automatic stream of revenue. However, as with Option A.1, predictability of revenues is lowered by the market based nature of the instrument and the uncertainty around interest of Parties to use it.

---

<sup>10</sup> The Doha Amendment of the Kyoto Protocol had not come into force at the time of writing this paper.

### 3.3 Contributions from ICAO's CORSIA scheme (Option A.3)

In October 2016, ICAO members established an offsetting instrument – CORSIA, with a stated aim to ‘...address any annual increase in total CO<sub>2</sub> emissions from international civil aviation above the 2020 levels...’ (ICAO, 2016). CORSIA will be implemented in a phased manner starting 2021. The first two phases require a voluntary participation (pilot phase (2021-2023) and first phase (2024-2026)); while the second phase (2027-2035) would be mandatory for ICAO members, except agreed exemptions.

**Option A.3 in our assessment is defined as a charge/levy equal to 2% of the carbon price on each offset unit used against ICAO obligations or a deduction of 2% of the offset units to be re-directed for adaptation purposes.** Since we assume that double taxation of units is undesirable, the option applies only if a 2% SOP is not yet transferred upon issuance of units, such as in the CDM or in a mechanism established under Article 6.4 of Paris Agreement.

ICAO decision agreed participation exemptions for Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Land Locked Developing Countries (LLDCs). Further, the decision established that the eligibility of offsets that can be used for CORSIA would be defined based on an Emission Unit Criteria (EUC) which will be defined in the coming years. Additionally, ICAO members agreed on the eligibility of offset units generated from CDM and Article 6.4 mechanism, once appropriate technical considerations such as double counting, vintages and timeframe are assessed. Further, for the assessment, we have assumed that the EUCs would consider units from CDM and Paris Agreement mechanisms as well as some voluntary programmes eligible. Further, we assume that CORSIA intends to offset aviation emissions in a cost-effective manner, i.e. it would target cheapest possible units that meet the EUCs. Additionally, the carbon price is set by the market i.e. ICAO does not regulate the price of the offset units.

#### **Revenue generation potential and timeframe**

As per the decisions taken under ICAO, the expected revenue generation potential of a levy from CORSIA can be in a range depending on the instruments that provide emission reduction units for the offsetting demand. The revenue could be 0 if all offsets are bought from CDM or Article 6.4 mechanism as they already have an SOP. Alternatively, all demand may be met by other eligible units assuming they are more cost-effective than the UNFCCC mechanisms or units from UNFCCC mechanisms are just not available after 2020. This would be the upper limit of the revenue generation potential from a levy on ICAO.

---

A 2% levy on units used towards ICAO obligations can generate average annual revenues in a range of 0 to **USD 22 million** between 2021 - 2035.

---

For estimating the upper limit, we use the average carbon price realised in voluntary carbon markets over the years of their operation i.e. USD 4.6 /tCO<sub>2</sub>eq (Hamrick & Goldstein, 2016, p.1) as a proxy for the cost-effective carbon price realised in CORSIA if most demand is met by other eligible units. The demand and supply under CORSIA is expected to be driven purely by market forces. We assume this to reflect the situation in voluntary markets where no multilateral or state decisions impacted demand and supply and repeat buyers stabilised demand. Estimates of ICAO demand are taken from Cames (2015, p.9). As per their assessment, if all flight routes are included, ICAO demand would stand at 3.3 GtCO<sub>2</sub> eq. between 2021-2035. Based on these two assumptions, an additional charge of USD 0.092 is added to the carbon price. Thus, the upper limit of the expected revenue range amounts to USD 303 million between 2021-2035; or an annual (average) revenue of USD 22 million.

However, Option A.3 would only come in operation after 2020. Hence, it does not serve the immediate adaptation finance demand of the adaptation fund.

Based on the assumptions made in the preceding paragraphs and applying the assessment criteria that form our assessment yard-stick, we rate the potential of Option A.3 as a suitable source of adaptation finance. Table 4 summarises the results of our assessment.

Table 4: Summary of assessment results for innovative adaptation finance from contributions from ICAO's CORSIA scheme (Option A.3)

Option		
<b>Revenue generation potential</b>	<b>Between 0 to USD 22 million (average) annually</b> Lower limit of the range corresponds to all demand being met by units from UNFCCC mechanisms and upper limit to all demand being met by units from voluntary markets	
<b>Timeframe</b>	<b>Post 2020</b> Reflects the agreed implementation timeframe for CORSIA	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	Medium	<ul style="list-style-type: none"> <li>Steady revenue stream possible</li> <li>Sector level offsetting demand is quantifiable as soon as participation in different phases is known</li> <li>Variable revenues, as carbon price is set in markets</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	High - Medium	<ul style="list-style-type: none"> <li>Revenues from aircraft operators offsetting demand is a new source.</li> <li>Additional to ODA and existing climate finance obligations if independent of national decisions. Different design of revenue collection might include risks of overlaps.</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral	<ul style="list-style-type: none"> <li>Neutral in terms of competition to mitigation. Offsetting is assumed to be mandatory and unaffected by price.</li> <li>Indirect effects depend on actual design and implementation of the underlying scheme.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High	<ul style="list-style-type: none"> <li>Provides an avenue for polluters to pay for reductions at the level of the sector (but not at the level of operators).</li> <li>Most vulnerable developing countries were exempted from the offsetting obligations.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	Low	<ul style="list-style-type: none"> <li>ICAO rejects any direct revenue generation for other purposes.</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>"Demand side" SOP seems possible although infrastructure does not exist yet.</li> <li>Technical feasibility depends on actual design and implementation of the underlying scheme.</li> </ul>

The assessment shows a fair potential of a SOP on activities under CORSIA to support global adaptation. However, proposal for a mandatory offsetting instrument with a provision to generate revenues for any other purpose received a strong opposition and was excluded since the early days of the scheme (Carbon Market Watch 2013). Hence, **stakeholder support** for the option is minimal. However, if political will existed, the technical and institutional design of the option could well be integrated with the ongoing work for designing a consolidated central registry and registries for member states. Thus, the **operational feasibility** is expected to be high.

The financial performance of an SOP on activities under CORSIA present a mixed picture. As of 12th October 2016, 66 member states with an equivalent share of 86.5% global aviation activity conveyed their intention to participate in the pilot phase of CORSIA. Thus, a reasonable estimate of short term demand from the instrument can already be predicted. However, the overall **predictability** of adaptation finance from CORSIA is rated medium to discount the volatility in carbon prices. Further, while the generated revenues would be a new source of adaptation finance, additionality to ODA and existing climate finance obligations of member states would depend on the institutional arrangements made for revenue collection. As with the previous two options, no risk would exist if the SOP is applied at the point of transactions. However, one can think of a scenario where a government bears the costs towards buying offsets, e.g. if the aircraft operator is government owned. In situations where transactions are channelled directly or indirectly via governments, the risk of competition to climate and development finance cannot be ruled out. Therefore, **performance against climate finance** criteria is rated conservatively as high-medium.

The **impact** of adaptation finance contributions from CORSIA is expected to be similar to Option A.2. In principle, CORSIA contributes to the predominant need for the aviation sector to limit its growing carbon footprint considering the technical limits for own emission reductions. While countries agreed on a less stringent offsetting scheme, one can expect that this set mandate would not be further diluted. Thus, we assume the agreed offsetting requirements to be mandatory and not affected as such by the slight change in offsetting costs from a levy. Some indirect mitigation affects may occur depending on actual design and implementation of the underlying scheme. For instance, while a country can withdraw its participation in the scheme at any point in time, retracting participation from a multilaterally agreed instrument often accompanies a loss of credibility in the global community. Hence, if adequate political will existed to accept an adaptation contribution in the first place, we assume countries won't be discouraged to continue participation due to the minor increase in offsetting costs for supporting global adaptation. Thus, we expect the overall impact of the option to be neutral.

**Fairness** of adaptation finance contributions from CORSIA is rated high. The approach for distribution of offsetting responsibility was agreed by consensus among all ICAO member states; hence is assumed to be a fair distribution. The decision already exempts LDCs, SIDSs and LLDCs from participation in the scheme. Moreover, recent estimations of the cost implications of CORSIA for participating countries suggest that the costs of selling offsets would exceed costs of purchasing offset units for developing countries with obligations under the mechanism (Cames and Van Velzen, 2016). Therefore, the option is not expected to come as a burden on vulnerable less developed countries. At least at the sectoral level, the option complies with polluter pays principle in a sense that aircraft operators need to offset their pollution by buying emission reduction credits. However, offsetting obligations under ICAO are not based on increase in emissions of individual operators but the average increase of the entire sector, which dilutes the scheme's effectiveness. This, however, does not change the rating as it does not impact the fairness of the overall adaptation contribution from the sector as a whole.



