ADAPTATION FUND

AFB/ PPRC.22-23/12
11 June, 2018

Adaptation Fund Board
Project and Programme Review Committee

PROPOSAL FOR
BENIN, BURKINA FASO, GHANA, NIGER, TOGO

Background

1. The strategic priorities, policies and guidelines of the Adaptation Fund (the Fund), as well as its operational policies and guidelines include provisions for funding projects and programmes at the regional, i.e. transnational level. However, the Fund has thus far not funded such projects and programmes.

2. The Adaptation Fund Board (the Board), as well as its Project and Programme Review Committee (PPRC) and Ethics and Finance Committee (EFC) considered issues related to regional projects and programmes on a number of occasions between the Board's fourteenth and twenty-first meetings but the Board did not make decisions for the purpose of inviting proposals for such projects. Indeed, in its fourteenth meeting, the Board decided to:

> *(c) Request the secretariat to send a letter to any accredited regional implementing entities informing them that they could present a country project/programme but not a regional project/programme until a decision had been taken by the Board, and that they would be provided with further information pursuant to that decision*
>
> *(Decision B.14/25 (c))*

3. In its eighth meeting in March 2012, the PPRC came up with recommendations on certain definitions related to regional projects and programmes. However, as the subsequent seventeenth Board meeting took a different strategic approach to the overall question of regional projects and programmes, these PPRC recommendations were not included in a Board decision.

4. In its twenty-fourth meeting, the Board heard a presentation from the coordinator of the working group set up by decision B.17/20 and tasked with following up on the issue of regional projects and programmes. She circulated a recommendation prepared by the working group, for the consideration by the Board, and the Board decided:

> *(a) To initiate steps to launch a pilot programme on regional projects and programmes, not to exceed US$ 30 million;*
>
> *(b) That the pilot programme on regional projects and programmes will be outside of the consideration of the 50 per cent cap on multilateral implementing entities (MIEs) and the country cap;*
>
> *(c) That regional implementing entities (RIEs) and MIEs that partner with national implementing entities (NIEs) or other national institutions would be eligible for this pilot programme, and*
>
> *(d) To request the secretariat to prepare for the consideration of the Board, before the twenty-fifth meeting of the Board or intersessionally, under the guidance of the working group set up under decision B.17/20, a proposal for such a pilot programme based on consultations with contributors, MIEs, RIEs, the Adaptation Committee, the Climate Technology Centre and Network (CTCN), the Least Developed Countries Expert Group (LEG), and other relevant bodies, as appropriate, and in that proposal make a*

recommendation on possible options on approaches, procedures and priority areas for the implementation of the pilot programme.

(Decision B.24/30)

5. The proposal requested under (d) of the decision above was prepared by the secretariat and submitted to the Board in its twenty-fifth meeting, and the Board decided to:

(a) Approve the pilot programme on regional projects and programmes, as contained in document AFB/B.25/6/Rev.2;

(b) Set a cap of US$ 30 million for the programme;

(c) Request the secretariat to issue a call for regional project and programme proposals for consideration by the Board in its twenty-sixth meeting; and

(d) Request the secretariat to continue discussions with the Climate Technology Center and Network (CTCN) towards operationalizing, during the implementation of the pilot programme on regional projects and programmes, the Synergy Option 2 on knowledge management proposed by CTCN and included in Annex III of the document AFB/B.25/6/Rev.2.

(Decision B.25/28)

6. Based on the Board Decision B.25/28, the first call for regional project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on 5 May 2015.

7. In its twenty-sixth meeting the Board decided *to request the secretariat to inform the Multilateral Implementing Entities and Regional Implementing Entities that the call for proposals under the Pilot Programme for Regional Projects and Programmes is still open and to encourage them to submit proposals to the Board at its 27th meeting, bearing in mind the cap established by Decision B.25/26.*

(Decision B.26/3)

8. In its twenty-seventh meeting the Board decided to:

(a) Continue consideration of regional project and programme proposals under the pilot programme, while reminding the implementing entities that the amount set aside for the pilot programme is US$ 30 million;

(b) Request the secretariat to prepare for consideration by the Project and Programme Review Committee at its nineteenth meeting, a proposal for prioritization among regional project/programme proposals, including for awarding project formulation grants, and for establishment of a pipeline; and

(c) Consider the matter of the pilot programme for regional projects and programmes at its twenty-eighth meeting.

(Decision B.27/5)

9. The proposal requested in (b) above was presented to the nineteenth meeting of the PPRC as document AFB/PPRC.19/5. The Board subsequently decided:

a) With regard to the pilot programme approved by decision B.25/28:

(i) To prioritize the four projects and 10 project formulation grants as follows:

1. If the proposals recommended to be funded in a given meeting of the PPRC do not exceed the available slots under the pilot programme, all those proposals would be submitted to the Board for funding;

2. If the proposals recommended to be funded in a given meeting of the PPRC do exceed the available slots under the pilot programme, the proposals to be funded under the pilot programme would be prioritized so that the total number of projects and project formulation grants (PFGs) under the programme maximizes the total diversity of projects/PFGs. This would be done using a three-tier prioritization system: so that the proposals in relatively less funded sectors would be prioritized as the first level of prioritization. If there are more than one proposal in the same sector: the proposals in relatively less funded regions are prioritized as the second level of prioritization. If there are more than one proposal in the same region, the proposals submitted by relatively less represented implementing entity would be prioritized as the third level of prioritization;

(ii) To request the secretariat to report on the progress and experiences of the pilot programme to the PPRC at its twenty-third meeting; and

b) With regard to financing regional proposals beyond the pilot programme referred to above:

(i) To continue considering regional proposals for funding, within the two categories originally described in document AFB/B.25/6/Rev.2: ones requesting up to US$ 14 million, and others requesting up to US$ 5 million, subject to review of the regional programme;

(ii) To establish two pipelines for technically cleared regional proposals: one for proposals up to US$ 14 million and the other for proposals up to US$ 5 million, and place any technically cleared regional proposals, in those pipelines, in the order described in decision B.17/19 (their date of recommendation by the PPRC, their submission date, their lower "net" cost); and

(iii) To fund projects from the two pipelines, using funds available for the respective types of implementing entities, so that the maximum number of or maximum total funding for projects and project formulation grants to be approved each fiscal year will be outlined at the time of approving the annual work plan of the Board.

(Decision B.28/1)

10. According to the Board Decision B.12/10, a project or programme proposal needs to be received by the secretariat no less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

11. The following fully-developed project proposal titled “Promoting climate-smart agriculture in West Africa” was submitted by the Banque Ouest Africaine de Développement (BOAD), which is a Regional Implementing Entity of the Adaptation Fund.

