Blue Carbon and Ecosystem-based Adaptation: Mapping of Arenas

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Summary

This mapping provides an overview of different types of arenas where the two concepts *Ecosystem-based adaptation* (EbA) and *Blue Carbon* (BC) are discussed. EbA has been defined by the Convention on Biological Diversity (CBD) as "The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change." (CBD, 2009). BC has been defined as "the carbon stored, sequestered or released from coastal ecosystems of tidal marshes, mangroves and seagrass meadows" (Herr, Pidgeon, & Laffoley, 2012). Both issues have been raised at the United Nations Framework Convention on Climate Change (UNFCCC) negotiations, as well as in the context of other United Nations bodies and various international frameworks. This report looks at where these topics are negotiated and contextualised, and displays how different arenas and actors are interlinked within and between these two issues.

The material used to compile this report comprises official documents and communication from the UNFCCC website and web-based material from around 60 different entities. The report is also based on observations from UNFCCC workshops and negotiations between 2013 and 2015, which have helped to identify relevant material, arenas and actors.

A large number of international organisations, conventions, and other bodies are engaged in the conceptualisation of these two issues. The report focusses, in particular, on the UNFCCC, and demonstrates which negotiation tracks are of interest for EbA and BC. The report also identifies other relevant conventions and UN-bodies that address these issues, or are in other ways relevant, at the stage of international politics. The report describes how EbA was first introduced at the level of international politics through the CBD and later to the UNFCCC. Today, the three so-called Rio Conventions, the CBD, the UNFCCC and the UN Convention to Combat Desertification (UNCCD) cooperate in the area of EbA (CBD, UNCCD, & UNFCCC, 2012).

In the context of the UNFCCC, Blue Carbon was first specifically discussed at the 34th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) in 2011. The results suggest that the most relevant arenas under the UNFCCC for Blue Carbon are REDD+ (Reducing Emissions from Deforestation and forest Degradation in developing countries) and LULUCF (Land Use, Land-Use Change and Forestry), which is in line with the general framing of BC as mainly related to climate change mitigation. There are also reflections of Blue Carbon in NAMAs and INDCs. However, there are EbA-projects that focus on Blue Carbon ecosystems (mangroves, tidal salt marshes, wetlands, and seagrass meadows), and propose very similar actions as projects that are specifically framed as Blue Carbon-projects. Thus, framed as an adaptation project, BC- and EbA-projects are interlinked and could both be addressed in the context of the Nairobi work programme, which is the negotiation track where discussions regarding EbA are most topical today, as National Adaptation Programmes of Action (NAPAs), or under the Adaptation Fund. The report identifies several UNFCCC agenda items with linkages to both BC and EbA, as well as other members of the UN-family and NGOs active in the conceptualisation of both issues.

How EbA and BC are considered in policy have implications for prioritising between different ecosystem services. Subsequent benefits and trade-offs, including on how the UNFCCC can best address land-use activities related to climate change, is identified as an important knowledge need.

Key words: Ecosystem-based adaptation, Blue Carbon, the UNFCCC, systematic mapping, international diplomacy

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This research was supported by the Swedish Energy Agency and the Centre for Environmental and Climate Research (CEC), Lund University.

The information and views set out in this report are those of the author and do not necessarily reflect the official opinion of the funding agencies or publisher.

The materials used for this report consist mainly of non-peer reviewed information, often from webpages. The scope of this report is to present an overview of arenas where the concepts of EbA and BC are discussed, not to assess the quality of the information provided on, at or by these arenas.

The report does not attempt to provide a full overview of all existing arenas where EbA and BC are discussed, but rather the most significant ones in terms of impact on the respective debates at the level of international politics, according to the findings.

Please consult chapter 2 for more information on method and material.

Contents

1. Introduction

The United Nations negotiations on climate change have evolved since the inception of the Framework Convention on Climate Change (UNFCCC) in 1992 to include more and more subject areas. This report presents the results of a mapping of different types of arenas where the two concepts *Ecosystem-based adaptation* (EbA) and *Blue Carbon* (BC) are negotiated and contextualised, and displays how different arenas and actors are interlinked within and between these two fields. This first chapter describes the scope of the mapping and its limitations. It briefly discusses the definitions of EbA and BC, and specifies what is seen as an 'arena' in this context.

1.1. Scope and delimitations

The scope of this report is to identify and compile arenas where the topics Blue Carbon and Ecosystem-based Adaptation are currently discussed and developed as scientific and political issues, in particular in relation to the UN climate change negotiations. The report considers also some arenas outside the UNFCCC, with the negotiations as the starting point and framing, (in particular in sections 3.1 and 4.1). The aim is to identify information that enables a better understanding of what is happening within, and in connection to, the UNFCCC-process regarding these two concepts, and to guide future efforts on investigating these concepts.

An important issue that arises following the scope of this report is the definition of an "arena". This is further elaborated in section 1.5, which concludes that arenas and actors are sometimes difficult to separate. This report is therefore guided by a holistic view on what an arena is, in order to make the compilation as comprehensive as possible within the frames of the overarching focus and delimitation of the work.

1.2. Definition of Ecosystem-based Adaptation

Ecosystem-based Adaptation is defined by the CBD as "the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change." (CBD, 2009). This definition has been used by other actors, including the UNFCCC (UNFCCC, 2011a) and the IPCC (Noble et al., 2014, p. 846). The abbreviation EbA is used throughout this report to refer to Ecosystem-based Adaptation. Worth noting is, however, that in the context of the UNFCCC, EbA stands for Ecosystem-based *approaches to* Adaptation (UNFCCC, 2011a).

The concept of *ecosystem services*, which underpins the concept of EbA, was popularised with the publication of the 2005 Millennium Ecosystem Assessment (MEA) report, defined as "[…] the benefits people obtain from ecosystems" (Millennium Ecosystem Assessment, 2005: preface). While the concept of ecosystem services includes all services that ecosystems deliver that are of benefit to humans, EbA focusses on those that can be used for climate change adaptation. This means that ecosystem services that do not deliver climate change adaptation benefits are less central to the concept of EbA, and often described as 'co-benefits' (c.f. Cartwright et al., 2013; Chong, 2014). Ecosystem services without adaptation potential are, however, still to the benefit of humans. Trade-offs (such as increased competition for land) as well as synergies (such as biodiversity) between EbA

and other societal and/or environmental goals should therefore be considered when implementing EbA (see e.g. Noble et al., 2014, p. 847).

It is worth noting that EbA, in line with the concept of ecosystem services, is human-oriented. EbA does not include man-made efforts undertaken in order to help *ecosystems* to adapt to the effects of climate change. Such efforts are instead commonly recognised as ecosystem management (cf. Pramova, Locatelli, Brockhaus, & Fohlmeister, 2012). There are, however, potential overlaps between ecosystem management and EbA because the way we manage our ecosystems affects the quality of the services they provide. In other words, if we manage ecosystems sustainably their resilience will increase, which in turn will strengthen their ability to provide ecosystem services.

With the concept of ecosystem services it was also possible to start talking about nature in monetary terms and a new field emerged – Payments for Ecosystem Services (PES). PES in particular and the concept of ecosystem services in general, provides an argument for the conservation of ecosystems outside of protected areas such as national parks. However, critique has been put forward that the concept risks excluding ecosystem services that are not easily measured in monetary terms (see e.g. Forsyth, 2014).

1.3. Definition of Blue Carbon

Blue Carbon (BC) has been defined as "[…] the carbon stored, sequestered or released from coastal ecosystems of tidal marshes, mangroves and seagrass meadows" (Herr et al., 2012).

In the context of the UNFCCC, the term 'Blue Carbon' has been used, but in official communication the term 'coastal [and] marine ecosystem' is used instead (see e.g. UNFCCC, 2011c, 2012c, 2013b, 2014n). This term is sometimes further specified by giving examples of included ecosystems, namely: mangroves, tidal salt marshes, wetlands, and seagrass meadows (see e.g. UNFCCC, 2011c. § 43; 2012d - see "Summary report by the Chair"). In this report, the term 'blue carbon ecosystems' refers to these different types of coastal marine ecosystems.

Blue Carbon was used by actors participating in the 4th Research Dialogue, in conjunction with SBSTA 36 in 2011(UNFCCC, 2012d), as well as in the workshop on ecosystems with high carbon reservoirs held in Bonn 2013 (UNFCCC, 2014o). Blue Carbon was also used by the IPCC in its 2014 AR5 WGII report (Wong et al., 2014, p. 394), and by many international actors (see chapter 4).

In some contexts covered by this report, all kinds of wetted areas that fall within state boundaries are considered Blue Carbon. The focus on areas within state boundaries is also representative for this report, which in turn means that oceanic blue carbon is considered to be outside its scope. The reason behind this is foremost that in terms of international climate change negotiations, the coastal areas are of more political interest as they are within the territory of nation states and can thus be regulated via existing UNFCCC mechanisms.

While this report recognises that other concepts are sometimes used synonymously or similarly to Blue Carbon, such as "coastal marine ecosystems" in the context of the UNFCCC, Blue Carbon is the focus of this report. This means that Blue Carbon is the term that has been used for the collection of materials, and also that the main focus has been on the use of BC-ecosystems to *mitigate* climate change, in line with the definition above, not other ecosystem services. The reason behind these delimitations is mainly pragmatic; "coastal marine ecosystems" is a broad term and when used to search for information in databases it results in unmanageable amounts of information, the majority covering aspects of these ecosystems other than political ones.

Furthermore, the term Blue Carbon has been used as a concept to raise awareness of the climate change mitigation potential of these ecosystems, and thereby the relevance of these ecosystems for

international climate politics, by platforms such as the joint Blue Carbon Initiative and the Blue Climate Coalition (see section 4.3).

Material/arenas that do not use the term Blue Carbon have been used to inform this report when deemed appropriate, including references to specific BC-ecosystems such as mangroves. It should, however, be noted that this report does not attempt to provide a full review of all material and information published of relevance to the debate on Blue Carbon.

1.4. What is an arena?

The purpose of this report is to identify arenas of relevance to the concepts of EbA and BC. The mapping started off with the notion of an arena as a physical place where different kinds of discussions and/or actions take place. However, during the gathering of material it became increasingly clear that the boundary between an arena and an actor is blurred. For example, UN bodies often facilitate negotiations that bring together representatives from different countries. Negotiations are thereby typical examples of physical places for discussions/negotiations. However, if we take the UNFCCC as an example we can understand it in many different ways and focus on one or more components. First of all, the UNFCCC is a document: the convention text (UNFCCC, 2014r). The convention text specifies that there should be annual negotiations open to all members of the convention (countries). The negotiations in turn consist of a number of texts for different agenda items. The negotiations are run by negotiators that represent countries. Countries are in turn run by governments or similar. The negotiations and the convention are facilitated by a secretariat that consists of staff members that in turn have more or less formalised professional relationships with other actors interested in the same issue. The secretariat has a physical location with offices and employees. The offices of the UNFCCC secretariat are located in Bonn, Germany, but this is not the same physical location as the annual negotiations (Conference of the Parties, COPs), which take place at different locations every year hosted by different governments. The negotiations are physical spaces in the sense that they take place in dedicated meeting rooms, but they are also processes of writing texts that turn into decisions or conclusions. They are also networking opportunities as negotiations often include governmental actors as well as non-governmental observers, which in turn can lead to the establishment of public-private initiatives and similar. These initiatives can take different shapes. For example the UNFCCC Nairobi work programme (NWP) hosts annual Focal Point Forums that bring together government representatives as well as representatives from non-governmental organisations and the private sector. These forums are physical arenas similar to negotiations, but they also host web-based arenas such as databases, and more informal collaborations between organisations and governments. The NWP can on the one hand be described as a formal UNFCCC agenda item, but also as a knowledge hub, platform and/or networking arena. Non-governmental organisations are perhaps best described as actors in the context of negotiations, but they often also have offices at physical locations that bring together different actors, sometimes creating new collaborations and/or umbrella organisations that are collections of several organisations, brought together at physical and/or virtual platforms. Examples of umbrella organisations given in this report include Birdlife International and the IUCN. Moreover, organisations often cooperate within the frames of more or less well defined areas of interests. In some cases, these networks of cooperation have official names. Examples in this report include the EbA Flagship and the Blue Carbon Initiative. Often, however, they do not have official names but can still be thought about as a type of arena where discussions are ongoing and narratives written. Hence, although an organisation is often talked about as an actor it could also be seen as an arena that brings together different actors (individuals, groups and/or other organisations). Furthermore, even though the UNFCCC or other UN-bodies can be thought of as arenas for negotiation, they can also be seen as collections of actors, or actors tout court. For example, the CBD often participates at the UNFCCC negotiations, represented by CBD

secretariat staff members. In this context, the CBD can be described as an actor at the climate change negotiations. However, the CBD also has negotiations, in a similar manner as the UNFCCC, which makes it difficult to decide if the CBD, in this case, should be treated as an arena or an actor.

Against this backdrop, a fairly holistic and flexible view on what an arena can be has been used. In this report, an arena can be a physical place, as well as a more virtual network. When collecting material, the search has been concentrated on actors participating in or contributing to ongoing discussions about Blue Carbon and/or Ecosystem-Based Adaptation at the level of international politics, in order to not exclude potential arenas that at first sight might appear to be an actor. Consequently, there are actors who have been excluded from the report. Examples include universities and similar entities that carry out research about EbA/BC but do not provide policy recommendations or similar, organisations that act at the local level but do not disseminate information directly or indirectly though other actors, and country positions. The latter are indirectly included via the UNFCCC-process, or other UN-negotiations.

The view on actors and arenas underpinning this report is that the boundary between an actor and an arena is blurred and that, in order to get a comprehensive mapping of relevant arenas, it is better to include all kinds of actors. It makes the presentation more complex, but also captures more of the overall picture than if proceeding with a more restricted selection.

The aspiration of this report is to present some of the bigger commonly known arenas with some degree of influence at the international stage, but not a complete compilation of arenas. Furthermore, as the landscape of the climate change negotiations is dynamic, what is relevant today might not be so tomorrow. The compilation in this report reflects the years between 2010 and 2015, with an emphasis on the most recent developments.

2. Methods and material

The main focus of this report is the UNFCCC-arena. However, other arenas influence what happens within the UNFCCC-context. Focussing only on the UNFCCC would be too limited as other UN bodies also work with these issues. A wider scope is interesting also in order to see how, if at all, different efforts within the UN-system are connected.

The context of the UNFCCC is vast and does not have a given scope; the scope could be defined based on, *inter alia,* specific sectors, political level and/or types of actors influencing the process. Issues other than climate change also influence how climate change, including BC and EbA, is addressed at the international level. Relevant arenas could potentially be found at all administrative levels, ranging from local cooperation to global partnerships. Material that could potentially be relevant comes in many shapes and from a variety of sources. The approach taken in this report is to start with the UNFCCC-context and work 'outwards', but focussing on the international level, including Intergovernmental Organisations (IGOs) and large, umbrella-like Non-Governmental Organisations (NGOs).

Material collection, part one: UNFCCC-arenas

Within the UNFCCC system, different agenda items are in this report treated as different arenas, acknowledging that they are not *de facto* standalone items, but rather depend on each other and are intertwined. Methodologically the approach has been to scrutinise available information about different negotiation tracks within the UNFCCC process that have, or could have, an influence on EbA and BC (sections 3.1 and 4.1). The material used includes foremost official UNFCCC documents and communications, complemented and driven by observations from relevant UNFCCC between 2013 and 2015, including technical workshops, intersessional negotiations and the annual negotiations within and around the Conference of the Parties. This was complemented by a second, more targeted, round of material collection, including the following:

- **Adaptation Fund:** All endorsed concepts obtained from the Adaptation Fund-web page (Adaptation Fund, 2015)
- **CDM**: the UNFCCC database with 7000+ projects (UNFCCC, 2014d). The scope was narrowed down to all (55) projects within the Afforestation/Reforestation category. The available project descriptions were downloaded and analysed.
- **INDCs**: All intended Nationally Determined Contributions (INDCs) available from the UNFCCC website June 30 2015 were added to the database (UNFCCC, 2015b). These were the INDCs from the following Parties to the Convention: Andorra; Canada; China; Ethiopia; EU; Gabon; Iceland; Lichtenstein; Mexico; Morocco; Norway; Republic of Korea; Russia; Serbia; Switzerland and the USA. The texts were analysed and the information categorised according to the following categories: Ecosystem; Wetlands/non-forest lands/coastal areas; Forests; Land-use and market mechanisms. These categories were selected based on the content of the INDCs, rather than decided beforehand. All information that could potentially be relevant for EbA and/or BC was selected, not only information that specifically mentioned these areas (Andorra, 2015; Canada, 2015; China, 2015; Ethiopia, 2015; EU, 2015; Gabon, 2015; Iceland, 2015; Korea, 2015; Lichtenstien, 2015; Mexico, 2015; Morocco, 2015; Norway, 2015; Russia, 2015; Serbia, 2015; Switzerland, 2015; USA, 2015).
- **NAMAs:** The NAMA database includes around 200 proposals. Titles and short descriptions were scrutinised. All NAMAs that dealt with land-use related issues were further examined.

- **NAPAs**: All National Adaptation Plans of Action (NAPA) available from the UNFCCC NAPA-web portal May 22 2015 were included. The NAPAs were contributions from fifty countries (see annex 3), and included several hundred individual NAPAs.
- **REDD+** projects were collected from the REDD-readiness webpage and UN-REDD, with a particular focus on EbA and BC-projects, and complemented with more generic information about REDD+ from the UNFCCC webpage.

Material collection, part two: Other members of the UN-system, IGOs, NGOs and hybrids

Part two of the material collection focussed on arenas outside the UNFCCC-process. The results are presented in two parts – an overview of members of the UN-system other than the UNFCCC of relevance to BC/EbA (sections 3.2 and 4.2) and an overview of remaining arenas (sections 3.3 and 4.3). These latter arenas are mainly NGOs and private sector initiatives of relevance to BC/EbA, but also few regional and governmental arenas, as well as 'hybrids', which in this context means entities made up of UN-bodies, governmental and/or non-governmental actors. One such hybrid arena is the Blue Carbon Initiative, which is coordinated by two environmental NGOs (Conservation International and the IUCN) and the UN-specialised agency UNESCO.

The material collection for this part of the report used the UNFCCC as a starting point and followed up other arenas and actors mentioned within this context, such as other UN-entities that are, or have been, observer organisations to the UNFCCC. It was complemented by material from other internet-based sources, using the search engine Google, following this step-wise approach:

- Internet search for "Ecosystem-based Adaptation" and "Blue Carbon" respectively, sorted according to relevance (using a browser cleared from previous search history as this otherwise changes the order of results);
- The first 40 results for each topic were selected;
- The actors/arenas behind the information provided were identified and included in a list of relevant actors for EbA and BC respectively;
    - Results without a dedicated actor/arena and/or results that were outside the scope of the report were excluded. Examples include peer-reviewed articles (the authors were here seen as individuals and thus not counted as actor/arena) and information that was clearly not about climate change. This resulted in the list of actors for EbA contained in Appendix 1 and for BC contained in Appendix 2;
    - After scrutinising the identified actors/arenas, some were excluded from the overviews in 3.3 and 4.3 for one of the following reasons: the information about EbA/BC was very limited and/or their information was gathered from another actor/arena (e.g. summary of a report from another organisation that works with EbA/BC. These actors/arenas were investigated instead), or the type of actor was outside the scope of the report. These actors were mainly universities/research institutes that do not provide policy recommendations or other material that could be seen as an attempt to influence the political discussion about these issues, or governments.
- A database, using NVivo 10, was set up;
- The actors' respective webpages were scrutinised for information about BC or EbA. Almost all webpages had their own search tool. This tool was used to find information regarding "ecosystem based adaptation" and "Blue carbon" respectively. Alternative words were only used when the search did not generate any results. For webpages with no internal search function, Google was searched for *name of actor + ecosystem based adaptation/blue carbon.* The results were included in the database. For webpages with many results related to EbA or BC, results were sorted according to relevance (using the inbuilt search function when available). When this was not possible, the most recently published results were included in

the database. The first three results (internal pages within the actor's webpage) were added to the database. When the search of the actor's database resulted in three or less internal webpages, all pages were included. The webpages were included in the database using the clipping-tool of the software Evernote. The pages were first downloaded to an Evernote-library and later transferred to NVivo 10;

- When deemed appropriate, a snow-ball approach was used to compliment the material collection, which resulted in a few additional actors/arenas to the list identified through links from other webpages;
- In total, 95 webpages about EbA and 89 webpages about BC (every "link" being one page, meaning that one organisation can have several pages at the homepage) and 37 reports were initially included in the database.