### 3.4 Earmarking auctioning revenues from national ETSs (Option B.1)

In 2014, the total value of operational national and subnational ETSs stood at USD 34 billion, covering 8% of global emissions (World Bank, 2015a). With the near global uptake of ETSs as a favoured policy instrument, innovative contributions from national ETSs can be a stable source of adaptation finance.

Innovative adaptation finance from national ETSs can be tapped at the point of allowance allocation or during allowance trading. For the former, a straight forward approach is to earmark a portion of revenues generated from auctioning of emission allowances. Alternatively, one could set aside allowances for monetisation by a third party. Earmarking revenues for priority programs is a common practice in several countries. In 2013, 18 EU member states notified the EU that they already earmark or are planning to earmark their EU ETS auctioning revenues (I4CE et al. 2015, pp. 96-97). A discussion on the nature of earmarking in EU member states is provided in Müller et.al (2016, pp.5-10). The third source can be a levy on allowance trading. For instance, in the case of EU ETS, financial intermediaries, particularly Banks, acted as intermediaries, account managers for small corporations, hedging partners for large corporations, market speculators, and direct buyers and sellers of allowances (Betz and Cludius, 2016).

For the purposes of our assessment, **Option B.1 covers contributions from national ETSs in the form of either setting aside a portion of the auctioning revenues or setting aside allowances for monetisation by a third-party.** Further, it covers only supranational (e.g. EU ETS) and national (e.g. South Korean ETS) ETS systems. ETSs where decision-making rests with sub-national actors i.e. regions (e.g. Californian ETS) and cities (e.g. Tokyo ETS) are addressed separately in Option C.2. Additionally, international linking of national/supra-national ETSs is addressed under Option A.2. We assume a 2% earmarking, like the precedence in CDM. Moreover, we assume that the earmarking will be practiced in the form of either a strict budgetary separation (e.g. as an off-budget fund) or earmarked politically (e.g. by a law or inter-ministerial agreement).

#### ***Revenue generation potential and timeframe***

Among the active national ETSs in 2014, only EU ETS has been using auctioning at a significant scale. In 2014, the total revenues generated through auctioning by national ETSs was over USD 4 billion (World Bank 2015a). A 2% earmarking for adaptation would have generated revenues in the order of USD 80 million. Between 2014 and 2015, the revenues raised by these instruments increased by 60% (World Bank, 2016b). One can expect the quantum of future revenues to be greater than the 2014 potential, as is reflected in the meteoric uptake of the instrument.

---

A 2% earmarking of national ETS auctioning revenues by all implementing countries can generate over **USD 80 million** annual finance

---

Even at conservative carbon prices, two major emission trading schemes of the future, viz. EU ETS and China, can individually surpass the global estimates we present. The EU ETS can raise close to €100 million annually between 2017-2020<sup>11</sup> (~USD 112 million) for adaptation finance. China's proposed national ETS can have a much greater potential. Auctioning of 15.21 million emission permits were reported from various ETS pilots in 2014, which generated 760 million yuan (~USD 122 million<sup>12</sup>) in revenues (Swartz 2016, p.7). Estimates suggest the upcoming national ETS could have annual trades as high as 3-4 billion tCO<sub>2</sub> (Carbon Pulse, 2016). Assuming 50% auctioning, a 2% earmarking for global adaptation in the Chinese ETS can generate between USD 107 - 143 million annually<sup>13</sup>.

In principle, Option B.1 can serve the immediate demand of the Adaptation Fund. Being nationally driven, the option would be implemented by ETS implementing countries that use auctioning for allowance allocation. Experience from currently functional ETSs suggests that national ETSs gradually adopt auctioning. The EU ETS introduced auctioning as the default allocation approach from Phase III onwards after a trial between 2008-2012. The Swiss ETS also started auctioning for non-leakage exposed sectors from 2013 onwards. Many recently developed ETSs follow this trend and plan to gradually increase the share of auctioning in allowance allocation in the post 2020 timeframe. For instance, South Korea plans to introduce 3% auctioning in a test phase between 2018-2020 and increase the share to over 10% in phase III (2021-2025).

Based on the assumptions made in the preceding paragraphs and applying the assessment criteria that form our assessment yard-stick, we rate the potential of Option A.3 as a suitable source of adaptation finance. Table 5 summarises the results of our assessment.

Option B.1's potential as a financing instrument for the Adaptation Fund is dependent on the decisions taken at the level of Parties. Certain instrument design features such as overall emissions cap, share of auctioning, mandatory participation and pre-defined frequency of auctions would ensure a predictable stream of revenues which can be automatically transferred to the Fund. However, the actual revenues depend on the realised carbon price. The EU ETS experience gives an appropriate example of such price variability. The realised prices have been lower than expected in the first three years of Phase III and have created planning constraints for many member states. For instance, in 2013, Germany had to revise the expenditure planning of its Special Climate and Energy Fund (EKF) – the sole beneficiary of ETS auctioning revenue, because of low realised revenues (Esch et al., 2013). In 2014 again, planned expenditure items had to be shifted to individual budgets of ministries (Kowalzig, 2013). Supranational schemes such as the EU ETS need a specific mention here as predictability would further depend on the bindingness of the EU level decisions on Member States. A binding decision at the EU level would make the flows most predictable, although non-obligatory decision of the likes of the EU Directive 2009/29/EC (EU Parliament, 2009) might still encourage willing Member States in defining the use of revenues. Thus, the overall **predictability** of option B.1 is rated medium.

---

<sup>11</sup> We use the current allowance price of € 5.76/EUA from (icap 2016, p.2) and forecast of auctioned allowances between 2017 and 2020 (3.469 billion EUAs) from Table 2, Chapter 5 in I4CE et al. (2015, p.94). This would generate €19.981 billion in revenues between 2017-2020.

<sup>12</sup> Based on Dec'14 exchange rates.

<sup>13</sup> The assumed carbon price is USD 3.57/ tCO<sub>2</sub>, i.e. the average carbon price in China's seven provincial ETSs in 2015. These are calculated from province specific carbon prices provided in World Bank (2015a, p. 24). With permit trades ~3-4 bln/year, USD 5.4 - 7.1 bln of auctioning revenues can be expected from the national scheme.

Table 5: Summary of assessment results for innovative adaptation finance from earmarking auctioning revenues from national ETSs (Option B.1)

Option B.1: Earmarking auctioning revenues from national ETSs		
<b>Revenue generation potential</b>	<b>Greater than USD 80 million annually</b> Assuming increased uptake of ETSs, future revenues would be greater than currently realised figures	
<b>Timeframe</b>	<b>Pre- and post-2020</b> Implementation of the option depends on decisions taken by countries implementing ETSs	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	Medium	<ul style="list-style-type: none"> <li>Can ensure <i>fairly automatic</i> and <i>steady revenue</i> stream since allowance auctions are held in regular intervals</li> <li><i>Variable revenues</i> (depends on ETS carbon price)</li> <li>Greater certainty of revenues than market instruments with voluntary participation</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	Medium-Low	<ul style="list-style-type: none"> <li>Difficult to determine unless countries transparently disclose whether they account this money in their climate finance reporting.</li> <li>Could overlap / compete with ODA if strict earmarking is not done.</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral - Positive	<ul style="list-style-type: none"> <li>Removing permits from the auctioning pool may marginally affect the unit price. Higher carbon price will discourage entities to simply buy emission permits and encourage own mitigation measures.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High - Low	<ul style="list-style-type: none"> <li>Countries capable of introducing a domestic ETS are often also more capable of contributing to adaptation finance.</li> <li>High, if countries cooperate and agree to implement such a provision as their schemes reach adequate maturity.</li> <li>Low, if implemented only in one / a few schemes as it may increase the risk of competitive distortion for trade exposed covered entities.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	Medium-Low	<ul style="list-style-type: none"> <li>Auctioning revenue earmarking faces opposition from policy makers, especially for international support.</li> <li>Option finds support in academic and civil society circles.</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>Earmarking revenues from public policies is common practice, some EU member states already earmark revenues; precedence exists.</li> </ul>

As with predictability, the **performance of Option B.1 against climate finance criteria** would also depend on the accounting approach taken by the country in question. It is difficult to determine with certainty if the resources generated from this option would be beyond the existing obligations and pledged amounts for both climate and development finance unless countries categorically disclose so. The double accounting risk is generally higher for any national instrument.