1. 12. This is the third submission of the regional project proposal. to the twenty-sixth meeting of the Board as a pre-concept, and the Board decided endorse it. It was then submitted as a project concept to the twenty-seventh meeting, and at the twenty-eighth meeting of the Board, having considered the comments and recommendation of the Project and Programme Review Committee, the Adaptation Fund Board (the Board) decided to:

(a) Endorse the project concept, as supplemented by the clarification response provided by the Banque Ouest Africaine de Développement (BOAD) to the request made by the technical review;

(b) Request the secretariat to transmit to BOAD the observations in the review sheet annexed to the notification of the Board’s decision, as well as the following issue:

(i) *At the fully-developed project document stage, the proponent should describe in more detail the risks, including environmental and social risks, and their related mitigation measure;*

(ii) *At the fully-developed project document stage the proposal should elaborate on the observation systems planned to be developed through the project, including the intended use of the data produced by those systems, the capacity to operate the systems, and the sustainability of the systems;*

(c) Approve the Project Formulation Grant of US$ 80,000; and

(d) Request BOAD to transmit the observations under item (b) to the Governments of Benin, Burkina Faso, Ghana, Niger and Togo.

(Decision B.28/21)

13. The present submission of the project proposal was received by the secretariat in time to be considered in the thirty-first – thirty second intersessional Board meeting. The secretariat carried out a technical review of the project proposal, with the diary number AFR/RIE/Food/2015/1, and completed a review sheet.

14. In accordance with a request to the secretariat made by the Board in its 10th meeting, the secretariat shared this review sheet with BOAD, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

15. The secretariat is submitting to the PPRC the summary and the initial technical review of the project, both prepared by the secretariat, along with the submission of the proposal in the following section. In accordance with decision B.25.15, the proposal is also submitted with changes between the initial submission and the revised version highlighted.

Project Summary

Benin, Burkina Faso, Ghana, Niger, Togo: Promoting climate-smart agriculture in West Africa

Implementing Entity: West African Development Bank (BOAD)

Project/Programme Execution Cost: US$ 1,331,000
Total Project/Programme Cost: US$ 11,573,000
Implementing Entity Fee: US$ 1,096,000
Financing Requested: US$ 14,000,000

Project Background and Context:

The Regional Project, "Promoting Climate-Smart Agriculture in West Africa," aims to reduce the vulnerability of farmers and pastoralists to increase climatic risk, which undermines the level of food security, income generation, and the supporting ecosystem services of poor communities. The specific objectives of the project, that correspond with the three project components, are:

(a) Strengthen knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change;

(b) Scaling up best practices related to climate change adaptation in agriculture and pastoralism at local and regional level;

(c) Share knowledge and disseminate lessons learned on resilient agricultural best practices related to climate-smart agriculture.

Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change (US$ 846,000).

Through its component 1, the project will: (i) develop regional synergy and complementarity that will strengthen the national capacity to produce agro-climatic and meteorological information in order to understand the current trends in climate change that are spreading from the regional to the local level; (ii) strengthen knowledge on resilience technologies, participatory and integrated design and planning of interventions, etc. as part of a climate-smart agriculture. This, in order to better prevent the adverse effects of climate change on agricultural and livestock production and strengthen the resilience of vulnerable populations.

Component 2: Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local and regional level (US$ 8,848,000).

Component 2 aims to promote climate-smart agriculture techniques and technologies, adapted to the project areas of intervention. As defined above, this agriculture contributes to adaptation, production and mitigation to the possible extent. As part of this project, a certain number of technologies were selected with all the actors of the agricultural sector (farmers, technical agents, NGOs / Associations, regional institutions, etc.).

The techniques and technologies selected, taken individually can not meet the dimensions of the CSA. Reason for which, package of technologies have been formed. These technologies, put together, will make it possible to sustainably reinforce the resilience of communities in the face of the adverse effects of climate change, sustainably improve agricultural production and beneficiary incomes, and contribute to carbon sequestration and thus GHG mitigation.

Component 3: Knowledge Sharing on Resilient Agricultural Best Practices Related to Climate-Smart Agriculture (US$440,000)

This component will help to develop and operationalize an information system and a knowledge sharing for the adoption of resilient agriculture good practices to support food security, income general, resilience, and environmental sustainability in the Project Region and West Africa. The sharing of knowledge and the dissemination of lessons learned will be done through two levels: (i) Dissemination of lessons learned and knowledge from the project to exchange between stakeholders of climate-smart agriculture at national and regional level; (ii) Dissemination of lessons learned and knowledge from the project at the local communities' level.

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regional Project

Country/Region: **Regional (Benin, Burkina Faso, Ghana, Niger, Togo)**

Project Title: **Promoting Climate-Smart Agriculture in West Africa**

Thematic focal area: **Food security**

Implementing Entity: **Banque Ouest Africaine de Développement (BOAD)**

Executing Entities: **ECOWAS Regional Agency for Agriculture and Food (RAAF) in collaboration with Directorates in Charge of Environment, Agriculture, and Livestock in the 5 countries indicated above**

AF Project ID: **AFR/RIE/Food/2015/1**

IE Project ID:

Requested Financing from Adaptation Fund (US Dollars): **14,000,000**

Reviewer and contact person: **Saliha Dobardzic**

Co-reviewer(s): **Dirk Lamberts**

IE Contact Person: **Yacoubou Bio Bio Sawe**

Review Criteria	Questions	Comments on 5/2/2018	Comments on 5/21/2018
	1. Are all of the participating countries party to the Kyoto Protocol?	Yes.	

Country Eligibility	2. Are all of the participating countries developing countries particularly vulnerable to the adverse effects of climate change?	Yes, all 5 participating countries are contiguous countries in west Africa that have high rural populations that are dependent on climate-sensitive sectors and has experienced documented increased in temperature and decline in rainfall, among other climate change impacts.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes, signed letters have been provided for all 5 countries by the current designated government authority.	
	2. Does the regional project / programme support concrete adaptation actions to assist the participating countries in addressing the adverse effects of climate change and build in climate resilience, and do so providing added value through the regional approach, compared to implementing similar activities in each country individually?	Yes, the project addresses a region that is transboundary and particular vulnerable for each participating country due to the dependence on agriculture and similar climatic conditions across borders. Each component of the project is designed to execute a series of activities that build upon each other to produce the information that is needed to support a more resilient agriculture system, implement solutions, and share knowledge across countries. Note: The use of USP (unidentified sub-projects) is justified for those under component 1 but is less so for component 2. In particular the larger water spreading threshold structures under Activity 2.1.1.2. are only few in number (2 per country) and no obstacles to their full identification at the proposal stage are presented. Nevertheless, in the interest of consistency and operational integration, they can be included in the ESP compliance process for the USPs.	