The material was then scrutinised through qualitative and quantitative text analysis using the software NVivo 10. Although a substantive amount of material has been used to inform this report, it does not attempt to provide a full account of relevant actors, arenas and sources of information. Furthermore, and as highlighted in previous literature, grey literature is a challenging source of information to use for systematic reviews as the information is often not collated into comprehensive databases, making it cumbersome to find the most relevant information, and not quality controlled in the same manner as academic literature is (e.g. Doswald et al., 2014). Excluding grey literature, such as project reports, altogether would, however, severely limit the mapping.

3. Arenas EbA

This chapter covers arenas of relevance to the concept of Ecosystem-based Adaptation. The aim is to map these arenas in order to get an overview of where this concept is currently constructed. This chapter will start with an overview of negotiation tracks within the UNFCCC that discuss, or in other ways works with, issues related to EbA. This is followed by a consideration of other UN-related bodies that also discuss EbA, and an overview of other governmental and non-governmental forums.

This report is underpinned by the understanding that how we talk about an issue, how we conceptualise it and how we materialise it changes how we see and apprehend an issue. In the context of EbA, Chasek (2011) argues that climate change has led to a rethinking of how we can best protect our environment. While protected areas were previously the response to loss of biodiversity, conservation organisations have, in light of climate change, embraced a more holistic view on nature protection, including EbA-approaches, as protecting specific areas might no longer conserve the values we wish to keep as the environment changes (Chasek, 2012). As explained in section 1.3, EbA differs from traditional views on nature protection as it puts humans at the centre of attention. EbA is about how we can use the services provided by our ecosystems to adapt to a changing climate, not about protecting ecosystems in the sense that they should be left untouched.

Whether the arenas and actors highlighted in this report also see EbA as a rethinking of the traditional view on nature protection is outside the scope of this report. The results of the mapping presented in this chapter show, however, that many of the actors who are involved in discussions about EbA are traditional conservation organisations and conventions, such as the Convention on Biological Diversity, Conservation International and the International Union for Conservation of Nature.

3.1. In the context of the UNFCCC

EbA was first formally introduced to the CBD in 2009, and shortly thereafter to the UNFCCC (Chong, 2014). An agreement between the so-called Rio Conventions on how to cooperate regarding EbA has been made and signed by their respective executive secretaries (CBD et al., 2012).

In the context of the UNFCCC, EbA has most notably been mentioned in the context of the Nairobi work programme (NWP). For example, the 17th Conference of the Parties (COP 17, held in Durban 2011) requested the UNFCCC secretariat to arrange an EbA-workshop, to write a report of the workshop and to set up a database comprising EbA-case studies (UNFCCC, 2011b: Decision 6/CP.17, § 4, 5 & 7). The database now comprises information sent to the Secretariat from governments, UN-bodies and organisations (UNFCCC, 2014e). Although most entries in the database were submitted to the Secretariat shortly after SBSTA 34, it was, at the time when this report was written, still possible to send suggestions of new entries to the Secretariat. The mandated Technical workshop on ecosystem-based approaches for adaptation to climate change, took place in Dar es Salaam, Tanzania 21-23 March 2013 (UNFCCC, 2014q). It was informed by a compilation of information relevant for EbA produced by the secretariat (see UNFCCC, 2011a). The Secretariat produced a workshop report, which was considered at the 38th meeting of the SBSTA (UNFCCC, 2013b). Since then, EbA has not been a specific focus area, but the SBSTA has identified *ecosystems* broadly as one of the *work areas* (together with the following areas: Human settlements, Water resources and Health) for the now running commitment period of the NWP (UNFCCC, 2013a:

Decision 17/CP.17, § 5). Moreover, UNFCCC mechanisms and processes other than the Nairobi work programme are also of relevance to EbA. Linkages, existing or potential, between the UNFCCC and EbA are displayed in Table 1 below. The material used for this table was collected from the UNFCCC webpage, and sorted according to process/mechanism and type of linkage. The types of linkages have been defined as:

- Formal: formally recognised by the parties to the Convention;
- Partial: agenda items that have included mechanisms of relevance to the implementation of EbA, or that have otherwise contributed to the advancement of EbA in the context of the UNFCCC;
- Indirect: current processes/mechanisms of the UNFCCC that do not specifically focus on EbA but have implemented mechanisms that overlap with EbA, such as activities that fit the definition of EbA used in this report without calling it EbA;
- Suggested linkages: propositions made by parties to the Convention related to EbA that have not (yet) been adopted by the Convention;
- Potential linkages: potential, but not (yet) suggested to the Convention, linkages identified through the material collected within the frames of this project (inductive), as well as linkages that could be imagined, based on the current knowledge about EbA and its framing (deductive).

The mapping presented in Table 1 is complemented by a more comprehensive discussion for each UNFCCC agenda item/activity identified.

Table 1: Linkages between EbA and established processes and mechanisms under the UNFCCC

Type of linkage	UNFCCC Process/mechanism
Formal	**Nairobi work programme** Database on ecosystem-based approaches to adaptation (UNFCCC, 2014e); Compilation of information on EbA (UNFCCC, 2011a); Technical workshop on EbA (UNFCCC, 2014q) Report of the technical workshop on EbA (UNFCCC, 2013); Ecosystems as one of the main focus areas of the programme since 2013 (UNFCCC, 2013a).
Suggested	**INDCs (Intended Nationally determined Contributions)** Out of the 16 INDCs available when this report was written, Mexico (2015) and Morocco (2015) mention Ecosystem-based Adaptation specifically, and Ethiopia mentions it indriectly (2015). Gabon (2015), included specific references to adaptation in its INDC, and stressed the role of biodiversity and healthy ecosystems.
Indirect	**NAPA (National Adaptation Programmes of Action)** Two out of fifty countries that have submitted NAPAs to the UNFCCC specifically mention EbA: Myanmar (2012) and Timor-Leste (2010). Twenty countries mention approaches that potentially have linkages to EbA.
Indirect	**Issues related to agriculture** Indirect linkages found include: Examples of EbA-agricultural projects in the NWP EbA database (UNFCCC, 2014e); Workshop, which discussed co-benefits and adaptation of agricultural lands, some which could be linked to EbA (UNFCCC, 2014p); Framing of the issue: stressing co-benefits, resilience and human-centred efforts.

Type of linkage	UNFCCC Process/mechanism
Indirect	**REDD+ (Reducing Emissions from Deforestation and forest Degradation in developing countries)** REDD+ focusses on mitigation. However, forests have other aspects than carbon sequestration, which is highlighted in the *plus* of REDD+, as well as three additions to the mechanisms that were agreed upon during SB 42, awaiting a possible conclusion at COP 21, namely: REDD-safeguards; Non-Carbon Benefits (NCB) and Joint Mitigation and Adaptation (JMA). These developments may include EbA, perhaps in particular NCB, including payments for NCB (see e.g. UNFCCC, 2014t).
Potential	**Market and non-market based mechanisms (including Payments for Ecosystem Services, PES)** While the use of Payments for Ecosystem Services (PES) is currently not formally discussed in the context EbA within the frames of the UNFCCC, some attention has been given to this issue. Examples include: In the context of REDD+ and non-carbon benefits stemming from REDD+ activities, via submissions from parties to the Convention (see e.g. UNFCCC, 2014t). In the context of the NWP via a submission to the NWP by partner organisation Birdlife International at the occasion of SBSTA 41, December 2014 (see: BirdLife International, 2014). While the focus is on mitigation, co-benefits such as adaptation, are discussed within the frames of the Non-marked based Approaches (NMA) mechanism, which is similar to the discussions regarding NCB in the context of REDD+.

INDCs

As the table above displays, two of the sixteen INDCs available and analysed when this report was written mention Ecosystem-based Adaptation specifically – Mexico (2015) and Morocco (2015). Other countries use approaches that fit the definition of EbA, but do not make specific references to EbA. Ethiopia, for examples, writes that:

> Enhance the adaptive capacity of ecosystems, communities and infrastructure through an ecosystem rehabilitation approach in the highlands of Ethiopia. Rehabilitation of degraded lands/forests will also increase resilience of communities, infrastructures and ecosystems to droughts and floods (Ethiopia, 2015, p. 6).

Gabon (2015) discusses adaptation in its INDC, but not EbA specifically. Gabon also links climate policy to sustainable development and societal values such as social capital, biodiversity and ecosystems. Lichtenstein states that they wish to implement climate change mitigation actions that at the same time bring co-benefits such as social and environmental benefits. Co-benefits is a core argument for promoting EbA (see e.g. Butler, Skewes, Mitchell, Pontio, & Hills, 2014; Doswald et al., 2014; Reid, 2015), and thus some elements of the proposed INDCs are in line with the framing of EbA. Furthermore, most of these INDCs included specific references to the IPCC guidelines[a], which are built around the following main sectors: Energy, Industrial Processes and product use, Agriculture, Forestry and other Land-Use (AFOLU) and Waste (IPCC, 2006). However, the broader category of land-use could potentially be managed through EbA, and hence be relevant in this context. The same can be said about the forestry sector. Non-forest lands were also mentioned in a few cases, which could also be a potential sector where EbA could be used. There are currently ongoing discussions regarding whether or not adaptation should be included in the INDCs, which could probably explain some of the lack of references to EbA specifically and adaptation generally. Another potential explanation is that the INDCs are written with a degree of variation to the details

[a]The most recent guidelines were published in 2006 and supplemented in 2013 with the so-called KP and Wetlands Supplements (IPCC, 2014a, 2014b).

regarding implementation, but all in all fairly generally and thus there might not have been a need to mention specific approaches such as EbA. As the effects of EbA are not easily monitored, they might therefore be deemed not suitable to INDCs.

NAPAs and NAPs

The table above outlines an indirect linkage between National Adaptation Programmes of Action and EbA. NAPAs were introduced in the UNFCCC process in 2001 as a way to assist Least Developed Countries to find funding to address their most urgent adaptation needs. NAPs were introduced at COP 16 in Cancún 2010 within the frames of the Cancun Adaptation Framework (LDC Expert Group, 2012). NAPs are more comprehensive than NAPAs in that they can be initiated by all developing countries, not only the least developed countries, and that the time frame is medium to long-term (ibid). However, this report focusses on NAPAs for two main reasons. 1) While many countries have initiated processes to establish NAPs, only one was available at the official webpage at the time of the writing of this report[b]. NAPAs have a longer history and 50 countries (July 2015) have submitted NAPAs accessible via the UNFCCC-NAPA webpage. 2) LDCs are encouraged to use their NAPAs to inform the NAPs-process (LDC Expert Group, 2012). Hence, analysing existing NAPAs may also give an insight in future NAPs.

The analysis shows that two out of the fifty countries that have submitted NAPAs to the UNFCCC (as of July 2015) specifically mention EbA – Timor-Leste and Myanmar. However, a text analysis of the submitted NAPAs reveals that twenty countries mention activities that could be associated with EbA to a greater or smaller extent. Almost all countries mention community-based work, which is something that is often associated with EbA. Community-based Adaptation (CBA) however does not always include ecosystems; it can also be about organisational settings and use of knowledge (Reid, 2015). Twenty out of the fifty countries that have submitted NAPAs use community-based work in the context of ecosystem and/or natural resources management (including sustainable development). In order for a project to be seen as EbA it needs to go beyond management of natural resources to use ecosystem services to help people adapt to climate change. Examples from the NAPAs include ecosystem-based tourism, change of crops in line with a changing climate to use the ecosystem services in the adaptation work of communities, and so on. Worth noting is that the information included in the NAPAs is in general not detailed enough to make a clear conclusion that these projects can be associated with EbA. Some cases are clearer and illustrate that EbA approaches have been embraced at least by some countries.

Issues related to agriculture

Agriculture has been a part of the negotiations since COP 17 in Durban 2011 (UNFCCC, 2011c, decision 2/CP.17). It is currently grouped together with REDD+ and LULUCF as land-use issues (UNFCCC, 2014h). There are potential overlaps between agriculture and EbA. An example of an activity undertaken within the agenda item "Issues related to agriculture" is a workshop held in 2013 with the title "Workshop on the current state of scientific knowledge on how to enhance the adaptation of agriculture to climate change impacts while promoting rural development, sustainable development and productivity of agricultural systems and food security in all countries, particularly in developing countries" (UNFCCC, 2014p). Adaptation of agricultural landscapes is not covered by the definition of EbA as EbA refers to how ecosystems can help us adapt to climate change, not the other way around, which was the main scope of the workshop. However, during this workshop the FAO highlighted both how ecosystems can become more resilient and how forests and trees can be used to increase our resilience through food security and income diversification, amongst other aspects (Meybeck, 2013).

[b] The official UNFCCC-NAP webpage <unfccc.int/nap> provides background information about the NAPs-process, and collates national communication from parties, NAPAs and NAPs. For more information about the NAPs-process, see also "Information paper on the national adaptation plan process" (UNFCCC, 2014g). Since 2013, UNDP and UNEP run a joint programme, the NAP-GSP, to assist LDCs in their work with NAPs, financed by the Least Developed Countries Fund (UNFCCC, 2015c).

Generally speaking, the way agriculture and EbA are spoken of in the context of the UNFCCC have some similarities. They both emphasise the well-being of humans – in agriculture mainly addressed as food-security and in EbA how people can adapt to climate change more broadly. Furthermore, both issues highlight the concept of resilience. In the context of agriculture this is mainly as the resilience of agricultural landscapes and the ecosystem services we associate with agriculture, and again more in general terms in the context of EbA. Another example is co-benefits/non-carbon benefits and the emphasis on these (compare e.g.: UNFCCC, 2013 2014p).

Finally, as an indirect linkage, the Nairobi work programme EbA database includes examples of EbA-agricultural projects (UNFCCC, 2014a).

REDD-plus

REDD (Reducing emissions from deforestation and forest degradation in developing countries) became REDD-plus (REDD+) at COP 16 in Cancun 2010. The *plus* stands for role of conservation, sustainable management of forests and enhancement of forest carbon stocks (UNFCCC, 2013d).

REDD+ was further elaborated through the Warsaw framework of REDD+. Recent decisions include three agreements reached during the inter-sessional negotiations in Bonn 2015, SB 42, for consideration by the next Conference of the Parties, COP 21 (Antonich et al., 2015). The three agreements are: REDD+ social and environmental safeguards (to minimise human and environmental risks associated with the implementation of REDD+ schemes, see also: Peskett & Todd, 2013), Non-Carbon Benefits (NCB) and Joint Mitigation and Adaptation (JMA). They all more or less relate to the plus in REDD+, and the additional benefits of reduced deforestation and forest degradation, and may thereby be relevant for EbA. The work on Non-Carbon Benefits (NCBs) was initiated at COP 18 in Doha, and further discussed at SB 38 (UNFCCC, 2012c, decision 1/CP.18, § 40). One potential NCB is adaptation, as elaborated by e.g. China in its submission regarding this matter, in which China also links adaptation benefits with JMA and Safeguards, underlining that "As a matter of fact, non-carbon benefits in REDD+ encompass a wide range of functions and services in the ecosystem, and mainly include ecological, economic and social benefits" (UNFCCC, 2014t, p. 24).

Generally speaking, activities in the forestry sector deal with several goods and services from ecosystems such as timber and forest products and other less visible services such as those related to the water cycle, soil functioning and more. When these activities lead to adaptation co-benefits, they may incorporate EbA as well.

Another possible NCB is enhanced ecosystem services provision. The SBSTA asked parties to the Convention to send submissions regarding NCB to the secretariat (compiled by the secretariat in: UNFCCC, 2014t). Three submissions highlighted enhanced ecosystem service provision and more resilient ecosystems as NCBs (COMIFAC; the Philippines and Tunisia). For example, the Philippines draw linkages to EbA by stating that:

> The links of REDD-Plus to other ecosystems-based approaches must be recognized and explored. In doing so, existing responsive methodologies for identifying (and valuing) ecosystem services should be built upon, rather than replaced, when developing methodologies related to NCBs (UNFCCC, 2014t, p. 34).

Two submissions discussed Payments for Ecosystem Services-schemes (PES) in a broader sense than payments for REDD+: the COMIFAC[c] countries, which highlighted potential benefits of *payments for non-carbon benefits,* and the Philippines, which highlighted potential overlaps between REDD+ safeguards and PES and the importance of taking these overlaps into consideration in order to not

[c] Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Gabon, Guinea-Equatorial, Rwanda, and São Tomé and Príncipe. For more information see the COMIFAC-webpage <http://www.comifac.org/fr/etats-membres>

increase complexity (ibid). Also observer organisations were asked to send their views regarding "Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" by March 2014 and a group of organisations - Conservation International (CI), Environmental Defence Fund (EDF), National Wildlife Federation (NWF), Rainforest Alliance (RA), The Nature Conservancy (TNC), and Union of Concerned Scientists (UCS) discuss benefits of PES in their joint submission (2014). According to the definition of EbA used in this report, EbA is the use of ecosystem services to help people adapt to a changing climate. It is human-centred and does not include how to adapt ecosystems to a changing climate. Enhanced resilience of ecosystems can instead be described as ecosystem management. However, given that humans depend on ecosystems for the provision of livelihoods, food, water regulation, and shelter and so on, healthy ecosystems will lead to better chances for humans to cope with a changing climate as well.

It should be noted that REDD+ has received criticism regarding the possibility to maintain social and environmental integrity (the REDD-safeguards guidelines mentioned above are meant to make sure that this is not the case), and some scholars are therefore critical to the possibility of REDD+ to also promote EbA (for an overview see Chong, 2014).

Market Mechanisms, including PES

Market-based mechanisms have been a component of the Kyoto Protocol and discussions are ongoing (July 2015) regarding the use of market mechanisms in the new climate agreement. For example, all submitted INDCs analysed within the frames of this report, with the exception of Mexico, relate to the role of market mechanisms/carbon credits. The EU, USA, Russia, Andorra and Norway state that they do not intend to use international mechanisms/credits (Andorra, 2015; EU, 2015; Norway, 2015; Russia, 2015; USA, 2015), but Norway expresses an optimistic view towards marked-based mechanisms and is, together with the EU, planning to use the European Emission Trading Scheme (ETS). Switzerland, Canada and Lichtenstein are all planning to use international credits/mechanisms (Canada, 2015; Lichtenstien, 2015; Switzerland, 2015). Gabon is considering the possibility to finance climate action through the use of green certificates and/or bonus-systems (Gabon, 2015).

The Kyoto protocol builds on the use of market mechanisms; Emissions trading, the Clean Development Mechanism (CDM) and Joint Implementation (JI). At COP 18 in Doha, when the second commitment period of the Kyoto Protocol started, three new work programmes related to market mechanisms were launched with the view towards the new climate change agreement to enter into force in 2020. The three mechanisms are:

- Framework for Various Approaches (FVA)
- New market-based mechanisms (NMM)
- Non-market based approaches (NMA)

The parties to the UNFCCC did not reach an agreement regarding these mechanisms at COP 20 in Lima December 2014 (UNFCCC, 2014i). It was then still unclear what these three acronyms incorporate and how they potentially overlap. While NMM and NMA can be separated based on the use of, or non-use of, market-mechanisms, the discussions regarding the FVA incorporate both strategies. A key approach within the discussions about FVA is Monitoring, Reporting and Verification (MRV) standards that are seen as being fairly generic and suited for market as well as non-market mechanisms (A. Howard, 2014). NMA is seen as either a complement to market-based mechanisms, or an alternative. It focusses on cost-efficient climate solutions without the use of credits and/or trading-schemes. Examples include taxes and regulations. Both FVA and NMA focus on co-benefits of mitigation actions such as sustainable development and adaptation to climate change (UNFCCC, 2014f, 2014m) and have, thereby, similarities with the Non-Carbon Benefits (NCB) discussed in the context of REDD+. Generally NMM is seen as a mechanism that generates credits, which in turn might be traded (UNFCCC, 2014l). At the time of COP 20 the

role of trading was unclear, as well as whether the focus should be on a comprehensive international market, or if the mechanism should be set up around various sectors (A. Howard, 2014). NMM could potentially be consolidated with CDM and JI, or coexist with them. All in all, the role of markets post 2020 is uncertain, but as these three approaches together represent a broad and varied view on markets, it cannot be excluded that adaptation will have a role to play (perhaps in particular in the context of the FVA), or that the agreement could potentially incorporate Payments for Ecosystem Services (PES) that, in its extension, could be relevant to EbA.