Impact of earmarking auctioning revenues in ETSs presents a mixed picture. Market based determination of auctioning clearing price can induce a marginally positive **climate impact** for Option B.1. Earmarking allowances would lead to removal of some allowances from the auctioning pool, which may affect the auctioning price to a certain extent and consequently encourage compliance buyers to reduce on their own. However, this impact is only marginal. Further, it would not occur if a portion of auctioning revenues is earmarked instead of allowances. Hence, the option is rated neutral-positive for its climate impact. Further, the option is rated high-low on **fairness** considerations. Earmarking of auctioning revenues from national ETSs would be unfair if implemented only by a few countries. Increase of carbon price in the ETS can increase the risk of competitive distortion for trade exposed entities in the scheme and lead to carbon leakage. Therefore, beginning with a 'club' of progressive countries with mature ETSs, all countries must gradually introduce such a provision as their scheme reaches adequate maturity. Developing such a 'club' of countries is not merely a speculation given many countries already cooperate bilaterally and under forums such as the World Bank's Partnership for Market Readiness (PMR) initiative on ETS development. At the end, a collective effort is essential for options realised from national instruments to be fair. The SOP will, in principle, also require polluters to pay.

**Stakeholder support** is rated medium-low as earmarking attracts substantial criticism in the policy circles on the risk of inequitable spending, resource wastage, possibilities of collusion and challenges in defending revenue diversion. Looking at the EU ETS experience, a 2008 proposal of the Environmental Committee of the EU Parliament had recommended Member States to earmark all auctioning revenues towards climate action and allocate at least 50% for developing countries. This proposal met with strong opposition (Müller, 2008b). Instead, a lenient non-obligatory directive was agreed (EU directive 2009/29/EC) which provided to set aside at least 50% of the auctioning revenues for climate and energy related purposes (EU Parliament, 2009). Member states have regularly surpassed this percentage since auctioning was introduced in 2013. However, opposition to the term 'earmarking', especially for international purposes, still exists. It is noteworthy here that the 2009 directive already makes a specific mention of supporting multilateral funds such as the Adaptation Fund.

Despite a medium-low rating for stakeholder support to earmarking in ETSs, some form of earmarking is common practice for countries. Among the EU Member states, some already earmark through strict off-budget separation of auctioning revenues, e.g. into a specialised fund of the likes of Germany's EKF. Others include hybrid arrangements under budgetary allocation e.g. France's multi-ministerial decision making to allocate revenues from its general budget equal to auctioning income to its housing authority (Müller et.al 2016). Considering prior experience of countries in earmarking, we rate the **operational feasibility** of the option as high.

The potential of Option B.1 is strongly dependent on the key assumption regarding the nature of earmarking. A key criticism levelled at national instruments is their dependence on national decision-making which reduces the certainty on adaptation contributions. Lack of clear earmarking and transparent accounting of the earmarked revenues would impact the finance performance of the instrument.

### 3.5 Earmarking revenues from carbon taxes (Option B.2)

In the past years, the uptake of carbon taxes has heightened as a favoured carbon pricing policy. Currently, over 16 jurisdictions have functioning or scheduled carbon tax, which covers 4% of global emissions (World Bank 2015a, pp.21-22).

Most revenues generated from carbon taxes are recycled back into the economy in the form of relaxations for the affected parties or ring fenced for public programs. Switzerland earmarks one-third of its CO<sub>2</sub> levy revenues into a national buildings programme and the rest to a technology fund (FOEN, 2016). While examples of earmarking for international purposes from a carbon tax are uncommon, ring-fencing small proportion of revenue similar to that done for domestic finance towards established, multilaterally managed funds such as the Adaptation Fund is not a huge flight of imagination.

Keeping in view this potential source of finance from national sources, **Option B.2 covers the potential of earmarking a portion of revenues generated from national carbon tax policies towards global adaptation.** In our definition, a carbon tax can cover the sale of domestic and/or imported fossil fuels, as was pioneered in the Nordic countries in the early 1990s and later implemented by developing and developed countries alike e.g. Switzerland (in 2008) and Mexico (in 2014). More recently, countries have started taxing one or more high emitting sectors for the resulting GHG emissions, e.g. in South Africa and Chile.

For our assessment and to ensure an innovative source of adaptation finance that holds against our definition or innovativeness, we assume a 2% earmarking and earmarking through strict budgetary separation (e.g. into an off-budget fund) or political earmarking (e.g. by a law or inter-ministerial agreement).

#### **Revenue generation potential and timeframe**

In 2014, active carbon taxes across the globe generated over USD 10 billion in revenues (World Bank 2015a, p. 30). A 2% earmarking of these would have generated revenues in the order of USD 200 million in one year only, which is close to one-third of the total donations received since the inception of Adaptation Fund<sup>14</sup>. The outlook is optimistic as the revenue potential would be higher in future when planned carbon taxes are implemented.

---

If all countries implementing a carbon tax earmark 2% revenues for global adaptation, one can generate over **USD 200 million every year.**

---

Like Option B.1, implementation of Option B.2 rests with national governments. However, even if only a few countries start to lead on this way, this Option can serve the immediate demand of the Adaptation Fund. The global trends are also encouraging with many new countries set to design carbon taxes (e.g. Chile) and some existing schemes with plans for tax rate escalation (e.g. Japan).

---

<sup>14</sup> Adaptation Fund has received ~USD 343 million in donations from donor countries between 2009-2015 (World Bank, 2015b)

Based on the assumptions made in the preceding paragraphs and applying the assessment criteria discussed in chapter 2.2, we assess the potential of Option B.2 as a suitable source of adaptation finance. Table 6 summarises the results of our assessment.

Table 6: Summary of assessment results for innovative adaptation finance from earmarking revenues from national carbon taxes (Option B.2)

Option B.2: Earmarking revenues from national carbon taxes		
<b>Revenue generation potential</b>	<b>Greater than USD 200 million (annually)</b> Assuming increased uptake of carbon taxes, future revenues would be greater than currently realised figures	
<b>Timeframe</b>	<b>Pre- and post-2020</b> Implementation of the option depends on decisions taken by countries implementing taxes	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	High	<ul style="list-style-type: none"> <li>Can ensure <i>automatic</i> and <i>steady</i> revenue stream.</li> <li>Revenues <i>fixed with certainty</i> (carbon price set by governments since instrument is rather price not market based).</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	Medium - Low	<ul style="list-style-type: none"> <li>Difficult to determine unless countries transparently disclose whether they account this money in public climate finance to meet existing obligations.</li> <li>Could overlap / compete with ODA if strict earmarking is not done.</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral-Positive	<ul style="list-style-type: none"> <li>No impact if the carbon price is set independently from the adaptation contribution.</li> <li>Slightly positive if the adaptation contribution leads to a marginally increased carbon price/tax.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High - Low	<ul style="list-style-type: none"> <li>High, if countries cooperate and agree to implement such a provision once their schemes reach adequate maturity.</li> <li>Low, if implemented only in one /a few schemes.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	Low	<ul style="list-style-type: none"> <li>A number of countries are against earmarking of revenues in general or for international support in particular.</li> <li>Policy makers prefer to domestically redistribute taxation revenues for increased tax acceptance (e.g. on priority programs).</li> <li>No ongoing discussion on the option to our knowledge</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>Operationalisation not complicated as countries can draw on their taxation experiences &amp; infrastructure.</li> </ul>

Option B.2 has the same results as Option B.1 on **climate finance performance** and **fairness** considerations as well as on performance against climate finance criteria. The **climate impact** would depend on whether the carbon price set in the tax reflects the 2% allocation made towards adaptation. If so, one may expect a marginal increase in the carbon price, which can motivate covered entities to undertake own mitigation to avoid extra costs. However, unlike emission trading schemes and broader market based pricing instruments the **predictability** of revenues from carbon taxes is higher due to carbon price certainty.

On the other hand, this price certainty also makes carbon taxes a lucrative instrument for domestic policy planning. The use of carbon tax revenues for direct return to affected parties (i.e. revenue recycling) or investing back into the economy through rebates and tax relaxations is common practice. Thus, the **stakeholder support** for an option to earmark tax revenues to international support is expected to be lower than that of an ETS, although **operational feasibility** is high as the option can be designed on the taxation infrastructure of a country.

Performance of Option B.2 against climate finance and impact criteria is strongly dependent on the assumption of a strict earmarking and transparent disclosure. Lack of clarity on these can negatively impact the finance performance of the instrument. Further, if revenues go into the national treasury and require yearly budgetary approval, there is a high political risk of discontinuation of support in future years, decreasing the predictability of revenues to adaptation.