	3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?	Yes, the proponent has clarified how the project will engage and involve marginalized and vulnerable communities.	
	4. Is the project / programme cost-effective and does the regional approach support cost-effectiveness?	Yes, the proponent has provided a thorough economic analysis to justify why the proposed approach was chosen and how it enables cost-efficiencies.	
	5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments? If applicable, it is also possible to refer to regional plans and strategies where they exist.	Yes, the proponent has provided a thorough overview of relevant strategies and plans across all 5 countries and had committed to align with the NDCs in each country.	

	6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	Requires clarification. The proposal includes a generic statement that "all project activities will be implemented in close collaboration with the Ministries of Agriculture, livestock, environmental so as to ensure compliance with the relevant standards and technical guidelines in each of the target countries." (p. 96). **CR1**: Please clarify which project implementation entity will be responsible for compliance with national standards. Please clarify in the USP (unidentified sub-projects) procedure how this will be achieved.	CR1: Partially addressed. The proposal now lists in a generic way which agencies are responsible for monitoring of compliance with national technical standards, but it still does not clarify which project implementation entity will be responsible for compliance with national standards. The procedure for USP selection and implementation does not specify this either and attributes roles to national enforcement agencies they may not be able to assume.

	7. Is there duplication of project / programme with other funding sources?	There are many related projects that could be utilized to make the current project more efficient of effective and activities have been identified to capture the lessons from each.	
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes, learning and knowledge management is a cornerstone of this project.	
	9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	Yes, the project has conducted thorough consultations with both local communities and technical staff in both countries, which has designed the approach of the project.	
	10. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Yes, the project is justified on the basis of full cost of adaptation reasoning.	
	11. Is the project / program aligned with AF's results framework?	Yes.	
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	Possibly. **CR2**: Please clarify how management committees will be sustained, governed, and structured.	CR2: Addressed
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified?	Yes however clarification is requested. The risks identification that is presented (II.L, p. 124 onwards and repeated further on) is speculative, premature and precipitous rather than evidence-based, comprehensive and commensurate as required by the ESP. At best, this could relate to	

		inherent risks of the type USPs that are suggested but it also comes to conclusions that are only possible by taking the specific setting of a USP into account. For no USP project activity is the concrete environmental and social setting known, which determines the actual environmental and social risk in combination with the inherent risk of that activity. This is not in line with the ESP as it is not evidence-based and not comprehensive. The risks identification table (Table 20) should be limited to risks already identified, i.e. those inherent to the USPs and those in general of the project locations. The latter implying that no risks can be excluded at this stage. CR3: Please revise the risks identification findings to limit them to the inherent ESP risks of the proposed activities. The mechanism presented in III.C of the proposal is largely adequate, with the following remarks: 1. The scope needs to be considerably reduced to match the resources available in terms of technical capacity, finances and personnel time. The implementation arrangements outline the project's approach to ESP compliance for the USPs. The concerns about the resources and capacity required to apply this approach to all USPs are also shared by the countries, who have requested assistance from the project. • Over 700 sub-projects are planned, i.e. 140 per country. For each country, a	CR 3: Partially addressed. The risks identification table in section II.L has been corrected, however,

		consultant will be hired to develop the USP project documents and to ensure compliance with the ESP. This seems ambitious, few consultants combine such expertise, and the time required does not seem to be available. • Applying the ESP regular processes to 700 sub-projects of 5 ha is not realistic and therefore alternative arrangements are required to comply with the ESP. • The implementation arrangements (p. 130-134) lack some elements required for ESP compliance. The Regional PMU does not have explicit ESP capacity, nor do the national steering committees or PMUs. The arrangement for the BOAD to comment on the ESIAs for the over 700 USPs may remain limited to a formal process due to the high numbers involved and the regional scope of the project. The capacity of the subprojects review committees (p. 137) to ascertain ESP compliance is not demonstrated. 2. Step 1 of the procedure should include a justification of the conclusions and substantiating information. 3. Step 3 may likely require funding to carry out consultations, data collection etc. required for effective ESIA. CR4 : Please clarify that provisions for funds to carry out consultations and data collection have been made, how they will be allocated and that these can be expected to be adequate. 4. Step 5 of the procedure – environmental permitting by the national ministries of environment - should be clarified to reflect that these permits refer to national requirements only and do not imply compliance with the AF ESP.	the same needs to be done to the subsequent Table 22. CR 4: Addressed. CR 5: Not adequately addressed. The scope of the USPs has not been modified. Risks identification needs to be done at the level of the 5 ha 'micro-units' constituting the 25 USP clusters as it is at this level that most risks present themselves. · No substantive changes were made. The basic USP units of 5 ha and larger have now been clustered into larger USPs, limiting their number to 25 in total. This clustering according to agro-climatic zones has little or no impact on the ESP risks identification requirements as most of these risk principles are not directly related to agro-climatic factors. Their clustering in this manner also is not expected to reduce the amount of effort required

		5. The validation meetings of Step 5 are impractical and expensive, and seem to have limited added value to the process: stakeholders have been consulted and no further involvement in the ESIA process seems needed; any remaining issues can be addressed through the grievance mechanism. National ministries may have additional requirements. 6. The monthly reporting on USP ESIA implementation risks to entail a large administration that might preclude the substantive aspect of this activity. The proposed ESMP mechanism for identifying and managing ESP risks for USPs, whilst inherently sound, provides insufficient prospects of ESP compliance. This is concluded based on the large number of USPs (>700), the involvement of 5 countries with their own national procedures and requirements, the stated lack of familiarity with the AF ESP and capacity to apply this policy, the remoteness of the IE, and the relatively low risk of consequences in case of non-compliance. CR5: Please consider restricting the scope of the USPs without affecting the range of activities or the strategy envisaged.	for risks identification. It is unlikely that the proposed one-day workshop will suffice to create the required capacity to effectively identify ESP risks for these USPs. · On p. 127, criteria are presented to exclude from being selected certain proposed USPs based on their ESP risks. It is not specified how these criteria will be applied (e.g. thresholds?) and they are not included in the updated USP selection process (p. 138-142). The finding of the initial review regarding the implementation arrangements (III.C) remains: the proposed ESMP mechanism for identifying and managing ESP risks for USPs, whilst inherently sound, provides insufficient prospects of ESP compliance. This is concluded based on the large number of USPs, the involvement of 5 countries with their own national procedures and requirements, the stated lack of familiarity with the AF ESP and capacity to apply this policy, the