Payments for Ecosystem Services (PES) have, as outlined above, been discussed in the context of REDD+. It has also been highlighted in other contexts that "Ecosystem service assessment or valuation can be an important tool to help understand the dependency of communities on ecosystem services, and to assess the quality, quantity and benefits of these services.", and furthermore that "Ecosystem service valuation can also help to engage sectoral ministries and the private sector, and may highlight opportunities for payments for ecosystem services schemes for adaptation." (BirdLife International, 2014, p. 3 f)

3.2. Other members of the UN-system

This section describes arenas other than the UNFCCC within the UN-system, such as conventions and specialised agencies[d] of relevance to Ecosystem-based Adaptation. Some of these arenas are linked to each other. For example, the IPCC was established by the WMO and UNEP, and IPBES is placed within the frames of UNEP. Another example of potential arenas worth noting in this context is the cooperation between the Rio Conventions – CBD, UNCCD and UNFCCC regarding Ecosystem-based Adaptation (CBD et al., 2012). A similar initiative is the UN collaborative programme on REDD+. The programme was established by FAO, UNEP and UNDP, and has a secretariat placed in Geneva (UN-REDD Programme, 2015).

As outlined in section 1.3, it was the CBD that came up with the definition of EbA that is today commonly used, e.g. by the IPCC and the UNFCCC, namely "the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change" (CBD, 2009; Noble et al., 2014, p. 846; UNFCCC, 2011a). According to Chong (2014), EbA has brought the objectives of the two conventions closer together and enabled cooperation that did not previously occur. While the UNFCCC has few references to biodiversity and the CBD did not give climate change much attention before 2010, both conventions have since then encouraged their respective member states to implement this strategy (Chong, 2014).

Today several members of the UN-system work with EbA more or less extensively. These bodies are listed in the table below, along with a general description of what they do, and examples of EbA related activities.

Table 2: Members of the UN-system and their work related to EbA

Entity	EbA-related activities
CBD	Following a UNEP initiative in 1988, the Convention on Biological Diversity (CBD) opened for signatures at the Rio Conference in 1992 and entered into force the following year (CBD, 2015). The CBD has highlighted EbA at several occasions, drawing linkages between climate change and biodiversity goals. Its technical expert group on biodiversity and climate change presented the definition of EbA that is today used by the UNFCCC (and in this report).

[d] Specialised agencies are part of the UN-system, yet independent organisations. Examples include the World Bank, the World Meteorological Organization (WMO) and the UN Educational, Scientific and Cultural Organization (UNESCO). For more information see < http://www.un.org/Overview/uninbrief/>

Entity	EbA-related activities
	The technical Expert Group on Biodiversity and Climate Change has highlighted EbA as one of the group's key messages. It writes that: "Ecosystem-based adaptation, which integrates the use of biodiversity and ecosystem services into an overall adaptation strategy, can be cost-effective and generate social, economic and cultural co-benefits and contribute to the conservation of biodiversity" (CBD, 2009, p. 9f). CBD COP 10 2010 Aichi Target 15 states that "By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification." (CBD, 2010). CBD COP 12 2014: "Encourages Parties and invites other Governments and relevant organizations to promote and implement ecosystem-based approaches to climate change related activities and disaster risk reduction, in both terrestrial and marine environments […]"(CBD, 2014b , §5) and encourages the executive secretary "[t]o promote ecosystem-based approaches to climate change adaptation and disaster risk reduction, taking advantage of opportunities presented by relevant processes and forums, in cooperation with relevant organizations, including the United Nations Framework Convention on Climate Change" (ibid §7a). The CBD Secretariat was one of the organisers behind a symposium held in Lima in 2014, which resulted in the "Lima declaration on biodiversity and climate change from science to policy-makers, for sustainable development" presented during a side even at UNFCCC COP 20 on December 5, 2014 (Peru's Environment Ministry, the National Council for Science and Technology, Convention on Biological Diversity (CBD) Secretariat, Inter-American Institute for Global Change Research (IAI), & German International Cooperation Agency (GIZ), 2014). The declaration, prepared by a number of scientists, states, that "Adapting to climate change impacts ecosystems can be managed to limit climate change impacts on biodiversity and to help people adapt to the adverse effects of climate change. Therefore, ecosystem-based approaches should be integrated into relevant strategies – including adaptation strategies and plans – and implemented" (ibid: 2).
GCF	The Green Climate Fund (GCF) was first proposed at UNFCCC COP 15, to support climate change work in developing countries that are parties to the UNFCCC, and is seen as an important part of the UNFCCC-process, in particular post-2020 as it has been decided that the fund should receive 100 billion US dollars per year from 2020 (GCF, 2015a). The Republic of Korea has been assigned to host the GCF and an independent GCF Secretariat has been established (ibid). The GCF has been requested to provide equal support to mitigation and adaptation actions (UNFCCC, 2012b, decision 3/CP.17). There are four sectors under mitigation and adaptation respectively. One of the adaptation sectors is called Ecosystems and Ecosystem Services (GCF, 2015b).
GEF (World Bank Group)	The Global Environmental Facility (GEF) serves as the financial mechanism for several international convention, including the CBD and the UNFCCC (GEF, 2013). The GEF works under the convention it serves, so it does not carry out initiatives on its own. It hosts the Adaptation Fund Board Secretariat and administers, following a decision at UNFCCC COP 7 in 2001, the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) (GEF, 2013). Both funds focus on adaptation to climate change. The GEF Secretariat has, amongst others, developed guidelines for applying for funding for EbA-projects through these funds, which states that the role of ecosystems in climate change adaptation is increasingly recognised and informs about the reader about, inter alia, the Nairobi work programme (GEF, 2012). GEF co-funds together with UNDP EbA projects in 146 countries (see UNDP).
IPBES	The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) was established in 2012 as an independent intergovernmental body open to all members of the UN (IPBES, 2015a). It operates much like the IPCC; holds plenary sessions and publishes substantial reviews on

Entity	EbA-related activities
	biodiversity and ecosystem services. IPBES does not have climate change as its main focus, as the IPCC does. Its activities circulate, as its name reveals, around the concepts biodiversity and ecosystem services. The concept of ecosystem services is, as previously discussed, underpinning the concept of EbA and IPBES is involved in activities focussing on EbA as well. During its 3rd session, IPBES recognised the Lima Declaration on Biodiversity and Climate Change (IPBES, 2015b § 80; see also CBD above). It also paved the ground for a "Generic scoping report for the regional and sub regional assessments of biodiversity and ecosystem services", also known as Deliverable 2b. The IPBES-3 decision states that the scope of the assessment report is to, inter alia, investigate statues, trends and projections for biodiversity and ecosystem functions and services. The assessment also aims at strengthening science-policy interaction at the regional and sub regional levels. One of the many guiding questions for the assessment focusses on EbA, namely: "How can ecosystems that provide ecosystem services, such as those underpinning ecosystem-based adaptation to climate change and nature-based solutions to sustainable development, be protected through investments, regulations and management regimes for terrestrial, freshwater, coastal marine systems?" (IPBES, 2015b annex VII).
IPCC	The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), with the view to provide the world's governments with more reliable and accessible scientific information on climate change (Biermann & Bernd, 2009). The panel was officially established in Geneva, Switzerland, in November 1988 (IPCC, 1988). In its 5th Assessment Report, AR 5, the IPCC uses three rough categories of adaptation measures: 1) Institutional and social, 2) Technological and Engineered, and 3) Ecosystem based (Wong et al., 2014, p. 387). AR5 has a dedicated section in Chapter 14 to EbA, which uses the CBD-definition of EbA and includes green infrastructure (Noble et al., 2014, p. 846f). Furthermore, EbA is highlighted in the Executive Summary of the chapter, stating (with robust evidence and high agreement) that: "Engineered and technological adaptation options are still the most common adaptive responses, although there is growing experience of the value for ecosystem-based, institutional, and social measures, including the provision of climate-linked safety nets for those who are most vulnerable […]" (ibid. 836).
UNCCD	The United Nations Convention to Combat Desertification (UNCCD) had EbA as the theme of 2014 World Day to Combat Desertification, in order to "[…] increase awareness about the potential of ecosystem-based adaptation as a strategy for coping with the impacts of climate change, especially in the drylands. Ecosystem-based adaptation means the strengthening of natural systems to cushion the worst impacts of climate change. When ecosystems are healthy, they are less vulnerable to the impacts and hazards of climate change" (UNCCD, 2014). In the opening statement of this day, UNCCD Executive Secretary Monique Barbut said that "This land and ecosystem-based based approach to adaptation is such a powerful tool for positive change. It makes us personally able to do something to avoid disaster. When our individual ecosystem-level initiatives are spread widely enough across countries, regions and the world, they will bring about a global transformation from the ground (Barbut, 2014b)". In another speech during the same event she argued that "[e]stimates of the cost of adaptation vary, but they are all in the billions of dollars. I argue that there are more cost-effective options out there, powered by nature. If we can harness them, we can reduce the global adaptation bill considerably" (Barbut, 2014a). At its website, the UNCCD has compiled information about EbA, including links to other actors e.g. the CBD and the IUCN (UNCCD, 2015). The CBD also uses the concept "land-based (ecosystem) adaptation" in a similar manner as EbA (c.f. Barbut, 2014a, 2014b).
UNDP	The United Nations development Programme (UNDP) hosts a platform called the Adaptation Learning Mechanism (ALM), which was originally funded by the GEF, is linked to the UNDP-GEF Global Adaptation Learning Mechanism, and is now financed by the UNDP (UNDP, 2012a). UNDP-ALM is a knowledge-sharing platform on country led programmes and projects financed by the UNFCCC Least Developed Country Fund (LDCF), Special Climate Change Fund

Entity	EbA-related activities
	(SCCF) and Adaptation Fund (AF), as well as bi-lateral donors and other UNDP-supported projects (ibid). UNDP facilitates the platform but works "in close partnership" with the UNFCCC, UNEP, World Bank, FAO and US Aid (ALM, 2015). UNDP-ALM has also developed so called Signature Programmes, one being EbA. The EbA Signature Programme is run together with the GEF and has thus far (2015) been implemented in 146 countries through 270+ projects (UNDP, 2012b). The UNDP-GEF projects aim at not only achieving adaptation benefits but also mitigation benefits (ibid). UNDP emphasises the mitigation potential of nature-based solutions to climate change and supports many EbA-mitigation projects. Examples given include restoration and protection of terrestrial as well as coastal ecosystems to safeguard them as carbon sinks and buffers for e.g. floods. (UNDP, 2015b). UNDP funds, together with the Adaptation Fund (UNFCCC) the project "Ecosystem-based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia", which is running from 2012 to 2017 (UNDP, 2015a).
UNEP	Two out of the United Nations Environment Programme's (UNEP) seven priorities are climate change and ecosystem management. In addition, UNEP has a specialised EbA programme under which it carries out EbA-related projects, e.g. on microfinance for EbA between 2012 and 2017 (FS-UNEP Centre, 2015), and "Adapting to Climate Change Induced Water Stress in the Nile River Basin" between 2009 and 2012 in partnership with the Nile Basin Initiative (UNEP, 2015a). UNEP has also produced a number of guidance documents, including a decision support framework (UNEP, 2015c) and a policy brief on the social dimensions of EbA-implementation (Naumann et al., 2013). According to UNEP, management of ecosystems is a valuable but under-utilised approach to cope with climate change (UNEP, 2015c). Similarly to UNDP, UNEP stresses the potential of co-benefits, such as clean water, food and climate change mitigation (ibid). At its first session, held 23-27 June 2014 in Nairobi, the United Nations Environment Assembly (UNEA) of the United Nations Environment Programme brought together 163 member states. The Assembly passed a resolution on EbA that, amongst others, highlighted the work of the UNDP, CBD and the UNFCCC. The resolution requests the Executive Director of UNEP to continue its collaboration with the UNDP on National Adaptation Plans (UNFCCC NAPs), and to continue supporting developing states regarding the "[…] development and implementation of community-based, national and regional ecosystem-based adaptation programmes and activities through, inter alia, practical tools and pilot projects to demonstrate the use of those tools and other policymaking technical support" (UNEP, 2014, resolution 1/8).

As the table above illustrates, the UNFCCC is not the only member of the UN-family involved in the conceptualisation of EbA. Although EbA by definition belongs in the context of climate change, entities outside the UNFCCC emphasise additional aspects of the concept that are particularly relevant for their respective work. For example, the UNCCD draws attention to land-based EbA, while UNDP uses EbA, amongst other approaches, as a way to promote development and cooperates with development organisations such as US Aid. EbA, just like climate change, can be framed in several ways.

Some of the UN-members presented above also cooperate with actors outside the UN-system regarding EbA. These hybrid establishments are included in the next section.

3.3. NGOs, the private sector, and beyond

In addition to the UNFCCC specifically and international cooperation in general, also other initiatives, such as Public-Private Partnerships, networks of NGOs, umbrella platforms and so on are visible in the context of international governance related to EbA. These arenas are often interlinked with each other and with the broader international landscape. This section presents all actors other than UN-related conventions and bodies identified in the material collected for the purpose of this report and within its scope. Collaborations between UN-related actors and actors outside the UN-family are also considered in this section. One such example is the EBA flagship, which was set up by UNEP, UNDP, IUCN and Germany's Federal Ministry of Environment. These kinds of "hybrid" arenas do not fit neatly in only one category as the actors are of different administrative types (UN-entity, NGO and government) or level of administration. For example, some arenas implement small scale, local, projects, but work with advocacy at a global level.

As explained in chapter 2, the 40 first results in the time span 2011-2015, sorted according to relevance, were scrutinised. After removing duplicates and conducting complementary searches, 30 organisations/actors were identified (see appendix 2). Their respective web pages were scrutinised. Duplicates and results outside the scope of the report (e.g. peer-reviewed articles) were excluded. This resulted in the identification of 14 different arenas/actors, which are presented in the table below. While these organisations, initiatives, platforms and hybrids are hardly the only entities that work with EbA, the fact that they were captured in the material collection, based on the methods applied, suggests that they are arguably among the most successful in terms of dissemination of information.

The table below provides a short description of the entities in general terms, followed by examples of EbA-related activities. The table also clarifies on what geographical scale the entity's EbA-work is in general related to.

Table 3: Other entities and their work related to EbA

Entity	EbA-related activities	Scale
Birdlife International	BirdLife International is a global partnership of organisations in more than 100 countries, making it the world's largest nature conservation partnership with approximately 120 partner organisations (BirdLife International, 2015a). It has six regional coordination offices around the world and a secretariat located in the UK. BirdLife's webpage informs us that their work related to EbA includes: • Management of protected areas • Active NWP partner organisation (e.g. BirdLife International, 2014) • Compilation of information about EbA and links to other sites • EbA demonstration sites, e.g. in Eastern Africa (BirdLife International, 2015c) • Teaching material EbA – training of trainers (BirdLife International, 2015b)	International
CCCCC	The Caribbean Community Climate Change Centre (CCCCC), established in 2005, coordinates climate change related work in the Caribbean region and hosts the Caribbean Community (CARICOM) Secretariat (CCCCC, 2015b). It is the platform for regional climate change information and data and carries out policy-advice to CARICOM member states (ibid) and disseminates information, e.g. through its blog (CCCCC, 2015c). Work that could be related to EbA includes online tools to inform decision making such as the Caribbean Climate Online Risk and Adaptation tool – CCORAL (CCCCC, 2015d), and projects, such as "Coastal Protection for Climate Change Adaptation in the Small Island States in the Caribbean" (2014 to 2018), financed by the German Ministry for Economic Cooperation and Development	Regional

Entity	EbA-related activities	Scale
	(CCCCC, 2015a). The centre is a United Nations Institute for Training and Research (UNITAR) recognised Centre of Excellence, as well as recognised advisor by UNEP and UNFCCC (CCCCC, 2015b). CCCCC and SPREP work together in a partnership regarding climate change and sustainable development (CCCCC, 2015b).	
CDKN	The Climate and Development Knowledge Network (CDKN) works to support decision-making through research, technical advice (in particular regarding disaster risk management and climate finance), support for developing countries at international negotiations and knowledge compilation and dissemination in the field of climate change and development (CDKN, 2015). The CDKN is managed by an alliance of organisations led by PricewaterhouseCoopers LLP (PwC), working in partnership with decision-makers at all levels and in the public as well as the private and non-governmental sectors (ibid). CDKN funds EbA projects. Examples include "Community resilience and valuing ecosystem-based adaptation approaches for disaster risk reduction in Fiji", carried out 2012-2014 (Brown et al., 2014) and "Ecosystems-based approaches to building resilience in urban areas: Making the case for a framework for smart decision-making criteria", carried out in 2013 (CDKN, 2014).	International
CI	Conservation International (CI) is an umbrella organisation that brings together different conservation organisations in some 30 countries (Conservation International, 2014a). CI works globally, at all levels of decision-making and in partnership with state and non-state actors. CI has, according to their numbers, helped protect more than 1200 areas globally, covering more than 730 million hectares of land and coast (ibid). CI has produced a number of publications on EbA and is an active member of the UNFCCC NWP (ibid, see also Conservation International et al., 2014). According to CI, EbA "[…]is receiving growing attention for its great potential to reduce people's vulnerability to a range of climate change impacts and provide significant co-benefits for biodiversity and people, especially those most vulnerable to climate change" (Conservation International, 2014b). CI's work related to EbA includes vulnerability assessments, implementation and assessment of EbA strategies through pilot projects (currently in the Philippines, South Africa and Brazil) built on vulnerability assessments and information about EbA to decision-makers in order to influence policy to promote EbA (ibid). CI hosted a workshop on EbA for the "Friends of EbA, FEbA" in Bonn, June 7 2015, during which CI also presented a new tool for integrating EbA in the UNFCCC NAPs, the results of its 5-year project Global Solutions (EbA in marine, terrestrial and coastal regions as a means of improving livelihoods and conserving biodiversity in the face of climate change) as well as the results of the CASCADE-project (EbA for smallholder subsistence and coffee farming communities in Central America) (Conservation International, 2015).	International
EbA Flagship	The EbA Flagship is a collaboration between UNEP, UNDP and IUCN, supported by the Federal Ministry of Environment, Germany (BMUB, 2015). UNEP, UNDP and IUCN collectively carry out the EbA Flagship Programme: Ecosystem-based Adaptation in Mountain Ecosystems (see UNDP-ALM, 2015 for a collection of publications). They have also produced a series of information material and policy briefs and recommendations about EbA (e.g. UNEP, 2010).	International
EC	The task of the European Commission (EC) is to represent the interests of the European Union and its 28 member states. The EC proposes new laws and regulations, and makes sure that the member states follow EU law. The Environment Directorate-General (DG-ENV) of the EC focusses on environmental issues. DG-ENV has, in the context of EbA, commissioned studies on the relationship between climate change and biodiversity, including the report "Assessing the potential of ecosystem-based	Regional

Entity	EbA-related activities	Scale
	approaches to climate change adaptation and mitigation in Europe" (Naumann et al., 2011). The EC has also published a thematic issue on EbA in its series "Science for Environment Policy" (UWE, 2013). Furthermore, in EC's guidelines on developing adaptation strategies, EbA and other strategies that provide multiple benefits are promoted: "Due to the broad range of potential future climate change impacts and their implicit uncertainties, multiple-benefits, no-regret and low-regret adaptation options should be favoured […]. Multiple-benefits options provide synergies with other goals such as mitigation, disaster risk reduction or sustainability (e.g. ecosystem based approaches)." (European Commission, 2013, p. 24).	
Ecologic Institute	Ecologic Institute is a an independent, private transdisciplinary research organisation with an EU-wing and a US-wing, the former established in 1995 and the latter in 2008 (Ecologic Institute, 2015b). It is described as a think-tank for applied environmental research, policy analysis and consultancy (Ecologic Institute, 2015a). The EU-wing of Ecologic Institute acts as consultant to the European Parliament Committee on Environment and Development Policy Framework Contract (Ecologic Institute, 2015b). In this role, Ecologic Institute has e.g. written a report commission by the EC about EbA (Naumann et al., 2011). Ecologic Institute disseminates EbA-related information and has presented its work regarding EbA at a number of conferences and events, e.g. about EbA in China with the Nature Conservancy (Jian & Chen, 2012) and at the European Climate Change Adaptation conference (Naumann, 2013).	Regional
GIZ	The German International Cooperation Agency (GIZ) is a federal enterprise – fully owned by the German state (GIZ, 2015b). GIZ receives most of its commissions from the German state, but also other actors. GIZ assists the German Government in the field of international cooperation, but also works with other actors including form the private sector. GIZ is however described as a public-benefit organisation – financial returns are not the highest priority and financial surplus is reinvested in development projects (ibid). Examples of work partners include the European Commission, bilateral organisations, multilateral organisations such as the United Nations and the World Bank, regional development banks, NGO-networks, church organisations and political foundations (ibid). It works on behalf of other actors to carry out projects in the field of development, including through the use of EbA. Examples of projects include: Improved management of extreme events through ecosystem-based adaption in watersheds (ECOSWat), in Thailand 2013-2016 (GIZ, 2015a) and Strategic mainstreaming of ecosystem-based adaptation in Vietnam 2014-2018 (GIZ, 2015c). GIZ was also part of arranging the summit on the Lima Declaration on Biodiversity and Climate Change (Peru's Environment Ministry et al., 2014).	International
ICRAF	The World Agroforestry Centre (ICRAF) main office is situated in Nairobi, Kenya, and has a further six regional offices in Cameroon, China, India, Indonesia, Kenya and Peru (ICRAF, 2015). ICRAF works towards increased use of trees in agriculture (agroforestry), to improve human well-being and environment alike, mainly through research in the field of agroforestry to inform policy-makers and society in large (ibid). Works with partners from other organisations, and receives funding from public and private actors (ibid). ICRAF is also a so called CGIAR Consortium Research Centre. CGIAR is a global partnership in the field of agriculture and development studies (CGIAR, 2015). A total of 15 centres (June 2015) are members of the CGIAR Consortium – in total some 10000 scientists and staff in almost 100 countries contribute to the work of CGIAR (ibid). One output of the work of ICRAF in the context of EbA is peer-reviewed articles written by ICRAF scientists (see e.g. Osano et al., 2013). Information sharing –blog, discussing EbA, development of interactive knowledge tools, portals and open source products (see e.g. Langford, 2013, 2014).	International