### 3.6 Share of proceeds from voluntary carbon market (Option C.1)

Contrary to the collapse of compliance markets which traded CDM credits to meet emission reduction obligations, voluntary carbon markets have shown agility over the years - maintaining a nearly stable carbon price and a high share of repeat voluntary buyers (Hamrick and Goldstein, 2016). Considering this resilience, a solidarity contribution from transactions in the Voluntary Carbon Market could provide a small but steady revenue stream for the Adaptation Fund. These contributions could be a 'share of proceeds' type levy on voluntary credits which are monetized by the Adaptation Fund or a price premium generated from an additional price per credit which would be channelled to the Adaptation Fund.

**Option C.1 looks at solidarity contributions from the Voluntary Carbon Market as a 'share of proceed' type levy on voluntary credits which can be monetized by the Adaptation Fund.** We assume that this SOP is implemented in the same way as the CDM SOP, i.e. supply and issuance based and in the same relative range of 2%.

#### **Revenue generation potential and timeframe**

The outlook of voluntary markets looks optimistic with a stable demand and supply, which could increase further if voluntary credits become eligible for ICAO's CORSIA. Since their establishment, 0.99 billion tCO<sub>2</sub> eq. at an average price of USD 4.6/tCO<sub>2</sub>eq have been transacted in the voluntary markets (Hamrick & Goldstein 2016, p. 1). An SOP would have generated close to USD 91 million adaptation finance, roughly half of the revenues generated by CDM for adaptation. This would have generated an average of ~USD 9 million adaptation revenues annually, if we assume 10 years of operation of voluntary markets. Given the positive future scenario, the SOP potential is assumed to be similar or higher.

---

An SOP on voluntary market credits could generate up to **USD 9 million** annually towards adaptation, building-up over a 10-year period to roughly half of what was generated under the CDM.

---

Option C.1 can be a financing option for both pre-and post-2020 time period.

Based on the assumptions made in the preceding paragraphs and applying the assessment criteria discussed in Chapter 2.2, we assess the potential of Option C.1 as a suitable source of adaptation finance. Table 7 summarises the results of our assessment.

Table 7: Summary of assessment results for innovative adaptation finance from a share of proceeds from Voluntary Carbon Markets (Option C.1)

Option C.1: Share of proceeds from Voluntary Carbon Market		
<b>Revenue generation potential</b>	<b>Average ~ USD 9 million (average) annually</b> With a stable demand and supply, revenue outlook is assumed to be stable or slightly higher than what could have been generated in the past 10 years	
<b>Timeframe</b>	<b>Pre- and post-2020</b> Voluntary markets are currently in operation and would continue to operate post-2020	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	Medium	<ul style="list-style-type: none"> <li>Revenue generation expect to be fairly automatic.</li> <li>Variable revenues (as realised revenues depend on carbon price set by market).</li> <li>Based on current experience, demand for voluntary credits is expected to be more or less stable in future as well.</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	High	<ul style="list-style-type: none"> <li>Coming from actors who do not have any direct and binding ODA and climate finance obligations under the UNFCCC, this is a new channel of money.</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral - Negative	<ul style="list-style-type: none"> <li>Increase in costs for voluntary offsetting might lead to disincentives for those voluntary buyers that have no obligation to offset.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High	<ul style="list-style-type: none"> <li>No unfair burden on peers as the instrument has voluntary participation and the levy would apply equally to all participants.</li> <li>In principle, the instrument provides an avenue for polluters to pay for reductions.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	Medium	<ul style="list-style-type: none"> <li>No ongoing discussion to our knowledge.</li> <li>General interest may exist since voluntary markets are more quality than compliance driven. Buyers have shown interest in paying price premiums on projects with social benefits. 'Demonstrating climate leadership' is reported to be one of the key buyer motivation to trade.</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>CDM SOP experience may act as design role model.</li> <li>No experience or precedence in voluntary markets.</li> </ul>



Option C.1 can generate automatic and stable revenue stream, albeit with a risk of price volatility inherent in all market based instruments, reducing its **predictability** as a finance instrument. However, it will be a new source of money from non-state actors, thus scoring high on **climate finance criteria**. Further, participation in these markets is voluntary and a levy applied equally to all willing participants would not put any unfair burden on a set of stakeholders, hence a high rating for the **fairness** criteria. In other words, actors use the voluntary market for demonstrating climate leadership than to fulfil compliance obligations. In this situation, the marginal increase in the cost of voluntary offsetting due to an SOP may come as a discouragement to those buyers with no obligations to offset. Thus, the **climate impact** of the instrument is rated as neutral to negative.

Feasibility of a solidarity levy from Voluntary Carbon Markets would depend on buyer interest in such an idea. Buyer behaviour in the past suggests that convincing private players for this voluntary contribution might not be as difficult as one might assume. Even under current market conditions, voluntary market players are reported to pay a price premium of USD 2.7/ tCO<sub>2</sub> eq. on Verified Carbon Standard (VCS) offsets that comply with Climate, Community and Biodiversity (CCB) co-benefits certification (Hamrick & Goldstein 2015, p.3). Standards such as CCB and Gold Standard can itself be considered as examples of innovative finance as buyers pay a higher price for mitigation projects that support higher co-benefits. The continued interest of voluntary buyers to pay a price premium for socially beneficial mitigation projects is symbolic of the market's appetite for such offset-plus approaches. Supporting a global fund to adaptation in the global south can gain some traction if approached through the right players. Perhaps, getting the four prominent standards in terms of volume of offsets issued - VCS, Gold Standard (GS), American Carbon Registry (ACR), and Climate Action Reserve (CAR) - on board for establishing such contributions as an international good practice norm would be a useful starting point. Thus, **stakeholder support** is rated medium. **Operational feasibility** is considered high, as CDM provides a good role model for developing such a levy.

### 3.7 Earmarking auctioning revenues from sub-national ETSs (Option C.2)

Sub-national ETSs, particularly in North America, have been pioneers in ETS use of auctioning for allowance allocation. 22 sub-national ETSs are functional or scheduled at regional or city levels (World Bank 2015a, p. 22). **Option C.2 discusses auctioning revenue earmarking from sub-national ETSs.** We consider the Chinese ETS under Option B.1 because the decision-making on the scheme design and governance rests with the national government and not cities. We assume a 2% earmarking, practiced as a strict budgetary separation (e.g. into an off-budget fund) or earmarking by a law or inter-ministerial agreement. A sub-national carbon tax is not discussed due to limited implementation examples.

#### **Revenue generation potential and timeframe**

Sub-national ETSs such as Regional Green House Gas Initiative (RGGI) and Quebec generated approximately USD 1 billion in auctioning revenues in 2014 (World Bank 2015a). A 2% earmarking for adaptation would have generated revenues in the order of USD 20 million in one year alone. In future,

---

Based on current revenue generated by sub-national ETSs and assumed increase in sub-national ETSs in the future, adaptation revenues over **USD 20 million** can be generated annually.

---

this annual revenue potential will be greater than the current estimate as other proactive jurisdictions in the US (e.g. Washington and Oregon), and Canada (e.g. Ontario) roll out their ETSs.

Sub-national ETSs can be another revenue source which can be pursued to meet the immediate demand for adaptation finance.

Based on the assumptions made in the preceding paragraphs and applying the assessment criteria discussed in Chapter 2.2, we assess the potential of Option C.2 as a suitable source of adaptation finance. Table 8 summarises the results of our assessment.

The **stakeholder support** for Option C.2 is rated medium on the grounds of the political traction this idea has received in the recent years. Paris saw many sub-national governments show support to multilateral funds for action in vulnerable countries. Commentators advocate a continued support by sub-nationals on both monetary and strategic grounds (Müller, 2015). As discussed earlier, earmarking is a common public policy practice in some countries, which can serve as a role model for sub-national jurisdictions. Hence, **operational feasibility** is rated high.

Similar to Option B.1, scheme design features such as regularity of auctions and mandatory participation would increase the **predictability** of revenues; albeit actual money generated would still depend on a market generated carbon price. Being independent of obligations under the convention, money from sub-nations would be new and additional, hence very much compliant with the **climate finance criteria** used as a yardstick of an option's performance in our assessment. However, it is unclear if and to what extent governments include sub-national contributions in national reporting. If they do, then a transparent accounting would be necessary to ensure the additionality of the revenues to existing pledges by countries.

The **climate impact** and **fairness** is expected to be neutral-positive and high respectively, similar to the carbon pricing instruments operational at a national level (Option B.1 and Option B.2).