			remoteness of the IE, and the relatively low risk of consequences in case of non-compliance. Therefore, restricting the scope of the USPs seems required without, however, affecting the range of activities or the strategy envisaged. None of these issues have been addressed.
	14. Does the project promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms?	Yes, the project includes a "menu" of innovative and traditional adaptation options – some new, but packaged together to deliver services and support to local communities and the institutional structure that supports them.	
Resource Availability	1. Is the requested project / programme funding within the funding windows of the pilot programme for regional projects/programmes?	Yes	
	2. Are the administrative costs (Implementing Entity Management Fee and Project/ Programme Execution Costs) at or below 20 per cent of the total project/programme budget?	Yes, both together are roughly 17%.	
Eligibility of IE	3. Is the project/programme submitted through an	Yes.	

	eligible Multilateral or Regional Implementing Entity that has been accredited by the Board?		
Implementation Arrangements	1. Is there adequate arrangement for project / programme management at the regional and national level, including coordination arrangements within countries and among them? Has the potential to partner with national institutions, and when possible, national implementing entities (NIEs), been considered, and included in the management arrangements?	Yes, the project outlines the various levels of management of the project, however some clarification is requested. **CR6**: Please see CR2 and include information on relevant fee management structures within the section on program management.	CR6: Partially addressed, the proponent should clarify the terms of reference of the committees and fee management structure.
	2. Are there measures for financial and project/programme risk management?	Yes.	

	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund? Proponents are encouraged to refer to the Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, for details.	Yes	
	4. Is a budget on the Implementing Entity Management Fee use included?	Yes	
	5. Is an explanation and a breakdown of the execution costs included?	Yes	
	6. Is a detailed budget including budget notes included?	Yes, however it is not detailed enough to fully evaluate the budget. **CR7**: Please provide greater detail by line item how the budget is divided across country and activity (across consulting fees, labor costs, agricultural inputs, etc).	CR7: Addressed
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators?	Yes	

	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	Yes.	
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	Yes.	
	10. Is a disbursement schedule with time-bound milestones included?	Yes.	

Technical Summary	The final technical review finds that many of the issues raised in the initial technical review have been addressed. However, some issues remain to be resolved prior to the first project disbursement. A conditional approval of the current proposal is recommended. The conditions to be met prior to the first disbursement are the following: • Finalization of the terms of reference of the perimeter committees and fee management structure. • An exhaustive list, or a series of such lists, of permitted activities will need to be developed with associated management actions for their inherent risks. Inherent risks are risks inherent to the activity, irrespective of its specific environmental and social setting. These may need to be country-specific. The exhaustive list(s) of permitted activities may be further restricted to meet e.g. national requirements. These could e.g. be exclusion areas inside or around protected areas, or other biodiversity hotspots or vulnerable habitats. This would then for all 15 ESP principles greatly reduce the range of possible risks.

	• For each of the permitted activities, their inherent environmental and social risks will be identified according to the 15 principles of the ESP. This will not take into account any location-specific information of potential USPs. • For the water spreading threshold activities, explicit attention will be given to their risks for the aquatic environment as well as on the floodplain and the ecosystem processes that are associated with the flood events. • For each ESP principle, a methodology will be prepared for the identification of relevant risks during USP identification. This will take into account the restrictions of the list of permitted activities, be based on the inherent risks of the USPs identified and provide guidance to the consultants and managers on the additional information that needs to be collected on the specific environmental and social setting of the USP location. It will also specify the supporting documentation that needs to be presented. • For each participating country, country-specific elements that will be required for risk identification and ESIA for all the USPs in that country will be developed and included in the methodology. E.g. elements for compliance with the law, human rights, gender considerations, ethnic minorities, biodiversity, natural habitats, heritage elements etc. Screening requirements for compliance with national regulations will also be included to determine easily what the specific requirements for a USP are. • An assessment will be carried out for each participating country of the personnel and capacity requirements to apply the ESMP, taking into account the outcomes of the three activities above. Staffing and budget allocations will be adjusted if necessary to reflect the outcome of the assessment. • The procurement of pesticides by the project is conditional upon the adoption project-wide of guidelines for safe pesticides use. • The project ESMP will be updated with the outcomes of the above.
Date:	5/23/2018

ADAPTATION FUND

REGIONAL PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Improved Resilience of Coastal Communities in
Countries:	Cote d' Ivoire and Ghana.
Thematic Focal Area[1]:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	MIE
Implementing Entity	United Nations Human Settlements Programme
Executing Entities:	**Government of Ghana**: *Leading:* Ministry of Local Government and Rural Development. *Supporting:* Ministry of Environment, Science, Technology and Innovation (MESTI); and Local planning departments[2]. **Government of Cote d' Ivoire**: *Leading:* Ministry of Urban Sanitation, Environment and Sustainable Development. *Supporting:* Ministry of Construction, Housing, Sanitation and Urban Planning, and Local planning departments[3].
Amount of Financing Requested:	US$14 million

Project Background and Context:

Summary problems and needs

The Governments of Ghana and Cote d' Ivoire have requested UN-Habitat to support coastal (and riverine / delta) cities and communities to better adapt to Climate Change, enhance urban planning, and build resilience to coastal erosion and related climate change impacts and risks. This project proposal is the result of these requests.

[1] Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.

[2] Tema Metropolis, Ningo-Prampram district, Ada West district, Ada East district and Keta Municipal.