Entity	EbA-related activities	Scale
IIED	The International Institute for Environment and Development (IIED) is a policy and research organisation established in 1971 that carries out research, advocacy work and provides policy advice (IIED, 2015a). It has (June 2015) four research groups: climate change, sustainable markets, human settlements and natural resources, with partners on five continents (ibid). IIED has, in the context of EbA, published a number of information products about EbA and Community-based Adaptation (CBA), including on lessons from EbA-implementation in Bangladesh (Reid & Shafiqul Alam, 2014) and on what CBA and EbA can learn from natural resource management (Reid, 2014). The information provided at the IIED webpage about EbA is often linked to CBA. IIED is also one of the hosts of the International Conference on Community Based Adaptation. The 9th conference (CBA9) took place 27-30 April 2015, Nairobi, Kenya, and brought together 400+ representatives from governments, civil society, the scientific community, private sector and international and non-governmental organisations (IIED, 2015b). One of the outcomes was the Nairobi Declaration on Community-Based Adaptation, which emphasises that CBA-projects should also take environmental sustainability into account (ibid).	International
IUCN	The International Union for Conservation of Nature (IUCN) is, according to information on the organisation's webpage the world's oldest and largest global environmental organisation (IUCN, 2015a). Its work is carried out in more than 160 countries and it has (June 2015) 45 offices globally and partner organisations from the private as well as the public sectors (ibid). The IUCN carries out field studies/case studies on EbA, e.g. cost-benefit analysis for EbA in the Philippines (Baig, Rizv, Pangilina, & Palanca-Tan, 2015), and engages in discussions globally, e.g. by producing technical and policy briefs to inform the UNFCCC COPs such as on "No Regret Adaptation Measures" for COP20 and vulnerability assessments as the key to successful EbA projects for COP21 (IUCN, 2015b). Alongside EbA, the IUCN also uses the concept of "nature based solutions" in e.g. the context of financial returns of EbA-projects (Rizvi, Baig, & Verdone, 2015), as well as human resilience (Rizvi, 2014). IUCN is an active member of the UNFCCC Nairobi work programme and submitted, for example, a so called "action pledge" about EbA to the programme in 2009 (IUCN, 2009). IUCN is also part of the EbA Flagship programme (see above for more information) and contributed to the organisation of the FEbA-workshop in June 2015 with Conservation International (see above for more information).	International
SPREP	The Secretariat of the Pacific Regional Environment Programme (SPREP) has, by the governments and administrations of the Pacific region, been given he responsibility to overlook the protection and sustainable development of the region's environment (SPREP, 2014a). SPREP's members are American Samoa, Australia, Commonwealth of the Northern Mariana Islands, Cook Islands, Federated States of Micronesia, Fiji, France, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United Kingdom, United States of America, Vanuatu and Wallis and Futuna (ibid). At the 24th meeting of the SPREP 17-19 September 2013, EbA was discussed as a "[…] core approach linking protection of ecosystem services, enhanced resilience, improved adaptation and sustainability" (SPREP, 2013). Moreover, in 2014 at the 3rd International Conference of Small Island Developing States, SPREP signed a 5-year, €5 million project named "Natural Solutions to Climate Change in the Pacific Islands Region: Implementing Ecosystem-based Adaption" with the German Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety (SPREP,	Regional

Entity	EbA-related activities	Scale
	2014b). The project is carried out in Fiji, Solomon Islands and Vanuatu (ibid).	
Wetlands International	Wetlands International is a member of the IUCN, and has official partnership relations with global intergovernmental Conventions such as the Ramsar Convention on Wetlands, and the Convention on Migratory Species (Wetlands International, 2014a). Is a member of two global partnerships, the Climate Action Network (CAN) and Ecosystem Climate Alliance (ECA) – advocating sustainable use of wetlands, including under the UNFCCC Nairobi work programme (see UNFCCC, 2012a). Wetlands International has published numerous reports available in the context of EbA, many focussing on mangrove restoration (see Wetlands International, 2014c for an overview). Wetlands International also supports EbA and CBA projects, e.g.: the Green Coast Community-project, and its follow- up programme in Thailand, the Green Coast II (Wetlands International, 2014b) Another programme and key concept related to EbA is called "building with nature", which is used to describe how conventional and ecosystem-based solutions can work together, and included in the organisation's strategic plan 2015-2025 (Wetlands International, 2015).	International
WWF	The World Wide Fund For Nature (also known as World Wildlife Fund) (WWF) was founded in 1961 and has today offices in some 80 countries around the world, with around 6200 full time staff members (WWF, 2015b). The headquarters are located in Gland, Switzerland. In the context of EbA, WWF works together with the World Bank on a large project in the Greater Mekong Sub-region, in cooperation with national ministries (WWF, 2015a). The project has thus far (June 2015) generated the following outputs: • Framework to Implement EbA in the Greater Mekong Sub-region (WWF & World Bank, 2013b); • Case studies from field testing in Vietnam and Lao PDR; • Customized frameworks for Implementation of EbA in Vietnam and Lao PDR; • Policy Briefs for Vietnam and Lao PDR; • Brochure promoting the framework in the Greater Mekong Sub-region and elsewhere (WWF & World Bank, 2013a); • EbA literature Review (see WWF, 2015a for a compilation of the publications).	International

3.4. Linkages between EbA arenas

This section demonstrates relationships between the identified different arenas. These relationships are formal ones that link different actors together. *Formal* means some kind of established cooperation over a longer period of time and/or linkages between different actors that together form a new entity, such as the EbA Flagship. Figure 1 illustrates the identified linkages between different arenas covered in the sections 3.1-3.3. Arenas without identified linkages with other arenas are not included in the figure.

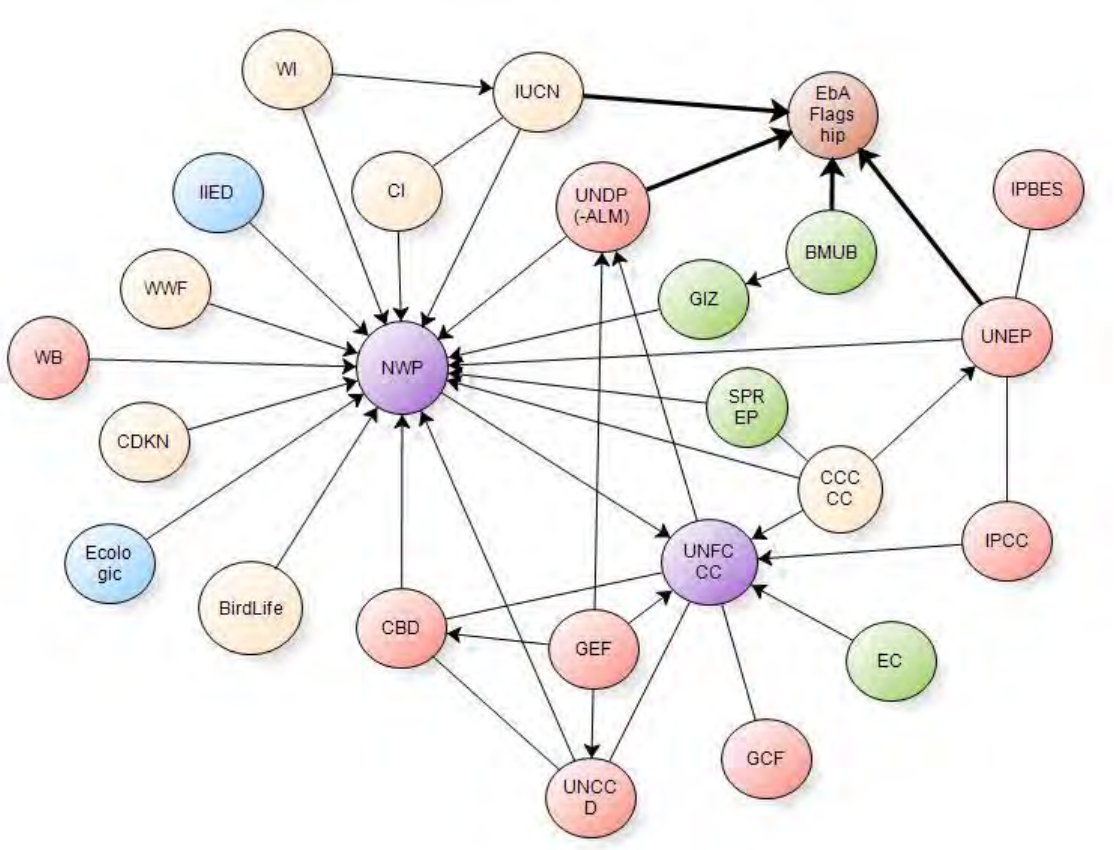

Figure 1: Linkages between EbA arenas.
Arenas listed in sections 3.1-3.3 with a connection to one or more other arenas are included in the figure.
Connectors: Thicker connectors in the figure symbolise formations of new entities, and more specifically in the figure above they illustrate the EbA Flagship. The direction of the connector symbolises membership and/or flow of information/resources. For example WI is a member of the IUCN, the IUCN is a partner organisation to the NWP and GEF coordinates financial resources for UN-entities. Associative connectors on the other hand symbolise partnership within which entities cooperate at the same or similar hierarchical level. Examples include the Rio-conventions and the relationship between UNEP and IPBES/IPCC. UNEP may have established the panels but they have their own staff and offices and today function autonomously.
Colour scheme: Purple = UNFCCC; Green = public/state; Red = member of the UN-family; Blue = entity mainly focussed on research; Beige = other entities, such as NGOs and private initiatives; Brown = hybrids.
Abbreviations: See tables in sections 3.1 - 3.3, or appendix 1 or 2.

The result demonstrates that one arena, the UNFCCC Nairobi work programme has by far the largest number of linkages to other arenas (the EC has a Joint Research Centre, which is also part of the NWP). Linkages are many (nine in total) also between the UNFCCC and other arenas. As the NWP is a programme of the UNFCCC, linkages to the NWP are also linkages to the UNFCCC. After the UNFCCC, the United Nations Environment Programme (UNEP) has the largest number of linkages with other arenas. Among the NGOs, the International Union for Conservation of Nature (IUCN) has the largest number of linkages with other EbA-arenas.

It should, however, be noted that also informal linkages between these arenas exist, such as online links, recommendations, guest writers on blogs, short-term collaborations on publications, and joint engagements in events such as side events at UNFCCC COPs, just to mention a few. These kinds of linkages could be better captured through social network analysis (see also chapter 5 for further discussion on future research needs and suggestions).

3.5. Geographical areas highlighted in the context of EbA

The previous sections have presented arenas relevant for the understanding and development of EbA as a political and scientific topic. These arenas are sometimes associated with physical locations, such as negotiations that take place at a given time and space, and sometimes virtual, such as online platforms. Most often they are both. For example, the NGOs presented in section 3.3 have headquarters at one or several locations and often carry out fieldwork, but they are also part of more or less stable networks (as displayed in section 3.4) and disseminate information online. This section presents additional information to assist in the understanding of these arenas by illustrating, based on the material used to inform this report, which geographical areas are most commonly highlighted in the context of EbA. More specifically, this section displays the results of a text analysis that sought to answer which geographical areas are mentioned in the context of EbA. This included areas where EbA-activities take place (regardless of the stage of the project; from planned to finished projects), as well as geographical areas or places mentioned as relevant to EbA. Geographical places mentioned in other contexts, such as where specific individuals come from, were not included in the analysis. This analysis is based on material from around 150 reports and webpages of the arenas presented in sections 3.2 and 3.3.

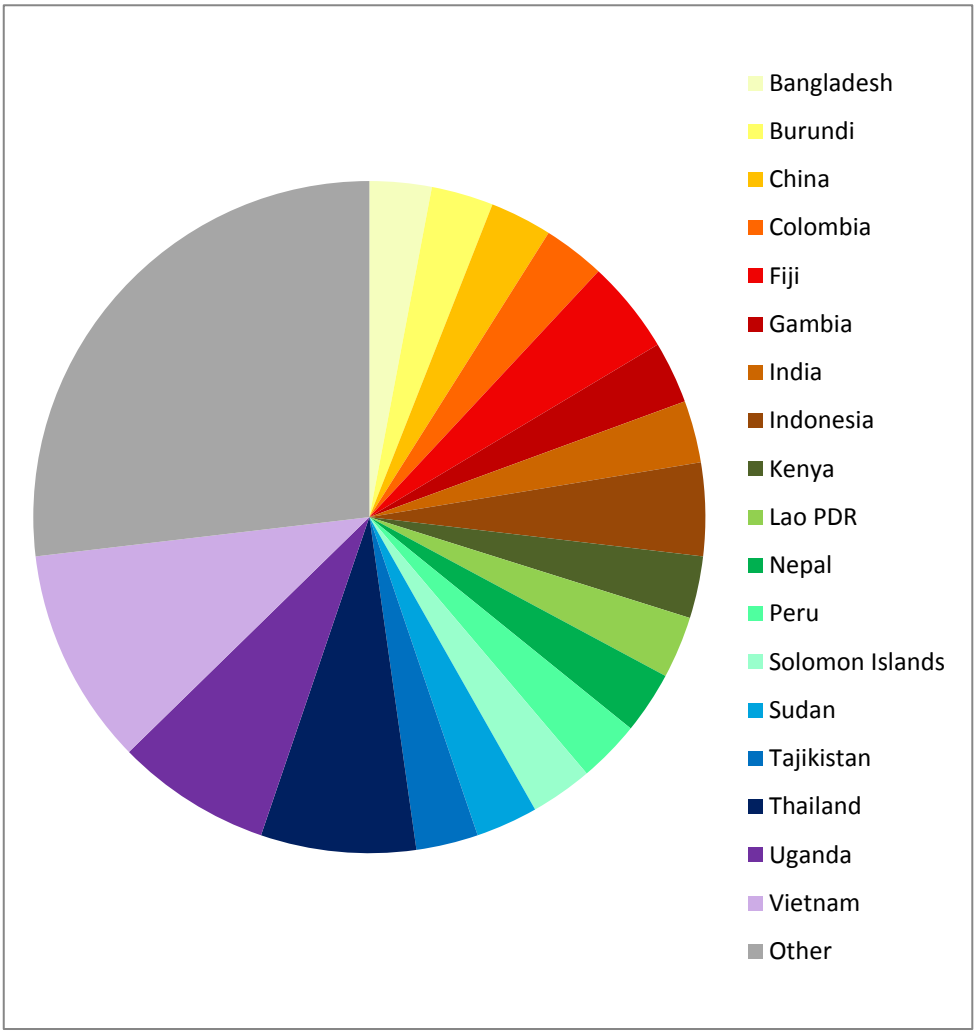

Figure 2: Geographical areas highlighted in the context of EbA.

Comment: Comment: Percentage of total areas referred to in the material. 'Other' includes all references made to geographical areas mentioned less frequently than the ones presented in the figure, as well as unspecified geographical areas such as trans-boundary areas including continents.

Locations were only counted once per document. Hence, if one document mentioned the USA five times, one mark was given to the USA. All geographical locations from country level to local levels were included. If, for instance, a natural reserve was mentioned, one mark was given to the country where the reserve is located. For transboundary locations, an equal share was given to each country. Hence, a natural reserve located at the border between two countries equalled 0.5 marks per country.

The analysis of geographical areas highlighted in the context of EbA in Figure 2 shows that developing countries dominate the picture. Out of the 18 countries, 8 belong to the group of Least Developed Countries (LDCs)[c], namely Bangladesh, Burundi, Gambia, LAO PDR, Nepal, Solomon Islands, Sudan and Uganda. The distribution between countries is fairly even. The largest group is 'other' (all areas mentioned less frequently than the 18 countries in the figure), followed by Vietnam, Uganda and Thailand. This implies that EbA activities are carried out in many different countries and not only in a few. A deeper analysis could reveal more details on the context within which these countries are talked about, e.g. related to fieldwork, policy development, or other.

[c] As classified by the United Nations. The UN updates the list of LDCs annually. The list is published at <un.org>.

4. Arenas Blue Carbon

This chapter presents arenas of relevance to the concept of Blue Carbon. The aim of the mapping is to present a summary of arenas that are currently involved in the scientific and/or political conceptualisation of the issue. As the UNFCCC-process is in focus of this report, this chapter starts with an overview of negotiation tracks within the UNFCCC that discuss, or in other ways work with, issues related to Blue Carbon. Next, other UN-related bodies that also discuss BC are presented, which is followed by an overview of relevant other governmental and non-governmental entities. Section 4.4 summarises the findings in a figure that illustrates how different arenas are linked to one another, and finally, geographical areas highlighted by the arenas presented in this chapter in the context of BC are presented.

4.1. In the context of the UNFCCC

Thus far (2015), Blue Carbon (BC) has not been formally included under the convention as a work programme or a mechanism. It has most notably been discussed within the frames of the agenda item Research and Systematic Observation (RSO). Blue Carbon is in official communications in UNFCCC-documents sometimes referred to as *coastal marine ecosystems* "[…] such as mangroves, tidal salt marshes, wetlands and seagrass meadows […]" (see e.g. UNFCCC, 2011c, § 43). These ecosystems, in this report referred to as 'blue carbon ecosystems' are not new to international politics. For example, certain marine and coastal areas are protected as e.g. marine protected areas, marine parks or marine reserves.

Blue Carbon was introduced to the UNFCCC negotiations in 2011. At SBSTA 34 (2011) "Ecosystems (including mountain ecosystems and coastal marine ecosystems)" were considered as "potential activities" of the Nairobi work programme (UNFCCC, 2011d: Annex). Six months later, coastal marine ecosystems were discussed in the context of agenda item 6; Research and Systematic Observation, as highlighted in the meeting report:

> The SBSTA invited Parties and regional and international research programmes and organizations active in climate change research, including marine research, to provide information on the technical and scientific aspects of emissions by sources, removals by sinks, and reservoirs of all greenhouse gases, including emissions and removals from coastal and marine ecosystems such as mangroves, tidal salt marshes, wetlands and seagrass meadows, with a view to identifying and quantifying the impact of human activities. […] The SBSTA noted the views of Parties regarding the importance of other ecosystems with high-carbon reservoirs, in particular terrestrial ecosystems, for example steppe, tundra and peatlands. (UNFCCC, 2011c: §43)

Since 2011, processes within the UNFCCC have indirectly facilitated an inclusion of Blue Carbon as a mitigation strategy, for example the establishment of new standardisation schemes: the inclusion of wetlands under LULUCF and the release of the 2013 IPCC wetlands supplement. The issue has mainly been driven by the Coalition for Rainforest Nations (CfRN), a group supported by 41 countries, which is also the group that was driving the introduction of forests under the Convention (Coalition for Rainforest Nations, 2015).

By definition (see section 1.4), Blue Carbon is framed as an issue within the broader discussion regarding mitigation of climate change; how BC-ecosystems can act as carbon sinks (see e.g.: Grimsditch, Alder, Nakamura, Kenchington, & Tamelander, 2013; Lovelock & McAllister, 2013). When these ecosystems are degraded or lost, the carbon stored is released. As such, discussions on

BC are similar to those of land-use in general, and forests in particular. In this section, linkages to other land-use issues in the context of the UNFCCC, such as LULUCF and agriculture, are therefore also highlighted. Even though the focus is on mitigation, this section aims at a comprehensive account of BC in the context of the UNFCCC, and discussions and mechanisms related to adaptation with linkages to BC-ecosystems are also discussed. This is also in line with the recent focus of the work by the Blue Carbon Initiative, a large collaborative network that works with the scientific and political advancement of BC (Herr, 2015, see also sections 4.3 and 4.4).