Table 8: Summary of assessment results for innovative adaptation finance from earmarking auctioning revenues from sub-national ETSs (Option C.2)

Option C.2: Earmarking auctioning revenues from sub-national ETSs		
<b>Revenue generation potential</b>	<b>Greater than USD 20 million annually</b> Assuming increased uptake of sub-national ETSs, future revenues would be greater than currently realised figures	
<b>Timeframe</b>	<b>Pre- and post-2020</b> Implementation of the option depends on decisions taken by regions and cities implementing the ETSs	
Assessment Results		
Criteria	Rating	Rationale for the rating
1. Finance performance		
<ul style="list-style-type: none"> <li>Predictability</li> </ul>	Medium	<ul style="list-style-type: none"> <li>Can ensure fairly automatic and steady revenue stream since allowance auctions are held in regular intervals.</li> <li>Variable revenues (depends on ETS carbon price)</li> <li>Greater certainty of revenues than market instruments with voluntary participation.</li> </ul>
<ul style="list-style-type: none"> <li>Performance against climate finance criteria</li> </ul>	High-Medium	<ul style="list-style-type: none"> <li>Coming from actors who do not have any direct and binding ODA and climate finance obligations under the UNFCCC, this is a new channel of money.</li> <li>Unclear to what extent national governments include subnational contributions in their national reporting.</li> </ul>
2. Impact		
<ul style="list-style-type: none"> <li>Climate Impact</li> </ul>	Neutral-Positive	<ul style="list-style-type: none"> <li>Removing permits from the auctioning pool may marginally affect the unit price. Cost increase for units will discourage entities to simply buy emission permits and undertake own mitigation measures.</li> </ul>
<ul style="list-style-type: none"> <li>Fairness</li> </ul>	High-Low	<ul style="list-style-type: none"> <li>Sub-national ETS development mostly in rich cities in the north which enjoy fairly high fiscal and law making powers; so the option would not come as a burden to people and countries that stand to benefit from the Adaptation Fund</li> <li>High, if jurisdictions cooperate and agree to implement such a provision as their schemes reach adequate maturity.</li> <li>Low, if implemented only in one / a few schemes.</li> </ul>
3. Feasibility		
<ul style="list-style-type: none"> <li>Stakeholder support</li> </ul>	Medium	<ul style="list-style-type: none"> <li>Political interest might exist: some proactive cities showed interest in supporting multilateral funds and pledged contributions in the run-up to Paris.</li> <li>The option finds support in academic circles.</li> </ul>
<ul style="list-style-type: none"> <li>Operational feasibility</li> </ul>	High	<ul style="list-style-type: none"> <li>Earmarking revenues from public policies is common practice. Role models from existing national schemes exist.</li> </ul>

## 4 Discussion

The assessment in the previous section presents a thorough overview of the opportunities and limitations linked to the individual innovative adaptation financing options. For an optimised implementation strategy, it is essential to compare all options, define a prioritisation order and identify synergies / overlaps that might affect the envisaged financing potential. For this purpose, Table 9 summarises the key findings and the qualitative criteria rating of all options. In addition, Figure 2 outlines engagement pathways for various options based on their availability timeframe and revenue generation potential and maps potential immediate or future overlaps.

Comparing **the revenue generation potential and timeframe of options highlights a mixed bag of prospective instruments** to support the current financing challenges of the Adaptation Fund. Given adequate political interest, the revenue generation potential of options from international crediting instruments and transfers under the Paris Agreement is high and these can become the centrepiece of cooperative action under the Paris Agreement. However, these are at a nascent stage of development and cannot address the immediate challenges of the Adaptation Fund. For continuing the momentum for micro-scale adaptation action pioneered under the Adaptation Fund and other similar funds supporting adaptation action in vulnerable countries, one needs to look beyond international markets to other instruments currently in operation. We have assessed innovative finance options from national emission trading schemes and carbon taxes; and solidarity contributions from the Voluntary Carbon Markets and sub-national ETSs. While introducing adaptation contributions would depend on individual countries in the case of these instruments, cumulatively, they have very high current revenue generation potential and therefore, can be pursued as options to support the Adaptation Fund.

Based on the overview presented in Table 9 **all options have a high operational feasibility**. This is an important finding since none of the discussed options have such fundamental limitations which would exclude them from further considerations. The assessment has shown that in terms of technical and institutional design, some prior experience or precedence exists for all options to build upon. For instance, all crediting instruments and international transfers can base themselves on the knowledge of the adaptation SOP design under CDM and platforms for tracking international unit transfers in the Kyoto Protocol, several EU member states already earmark their EU ETS auctioning revenues while national taxation systems have a long history of earmarking revenues for priority public programs.

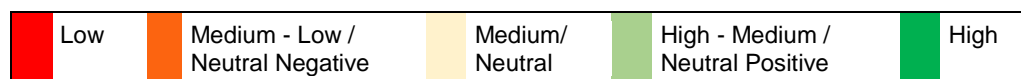
The assessment has furthermore shown that **all options can be designed in a way to lead to fair adaptation finance contributions**. With an optimised use of design elements available and assumed prior to our analysis, all options fare well on the fairness yardstick i.e. none puts an unfair burden on peers or vulnerable countries and people who stand to benefit from the Adaptation Fund; and all are in line with the polluter pays principle by encouraging private players to include social costs in their financial accounting. In addition, no significant negative climate impacts are expected from the implementation of these adaptation financing approaches according to the assumptions used in this assessment. The **overall climate impact of all options is also seen neutral** although more detailed discussions of direct and potential indirect impacts to mitigation achievements of the underlying instruments show that positive or negative impacts are in theory possible. However, based on the design assumptions we rate them as minor and identify in some cases opposite effects that have the potential to cancel each other.

**Limited stakeholder support is currently the main stumbling block** for the realisation of almost all options. This may seem to be pushing down the feasibility of some options. However, the assessment assessed the current support for the options and rated this criterion lower if only one important decision maker shows clear opposition. There is currently limited political will in some actors to implement some options whereas this can change in a future scenario which itself can be influenced by institutions supporting the ideas presented in this study for new innovative adaptation finance sources.

Table 9: Comparison of assessment results for all options

Assessment Framework		Option A.1	Option A.2	Option A.3	Option B.1	Option B.2	Option C.1	Option C.2
		SOP on intl. crediting	SOP from intl. transfers	Contributions from ICAO's CORSIA scheme	Earmarking auctioning revenues from national ETSS	Earmarking revenues from Carbon taxes	SOP from Voluntary Carbon Markets	Earmarking auctioning revenues from sub-national ETSS
<b>Revenue generation potential</b>		0 to >> USD 20 mln (avg annually)	0 to high	0 to USD 22 mln (avg. annually)	> USD 80 mln (annually)	> USD 200 mln (annually)	>= USD 9 mln (avg. annually)	> USD 20 mln (annually)
<b>Timeframe</b>		Post 2020	Post 2020	Post 2020	Pre- & Post-2020	Pre- & Post-2020	Pre- & Post-2020	Pre- & Post-2020
<b>1. Finance performance</b>	• Predictability	Medium - Low	Medium - Low	Medium	Medium	High	Medium	Medium
	• Performance against climate finance criteria	High	High	High - Medium	Medium - Low	Medium - Low	High	High - Medium
<b>2. Impact</b>	• Climate Impact	Neutral	Neutral	Neutral	Neutral - Positive	Neutral - Positive	Neutral - Negative	Neutral - Positive
	• Fairness	High	High	High	High - Low	High - Low	High	High - Low
<b>3. Feasibility</b>	• Stakeholder support	High	Low	Low	Medium - Low	Low	Medium	Medium
	• Operational feasibility	High	High	High	High	High	High	High

Index:



Relevant examples in this regard are the Option A.3 which could lead to contributions from ICAO's CORSIA and is identified as technically feasible and rated in particular high with regards to fairness. Independent from the sector's resistance against finance contributions for adaptation, a moral obligation might still exist. Another example is a potential share of proceeds from international transfers, although an adaptation contribution was not agreed to this effect in Paris due to reservations from some Parties. The assessment in this paper rates adaptation contributions from international transfers under Article 6.2 (Option A.2) very similar to contributions from international crediting from an Article 6.4 mechanism (Option A.1). Based on expectations that only Parties with a higher capability to operate a national inventory and who are able to show corresponding adjustments for transactions will have access to Article 6.2 transfers, we conclude that less developed Parties might have better or only access to Article 6.4. In light of this different access of Parties to Article 6.2, an adaptation contribution of Parties using and benefiting from Article 6.2 transfers might be even more appropriate than a SOP on Article 6.4.