[3] *Jacqueville Department, Bingerville Department, Grand-Bassam Department, Cocody commune, Port Bouet commune*

Fuvemeh small village flooding during high tides in Ghana (2016)

Jackeville community flooded by lagoon in Cote d'Ivoire (2017)

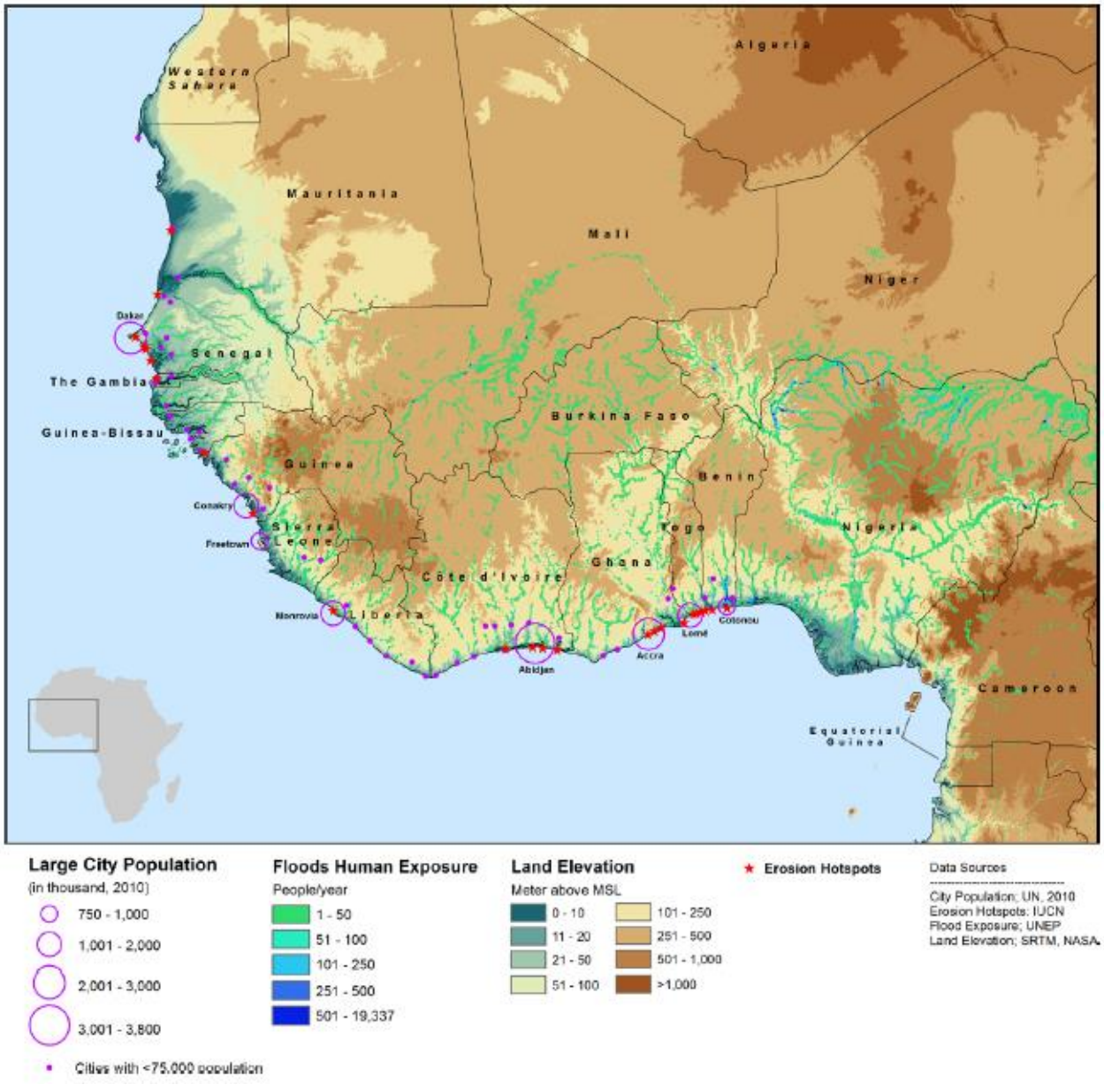


Figure 1: Vulnerable urban coastal areas in Western Africa. Source: WB WACA project 2017 (with identified large urban populations, flood exposure, land elevation and erosion hotspots).

Urban settlements in West Africa are growing at unprecedented rates and it is estimated that already 40 percent of the people living in Ghana and Cote d' Ivoire are settled in coastal zones, totalling more than 20 million people[4]. In this coastal zone, uncontrolled and unplanned urban growth patterns and poverty lead to the rapid development of substandard houses, assets, infrastructures and settlements in areas that are very vulnerable to climate change and will be seriously affected by sea level rise and other drivers leading to coastal erosion and reduction of livelihood options, which mainly rely on natural resource-based activities.

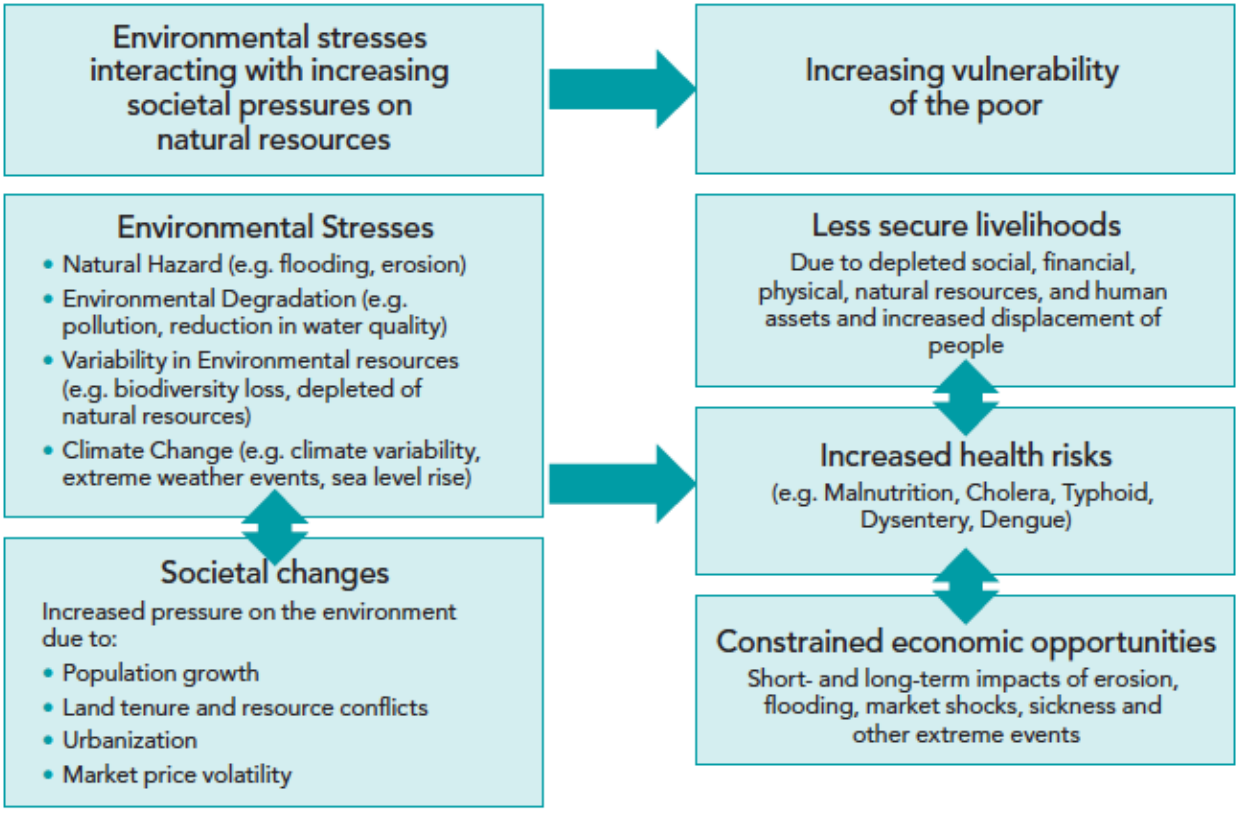


Figure 2: Vulnerability Profile of West Africa. Source: Dow, K., 2005. Stockholm Environment Institute.