The table below presents an overview of UNFCCC mechanisms and programmes with identified linkages to BC. The table includes the following types of linkages and their respective definitions in this report:

- Formal: formally recognised by the parties to the Convention;
- Partial: agenda items that have included some of the BC-ecosystems and/or aspects of them;
- Indirect: current processes/mechanisms of the UNFCCC that do not specifically target BC but have implemented mechanisms that overlap with BC, such as examples of activities that target BC-ecosystems;
- Suggested linkages: propositions made by parties to the Convention related to BC that have not (yet) been adopted by the Convention;
- Potential linkages: potential, but not (yet) suggested to the Convention, linkages identified through the material collected within the frames of this project (inductive), as well as linkages that could be imagined, based on the current knowledge about BC and its framing (deductive).

The mapping presented in Table 4 is complemented by a more comprehensive discussion for each UNFCCC agenda item/activity identified.

Table 4: Linkages between BC and established processes and mechanisms under the UNFCCC

Type of linkage	Agenda item
Formal	**RSO (Research and Systematic Observation)** SBSTA 35: Call for submissions for Research Dialogue, coastal and marine ecosystems suggested as one potential topic (UNFCCC, 2011c) . SBSTA 36: Research Dialogue, discussing coastal marine ecosystems (UNFCCC, 2012d). SBSTA 37: requesting the Secretariat to organise a workshop, covering coastal marine ecosystems, among other ecosystems with high carbon reservoirs (UNFCCC, 2012c, § 50f.). Workshop on "technical and scientific aspects of ecosystems with high-carbon reservoirs not covered by other agenda items under the Convention" held in Bonn, 24-25 October 2013 (UNFCCC, 2013c). Report of the workshop presented and recognised at SBSTA 40 (see: UNFCCC, 2014o, for the report of the workshop). The 2013-2015 Review: Discussions regarding negative emissions.
Partial	**Accounting and reporting of LULUCF (Land use, Land-Use Change and Forestry) under the KP** The LULUCF-sector is accounted for by Annex-1 countries under the first commitment period of the Kyoto Protocol (IPCC, 2006). This includes afforestation and reforestation, which might be relevant in this context. For the second commitment period of the KP, new guidelines for wetted areas have been established (IPCC, 2014a, 2014b) .
Partial	**REDD+ (Reducing Emissions from Deforestation and forest Degradation in developing countries)**

Type of linkage	Agenda item
	Mangroves, one of the BC-ecosystems, can be included in REDD+ accounting, if the national forest definition includes mangroves. Example: Madagascar (Carro, 2015). So called Joint mitigation and adaptation approaches under REDD+ could be of future relevance to BC. Examples of REDD-readiness projects that could potentially be described as BC-projects include: Bangladesh, Cambodia, Sri Lanka, Indonesia, PNG and Viet Nam.
Indirect	**CDM (Clean Development Mechanism)** As of June 2015, 7645 projects had been registered, including approx. 55 Afforestation/Reforestation projects. Example of CDM-project with linkage to BC: Senegal's Mangrove project and a demonstration project for seagrass in the Republic of Korea.
Indirect	**NAPA (National Adaptation Programmes of Action)** 50 countries (LDCs) have submitted NAPAs. Out of these, almost half mention mangroves and 15 wetlands. Three countries: Ethiopia, Myanmar and Sierra Leone mention BC-ecosystems in the context of carbon sequestration.
Indirect	**Adaptation Fund** The Adaptation Fund supports several projects that have linkages to BC, including the following so called 'endorsed projects': Myanmar – a project that will, according to its plan, result in 4200 hectares of protected "micro-watersheds". In collaboration with local mangrove NGO MERN. Mangrove projects in Mauritius and Belize both have adaptation and mitigation components linked to BC.
Suggested	**INDCs (Intended Nationally determined Contributions)** By the end of June 2015, 16 countries had submitted their INDCs. References to coastal ecosystems/wetlands, include: Mexico (2015): Protection of coastal marine ecosystems as adaptation strategy. Switzerland (2015): "[…][plans to include non-forest land from 2020 and anticipates to switch to a comprehensive land based approach". Russia (2015): 2013 IPCC wetlands supplement in section "Methodological approaches used, in particular, for measurement and verification of anthropogenic GHG emissions and, in appropriate cases, their absorption". Gabon (2015): emission crediting/trading for biomass.
Suggested	**NWP (Nairobi work programme on impacts vulnerability and adaptation to climate change)** Linkage between the NWP, the Climate Technology Centre and Network (CTCN), and BC highlighted at SBSTA 40 (UNFCCC, 2014n, § 63), and in the workshop on ecosystems with high-carbon reservoirs (see RSO, above).
Suggested	**NAMA (Nationally Appropriate Mitigation Action)** NAMAs targeting the forestry sector, for example project NS-5 by Chile, which is currently seeking support for implementation: "Implementation of a National Forestry and Climate Change Strategy, including the development and implementation of a Platform for the Generation and Trading of Forest Carbon Credits". Another example is the Blue Carbon NAMA by the Dominican Republic, which aims at sequestering and storing "substantial blue carbon" through restoration and conservation of mangroves (Dominican Republic, 2015).
Potential	**Framework for Various Approaches, New Market-based Mechanisms, and Non Market-based Approaches**

Type of linkage	Agenda item
	As BC has generally been given a mitigiation framing, and has linkages with REDD+ and CDM, market mechanisms could be one way to implement BC-activities in the context of the UNFCCC. New approaches to markets are currently discussed, but at the time of the writing of this report it was still unclear how the role of markets will look post 2020.
Potential, indirect	**Warsaw Framework on Loss and Damage** This framework was set up to provide developing countries compensation for adverse effects of climate change that are not possible to adapt to – they "go beyond" adaptation. Significant attention has been given to slow onset events such as sea level rise and one such negative effect could be that mangroves and other coastal ecosystems cannot adapt to the rising sealevel fast enough and thus leave countries with vulnerable coastal lines.
Potential, partial	**Issues related to agriculture (aquaculture)** Aquaculture is sometimes treated within the UNFCCC agenda item called 'issues related to agriculture'. Aquaculture is considered an important driver of degradation of coastal marine ecosystems, e.g. clearing mangroves to give space to shrimp farms, which also leaves the ecosystem vulnerable to salt water intrusion (cf. Matsui, Morimune, Meepol, & Chukwamdee, 2012). See also REDD+, drivers of deforestation, below. Aquaculture is seen as a driver of mangrove deforestation and degradation.

Research and Systematic Observation

Blue Carbon was put forward at the 35th meeting of the Subsidiary Body for Scientific and Technological Advice (SBSTA) by Papua New Guinea on behalf of the Coalition for Rainforest Nations (CfRN) (Murray, Watt, Cooley, & Pendleton, 2012). SBSTA encouraged Parties to submit their views on this issue as a potential topic to be discussed at an upcoming Research Dialogue (UNFCCC, 2011c, § 39 & 43). At the Research Dialogue arranged in conjunction with SBSTA 36, 'coastal marine ecosystems' was one of the issues discussed. The CfRN brought in experts that presented more information on this issue (UNFCCC, 2012d). Half a year later, at SBSTA 37, the parties requested the secretariat to organise a workshop about ecosystems with high carbon reservoirs, including coastal marine ecosystems (UNFCCC, 2012c, § 50f). The two day-workshop took place in October 2013, followed by a workshop report compiled by the Secretariat (UNFCCC, 2014o). A number of experts were invited to present current research on ecosystems with high carbon stocks, which included not only BC-ecosystems, but also peatland (sometimes counted as BC), steppe, tundra and other ecosystems (UNFCCC, 2013c).

The Coalition for Rainforest Nations referred to the workshop and highlighted the importance of coastal marine ecosystems as carbon sinks, in its opening- as well as closing statements at SBSTA 40 (Coalition for Rainforest Nations, 2014a, 2014b). The SBSTA "noted" the workshop and its outcomes in the report of the session, and "[…] invited the IPCC to take note of the work of the SBSTA on research and systematic observation in matters related to ecosystems with high-carbon reservoirs in the consideration, by the IPCC, of future work" (UNFCCC, 2014n, § 66).

Another activity linked to the RSO negotiations track is the 2013-2015 review, which aimed at assessing the 2 degree temperature target in light of the ultimate objective of the UNFCCC; to prevent dangerous anthropogenic effects of climate change (UNFCCC, 2014a). The review was supported by a Structured Expert Dialogue (SED), which final results were presented and discussed in Bonn during SB 42 (UNFCCC, 2014a, 2014s). One of the most momentous discussions was on whether the adequate temperature goal should be 1.5 degrees instead of the below 2 degree target (UNFCCC, 2015f). Representatives from the IPCC underscored that the lower the temperature target, the larger the cumulative emission reductions should be (ibid), which is in line with the report of the SED (UNFCCC, 2015e). A need for negative emissions would arguably increase the importance of BC and other ways of boosting sequestration in natural environments (cf. Macreadie,

Baird, Trevathan-Tackett, Larkum, & Ralph, 2014), at least unless artificial carbon sequestration is used to a great extent.

Accounting and reporting of LULUCF (Land use, Land-Use Change and Forestry) under the KP

The LULUCF-sector is accounted for by Annex-1 countries under the first commitment period of the Kyoto Protocol. This includes afforestation and reforestation, which might be relevant in the BC context. For the second commitment period of the KP, a revised Supplementary Methods and Good Practice Guidance was released (IPCC, 2014a), and new guidelines for wetted areas established (IPCC, 2014b).

It is at the time of the writing of this report still unclear how countries will approach the new directives under the KP or otherwise. For example, the EU has decided not to include land-use in its INDC until it has been decided how the sector will be dealt with (EU, 2015), while other countries such as Switzerland envision a comprehensive approach to accounting of the LULUCF-sector (Switzerland, 2015).

REDD+ (Reducing Emissions from Deforestation and forest Degradation in developing countries)

The agenda item with the strongest connection to Blue Carbon is arguably REDD-plus, as the concept of Blue Carbon stems from discussions regarding how to expand REDD (cf. Grimsditch et al., 2013).

As mentioned in section 3.1, the Parties came to an agreement regarding the methodological guidance for REDD+ in the context of the Warsaw framework for REDD+ at SB 42, June 2015, with the agreements on Safeguards, Non-Carbon Benefits (NCB) and Joint Mitigation and Adaptation (JMA) (Antonich et al., 2015). While further guidance for finance of REDD+ is needed before it can be formally implemented, some countries have already prepared for implementation, so-called REDD-readiness[f] (e.g. Bangladesh, Cambodia, Sri Lanka, Indonesia, PNG and Vietnam).

The so-called Warsaw Framework on REDD-plus includes "modalities for national forest monitoring systems" (UNFCCC, 2013a). These modalities clarify that "different types of forests may be included: Enable the assessment of different types of forest in the country, including natural forest, as defined by the Party" (UNFCCC, 2013a, decision 11/CP.19, §4b). In practice, this means that BC-ecosystems can be included in REDD+ *if* the national forest definition includes mangroves. Several countries elaborate on the inclusion of mangroves in their REDD-readiness plans. For example, the Indonesian review of the existing legal framework concludes that "[…] Law 26/2007 covers spatial planning of coastal zones, which provides to the possibility of REDD incentives to avoid the clearing of mangrove forests (relatively carbon intensive)" (Indonesia, 2009, p. 11). Cambodia is another example of countries that have taken mangroves into consideration, but reports that while there is extensive and good quality data on tropical forests, data on "flooded forests and mangroves" is lacking (Cambodia, 2011). Madagascar is an example of countries that include mangroves in its forest definition, although the definition is restricted to mangroves taller than five meters (Carro, 2015).

REDD (Reducing Emissions from forest Degradation and Deforestation) formally became REDD-plus at COP 16 in Cancun 2010. The *plus* includes conservation of forest carbon stocks (UNFCCC, 2013d). As BC-ecosystems in general have high carbon stocks, including in comparison with tropical forests (B. Kauffman, Heider, Norfolk, & Payton, 2014; Locatelli et al., 2014), the recognition of the value of conservation in REDD-plus is arguably important in relation to BC. The largest amounts of carbon are for mangrove ecosystems stored in the soil, (Siikamaeki, Sanchirico, Jardine, McLaughlin, & Morris, 2013, p. 18). However, data on soil organic carbon is

[f] For more information see UN-REDD web portal, UN-REDD.org

often missing, which means that a large share of carbon stored in mangroves and other BC-ecosystems is not accounted for (Wylie, Sutton-Grier, & Moore, 2016).

Another potential feature of REDD+ that might be relevant for BC is the Joint Mitigation and Adaptation (JMA) approach (see e.g: UNFCCC, 2013a, p. , 2/CP.17, § 67). As the linkages between adaptation, mitigation and Blue Carbon have, in the context of the UNFCCC (see e.g. UNFCCC, 2014n, § 63) and the IPCC (IPCC, 2014c), been highlighted, activities such as mangrove restoration for carbon sequestration and flood protection, could potentially be seen as Joint Mitigation and Adaptation approaches.

CDM (Clean Development Mechanism)

The first commitment period of the Kyoto Protocol allowed afforestation and reforestation projects under the CDM, excluding REDD+ activities. Rewetting of wetlands can be voluntarily accounted for under the second commitment period of the CDM (see LULUCF above).

As of June 2015, 7645 Clean Development Mechanism (CDM) projects had been registered at the UNFCCC CDM-platform (UNFCCC, 2014d). Out of these, only a small fraction is A/R (afforestation/reforestation) projects (around 55)[g]. Among all A/R projects registered between 2012 and 2014 (no projects registered in 2015), one that could be described as having a clear connection to BC, namely the Oceanium Mangrove project in Senegal (CDM Executive Board, 2011), was identified. In addition to this, the Republic of Korea has carried out small-scale seagrass-projects in the context of CDM (Chung et al., 2013).

Several countries mention wetlands in their projects (e.g. Brazil, China, Kenya, Mozambique, Uganda and Colombia, see UNFCCC, 2014d). Mozambique, for example, emphasises values related to the conservation of wetlands (CDM Executive Board, 2013). Most references to wetlands in the context of CDM are however to say that the land covered does *not* fall into the wetland category and that it is therefore not necessary to assess methane emissions (see e.g. Kenya, UNFCCC, 2014d). Hence, even though attention to wetlands has been given in the context of the CDM, only few projects have so far been carried out.

NAPA (National Adaptation Programmes of Action)

The NAPAs-process was introduced in 2001 to address the most urgent adaptation needs of the Least Developed Countries (UNFCCC, 2014k). In total, 50 countries have submitted NAPAs, which in total count a few hundred proposals[h]. Out of these 50 NAPA-countries, almost half (24) mention mangroves in one or more NAPAs, some in general terms describing the nature of the country, some pointing more specifically at important features of these ecosystems. 15 out of the 50 countries mention wetlands. In addition, three countries highlight the role of tidal salt marshes: Guinea (converting land into salt marshes), Togo (protection against inundation) and Burundi (sustainable water harnessing). A few countries also mention peat lands. For example, Rwanda (NAPA priority project No 7) writes that peats are degraded as they are used as an energy source, proposes to substitute peat for wood, and to work with reforestation and rehabilitation. Similarly, Burundi (NAPA priority project No 9) highlights that peat is used by the army as an energy source, which in turn leads to environmental degradation. Their action plan focusses on increasing the area covered by forest.

Arguably of most outright importance in the context of Blue Carbon are the NAPAs that talk about the ability of ecosystems to sequester carbon dioxide, which Ethiopia, Sierra Leone and Myanmar do (projects 5, 9 and 4, respectively). The Ethiopian NAPA highlights the ability of wetlands to

[g] All A/R project descriptions available via <cdm.unfccc.int> were included in the project database using NVivo 10.

[h] All NAPAs available via <unfccc.int/4583> were included in the project database. See also appendix 4. Many NAPAs are in French. Search for key words in both French and English were conducted. Sequestration and mangrove are the same in both languages. "Marsh" is in French *marais* (found in Togo and Guinea). Seagrass is *herbiers* – not detected. Peat is *tourb* (peatland is tourbière) – no results. Wetland is *zone humides*.

sequester carbon: "[a]mong their significant functions, they reduce the greenhouse effect (through their capacity for sequestrating and retaining carbon […] ".

Adaptation Fund

Despite being an adaptation mechanism (UNFCCC, 2014b), several of the 19 so-called "Endorsed Concepts"[i] of the Adaptation Fund mention carbon sequestration from ecosystems (India, Belize, Myanmar, Rwanda and Jordan) (Adaptation Fund, 2015). Of the Endorsed Concepts (as of July 2015), five mention the role of mangroves (Belize, Costa Rica, Mauritius, Myanmar and Benin), one salt marshes (Belize) and three seagrasses (Belize, Costa Rica and Mauritius).

An example of a project with linkages to BC is Myanmar's project that is supposed to result in 4200 hectares of protected "micro-watersheds". Other examples include Mauritius' Mangrove planting project in collaboration with local mangrove NGO (Mangrove Environmental Rehabilitation Network, MERN), and Belize's "Marine Conservation and Climate Adaptation Project". The Belizean project description is the only in which Blue Carbon is specifically mentioned, stating that:

> "Natural coastal habitats […] sequester and store large quantities of carbon in plants and the soils below them – termed "Blue Carbon". Currently, greenhouse gas emissions that occur as a result of the management of such coastal and marine habitats are not being accounted for in international climate change mechanisms […] or in National Inventory Submissions. This represents a missed opportunity globally and for countries like Belize that are richly endowed with coastal and marine ecosystems of global importance." (World Bank, 2012, p. 12)

INDCs (Intended Nationally Determined Contributions)

Also, compared to the Kyoto Protocol, which had a fairly top-down steering with emission reduction targets, the new agreement foresees more bottom-up approaches built around the efforts each country proposes in the Intended Nationally Determined Contributions (INDCs). In some of these, there are reflections of BC, such as:

Mexico: Protection of coastal marine ecosystems as adaptation strategy (2015).

Switzerland: "[…] plans to include non-forest land from 2020 and anticipates to switch to a comprehensive land based approach" (2015). Until 2020 the sector is however not accounted for.

Russia: Refers to the 2013 IPCC wetlands supplement in section "Methodological approaches used, in particular, for measurement and verification of anthropogenic GHG emissions and, in appropriate cases, their absorption" (2015).

Gabon: less clear connection to BC, but is planning to use emission crediting/trading for biomass, which could arguably be adapted to all kinds of biological systems, including coastal marine ecosystems (2015).

NWP (Nairobi work programme on impacts vulnerability and adaptation to climate change)

At SBSTA 40, as well as in the workshop on ecosystems with high-carbon reservoirs (see RSO, above), the adaptation benefits of Blue Carbon were noted and the SBSTA highlighted the NWP together with the Climate Technology Centre and Network (CTCN) as potential areas outside of the RSO where these ecosystems could be dealt with (UNFCCC, 2014h, § 63). The report states that ecosystems with high carbon reservoirs "[…] may be relevant to the work of Parties on both mitigation and adaptation within other processes under the Convention, such as the Nairobi work programme on impacts, vulnerability and adaptation to climate change, and the CTCN" (ibid).

NAMA (Nationally Appropriate Mitigation Action)

[i] All Endorsed Concepts available via <adaptation-fund.org> were included in the project database.

At COP 16 in 2010, the parties to the UNFCCC decided to establish a registry for Nationally Appropriate Mitigation Actions (NAMAs) in developing countries, financially supported by developed countries (UNFCCC, 2014j). The registry matches proposals from developing countries, at a national or "individual" (private initiatives) level, with funding from developed countries (ibid). There were, in July 2015, 13 financially supported NAMAs, and more than hundred proposals pending for support (UNFCCC, 2015d). These proposals are divided into three different subgroups, depending on the stage of the project that needs financial support, namely: "seeking support for preparation", "seeking support for implementation" and "other NAMAs, for recognition" (ibid).

There are a few NAMAs targeting the forestry sector[j], for example proposal NS-5 from Chile, which seeks support for implementation: "Implementation of a National Forestry and Climate Change Strategy, including the development and implementation of a Platform for the Generation and Trading of Forest Carbon Credits" (Chile, 2013). As previously discussed, the ideas of accounting for forest carbon and blue carbon are similar, and forestry-NAMAs might therefore be used to inform the Blue Carbon process

One outspoken BC-NAMA, which is currently seeking support for preparation: NS-189 "Blue Carbon NAMA: Conserve and Restore Mangroves in the Dominican Republic" (Dominican Republic, 2015), was identified during the mapping. The proposal includes, inter alia, measuring the quantity of blue carbon, enhancing national policy, and the "analysis and pursuit of potential carbon credit income for the Dominican Republic" (ibid).