It can be concluded that **carbon pricing instruments can provide a decent predictability of revenue**, even after discounting the carbon price volatility inherent in many options. The obligatory nature of instruments underlying some options can provide reassurance for funds which require a multi-year revenue certainty for effective disbursement. Moreover, if the discussed design assumptions would hold, all options can provide steady stream of revenue without time-taking and bureaucratic procedures of disbursement and transfers. Unlike predictability, **options perform variously against our yardstick for performance against climate finance criteria**. Options from national instruments have been rated lesser than the international and sub-national instruments to acknowledge the risk of domestic political interference in provision of money. This risk has been a central concern voiced by many developing country Parties over the years. Despite this, the assessment assumes that national instruments would either enshrine such support in the legal framework of their countries or at least as a multi-year political commitment.

As Figure 2 illustrates, different innovative adaptation financing options of varying revenue generation potential can become available (in principle) at different points in time. While revenue generation from international instruments can be enormous, they also have the risk of a "no contribution scenario". Similarly, options from national instruments such as ETs and carbon taxes have a particularly high and predictable revenue potential but they aren't very high on the agenda of these decision-makers. In the current scenario, contributions from instruments by non-state actors, in spite of having the smallest direct revenue potential, are more promising. These options can be a quick fix solution to address a part of the most immediate and urgent needs of the Adaptation Fund. Climate finance pledges from proactive sub-national jurisdictions such as Quebec (CAD \$ 6 million to LDC fund), Paris (EUR 1 million to the Green Climate Fund) and Wallonia (EUR 1 million to GCF) during COP 21 and their history of pioneering innovation in climate policy making (e.g. linking of Quebec-Californian ETs) makes earmarking from subnational ETs potentially the most plausible option in the pre-2020 timeframe. We have also argued that Voluntary Carbon Markets may have an appetite for solidarity support. More so, **early action by non-state-actors can have a transformative effect to push the envelope for countries to act on options within their decision-making authority** by setting examples of implementation models and, more importantly, of political leadership to support adaptation. Overall, the Adaptation Fund must target tapping multiple innovative finance sources instead of one. This increases the predictability of overall revenues available to the Fund. Continued dependency on only international, national or non-state actor level contributions bear the risk of new funding gaps in the future while markets showed a constant activity increase if all levels are assessed cumulatively. Different pathways to tap these multiple innovative finance sources are visualised in Figure 2 along the lines of the different nature of the underlying carbon market instruments being "baseline and credit", "cap and trade" and taxation approaches. Most obvious are offsetting approaches following the CDM precedent, followed by trading instruments and taxation approaches.

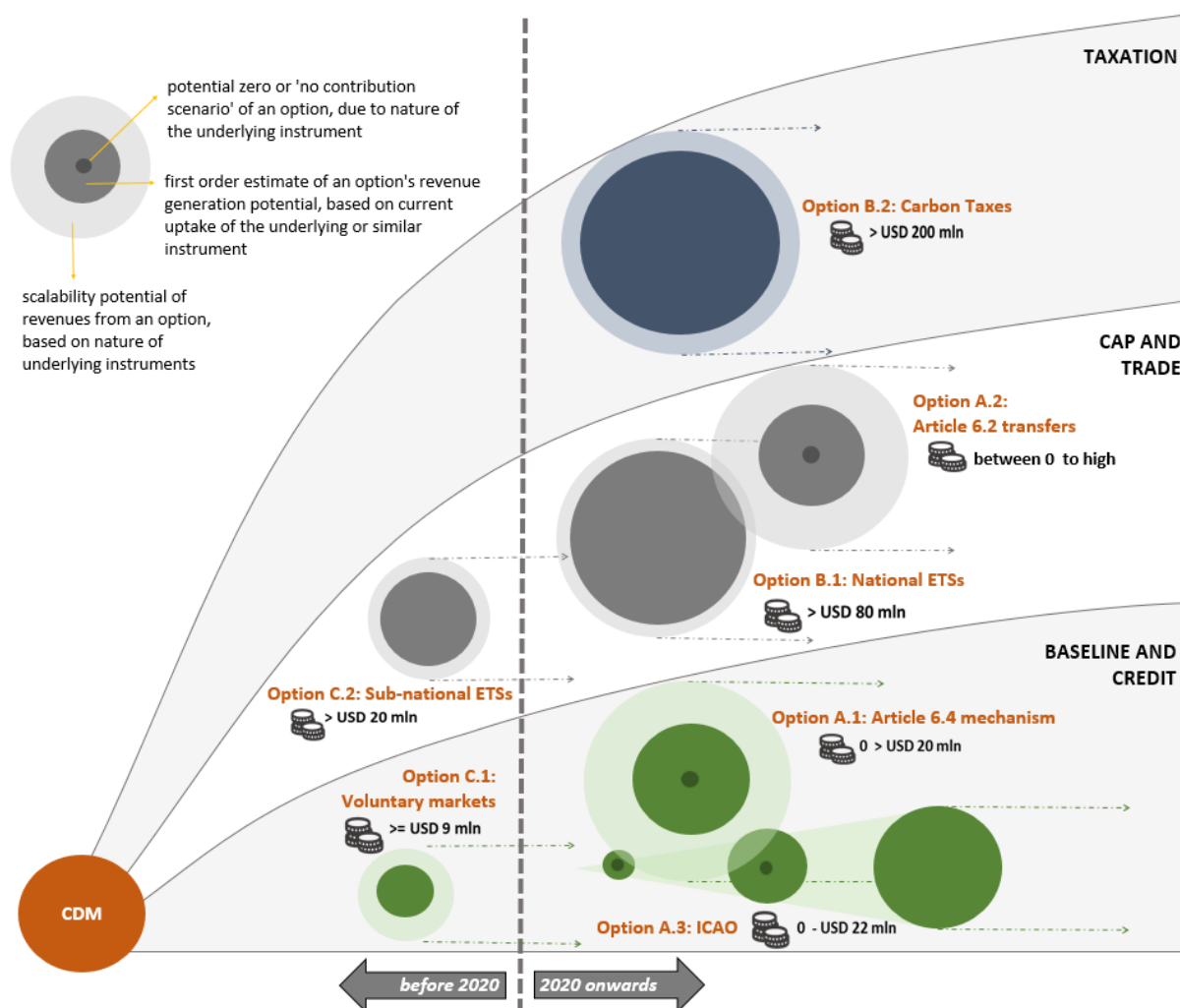


Figure 2: Pathways for innovative finance for the Adaptation Fund

[Note: The infographic maps innovative finance options coming from different carbon financing instruments. It presents an imprecise estimation of their revenue generation potential and the broad pathways of availability from now, until after post 2020. The size of bubbles is not to scale and are not aimed at providing concrete volume of revenues from the option.]

Lastly, the assessment in this paper and the visualisation in Figure 2 also identified potential immediate and future overlaps between options. This is, for example, the case for national or subnational ETSs which are linked internationally. Assuming all types of generated or transferred units should contribute only once to adaptation finance, the transfer of units from internationally linked ETSs via Article 6.2 of the Paris Agreement cannot be subject to a SOP under Option A.2 if the linked ETSs individually contribute their share following Option B.1 or C.2. Hence, the revenue generation potential of all options cannot just be aggregated to show the overall potential. However, **overlaps in scope for some of the options can also lead to alternative avenues for tapping the adaptation finance potential**. Assuming that the ICAO proposal will mainly build on CDM and Article 6.4 offsets (which already include a SOP), the actual adaptation finance from this option might come only from other eligible offset units. If, for instance, the credits generated under voluntary markets become eligible for use under ICAO, one can indirectly tap into the demand from ICAO by pushing for implementation of Option C.1. A scenario in which all eligible sources of offset units for ICAO have their own adaptation contributions - and assuming ICAO continues to decline having an adaptation contribution from CORSIA - Option A.3 as analysed in this paper would be obsolete, but adaptation finance from the overarching demand from ICAO would have been tapped.

## 5 Way forward for the Adaptation Fund

The Adaptation Fund finds itself at a critical juncture at the moment. On one hand, it has seen skyrocketing interest from countries which generates immediate demand going up to 2020 under the direct-access modalities while, on the other hand, there seems to be political will to create a role for the Adaptation Fund under the Paris Agreement. At the same time, there is a looming uncertainty on financing the Adaptation Fund permanently. The assessment presented in this paper reiterates that a range of operationally feasible potential sources of finance already exist, but all face varying degree of political uncertainty.

This potential is not new; however, the post-Paris landscape presents a ripe opportunity to re-initiate a discussion on these. In future, the Fund must engage with decision makers for all innovative carbon finance options, instead of risking having only a single source. With a mandated body in the form of the Resource Mobilisation Task Force, the Fund is well placed to take an aggressive approach and develop engagement models that fits the options in question. The focus of such engagement needs to be three-pronged:

- » push for immediately realisable options (which can support the immediate needs);
- » pilots for some options with front-runners (to showcase potential implementation pathways); and
- » strategic engagement with decision-makers for options that do not see realisation before 2020.