More specifically, climate related hazards include a projected one-meter rise[5] in sea level by the end of the century, that may result in regional land loss of 18,000 km^2 along the West African coast[6]. In Cote d'Ivoire and Ghana this climate change impact is combined with unsustainable land and water management (e.g. reduction of ecosystems and construction of dams and

[4] *World Bank. (2012) and Country Fact Sheets prepared for West Africa Coastal Climate Change National Adaptation Planning Workshop*

[5] *IPCC AR5.*

[6] *WACA.(2016)* Building Climate Resilience of Coastal Areas in West Africa. Journalists Workshop.

harbours resulting in changes in sedimentation flows), leading to coastlines eroding 1 up to 10 meters per year.[7] Nature is literally disappearing, fish populations are decreasing in certain areas, and coastal and river floods in urban areas are becoming more and more frequent. This pressure on coastal communities is combined with severe forms of anthropogenic pollution from (mostly) economic activities in settlements, especially in harbour areas, lagoons and 'urban coastlines.' To respond to these challenges, national and local governments and communities need to better (i) (spatially) plan coastal developments in advance, (ii) better protect the coastal ecosystem (and related livelihoods), (iv) invest in infrastructure to strengthen resilience, and (iiii) strengthen their capacities to shift to a more sustainable and resilient development pattern and governing system of the coast.

The present project proposes to respond to these challenges posed by the combination of climate change and unsustainable urbanization (exacerbating the coastal erosion and flooding) by proposing a comprehensive approach to build climate resilience of coastal communities and support coastal protection at a larger scale. The comprehensive approach encompasses in-depth climate risk and vulnerability assessments, participatory settlement and territorial planning towards building coastal resilience comprehensively at the local, district / department and regional scale. The analysis and planning is the basis for implementation of community driven 'low cost and 'ecosystem-based (i.e. building with nature) solutions and infrastructure interventions for coastal protection and income generation activities that can be replicated in the West Africa region. The Planning will focus on avoiding development in high risk areas, protecting ecosystem services, supporting livelihood and strengthening development opportunities where possible. The project focuses on the most vulnerable coastal settlements and communities in Ghana and Cote d'Ivoire, with a particular focus increasing the resilience of women, youth and vulnerable groups.

Given the regional similarity of the climate hazards and vulnerabilities (see below), as well as the transboundary character of the existing challenges, working at the regional scale will allow addressing the micro, meso and macro dynamics of climate change and coastal erosion on coastal settlements. This regional scope will also allow for cost effectiveness, replication of successful solutions for climate change adaptation in other coastal countries and towns in West Africa (i.e Senegal, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Togo, Benin and Nigeria).

Climate change and erosion in West Africa

Climate Change in West Africa is already manifested through (1) rising temperatures, (2) declining total rainfall quantity and its increased variability, (3) rising sea levels and (4) high incidence of weather extremes and disasters.

Observed climate trends and projections: [8]

- A general warming trend across Western Africa over the last 50 years between 0.5 and 0.8 ºC.

[7] Deltaris, WB, WACA and Water Partnership Programme: A quantitative assessment of human interventions and climate change on the west African sediment budget.

[8] IPCC AR5 and USAID

- Between 1961-2000, the incidence of warm spells has increased and the incidence of cold days has decreased.
- An overall decrease in annual rainfall since the late 1960s, ranging from 20-40 percent, depending on the area.
- Arid zones have experienced more prolonged and frequent droughts since the 1970s.
- In tropical and coastal zones, there has been an increase in the occurrence and frequency of extreme weather events such as storms and severe flooding over the past two decades.

While projections for West Africa vary across models depending on assumptions, the majority of climate models predict:

- An overall continued warming trend throughout the region, with an average temperature increase of up to 0.5° C per decade. Temperatures in Africa are projected to rise faster than the global average.
- An overall decline in precipitation across the region of 0.5-40 percent by 2025, with an average decrease of 10-20 percent.
- By 2100 average sea levels are projected to rise 0.26–0.63 meters in low-emissions scenarios and 0.33–0.82 meters in high-emission scenarios (IPCC 2013). Sea-level rise will not be uniform across regions. Sea levels along the West African coast are expected to rise faster than the global average (UEMOA 2010).

Vulnerability and impacts in West Africa coastal zones:

Key climate change impacts on West Africa coastal areas:[9]

- Rising sea levels, intensifying storm surge, and extreme precipitation are likely to accentuate coastal erosion events, with significant socio-economic impacts;
- Changing precipitation patterns could decrease the overall rainfall volumes in West Africa, which would further reduce the flow of rivers in the region, thus leading to a decrease in sedimentation deposits, in turn causing increased erosion rates;
- The combination of higher temperatures, increasing salinity of coastal estuaries and groundwater resources, and alterations in river dynamics from changes in rainfall may continue to exacerbate the loss of natural ecosystems and resources located along the coast.

The West African coastline hosts about 40 percent of the region's population, as well as significant economic activities, infrastructure and homes, all of which are likely to become increasingly concentrated as coastal areas continue to experience rapid population growth. Climate change could exacerbate these trends, as droughts inland - which are expected to become more frequent and intense as a result of higher temperatures and changing precipitation patterns - drive rural populations from the hinterland towards the urban centers of the coast in search of economic opportunity. In addition, these coastal areas are under further pressure due to climate change hazards such as sea level rise, intensified storm surges and extreme precipitation.

As a result of this urban growth pattern and climate change, Western Africa's coastal urban areas are increasingly vulnerable to erosion, flooding and salt-water intrusion. These impacts threaten

[9] WACA and WB knowledge sheet 6 (2016): The effects of climate change on coastal erosion in West Africa

life, assets, freshwater systems, agricultural land, fisheries, ecosystems and communities that depend on these coastal resources for their livelihoods, food, and fuel.