Framework for Various Approaches, New Market-based Mechanisms, and Non Market-based Approaches

As BC has generally been given a mitigation framing, and has obvious linkages with both REDD+ and CDM including LULUCF, market mechanisms could be one way to implement BC-activities in the context of the UNFCCC. New approaches to markets are currently being discussed (A. Howard, 2014), but at the time of the writing of this report, how markets will be a part of the post-2020 agreement, is unclear. There is, however, already a voluntary market for BC-carbon credits (see section 4.3, in particular the work by Blue Ventures, Forest Trends, the Ocean Foundation and the VCS. See also Wylie et al., 2016).

Warsaw Framework on Loss and Damage

Loss and Damage is one element of the Cancun agreement from COP 16 2010. It was developed into the Warsaw Framework on Loss and Damage at COP 19 2013 (UNFCCC, 2015a). Its focus is on developing countries and how to compensate them for losses that happen despite mitigation and adaptation efforts, including from slow-onset events such as sea level rise (ibid). The first meeting of the mechanism's Executive Committee is scheduled for September 2015, and it remains to be seen what losses that can be compensated for and how. Loss of coastal ecosystems such as mangroves is one adverse effect of climate change we might see in the future related to, *inter alia,* sea level rise (see e.g. Kirwan; & Megonigal;, 2013; Sutton-Grier, Moore, Wiley, & Edwards, 2014).

Issues related to agriculture (aquaculture)

Agriculture was included was brought into the UNFCCC-process at COP 17 in Durban 2011, during which the SBSTA was requested to consider issues related to agriculture "with the view of exchanging views" (UNFCCC, 2012b). Since then, this agenda item has mainly focussed on adaptation of the agricultural sector in light of climate change (UNFCCC, 2014p). Aquaculture (such as shrimp farming), has also been highlighted (ibid). Aquaculture is one of the main drivers behind degradation of coastal marine ecosystems (see e.g. DelVecchia et al., 2014; Lovelock &

[j] All descriptions of NAMAs accessible via <unfccc.int/7476> were included in the project database. The NAMA registry allows users to export short project descriptions in spreadsheet-formats. These were scrutinised and full project descriptions of NAMAs targeting the forestry sector, and/or BC-ecosystems were included in the project database.

McAllister, 2013; Spalding et al., 2014). Progress on the agenda item "Issues related to agriculture" might therefore be relevant to Blue Carbon as well.

4.2. Other members of the UN-system

Based on the material used to inform the current report, the concept of Blue Carbon appears to be less established compared to EbA. For example, while some actors and arenas use the concept often, including in their names (e.g. the Blue Carbon Initiative, section 4.3), other arenas and actors use other terms such as 'coastal marine ecosystems' (see also section 4.1), or simply describe the process of carbon sequestrations and storage in coastal ecosystems. For instance, even though the work of the Ramsar Convention is arguably one of the most important arenas for the development of BC as a concept, it seldom uses the term Blue Carbon. However, many activities of the Ramsar Convention, including raising awareness of the role of wetted areas in the context of climate change, are of direct relevance to the concept of Blue Carbon (see Table 5 below). The table below summarises arenas related to the UN-system, other than the UNFCCC, that work more or less directly with issues related to Blue Carbon. The table also presents a short description of the general work of each entity, and points out examples of activities related to Blue Carbon.

Table 5: Members of the UN-system and their work related to BC

Entity	BC-related activities
CBD	Following a UNEP initiative in 1988, the Convention on Biological Diversity (CBD) opened for signatures at the Rio Conference in 1992 and entered into force the following year (CBD, 2015). The CBD works broadly with biodiversity and the protection of nature. Safeguarding BC can be achieved through conservation and restoration of BC-ecosystems. The CBD is therefore of relevance to BC in a broader sense. More specifically, CBD has a joint action plan with the Ramsar Convention regarding wetlands, something that was recognised during, inter alia, CBD COP 12 (CBD, 2014a decision XII/9c). In the context of BC the CBD COP 12 report further emphasised "[…] the critical importance of coastal wetlands for biodiversity and ecosystem functions and services, in particular for migratory bird species, sustainable livelihoods, climate change adaptation and disaster risk reduction, invites Parties to give due attention to the conservation and restoration of coastal wetlands, and, in this context, welcomes the work of the Ramsar Convention and initiatives that support the conservation and restoration of coastal wetlands, including options to build a "Caring for Coasts" Initiative, as part of a global movement to restore coastal wetlands" (CBD, 2014a decision XII/19§6). The protection of carbon stocks through conservation and protection of ecosystems and biodiversity is also part of the CBD Aichi Target No 15 (CBD, 2010). Discussions at CBD COP 11 in 2012 and COP 11 of the Ramsar Convention contributed to the work of The Economics of Ecosystems and Biodiversity (TEEB) initiative and its report on water and wetlands, produced by the CBD, the Ramsar Convention, the Institute for European Environmental Policy (IEEP), the International Union for Conservation of Nature (IUCN), the Helmholtz Centre for Environmental Research (UFZ) and Wetlands International (Russi et al., 2013). TEEB is an international initiative with the aim of drawing attention to the value of biodiversity and ecosystem services (ibid).
GEF	The Global Environmental Facility (GEF) serves as the financial mechanism for several international convention, including the CBD and the UNFCCC (GEF, 2013). The GEF works under the convention it serves, so it does not carry out initiatives on its own. It funds UNEP's "Blue Forests Project" (see UNEP below and GRID-Arendal section 4.3).
IPCC	Established in Geneva, Switzerland, in November 1988, the Intergovernmental Panel on Climate

Entity	BC-related activities
	Change (IPCC, 1988) has produced five comprehensive assessment reports on climate change. The term Blue Carbon was, for the first time in an IPCC Assessment Report (AR), used in AR5, Working Group 2. It is here highlighted that restoration or "ecosystem engineering" of marine vegetated habitats can provide adaptation and mitigation benefits, and other co-benefits, and should therefore "[…] be further explored to be considered as a valid alternative in the portfolio of measures for climate change mitigation and adaptation" (IPCC, 2014c, p. 394). The authors however also note that there are potential trade-offs between mitigation and adaptation from interventions in marine vegetated habitats (ibid). In the context of coastal-EbA, restoration or protection of coastal ecosystems such as mangroves can be seen as no- or low-regret options, but more research is according to the IPCC needed in order to fully estimate the effect of these types of interventions (ibid: 388). In addition to its comprehensive assessment reports, the IPCC also produces so called special report on specific, new, issues, and technical papers with a much more stringent scope than the ARs, built on information that is already available in previous IPCC reports (UNFCCC, 2014c). These reports and papers can be requested by the UNFCCC COP, its subsidiary bodies, or other UN bodies, but it is ultimately the IPCC that decides if additional reports are to be produced. One such report of relevance to BC is the 2013 Supplement to the 2006 Guidelines for National Greenhouse Gas Inventories: Wetlands, requested by the UNFCCC SBSTA (IPCC, 2014b).
Ramsar Convention	The Convention on Wetlands of International Importance, called the Ramsar Convention, was adopted in 1971 and came into force in 1975. 169 countries are today contracting parties to the Ramsar Convention. Its mission is the "conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world" (Ramsar Convention, 2015). The Ramsar Convention covers all kinds of activities related to wetlands and its work can therefore be of general relevance to Blue Carbon by, inter alia, highlighting the value of wetlands through activities such as the World Wetland Day on February 2; the date the Ramsar Convention on Wetlands was signed in Ramsar, Iran (Ramsar Convention, 2014). Other activities and publications are of more specific relevance to BC, i.e. focussed on climate change mitigation and/or BC-ecosystems. One example is a joint technical paper with the CBD on the value of wetland ecosystem services, one service being "climate regulation" including carbon sequestration (de Groot, Stuip, Finlayson, & Davidson, 2006). The paper highlights case studies on wetland valuation, including on mangroves, peat, seagrass beds and estuaries (ibid). The Ramsar Convention Secretariat also contributed to The Economics of Ecosystems and Biodiversity (TEEB) water and wetlands report (Russi et al., 2013). Related to climate change the Ramsar Conference of the Parties has addressed climate change through decisions taken in 2002, 2008 and 2012 (Ramsar Convention, 2013). Furthermore the Convention's strategic plan for the years 2016-2024 highlights that wetlands contribute to many valuable ecosystem services, including climate regulation (ibid: §6). The convention works, as also highlighted above, closely with the CBD, but the strategic plan highlights contributions also to the UNFCCC (ibid: §16). One of its strategic goals, target No 12, envisions a future world in which "Restoration is in progress in degraded wetlands, with priority to wetlands that are relevant for biodiversity conservation, disaster risk reduction, livelihoods and/or climate change mitigation and adaptation" (Ramsar Convention, 2015). A few Ramsar Convention publications specifically mention Blue Carbon. For example, already in 2009 a Ramsar-workshop on "Achieving Carbon Offsets through Mangroves and Other Wetlands" was held (Danone Fund for Nature, 2010). The workshop dscussed, inter alia, the potential to use markets to achieve the mission of the Convention, including through the "blue carbon fund", peatland-related funds/standards and Payments for Ecosystem Services. The workshop report highlights that in the context of the UNFCCC, market mechanisms are scewed towards forests, and that it is therefore important to identify wetlands that can fall under the IPCC definition of forests. Mangroves were described as "well positioned for market

Entity	BC-related activities
	development". Potential risks of negative effects of the use of market mehanisms were also covered (ibid). At another workshop, the "Asia Regional Workshop on Scientific and Technical Support for Implementation of the Ramsar Convention", held in 2013, the relationship between the protection of wetlands and carbon sequestration was discussed. The workshop report notes that "Significant progress has been made with respect to knowledge and awareness of the importance of the carbon sequestration and storage function of wetlands (including inter alia inland peatlands and coastal wetlands), including the scientific understanding of greenhouse gas fluxes from wetlands and the drivers of greenhouse gas fluxes from land use, land use change, and forestry sources, and through the 'wet carbon' and 'blue carbon' assessments" (Ramsar Convention, 2013, p. 2). The Ramsar Convention is a member of the Blue Carbon Initiative (see BCI section 4.3.)
UN SDG	The Sustainable Development Goals (SDG) of the UN for the post-2015 agenda have a broader target than climate change, and acknowledge that the UNFCCC is the primary convention for climate change negotiations. Goal 13 nevertheless addresses climate change. Goal 14 addresses marine and coastal environments and parts of the language could arguably be of relevance to Blue Carbon, in particular target 14.2: "by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans" (UN-DESA, 2015).
UNEP	Established in 1972, the United Nations Environment Programme (UNEP) calls itself "the lead organization to coordinate environmental matters within the United Nations system" (UNEP, 2015d). UNEP produces and disseminates environmental assessments and analyses, norms, manuals and tools in the fields of environmental management and sustainable development (ibid). UNEP works with environmental issues broadly and Blue Carbon is only indirectly mentioned in its strategy for 2014-2017, under the area *Ecosystem Management* through the 'Expected Accomplishment' No. EA2 Marine issues: "Increased use is made of the ecosystem approach to sustain ecosystem services from coastal and marine systems" (UNEP, 2015d, p. 31). UNEP however also works specifically with Blue Carbon. It published one of the first reports on the issue (Nellemann et al., 2009) and started a "UNEP Blue Carbon Initiative[k]", including an online portal that collates information on BC (GRID-Arendal & UNEP, 2013). The initiative is part of UNEP's thematic focus areas on marine and coastal ecosystem valuation and is co-managed with GRID-Arendal, which is a collaborative centre to UNEP based in Norway (see more about GRID-Arendal in section 4.3). The aim of the initiative is to build a global network around BC to enable good management of coastal and marine ecosystems, in order to ensure effective carbon sequestration and storage in these ecosystems (UNEP, 2015b). The GEF Blue Forests-project is an initiative of UNEP (implementing agency), funded by GEF and managed by GRID-Arendal (GRID-Arendal, 2015). The project involves a large number of partners as, inter alia, advisers and co-financers. It includes five project sites, led on site by five different organisations (see also section 4.3): • United Arab Emirates, Abu Dhabi Global Environmental Data Initiative (AGEDI); • Madagascar, Blue Ventures; • Ecuador, Conservation International (CI); • Indonesia, Indonesian Ministry of Marine Affairs and Fisheries; • Mozambique, World Wildlife Fund (WWF). UNEP and GRID-Arendal also coordinate The Economics of Ecosystem and Biodiversity (TEEB) for Oceans and Coasts 2014-2017 (UNEP & GRID-Arendal, 2013, see also TEEB Water and

[k] The UNEP Blue Carbon Initiative is not the same as the "Blue Carbon Initiative" by UNESCO and partners described in section 4.3.

Entity	BC-related activities
	Wetlands). The UNEP-World Conservation Monitoring Centre has, together with GRID-Arendal and AGEDI (see section 4.3) developed the "Blue Carbon Mapping Toolkit", which assesses blue carbon stocks in Abu Dhabi and monitors impacts of coastal management in the region (UNEP-WCMC, AGEDI, & GRID-Arendal, 2015).
UNESCO	The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialised agency of the United Nations; it is included in the UN-system, but functions as an independent organisations. The Intergovernmental Oceanographic Commission (IOC) of UNESCO is coordinating the Blue Carbon Initiative (BCI, see section 4.3) together with Conservation International and the International Union for Nature Conservation (IUCN), and has in this role, inter alia, co-produced a manual on how to assess carbon in coastal marine ecosystems (J. Howard, Hoyt, Isensee, Pidgeon, & Telszewski, 2014) Together with the NGO the Scientific Committee on Oceanic Research (SCOR), UNESCO-IOC sponsors the International Ocean Carbon Coordination Project (IOCCP), with the aim of establishing a coordinated, global effort on ocean carbon observations (IOCCP, 2015).
World Bank	The World Bank is, as UNESCO, classified as a specialised UN-agency. The World Bank provides financial support to several Blue Carbon-related activities, such as the BC-project in Abu Dhabi (see section 4.3). The World Bank has also published a number of BC-related publications, e.g. on the challenges and opportunities for climate change mitigation through restoration (S. Crooks, Herr, Tamelander, Laffoley, & Vandever, 2011) and management of BC-ecosystems and the mitigation and adaptation benefits of the conservation of BC-ecosystems (World Bank, IUCN, & ESA PWA, 2010). Examples include the TEEB for Oceans and Coasts (UNEP & GRID-Arendal, 2013), and information on the valuation of coastal and marine ecosystems (World Bank, 2009).

4.3. NGOs, the private sector, and beyond

This chapter has thus far covered arenas of relevance to the concept of Blue Carbon within the UN-family, and in particular in relation to the UNFCCC. Section 4.1 explained that Blue Carbon has not (yet) been formally included under the UNFCCC as a standalone agenda item, although several established and potential linkages with other agenda items can be identified. While it remains to be seen how REDD+ and potentially other mechanisms of land-use related carbon credits under the UNFCCC-process will develop, the voluntary carbon market has already included Blue Carbon (see e.g. VCS below). This section takes a closer look at BC-activities, market and non-market based, outside the UN-system. Collaborations between UN-bodies and entities outside the UN-family, in this report called 'hybrids', are also explored in this section. One such example is the Blue Carbon Initiative, which is coordinated by IOC-UNESCO, Conservation International, and the International Union for Conservation of Nature.

As for section 3.3, the backbone for this section is material gathered through internet searches as explained in chapter 2. 37 potential arenas were identified and their respective webpages scrutinised, which in turn resulted in the removal of some arenas as they were deemed outside the scope of this report (e.g. peer-reviewed articles, universities without consultancy-wing or similar, or information only about BC from other actors/arenas) and clustering of others (see annex 3). Information related to the UNFCCC or other members of the UN-family is presented in sections 4.1 and 4.2. The remaining 23 arenas are included in Table 6 below. The table provides a short description of these

entities in general terms, followed by examples of BC-related activities. The table also clarifies on which geographical scale the entity's BC-work in general is focussed on.

Table 6: Other entities and their work related to BC

Entity	BC-related activities	Scale
ACF	The Aboriginal Carbon Fund (ACF) is a not-for-profit company established in 2010 to facilitate carbon trading of benefit to the Aboriginal people of Australia, also called indigenous carbon farming (Aboriginal Carbon Fund, 2015). The Fund has brought attention to the issue of Blue Carbon through, e.g. blog posts and a workshop held in Cairns in June 2012 (Aboriginal Carbon Fund, 2014). The Fund proposes to use BC-credits in Australia and refers to the American Carbon Registry for methodological guidance (ibid).	National (Australia)
ACR	The American Carbon Registry (ACR) is a non-profit carbon offset programme that provides three different carbon registry standards, including one targeting REDD+ specifically and one forests in general (American Carbon Registry, 2015). REDD+/the forest sector could, as discussed in section 4.1 be relevant for Blue Carbon-ecosystems – in particular mangroves The ACR has also developed an approved and implemented methodology for wetland restoration in the Mississippi Delta for carbon offsetting, which could, according to the ARC, be expanded to other regions and other practices (American Carbon Registry, 2015). The ARC has also developed a similar methodology, currently under review, for the California deltas and coastal wetlands (ibid).	National (USA)
AGEDI	Abu Dhabi Global Environmental Data Initiative (AGEDI) is an information and data sharing platform set up in 2002 by the government of the United Arab Emirates (J. B. Kauffman & Crooks, 2015). AGEDI is supported by the Environment Agency of Abu Dhabi (EAD) at the local level, and regionally and internationally by UNEP (ibid). The AGEDI BC-project was set up in two phases – Phase I as a demonstration project in Abu Dhabi and Phase II as a nation-wide project (AGEDI, 2014a). The fieldwork was completed in 2014 and the results released in 2015 (ibid). Phase II was managed and facilitated by AGEDI and the national Ministry of Environment and Water, in collaboration with local authorities (J. B. Kauffman & Crooks, 2015). The investigation was led by researchers from the scientific-wing of the Blue Carbon Initiative (ibid, see also BCI below for more information). AGEDI provides guidelines on how to build BC-projects (AGEDI, 2014b) and has developed a mapping tool, the "Blue Carbon Toolkit" (UNEP-WCMC et al., 2015), with GRID-Arendal and UNEP-WCMC. The Abu Dhabi BC-project is also one of five field sites of the GEF Blue Forests' project (2015-2018), initiated by UNEP, managed by GRID-Arendal, and led on site by AGEDI (GRID-Arendal, 2015).	National (UAE), part of international project.
BCI	The Blue Carbon Initiative (BCI) is a "coordinated, global program focused on mitigating climate change through the conservation and restoration of coastal and marine ecosystems" coordinated by the IUCN, CI and IOC-UNESCO (Blue Carbon Initiative, 2015). Its members include several universities, NGOs and governmental organisations (ibid). The initiative has two wings – one focussing on	International

Entity	BC-related activities	Scale
	advocacy and advancing policy, and one on advancing BC-research. Both wings have frequent meetings. BC-activities linked to the BCI include: Initiating fieldwork, various reports including manuals for BC-projects, policy briefs and national recommendations (see e.g. Herr et al., 2012; J. Howard et al., 2014), and peer-reviewed publications (e.g Alongi et al., 2015).	
BCS	Blue Climate Solutions (BCS) is a project of the Ocean Foundation (see below). BCS is a non-profit organisation that seeks to advance BC-policy "[…] that promotes the roles coastal and ocean ecosystems play as natural carbon sinks, including the conservation of ecosystems such as seagrass meadows, mangrove swamps, and salt marshes" (The Ocean Foundation, 2013). Hence, the BCS promotes the use of oceans in addition to coastal ecosystems as a way of tackling climate change. BCS created the Blue Carbon Blog, co-managed by GRID-Arendal (Blue Climate Solutions & GRID-Arendal, 2013). BCS has contributed to the production of BC-publications such as on the Abu Dhabi BC-project (AGEDI, 2014b) and the role of marine vertebrate carbon services (Lutz & Martin, 2014). BCS advocates the implementation of BC policy internationally, in the context of the UNFCCC, as well as domestically in the USA (The Ocean Foundation, 2013). In this vein, BCS created the Blue Climate Coalition (BCC, see below).	international
BCC	The Blue Climate Coalition (BCC) was created by Blue Climate Solutions (BCS) in 2009. The BCC advocated the inclusion of BC at the UNFCCC at COP 16 in Cancun 2010 with an open statement to the negotiators (Blue Climate Coalition, 2010), as well as letters directed to the US government and senates (Blue Climate Solutions, 2011). In November 2010, the organisation represented over 100 conservation- and environmental groups, including Blue Climate Solutions, Blue Ventures Conservation, Forest Trends, Restore America's Estuaries, Surfrider Foundation and The Ocean Foundation - (ibid). The coalition has not released any new statements since 2010 (as of July 2015).	International
Blue Ventures	Blue Ventures was established to work with coral reefs in Madagascar (Blue Ventures, 2015c), but has since then expanded to other issue areas, including Blue Carbon. It works with local coastal/fishery communities to protect coastal marine ecosystems, with field sites in Madagascar, Timor-Leste and Belize (Blue Ventures, 2015b). Besides fieldwork, including protection and conservation of areas, Blue Ventures works with advocacy, information dissemination and eco-tourism/volunteering expeditions (ibid). Blue Ventures is also part of the GEF-Blue Forests programme and leads the fieldwork in Madagascar (GRID-Arendal, 2015). The Blue Forests project in Madagascar is focussed on the quantification of carbon sequestration and fluxes in order to produce Blue Carbon-credits that fulfil the Verified Carbon Standard, Climate Community and Biodiversity Alliance, and Plan Vivo standards, and becomes part of Madagascar's REDD+ strategy (Blue Ventures, 2015a). The aspiration is to support local communities, poverty alleviation and the protection of mangrove forests through the use of carbon credits (ibid).	International