**The following pointers introduce the way forward and engagement models for the Adaptation Fund.** We phrase it as the **Adaptation Fund "2%" campaign**, which would require to take up a dynamic, pro-active role through the Adaptation Fund Resource Mobilisation Task Force to establish a campaign towards establishing a global norm of 2% share of proceeds from carbon pricing related instruments for adaptation, with the Adaptation Fund a primary delivery channel for such funds. Such campaigns would have the following contours:

**Anchor the Adaptation Fund Board and its Resource Mobilization Task Force as the relevant actor:** For the Adaptation Fund to have any success, it needs to take up a proactive role on the issue. It is to be clarified that the issue of innovative sources for adaptation finance needs to be appropriately reflected in the Adaptation Fund mid-term strategy, which is currently under development, and which will be presented to the Adaptation Fund Board's 29<sup>th</sup> meeting in March 2017. Generally, the role and effort of the Resource Mobilization Task Force should be enhanced with more time and resources during and in-between Adaptation Fund Board meetings allocated to the group. The Task-Force should be opened-up to external actors to increase the acceptance of its proceedings. In addition, Parties and observers should reflect the conclusions of the work of the Resource Mobilization Task Force in the political process that clarifies the condition for the Adaptation Fund serving the Paris Agreement. Specifically, 1/CP.22 calls for Parties to submit their views on "their views on the governance and institutional arrangements, safeguards and operating modalities for the Adaptation Fund to serve the Paris Agreement". It is important that these discussions - that will take place under the Ad Hoc Working Group on the Paris Agreement (AW-APA) - are held in sync with the discussion at the level of the Adaptation Fund Board and its Resource Mobilization Task Force.

**Follow and engage in the developments on operationalization of the Article 6 of the Paris Agreement:** With most Article 6 design decisions yet to be taken, the Adaptation Fund must closely follow developments and continually engage the UNFCCC process on markets, especially to agree a reasonable Share of Proceeds under Article 6.4 mechanism (Option A.1) and build on fairness arguments to highlight potential adaptation contributions from transfers under Article 6.2 (Option A.2). Given adequate political interest, Article 6.4 mechanism can become the centrepiece of market based cooperative approaches in the longer term. This makes such engagement desirable even if it does not resolve the current challenges of the Adaptation Fund.



**Create specific relations with cities and regions:** Efforts to realise financing through ETSs operational in cities and regions (Option C.2) can provide a strong strategic message and provide role models for national policy makers to pilot such approaches in domestic ETSs (Option B.1) and national carbon taxes (Option B.2). For this to happen, the Adaptation Fund Board and its secretariat should identify frontrunner cities and regions that are interested in supporting adaptation beyond their territories. The Adaptation Fund - as the only example in the UNFCCC climate finance architecture - has already a track record in entertaining successful relations with funders from cities and regions on a consecutive basis.<sup>15</sup>

**Identify pro-active countries for national funding schemes:** The Adaptation Fund can initiate direct communication with pro-active countries which already earmark funding to climate policy purposes to discuss possibilities to pilot earmarking in some mature ETSs (Option B.1) and national carbon taxes (Option B.2). If such propositions remain unsupported, contributions could at least be realised for internationally linked ETSs through a SOP on international transfers (Option A.2). These discussions again would have to take place under the UNFCCC.

**Achieve Share of Proceeds from Voluntary Carbon Markets:** The Adaptation Fund should closely engage with actors in the Voluntary Carbon Markets to establish a good practice of 2% levy (or price premium) towards adaptation. Supporting a global fund promoting adaptation in the global south can gain traction in the voluntary market if approached through the right players. As a starting point the Adaptation Fund Resource Mobilization Task-Force and the secretariat should initiate conversations with the four prominent standards<sup>16</sup> for establishing such contributions as an international good practice.

**Create momentum at ICAO level:** Pushing action on the ICAO approach is essential to tap the future demand coming from aviation. Even though an adaptation contribution from CORSIA has already been dismissed, the Adaptation Fund should closely follow the development of the EUCs under ICAO and focus efforts in closing the financing gap by pursuing a supply-side SOP with decision-makers in instruments whose offset units are eligible under ICAO. For instance, a voluntary market solidarity SOP (Option C.1) can be a conduit to tap demand potential of ICAO.

---

<sup>15</sup> The Adaptation Fund received funding pledges in the past from Wallonia, the Flamish region and the City of Brussels.

<sup>16</sup> i.e. Verified Carbon Standard (VCS), Gold Standard (GS), American Carbon Registry (ACR), and Climate Action Reserve (CAR)

## 6 References

- Adaptation Fund, 2016. *Adaptation Fund Project Pipeline Enhanced with New Approvals at the 28th Board Meeting - Adaptation Fund*. Webpage. Available at: <https://www.adaptation-fund.org/adaptation-fund-project-pipeline-enhanced-new-approvals-28th-board-meeting/>. (accessed on: November 4, 2016).
- Betz, R. & Cludius, J., 2016. *EU Emissions Trading: The Role of Banks and Other Financial Actors Insights from the EU transaction log and interviews*. Working paper Swiss Competence Centre for Energy Research (SCCER CREST).
- Brown, J., Vigneri, M. & Sosis, K., 2009. *Innovative carbon-based funding for adaptation*. Working paper, Overseas Development Institute (ODI). Available at: <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3401.pdf>.
- Buchner, B., Falconer, A., Hervé-Mignucci, M., Trabacchi, C., Brinkman, M., 2011. *The landscape of climate finance: A CPI Report*. Climate Policy Initiative. Available at: <http://climatepolicyinitiative.org/wp-content/uploads/2011/10/The-Landscape-of-Climate-Finance-120120.pdf>.
- Cames, M. & Van Velzen, A., 2016. *Cost impacts of ICAO's GMBM*. Briefing paper. Öko-Institut e.V. Available at: <http://www.oeko.de/oekodoc/2457/2016-001-en.pdf>.
- Carbon Market Watch, 2013. *Turbulences Ahead: Market Based Measures to reduce Aviation Emissions*. Policy brief. Carbon Market Watch. Available at: <http://carbonmarketwatch.org/wp-content/uploads/2013/05/Aviation-Emissions-Policy-Brief-June-20131.pdf>.
- Carbon Pulse, 2016. *CARBON FORWARD: China's massive carbon market to weed out industrial overcapacity*. Carbon Pulse Magazine. Available at: [http://carbon-pulse.com/24571/?utm\\_source=CP+Daily&utm\\_campaign=2d907e9e02-CPdaily23092016&utm\\_medium=email&utm\\_term=0\\_a9d8834f72-2d907e9e02-33318445](http://carbon-pulse.com/24571/?utm_source=CP+Daily&utm_campaign=2d907e9e02-CPdaily23092016&utm_medium=email&utm_term=0_a9d8834f72-2d907e9e02-33318445) (accessed on: November 22, 2016).
- Esch, A., Jedrasik, I., Mazounie, A., Gautier, C., Holub, P., Bart, I., Jerabek, J., Kaskeala, N., 2013. *Using EU ETS auctioning revenues for climate action: What is the appetite for earmarking within specific EU member states?*. Briefing paper. Germanwatch. Available at: <https://germanwatch.org/en/download/7749.pdf>.
- EU Parliament, 2009. *Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community*. Directive no. 2009/29/EC. European Union. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:EN:PDF>. (accessed on: November 4, 2016).
- FOEN, 2016. *Imposition of the CO2 levy on thermal fuels*. Webpage. Switzerland Federal Office for the Environment (FOEN). Available at: <http://www.bafu.admin.ch/klima/13877/14510/14748/index.html?lang=en> (accessed on: September 14, 2016).
- Hamrick, K. & Goldstein, A., 2015. *Ahead of the curve: State of the Voluntary Carbon Markets 2015*. Forest Trends Ecosystem Marketplace Report. Available at: [http://forest-trends.org/releases/uploads/SOVCM2015\\_FullReport.pdf](http://forest-trends.org/releases/uploads/SOVCM2015_FullReport.pdf).
- Hamrick, K. & Goldstein, A., 2016. *State of the Voluntary Carbon Markets 2016: Raising Ambition*. Forest Trends Ecosystem Marketplace Report. Available at: [http://www.forest-trends.org/documents/files/doc\\_5242.pdf](http://www.forest-trends.org/documents/files/doc_5242.pdf).
- Harmeling, S., Bals, C., Sterk, W., Watanabe, R. 2009. *Funding sources fro international climate policy: A criteria based analysis of the options discussed under the UNFCCC*. Briefing Paper. Germanwatch and Wuppertal Institute for Climate, Environment, Energy. Available at: <http://germanwatch.org/klima/fundso09e.pdf>.