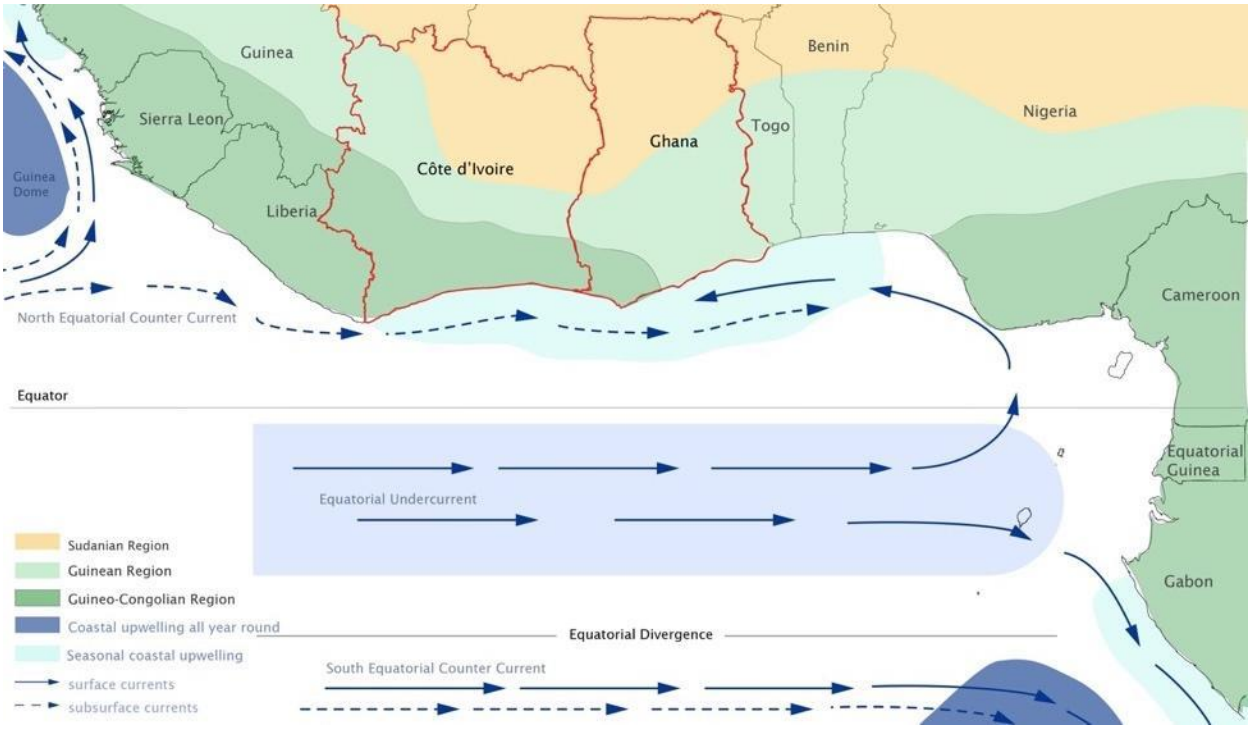
The extent to which these coastal communities are vulnerable to the mentioned hazards is directly related to their spatial context. In the case of West Africa, the coast mainly consists of a narrow low-lying coastal strip between Senegal and Cameroon, where historically the main settlements and urban centres have been developing such as Lagos, Abidjan and Accra. This narrow coastal land traditionally used to be protected from the sea by a sandy dune barrier that was maintained by a strong wave-driven longshore transport of sand from west to east, which can be compared to a 'sand river'.[10] This sand originates from sediments of rivers that deposit the sand downstream into the sea and from large coastal sand deposits.

Today, however, the flow of sediment and fluvial sand has lost its balance. In some cases, this is due to retention behind river dams and / or by harbour jetties. This is causing erosion near river mouths and harbour jetties, i.e. in the most urbanized areas (with the highest erosion in the order of 10 m/year or more). The decline in coastal mangrove populations (partly caused by urban expansion), which trap sediment where it is needed, also contributes to this coastal erosion, (while resulting in decreasing fish populations, since mangroves are the natural fish breeding areas).

On top of that, from the 'sea-side' perspective, sea-level rise, intensifying storm surge, changing prevailing wave direction and extreme precipitation are likely to accentuate coastal erosion and enhance coastal retreat in the future.From the 'in-land perspective,' changing precipitation patterns are projected to produce a decrease in the annual rainfall in the region, reducing river flows and the amount of sediment deposited along the coast. The combination of these factors will lead to the further disruption of the coastal barrier as well as to severe land and shoreline loss if no erosion control measures are taken.[11] This will have an enormous negative impact in the lives of communities and residents living along the coast, resulting in losses in land, economic activities, habitat, cultural heritage and severely reducing environmental biodiversity.

[10] https://www.deltares.nl/en/news/west-african-coastal-erosion/

[11] Deltaris, WB, WACA and Water Partnership Programme: A quantitative assessment of human interventions and climate change on the west African sediment budget.


Guinea
Sierra Leon
Liberia
Côte d'Ivoire
Ghana
Togo
Benin
Nigeria
Cameroon
Equatorial Guinea
Gabon
Guinea Dome
North Equatorial Counter Current
Equator
Equatorial Undercurrent
Sudanian Region
Guinean Region
Guineo-Congolian Region
Coastal upwelling all year round
Seasonal coastal upwelling
surface currents
subsurface currents
Equatorial Divergence
South Equatorial Counter Current

Climate change in Cote d'Ivoire

Climate change trends, projections, vulnerability and impacts are generally in line with those for West Africa. According to Cote d'Ivoire's Nationally Determined Contributions (INDCs) (see also annex 4) and the 3rd National communication submitted to UNFCCC in December 2017, the country's main climate change impacts include floods, storms, landslides, drought-heatwaves, wildfires, declining river flows and diminishing surface water volumes, the shortening of the average length of periods of vegetative growth, shortening of the average length of growing seasons and the increased exposure of plants to water stress, the low growth of plant biomass, the reduction of the productive potential of ecosystems, the reduction of arable land due to their degradation and coastal erosion up to 3 meters per year while reaching 6 to 12 meters during storms and the attenuation of the phenomenon of seasonal upwelling.