Entity	BC-related activities	Scale
CI	Conservation International (CI) is an umbrella organisation that brings together different conservation organisations in 30+ countries (Conservation International, 2014a). CI works globally, at all levels of decision-making and in partnership with state and non-state actors. CI has, according to their numbers, helped protect more than 1200 areas globally, covering some 730 million hectares of land and coast (ibid). Conservation International coordinates the Blue Carbon Initiative with IOC-UNESCO and IUCN (see more above).	International
CIFOR	The Centre for International Forestry Research (CIFOR) is a non-profit research organisation, active within the fields of forestry and land-use management with headquarters in Bogor, Indonesia. CIFOR is part of the CGIAR consortium, which brings together 16 research centres active within the fields of agriculture and development (CGIAR, 2015). Examples of BC-work include research, publications and participation in international discussions such as in the context of the UNFCCC (e.g. side events at COP, Global Landscapes Forum). Examples of publications include guidelines for coastal wetland carbon projects, developed with UNEP (UNEP & CIFOR, 2014), and protocols for the measurement, monitoring and reporting of structure, biomass and carbon stocks in mangrove forests (Kauffman & Donato, 2012). CIFOR is, in collaboration with the USDA Forest Service (USFS) and Oregon State University, part of SWAMP - The Sustainable Wetlands Adaptation and Mitigation Program. SWAMP aims at providing policy-relevant scientific knowledge about carbon-rich peatlands and mangroves (CIFOR, 2014a). Outcomes of SWAMP include, inter alia, peer-reviewed articles, input to the IPCC Wetlands Supplement and SWAMP protocol for assessment of carbon stocks (CIFOR, 2014b). CIFOR is associated with the scientific working group of the BCI.	International
Climate Solutions	Climate Solutions is a non-profit company based in the US within the renewable energy sector (Climate Solutions, 2015a). It develops initiatives and models for projects related to renewable energy (ibid). In the context of BC it has mainly been involved in the development of an assessment of BC-project from demonstration projects in the Snohomish Estuary, through the Climate Solution project "Northwest Biocarbon Initiative" and its partner EarthCorps with Restore Americas Estuaries (RAE) and partners (Climate Solutions, 2015b; S.; Crooks et al., February 2014.).	National (USA)
Commission for Environmental Cooperation (CEC)	The Commission for Environmental Cooperation (CEC) is a trans-governmental agency between the North American states of Mexico, USA and Canada, coordinating the environmental work of these countries (CEC, 2014a). The agency works within the frames of the North American Agreement on Environmental Cooperation (NAAEC), which was adopted in 1994 (ibid). Related to BC, the agency provides information and advice, including methods and guidelines for BC-projects (e.g. CEC, 2013; CEC, 2014b), workshops and meetings with experts and policy makers (e.g. CEC, 2015a), and an assessments of the carbon storage in the North American region (CEC, 2015b). The carbon assessment was part of a longer BC-project that for the period 2015-2016 focusses on advancing BC-mapping activities for the region and BC-policy methodologies, including voluntary carbon markets,	Regional (Mexico, USA and Canada).

Entity	BC-related activities	Scale
	with the aspiration of serving as a model for other countries that would like to implement BC-crediting systems (ibid).	
CSIRO	The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national science organisation, classified as government corporate entity. CSIRO's Coastal Carbon Cluster (3C) consists of Australian universities working with issues related to coastal ecosystems, including Blue Carbon (CSIRO, 2015b). One of the aims of the project is to advance methods for assessment of the amount of carbon stored in coastal ecosystems, to collate already available data and to collect new data (CSIRO, 2015a). Examples of other activities of the cluster are participatory mappings of governance of coastal areas in Australia, an "adaptive learning toolkit for coastal organizations", case studies (CSIRO, 2015b) and research about sustainable coastal management (Harvey, Clarke, & Nursey-Bray, 2012). CSIRO is associated with the scientific working group of the BCI.	International
Forest Trends	Forest Trends is an international non-profit organisation based in the USA, created in 1998 that focusses on the use of market mechanism for the sustainable use of forests and other ecosystems (Forest Trends, 2015). Forest Trends has created the initiative "Ecosystem Marketplace", a platform that collates information on environmental markets and payments for ecosystem services (PES) (Bennett, Carroll, & Hamilton, 2013). Forest Trend's Marine Ecosystem Services (MARES) programme works with, inter alia, the development and application of market-based mechanisms, including PES, for the protection and conservation of coastal and marine ecosystems (Forest Trends, 2013). MARES effort on marine and coastal market mechanisms include field work at project sites, advocacy, and outreach (ibid, see also Bennett et al., 2013). Related to BBC-ecosystems specifically, MARES highlights carbon sequestration as one of the key ecosystems services of marine environments, e.g. in mangroves (Forest Trends, 2013). Forest Trends has also contributed to a number of BC-related publications such as the UNEP-report "Taking steps toward marine and coastal ecosystem-based management: an introductory guide" (Agardy, Davis, Sherwood, & Vestergaard, 2011), and building BC-project in Abu Dhabi as a partner to the GEF Blue Forests project (GRID-Arendal, 2015).	International
GRID-Arendal	Global Resource Information Database (GRID)-Arendal is a Norwegian based centre collaborating with the United Nations Environment Programme (UNEP). GRID-Arendal manages the Blue Carbon Blog with BCS (Blue Climate Solutions & GRID-Arendal, 2013) and created the Blue Carbon Portal, an online platform that collates information about BC-projects around the world and brings together BC-actors, with UNEP (GRID-Arendal & UNEP, 2013). The centre has also published a number of BC-related publication, e.g. BC-guidelines (Nellemann et al., 2009) and information about marine vertebrate carbon services (Lutz & Martin, 2014). It manages The Economics of Ecosystems and Biodiversity (TEEB) for Oceans and Coasts with UNEP (UNEP & GRID-Arendal,	International

Entity	BC-related activities	Scale
	2013) and the GEF/UNEP Blue Forests Project (see section 4.2), including the Abu Dhabi Blue Carbon Demonstration Project (see AGEDI above).	
IUCN	The International Union for Conservation of Nature (IUCN) is, according to information on the organisation's webpage, the world's oldest and largest global environmental organisation (IUCN, 2015a). Its work is carried out in more than 160 countries; it has (June 2015) 45 offices globally and partner organisations from the private as well as the public sectors (ibid). The IUCN supports research, field projects, policy advice and advocacy work. The IUCN coordinates the Blue Carbon Initiative (see more above), together with the CI and IOC-UNESCO. During the 2014 IUCN World Parks Congress in Sydney (12-19 November), blue and "green" carbon were highlighted and the potential of using them as mechanism to protect land and coast discussed (IUCN, 2014).	International
NatCap	The Natural Capital Project (NatCap) is a partnership between Stanford University, the Nature Conservancy, the WWF and University of Minnesota. Blue Carbon-related activities include a BC-model (and guidance) to calculate carbon storage, sequestration and the value of sequestered carbon – the inVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) Blue Carbon Model (Natural Capital Project, 2015). The model can calculate four types of carbon pools in BC-ecosystems, namely above ground biomass, below ground biomass, and sediment carbon in soils and litter (ibid).	Mainly national (USA).
Nicholas institute for environmental policy solutions	The Nicholas Institute for Environmental Policy Solutions is part of Duke University. The institute functions as a link between science and policy, providing policy advice and recommendations. The Nicholas Institute for Environmental Policy Solutions works, under the focus area "Coastal Blue Carbon", on the potential for payments for blue carbon to preserve BC-ecosystems, e.g. by testing the viability of a financing mechanisms for preservation of west African mangroves (Duke Nicholas Institute, 2015). It has also produced policy advice regarding the potential inclusion of BC as a mitigation mechanism under the UNFCCC (Murray & Vegh, 2012), review of the scientific evidence base for BC (Sifleet, Pendleton, & Murray, 2011), and about financial options for BC based on experiences from REDD+ (Gordon, Murray, Pendleton, & Victor, 2011), and scientific knowledge about BC-ecosystems (e.g. Miteva, Murray, & Pattanayak, 2015). Duke is associated with the policy working group of the BCI, and a partner of the GEF Blue Forests project.	International
Ocean Foundation	The Ocean Foundation was initiated in 2003 and has partners and projects around the world working with marine conservation (The Ocean Foundation, 2016). The foundations coordinates Blue Climate Solutions together with GRID-Arendal, (The Ocean Foundation, 2013), and runs the Surfrider Foundation and the Seagrassgrow!-project, The *Surfrider Foundation* was established in 1984 for the protection of the World's oceans and has today approximately 50000 members (Surfrider Foundation, 2015). It hosts the Beachapedia with	International

Entity	BC-related activities	Scale
	information about, inter alia, Blue Carbon (Beachapedia, 2011, 2015). The *SeagrassGrow!* project supports seagrass recovery and has, amongst other things, developed a calculator that uses seagrass restoration for voluntary carbon emission offsetting (The Ocean Foundation, 2014).	
Project Watershed	The Comox Valley Project Watershed Society is a Canadian non-profit society that works with conservation mapping and technical advice related to the protection of wetted areas (Project Watershed, 2013a). In the context of Blue Carbon, Project Watershed focusses on advancing scientific knowledge about Blue Carbon through field work and data collection such as eelgrass planting activities and the restoration of salt marshes (Project Watershed, 2013b). Project Watershed works on a BC-monitoring and demonstration project with SRWS, funded by CEC (SRWS, 2014b).	Local (Canada)
RAE	Restore America's Estuaries (RAE) is a non-profit organisation based in the USA that brings together 11 conservation organisations with the common goal of protecting and restoring American estuaries and bays (RAE, 2015a). Within the context of BC, RAE conducts field studies research on carbon sequestration, storage and loss occurring in wetland habitats, for example assessment of the BC-potentials in the Snohomish estuary (S.; Crooks et al., February 2014.) RAE has also contributed to the introduction of Blue Carbon on the voluntary carbon market, first in 2012 with the Wetland Restoration and Conservation Requirements, adopted by Verified Carbon Standard (RAE, 2015b), and more recently on the development of the VCS-methodology for Tidal Wetlands and Seagrass Restoration, also for the voluntary carbon market (VCS, 2015). The standard was developed based on a tidal wetland conservation methodology and criteria, which was prepared by RAE with partner for the North American Commission for Environmental Cooperation (CEC, 2014b). RAE has also contributed to and edited a manual for using the VCS for tidal wetlands (Emmer et al., 2015). Other work related to BC includes communication of information on BC through e.g. webinars, conferences, and workshops (RAE, 2015b). RAE convened, for example, a workshop on the climate benefits from coastal habitat restoration as early as 2008, which resulted in a report that covers mitigation as well as adaptation benefits and measure (Needelman et al., 2012). RAE has also advocated the inclusion of BC in US-policy, including through the BCC (Blue Climate Solutions, 2011). RAE is also associated with the BCI scientific working group.	National
SERC	The Smithsonian Institute is a cluster made up of museums and research centres. One of the centres is the Smithsonian Environmental Research Center (SERC). The centre's research focusses on coastal environments, e.g. impact from fishery and aquaculture, pollution, invasive species and climate change – including Blue Carbon (SERC, 2014a). SERC is associated with the Blue Carbon Initiative and contributed to the development of VCS Methodology for Tidal Wetland and Seagrass Restoration (SERC, 2014a), which was developed by RAE and other partners (VCS, 2015). In 2013, SERC was a partner to the Abu Dhabi	National (USA)

Entity	BC-related activities	Scale
	BC-project (SERC, 2014b; see also AGEDI).	
SRWS	The Squamish River Watershed Society (SRWS) is an Environmental NGO based in Canada, established in 1993 (SRWS, 2014a). Its main objective is to protect the Squamish River Watershed, situated in the province of British Columbia (ibid). SRWS runs a Blue Carbon demonstration and monitoring project, funded by the CEC, in partnership with Project Watershed. The project is looking at restoration and conservation opportunities for BC-ecosystems, as well as possibilities to establish a BC-offsetting protocol in British Colombia, based on the project's carbon monitoring plan (SRWS, 2014b).	Local (Canada)
VCS	The Verified Carbon Standard (VCS) is the World's largest voluntary greenhouse gas program for carbon credits, initiated in 2005 by a partnership of actors from The Climate Group, the International Emissions Trading Association (IETA) and The World Economic Forum. These groups convened a team of global carbon market experts to draft the first VCS requirements (VCS, 2016). The program has several methodologies of relevance to BC-ecosystems, examples include: • Methodology for Tidal Wetland and Seagrass Restoration, developed by RAE and Silverstrum, with support from The Ocean Foundation, the Smithsonian institute, and others (VCS, 2015). • Methodology for Coastal Wetland developed by Louisiana Coastal Protection and Restoration Authority (VCS, 2014a). • Methodology for Rewetting Drained Tropical Peatlands, prepared by WWF Germany (VCS, 2014b).	International

4.4. Linkages between BC arenas

This section presents formal linkages between arenas presented in sections 4.1-4.3. *Formal* refers to relationships that are, *inter alia,* recognised through the establishment of a shared, long-term, work plan, shared secretariat or working group, and/or the formation of a new entity. The figure below illustrates these linkages.

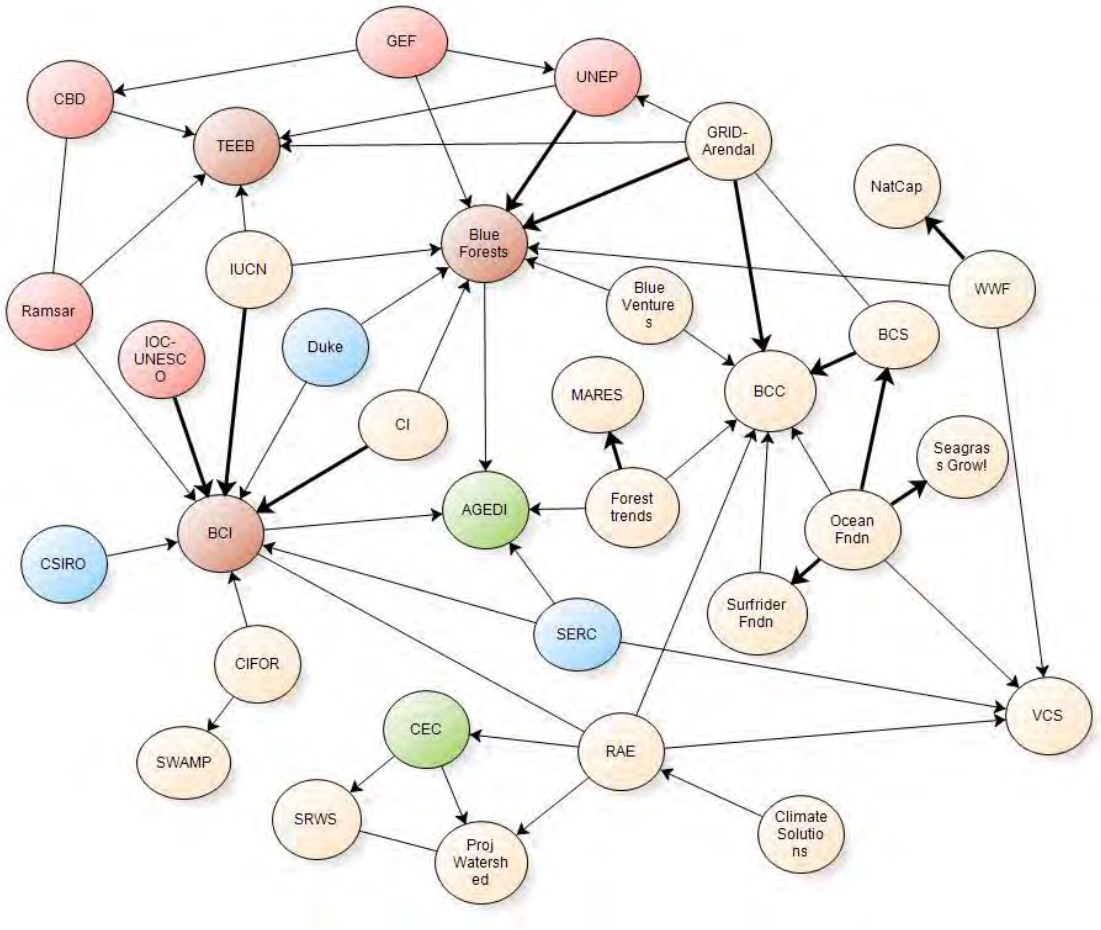

Figure 3: Linkages between BC arenas
Arenas listed in sections 4.1-4.3 with a connection to one or more other arenas are included in the figure. For pragmatic reasons, formal linkages between members of the UN-family already pointed out in section 3.4 have been excluded, such as between UNEP and the IPCC.
Connectors: Thicker connectors in the figure symbolise formations of new entities, e.g. the BCI. The direction of the connector symbolises membership and/or flow of information/resources. For example, one of the Ocean Foundation's projects is the Surfrider Foundation. The Surfrider Foundation is a signatory to the Blue Climate Coalition. WI is a member of the IUCN, the IUCN is a partner organisation to the NWP and GEF coordinates financial resources for UN-entities. Associative connectors on the other hand symbolise partnership within which entities cooperate at the same or similar hierarchical level. Examples include the Rio-conventions and the relationship between UNEP and IPBES/IPCC. UNEP may have established the panels but they have their own staff and offices and today function autonomously.
Colour scheme: Green = public/state; Red = member of the UN-family; Blue = entity mainly focussed on research; Beige = other entities, such as NGOs and private initiatives; Brown = hybrids.
Abbreviations: See tables in sections 4.2 and 4.3, or appendix 1 or 3.

The result of the mapping of linkages between various BC-arenas demonstrates a multitude of relationships. A few entities appear to function as nodes for activities related to BC, such as the Blue Carbon Initiative (BCI), the Blue Climate Coalition (BCC) and Blue Forests. This result is perhaps

not surprising, given that the objective of two of these, the BCI and the BCC, is, inter alia, to gather actors that work with BC to promote the advancement of this issue, politically, and in the case of the BCI also scientifically (see section 4.3). It is, however, worth noting that the BCC has not executed any advocacy work during the past few years. Figure 3 also elucidates the existence of at least three hybrid arenas of relevance to BC, namely the BCI, The Economics of Ecosystems and Biodiversity (TEEB) and Blue Forests. These all have in common that they are run jointly by UN-entities and non-UN entities. Of the entities that could be classified as Environmental NGOs, Restore Americas Estuaries (RAE) has the largest number of linkages with other actors (six), closely followed by the Ocean Foundation (with five).

Figure 3 covers only formal, long-term, relationships. Many other informal linkages exist between these arenas, such as joint publications, participation in workshops and other events, and individuals working for several different arenas. As discussed in section 3.4, these kinds of linkages could potentially be better captured through social network analysis (see also chapter 5).

4.5. Geographical areas highlighted in the context of BC

While the previous sections have focussed on the development of Blue Carbon as a political and scientific issue at various 'arenas', this section displays the geographical locations that are most often highlighted in the context of Blue Carbon at these arenas. The arenas presented in previous sections are 'physical' arenas such as negotiations taking place at a certain time and place around a given topic, as well as more virtual arenas such as web-based platforms and networks. The aim of this section is to further the understanding of arenas of relevance to the concept of BC, by presenting which specific countries that are most frequently mentioned.