- ICAO, 2016. *ICAO Assembly — 39th Session Report of the Executive Committee on Agenda Item 22 (Section on Global Market-based Measure Scheme)*. International Civil Aviation Organisation (ICAO). Available at: [http://www.icao.int/Meetings/a39/Documents/WP/wp\\_530\\_en.pdf](http://www.icao.int/Meetings/a39/Documents/WP/wp_530_en.pdf) (accessed on: November 4, 2016).
- icap, 2016. *EU Emissions Trading System (EU ETS), ETS detailed information*. Report. International Carbon Action Partnership (icap). Available at: [https://icapcarbonaction.com/en/?option=com\\_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=43](https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=43).
- Institute for Climate Economics (I4CE), Enerdata & IFP Energies nouvelles (IFPEN), 2015. *Exploring the EU ETS beyond 2020: A first assessment of the EU commission's proposal for Phase IV of the EU ETS (2021-2030)*. Available at: <http://www.i4ce.org/wp-core/wp-content/uploads/2015/11/15-11-30-COPEC-FULL-REPORT.pdf>.
- Kowalzig, J., 2013. *The German 2014 federal budget: climate financing secured, development aid cut? The German contribution to International Climate Finance*. Website. Available at: <http://www.germanclimatefinance.de/2013/03/15/the-german-2014-federal-budget-climate-financing-secured-development-aid-cut/>. (accessed on: November 4, 2016).
- Marcu, A., 2016. *Carbon Market Provisions in the Paris Agreement (Article 6)*. Special Report No. 128. Centre for European Policy Studies (CEPS). Available at: [https://www.ceps.eu/system/files/SR\\_No\\_128\\_ACM\\_Post\\_COP21\\_Analysis\\_of\\_Article\\_6.pdf](https://www.ceps.eu/system/files/SR_No_128_ACM_Post_COP21_Analysis_of_Article_6.pdf).
- Müller, B., 2015. *Finance for the Paris Climate Compact The role of earmarked (sub-) national contributions*. Policy Brief. Oxford Climate Policy. Available at: [http://www.oxfordclimatepolicy.org/publications/documents/CS-PB1-Finance\\_for\\_Paris\\_Climate\\_Compact.pdf](http://www.oxfordclimatepolicy.org/publications/documents/CS-PB1-Finance_for_Paris_Climate_Compact.pdf).
- Müller, B., 2008a. *International Adaptation Finance: The Need for an Innovative and Strategic Approach*. Working Paper. Oxford institute of Energy Studies. Available at: [http://edden.upmf-grenoble.fr/IMG/pdf/Muller\\_EV42\\_2008.pdf](http://edden.upmf-grenoble.fr/IMG/pdf/Muller_EV42_2008.pdf).
- Müller, B., 2008b. *To Earmark or Not to Earmark? A far-reaching debate on the use of auction revenue from (EU) Emissions Trading*. Working paper. EV43, Oxford Institute of Energy Studies. Available at: <http://www.accc.gv.at/pdf/EV43.pdf>.
- Müller, B., Kornilova, A., Tewari, R., Warnecke, C., 2016. *Two Unconventional Options to Enhance Multilateral Climate Finance Shares of Proceeds and Crowdfunding*. Working paper. European Capacity Building Initiative (ecbi). Available at: [https://newclimateinstitute.files.wordpress.com/2016/10/2016\\_ecbi\\_policy\\_brief\\_finance\\_final.pdf](https://newclimateinstitute.files.wordpress.com/2016/10/2016_ecbi_policy_brief_finance_final.pdf).
- Obergassel, W. & Gornik, M., 2015. *Update on the Role of Market Mechanisms in Intended Nationally Determined Contributions*. JIKO Policy Brief 4/2015. Available at: <http://www.carbon-mechanisms.de/en/2015/update-on-role-of-market-mechanisms-in-intended-nationally-determined-contributions/>.
- Swartz, J., 2016. *China: An emission trading case study*. Reports. International Emission Trading Authority (IETA). Available at: <http://www.ieta.org/resources/2016%20Case%20Studies/China%20case%20study.pdf>
- UNEP, 2016. *The Adaptation Finance Gap Report*. United Nations Environment Programme (UNEP). Nairobi, Kenya. Available at: [http://web.unep.org/adaptationgapreport/sites/unep.org.adaptationgapreport/files/documents/ag\\_r2016.pdf](http://web.unep.org/adaptationgapreport/sites/unep.org.adaptationgapreport/files/documents/ag_r2016.pdf).
- UNFCCC, 2016a. *Decision -/CMA.1 Matters relating to the implementation of the Paris Agreement*. United Nations Framework Convention on Climate Change (UNFCCC). Available at: [http://unfccc.int/files/meetings/marrakech\\_nov\\_2016/application/pdf/auv\\_cma1\\_matters\\_relating\\_to\\_the\\_implementation\\_of\\_the\\_paris\\_agreement.pdf](http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cma1_matters_relating_to_the_implementation_of_the_paris_agreement.pdf)
- UNFCCC, 2016b. *Preparations for the entry into force of the Paris Agreement and the first session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement*.

- United Nations Framework Convention on Climate Change (UNFCCC). Available at: [http://unfccc.int/files/meetings/marrakech\\_nov\\_2016/application/pdf/auv\\_cma1\\_matters\\_relating\\_to\\_the\\_implementation\\_of\\_the\\_paris\\_agreement.pdf](http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cma1_matters_relating_to_the_implementation_of_the_paris_agreement.pdf)
- UNFCCC, 2016c. *Report of the Adaptation Fund Board*. Twenty-second session fo the Conference of Parties serving as the meeting of Parties (COP 22). United Nations Framework Convention on Climate Change (UNFCCC). Available at: [http://unfccc.int/files/meetings/marrakech\\_nov\\_2016/application/pdf/auv\\_cmp12\\_i7a\\_report\\_of\\_af\\_board.pdf](http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cmp12_i7a_report_of_af_board.pdf)
- UNFCCC, 2016d. *CDM: The share of proceeds from the clean development mechanism project activities for the Adaptation Fund*. United Nations Framework Convention on Climate Change (UNFCCC). Available at: <https://cdm.unfccc.int/Issuance/SOPByProjectsTable.html?s=0>
- UNFCCC, 2015. *Adoption of the Paris Agreement. Proposal by the President. Draft decision -/CP.21. Conference of the Parties. Twenty-first session, Paris, 30 November to 11 December 2015*. FCCC/CP/2015/L.9/Rev.1. United Nations Framework Convention on Climate Change. Available at: <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>
- UNFCCC, 2012. *Amendment to the Kyoto Protocol pursuant to its Article 3, paragraph 9 (the Doha Amendment)*. United Nations Framework Convention on Climate Change. Available at: <http://unfccc.int/resource/docs/2012/cmp8/eng/13a01.pdf#page=2>
- World Bank, 2016a. *Adaptation Fund specific financial information*. Report. The World Bank. Washington D.C.; USA. Available at: <http://fiftrustee.worldbank.org/Pages/adapt.aspx> (accessed on: November 3, 2016).
- World Bank, 2016b. *State and Trends of Carbon Pricing 2016*. Report. The World Bank. Washington D.C.; USA. Available at: [http://www.ecofys.com/files/files/wb\\_report\\_2016\\_161018\\_screen.pdf](http://www.ecofys.com/files/files/wb_report_2016_161018_screen.pdf).
- World Bank, 2015a. *State and Trends of Carbon Pricing 2015*. Report. The World Bank. Washington D.C.; USA. Available at: <http://www.worldbank.org/content/dam/Worldbank/document/Climate/State-and-Trend-Report-2015.pdf>.
- World Bank, 2015b. *Summary Status Report Adaptation Fund 2015*. Report. The World Bank. Washington D.C.; USA. Available at: [http://fiftrustee.worldbank.org/SiteCollectionDocuments/ADAPT/Summary Status Reports/AF\\_MR\\_12\\_15.pdf](http://fiftrustee.worldbank.org/SiteCollectionDocuments/ADAPT/Summary Status Reports/AF_MR_12_15.pdf).



**NewClimate – Institute for Climate Policy and Global Sustainability gGmbH**

**Cologne Office**  
Am Hof 20-26  
50667 Cologne  
Germany

T +49 (0) 221 999833-00  
F +49 (0) 221 999833-19

**Berlin Office**  
Brunnenstraße 195  
10119 Berlin  
Germany

[info@newclimate.org](mailto:info@newclimate.org)  
[www.newclimate.org](http://www.newclimate.org)