Figure 4 below presents the results of a text analysis that looked at what geographical areas that are mentioned in the context of BC. This included areas where BC-activities are carried out (from planned to implemented and evaluated projects), as well as geographical areas or places mentioned as relevant to the BC-ecosystems. Geographical places mentioned in other contexts, such as where specific individuals come from, have not been included in the analysis.

This analysis is based on material from around 115 reports and webpages from the actors presented in sections 4.2 and 4.3.

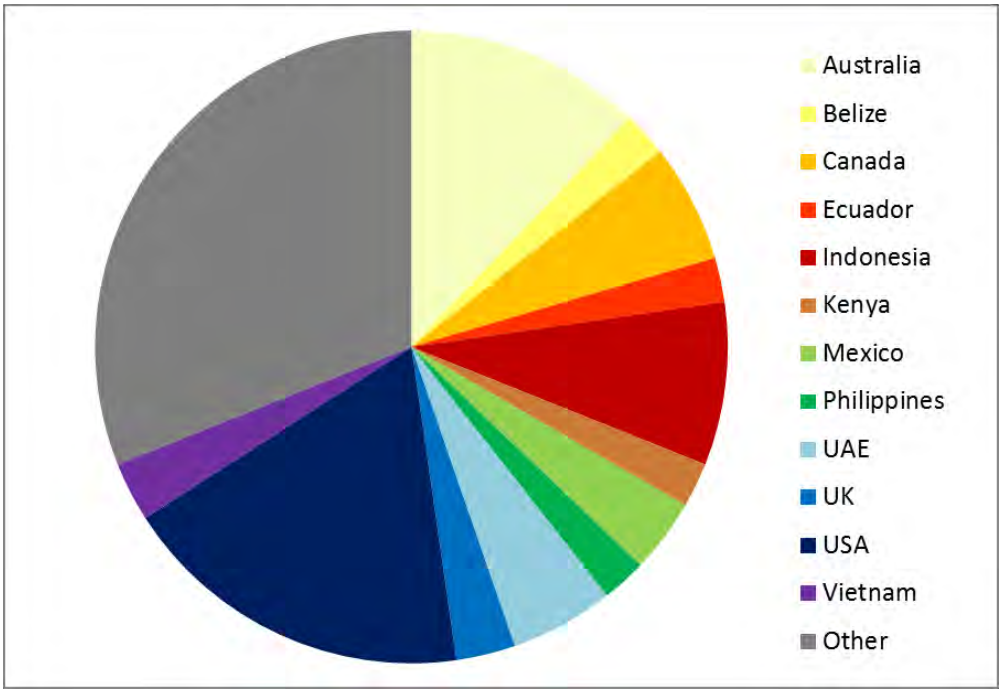

Figure 4: Geographical areas highlighted in the context of BC.
Comment: Percentage of total areas referred to in the material. 'Other' includes all references made to geographical areas mentioned less frequently than the ones presented in the figure, as well as unspecified geographical areas such as trans-boundary areas including continents.

Locations were only counted once per document. Hence, if one document mentioned Vietnam five times, one mark was given to Vietnam. All geographical locations from country level to local levels were included. If, for instance, a natural reserve was mentioned, one mark was given to the country where the reserve is located. For transboundary locations, an equal share was given to each country. Hence, a natural reserve located at the border between two countries equalled 0.5 marks per country.

The distribution of geographical areas highlighted in the context of BC (figure 4) contrasts with the same analysis for EbA (see figure 2, section 3.5). For EbA, developing countries dominate the picture, and especially those from the Least Developed Countries (LDC) group[1]. For BC, two developed countries, the USA and Australia, dominate the picture. The largest group is however, as for EbA, 'other', which includes all areas mentioned less frequently in the analysed material than the 12 countries presented in figure 4. Out of these 12 countries, none belong to the LDCs. This implies that BC-activities are carried out in a smaller number of locations compared to EbA, which is in line with the impression that EbA as a concept is more established than BC, as discussed in section 4.2. Further research is needed in order to better understand the development of BC as a concept, and how and where related activities are carried out. BC-ecosystems are found all over the world in coastal areas, and the potential to carry out BC-related work at additional locations therefore exists. Further research is also needed in order to better understand the difference between EbA and BC as illustrated in figures 2 and 4. Possible explanations could be linked to the focus on mitigation versus adaptation, and/or to the location of research organisations and field sites.

[1] As classified by the United Nations. The UN updates the list of LDCs annually. The list is published at <un.org>.

5. Conclusions

Both EbA and Blue Carbon could be linked to the overarching concept of Ecosystem Services, although EbA can be seen as a broader concept of the two. These three topics are all human-centred, rather than eco-centric, in their views towards the protection of nature. The concept of Ecosystem Services draws attention to the benefits to humans from ecosystems in general. EbA focusses on the services people can use to adapt to climate change, but does not restrict what types of ecosystems that may be considered for this purpose (cf. CBD, 2009). That said, developing countries dominate the picture geographically, at least for the EbA-arenas considered in this report. Blue Carbon focusses on one type of ecosystems, namely coastal (marine)[m], and, in contrast to EbA, on the mitigation rather than the adaptation benefits these ecosystems provide. Hence, while EbA at least in theory could be implemented anywhere on the planet, Blue Carbon is specific for coastal areas. The analyses of what geographical areas that are highlighted in these two contexts revealed that for EbA, developing countries dominate the discussions, but no individual country stands out particularly. For BC two developed countries, namely the USA and Australia, are the two most frequently mentioned countries in the context of BC, followed by Indonesia and Canada.

Both EbA and Blue Carbon are discussed in the context of the UNFCCC and they were both addressed in the fifth assessment report of the IPCC (IPCC, 2014c; Noble et al., 2014). Table 7 lists the UNFCCC-negotiation tracks these two issues have in common. In addition, the mapping presented in the previous chapters identified a number of arenas outside the UNFCCC and the IPCC that consider both EbA and BC. These are: Conservation International, the Global Environmental Facility, the International Union for Conservation of Nature, and the United Nations Environment Programme.

Table 7: UNFCCC negotiation tracks that both EbA and to BC relate to.

Type of linkage	UNFCCC negotiation track
Partial (BC), Indirect (EbA):	REDD+ (Reducing Emissions from Deforestation and forest Degradation in developing countries)*
Indirect (BC and EbA):	NAPA (National Adaptation Programmes of Action)
Suggested (BC), Formal (EbA):	NWP (Nairobi work programme)
Suggested (BC and EbA):	INDC (Intended Nationally determined Contributions)
Potential (BC and EbA):	Issues related to agriculture*
Potential (BC and EbA):	FVA (Framework for Various Approaches), NMM (new market-based mechanisms) and NMA (non-market based approaches); Market and non-market based mechanisms (including PES)

Comments: * Included under the UNFCCC overarching theme "Land Use and Climate Change", unfccc.int/8792.

Six different negotiation tracks were identified as relevant or potentially relevant for EbA. All of these tracks are also linked, or potentially linked, to BC. Twelve different negotiation tracks that are or could become relevant for BC were identified during the mapping activity.

[m] As discussed in section 1.4, the types of ecosystems covered by the concept of Blue Carbon differ slightly between contexts and actors. In this report, the ecosystems included in UNFCCC-writings on 'coastal marine ecosystems' have been used as a guiding reference to what ecosystems should be considered BC-ecosystems. These are: mangroves, tidal salt marshes, wetlands, and seagrass meadows (see e.g. UNFCCC, 2011c. § 43).

The results of the mappings suggest that EbA is more established as a concept within the UN-system than BC. EbA was defined by the CBD as early as 2009, and shortly thereafter recognised by the UNFCCC. The focus of EbA on climate change adaptation rather than mitigation was further confirmed when the NWP, with its focus on adaptation, took EbA on board. The concept 'Blue Carbon' on the other hand is not used in UNFCCC-decisions or other official communications. Instead, the term 'coastal marine ecosystem' is used. As it remains unclear if BC will at some point be formally recognised by the UNFCCC as a mitigation mechanism, BC could still be redefined and transformed into an adaptation mechanism or component. This potential change of framing from mitigation to adaptation is also in line with the examples of adaptation projects, such as the NAPAs and the Adaptation Committees 'Endorsed Concepts' that overlap with the current understanding of BC. It also suggests that these two topics, that are framed differently and look different on paper, may nevertheless be difficult to separate when we move from theory to implementation. When we talk about ecosystem-based adaptation in coastal marine ecosystems, and when we talk about the co-benefits of Blue Carbon projects in terms of adaptation benefits, we in essence talk about the same processes in the environment and implementation on the ground. For example, mangrove conservation protects the ecosystem's carbon stocks (mitigation), and at the same time it protects coastal areas from erosion and floods (adaptation) (e.g. Chong, 2014; Locatelli et al., 2014; Miteva et al., 2015; Sierra-Correa & Kintz, 2015). In addition to mitigation and adaptation, these projects may generate other additional benefits, but also involve trade-offs between different desired outcomes (e.g. IPCC, 2014c). This means that on site, a mangrove conservation project that focusses on climate change adaptation may look very similar to a mangrove conservation project that focusses on mitigation; the difference lies in what values are highlighted, which in turn has an impact on, or may be a consequence of, what type of funding and which international mechanisms that are applicable. For example, defining BC as a mitigation measure rather than an adaptation measure could bring in market mechanisms into the equation. In terms of MRV, measuring the carbon content in an ecosystem involves a set of quantitative methods that cannot be used to capture the value of more qualitative ecosystem services (e.g. spiritual and cultural values), and vice versa.

Table 8 summarises implications of framing BC as a mitigation issue compared to an adaptation issue in terms of relevant UNFCCC agenda items and funding from the Green Climate Fund, based on the mapping presented in this report.

Table 8: Blue Carbon framed as adaptation compared to mitigation.

	Adaptation	Mitigation
Example ecosystem service:	Coastal protection	Carbon sequestration and storage
Agenda item UNFCCC:	NAPAs (→ NAPs)	NAMAs, REDD+
	Adaptation Fund	LULUCF, CDM
	NWP, INDCs	INDCs
GCF sector:	50% adaptation	50% mitigation
	Increased resilience of ecosystems and ecosystem service	Reduced emissions from forests and land-use

This demonstrates the complexity of including issues that have both adaptation and mitigation components under the UNFCCC-process with its many different negotiation tracks that in turn can be broadly dived in two categories: adaptation or mitigation. A separation of adaptation and mitigation issues ultimately means that for issues that are both, one or other ends up being emphasised, which in turn may have bearing on what rules, mechanisms and support can be applied.

Discussions regarding co-benefits of EbA-projects, and co-benefits and safeguards for REDD-plus demonstrate similar complexities (see section 3.1). Generally speaking, the inclusion of land-use

related issues under the UNFCCC, including BC and EbA as well as LULUCF, REDD-plus and 'Issues related to agriculture', arguably mean that, under the current structure of the UNFCCC, it is a necessity to prioritise between focussing on 'adaptation ecosystems services' or 'mitigation ecosystem services'. The services we do not prioritise become 'co-benefits'. Such categorisation may lead to not making full use of the mitigation or adaptation potential of the systems, risk neglecting ecosystem services other than those related to climate change mitigation and adaptation, as well as the linkages between different land-use activities, such as between agriculture and deforestation.

Future research could shed more light on how the land-use sector specifically, and ecosystems in general, should best be handled within the context of the UNFCCC. Accounting for co-benefits may be an important element, and how the inclusion of an issue in the negotiations may be affected by its chosen framing. The latter is also of potential importance when defining new negotiation items. To scrutinise pros and cons with different framings could be further explored in future research projects. To increase our understanding of BC and EbA in relation to the UNFCCC, a social network analysis could provide more clarity regarding linkages between different arenas and actors. Furthermore, a more in-depth text analysis could increase our understanding of what geographical areas that are the most important for the development of BC and EbA as scientific and political topics. This type of analysis could also bring clarity to how EbA and BC are framed by the arenas covered in this report, and elsewhere.

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7. Annexes

Annex 1. Abbreviations

Abbreviation	Full name
2013-2015 Review	Review of the adequacy of the 2°C goal "[…] in the light of the ultimate objective of the Convention and overall progress toward achieving the long-term global goal, including a consideration of the implementation of the commitments under the Convention. The Review will also consider strengthening the long-term global goal, including in relation to temperature rises of 1.5°C."
AC	Adaptation Committee
ACF	Aboriginal Carbon Fund
ACR	American Carbon Registry
ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
AFB	Adaptation Fund Board
AGEDI	Abu Dhabi Global Environmental Data Initiative
BC	Blue Carbon
BCI	Blue Carbon Initiative
BCP	Blue Carbon Portal
BCS	Blue Climate solutions
BMUB	Federal Ministry of Environment, Germany
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CCA RAI	Climate Change Adaptation in Rural Areas of India
CCCCC	Caribbean Community Climate Change Centre
CDKN	Climate & Development Knowledge Network
CDM	Clean Development Mechanism
CEC	Commission for Environmental Cooperation
CfRN	Coalition for Rainforest Nations
CI	Conservation International
CIFOR	Centre for International Forestry Research
COP	Conference of the Parties
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTCN	Climate Technology Centre and Network
EbA	Ecosystem-based Adaptation; Ecosystem-based approaches to Adaptation
ELAN	Ecosystem and Livelihoods Adaptation Network
ETS	Emission Trading Scheme/System
EC	European Commission
EU	European Union
FEbA	Friends of EbA
FVA	Framework for Various Approaches
GCF	Green Climate Fund
GEF	Global Environmental Facility
GHG	Greenhouse gas
GIZ	German International Cooperation Agency
GRID	Global Resource Information Database
ICLEI	Local Governments for Sustainability
ICRAF	International Centre for Research in Agroforestry; World Agroforestry Centre
IETA	International Emissions Trading Association
IIED	International Institute for Environment and Development
INDC	Intended Nationally Determined Contribution
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
L&D	Loss and Damage (associated with climate change impacts)

LDCF	Least Developed Countries Fund
LDCs	Least Developed Countries
LEG	Least developed countries Expert Group
LULUCF	Land-Use Land Use Change and Forestry
MERN	Mangrove Environmental Rehabilitation Network
MRV	Measuring, reporting and verification
NAMAs	Nationally appropriate mitigation actions of developing countries
NAPAs	National Adaptation Programmes of Action
NAPs	National Adaptation Plans
NatCap	Natural Capital Project
NCB	Non-Carbon Benefits
NMA	Non Market-based Approaches
NMM	New Market-based Mechanisms
NOAA	National Oceanic and Atmospheric Administration
NWP	Nairobi work programme
PES	Payments for Ecosystem Services
RAE	Restore America's Estuaries
REDD+	Reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
RFF	Resources for the future
RSO	Research and Systematic Observation
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCCF	Special Climate Change Fund
SERC	Smithsonian Environmental Research Center
SIDS	Small Island Developing States
SPREP	Secretariat of the Pacific Regional Environment Programme
SRWS	Squamish River Watershed Society
SDG	Sustainable Development Goals
TEEB	The Economics of Ecosystem and Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
WI	Wetlands International
WMO	World Meteorological Organization
WB	World Bank
WWF	World Wide Foundation

Annex 2. Arenas EbA: Internet Search

The arenas/actors identified through internet searches are listed below. *Italics* marks entities identified but later excluded from the mapping, **bold** marks entities identified through complimentary searches.

1. Birdlife International
2. CBD, Convention on Biological Diversity
3. CCCCC, Caribbean Community Climate Change Centre
4. *CCA RAI, Climate Change Adaptation in Rural Areas of India*
5. CDKN, Climate & Development Knowledge Network
6. CI, Conservation International
7. EBA Flagship
8. EC, European Commission
9. Ecologic Institute
10. *ELAN, Ecosystem and Livelihoods Adaptation Network*
11. **GCF, Green Climate Fund**
12. GEF, Global Environmental Facility
13. GIZ, The German International Cooperation Agency
14. *BMUB, Federal Ministry of Environment, Germany*
15. *ICLEI, Local Governments for Sustainability*
16. **ICRAF, The World Agroforestry Centre**
17. IIED, International Institute for Environment and Development
18. IUCN, International Union for Conservation of Nature
19. IPBES, Intergovernmental Platform on Biodiversity and Ecosystem Services
20. IPCC, Intergovernmental Panel on Climate Change
21. SPREP, Secretariat of the Pacific Regional Environment Programme
22. UNCCD, United Nations Convention to Combat Desertification
23. UNDP, United Nations Development Programme
24. UNEP, United Nations Environment Programme
25. UNFCCC, United Nations Framework Convention on Climate Change
26. *University of the sunshine coast, Queensland, Australia*
27. *weADAPT*
28. WI, Wetlands International
29. WWF, World Wide Foundation
30. *WMO, World Meteorological Organization*

Annex 3. Arenas BC: Internet Search

The arenas/actors identified through internet searches are listed below. Italics marks entities identified but later excluded from the mapping, bold marks entities identified through complimentary searches.

1. ACF, Aboriginal Carbon Fund
2. **ACR, American Carbon Registry**
3. AGEDI, Abu Dhabi Global Environmental Data Initiative
4. BCC, Blue Climate Coalition
5. BCI, Blue Carbon Initiative
6. *BCP, Blue Carbon Portal (clustered with GRID in this report)*
7. BCS, Blue Climate solutions
8. Blue Ventures
9. **CBD, Convention on Biological Diversity**
10. CEC, Commission for Environmental Cooperation
11. CI, Conservation International
12. **CIFOR, Centre for International Forestry Research**
13. Climate Solutions
14. CSIRO, Commonwealth Scientific and Industrial Research Organisation
15. Duke – Nicholas institute for environmental policy solutions
16. *Eye on Earth (clustered with AGEDI in this report)*
17. Forest trends
18. **GEF, Global Environmental Facility**
19. GRID, Global Resource Information Database-Arendal
20. **IPCC, Intergovernmental Panel on Climate Change**
21. IUCN, International Union for Conservation of Nature
22. *MARES (clustered with Forest Trends in this report)*
23. NatCap, Natural Capital Project
24. *NOAA, National Oceanic and Atmospheric Administration*
25. Ocean Foundation
26. Project Watershed, Comox Valley Project Watershed Society.
27. RAE, Restore America's Estuaries
28. **Ramsar Convention**
29. *RFF, Resources for the future*
30. SERC, Smithsonian Environmental Research Center
31. SRWS, Squamish River Watershed Society
32. *Surfrider foundation (clustered with Ocean Foundation in this report)*
33. **UN SDG, Sustainable Development Goals**
34. UNEP, United Nations Environment Programme
35. UNESCO, United Nations Educational, Scientific and Cultural Organization
36. *University of Delaware*
37. **VCS, Verified Carbon Standard**
38. **World Bank**

Annex 4. Submitted NAPAs

	Country	Date NAPAs posted
1	**Afghanistan**	September 2009
2	**Angola**	December 2011
3	**Bangladesh (updated)**	June 2009
4	**Benin**	January 2008
5	**Bhutan**	May 2006
6	**Burkina Faso**	December 2007
7	**Burundi**	February 2007
8	**Cambodia**	March 2007
9	**Cape Verde**	December 2007
10	**Central African Republic**	June 2008
11	**Chad**	February 2010
12	**Comoros**	November 2006
13	**Democratic Republic of Congo**	September 2006
14	**Djibouti**	October 2006
15	**Equatorial Guinea**	November 2013
16	**Eritrea**	May 2007
17	**Ethiopia**	June 2008
18	**Gambia**	January 2008
19	**Guinea**	July 2007
20	**Guinea-Bissau**	February 2008
21	**Haïti**	December 2006
22	**Kiribati**	January 2007
23	**Lao People's Democratic Republic**	May 2009
24	**Lesotho**	June 2007
25	**Liberia**	July 2007
26	**Madagascar**	December 2006
27	**Malawi**	March 2006
28	**Maldives**	March 2008
29	**Mali**	December 2007
30	**Mauritania**	November 2004
31	**Mozambique**	July 2008
32	**Myanmar**	May 2013
33	**Nepal**	November 2010

34	**Niger**	July 2006
35	**Rwanda**	May 2007
36	**Samoa**	December 2005
37	**Sao Tome and Principe**	November 2007
38	**Senegal**	November 2006
39	**Sierra Leone**	June 2008
40	**Solomon Islands**	December 2008
41	**Somalia**	April 2013
42	**Sudan**	June 2007
43	**Tanzania**	September 2007
44	**Timor-Leste**	September 2011
45	**Togo**	September 2009
46	**Tuvalu**	May 2007
47	**Uganda**	December 2007
48	**Vanuatu**	December 2007
49	**Yemen**	April 2009
50	**Zambia**	October 2007