Cote d'Ivoire has a large coastal ecosystem. The country has an east-west coastline of 515 km with many lagoons. As per the Climate and Disaster Risk Screening Report, [12] this coastal area is extremely vulnerable to sea level rise and coastal erosion. A 1-m sea-level rise will lead to inundation of 1,800 km2 of lowland. The rate of shoreline retreat as a result of erosion is estimated to vary from 4.5 m to 7.4 m per annum (ICST, 1996). Abidjan, the Capital City, is one of the top

Fig 3 Bioclimatic regions and coastal dynamics in Gulf of Guinea

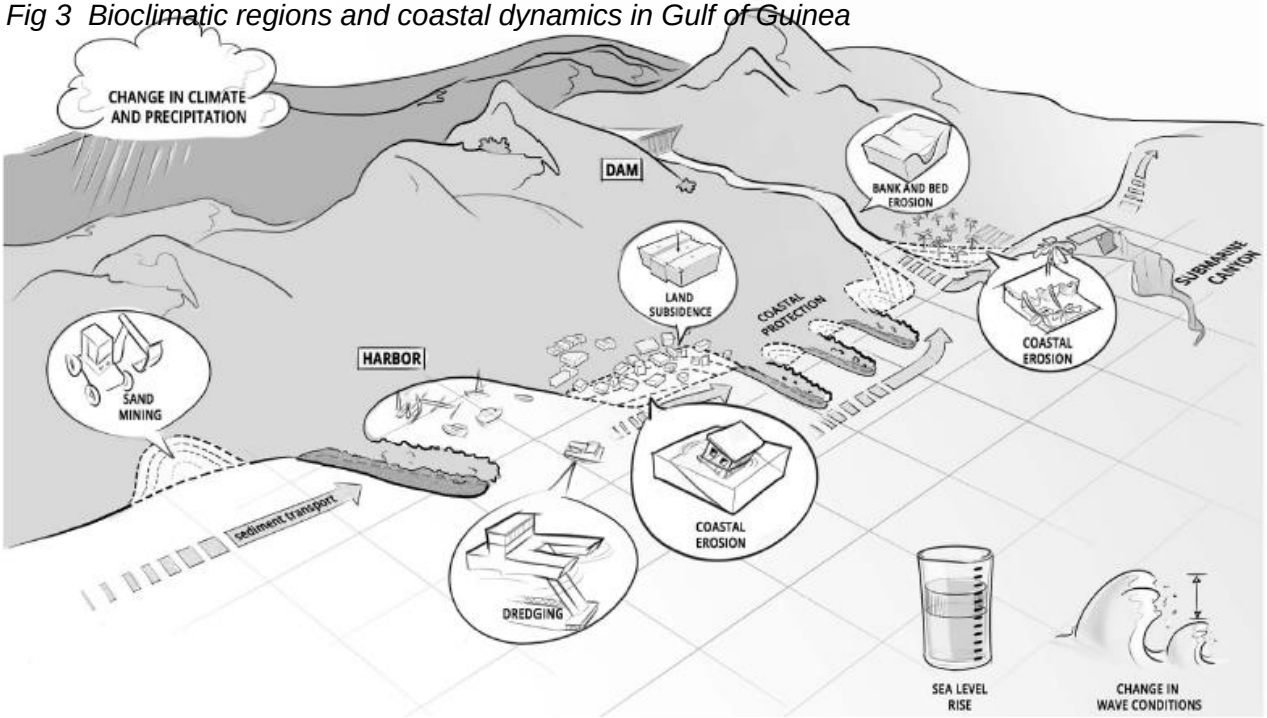


Fig 4: Major factors which may affect the sand river and consequent morphological changes. Source: Anthony, 2015

[12] This is the output report from applying the World Bank Group's Climate and Disaster Risk Screening National Level Tool(Global website:climatescreeningtools.worldbank.org; World Bank users: wbclimatescreeningtools.worldbank.org). The findings, interpretations, and conclusions expressed from applying this tool are those of the individual that applied the tool and should be in no way attributed to the World Bank, to its affiliated institutions, to the Executive Directors of The World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the information included in the screening and this associated output report and accepts no liability for any consequence of its use.

20 cities where the most people will be at the greatest risk from sea level rise and storm surges in the developing world with expectation to continuous increase.[13]

Within this context, eleven sectors were identified in the INDC as particularly vulnerable: (i) Agriculture / Livestock / Aquaculture; (ii) Land use; (iii) Forests; (iv) Water resources; (v) Energy; (vi) Coastal zones; (vii) Fisheries; (viii) Infrastructure (habitats); (ix) Transport (roads); (x) Public health and (xi) gender. Except from energy, all sectors but specifically coastal zones, are relevant for this project.

In Cote d'Ivoire's INDC the following actions and planning interventions for climate change resilience per sector has been proposed:

- Water resources: Controlling and managing water resources (strengthening of watershed planning and coordination, development of dam agro-pastoral sites, development of new irrigation and water reservoirs, improvement of irrigation efficiency, valuation of rainwater and flood management.
- Agriculture / Livestock / Fisheries: Improving production technologies, building capacity of stakeholders.
- Forests and land use: Improving silvicultural species, promoting reforestation and agro-ecology, restoring degraded lands, promoting techniques for improving fertility and soil conservation.
- Coastal Zones: Regulate the construction and extraction of sand on the coast, relocate and rebuild hazardous structures on a retreat line, build works of active protection (ears, breakwaters), passive, restoration (wind curtains, revegetation, even reforestation - mangroves).
    - Sassandra, Vridi and Port-Bouët, of which the last two are at the coast of Abidjan, have been identified as most vulnerable / target areas.
- Energy: To organize the wood-energy sector, to avoid the silting of streams, to reprofile and to restore the flows in the minor beds of the rivers. Extending the construction and use of improved fireplaces in rural areas.

Climate change in Ghana

Climate change trends, projections, vulnerability and impacts are in line with those for West Africa. According to Ghana's National government[14] the concerns on the potential impacts of climate change in coastal areas are paramount. With a coastline of 539 km long, Ghana's coastal area is very vulnerable to climate change impacts.[15] This is due to its high density of vulnerable and valuable natural and productive assets; a large and growing population living near and in the

[13] https://www.washingtonpost.com/news/wonk/wp/2013/08/20/these-20-cities-have-the-most-to-lose-from-rising-sea-levels/?utm_term=.4c2b730cbf50 or:

https://www.theguardian.com/cities/2016/oct/14/global-sea-levels-rising-fast-cities-most-at-risk-flooding-un-habitat

[14] Ghana National Climate Change Policy, 2013, p 1-7

[15] Idem

coastline; and a significant investment in development including buildings and infrastructure. Climate change impacts at the coast include:

- The impact on agriculture, with reduced yields leading to more poverty and food insecurity (including the possibility of famine), and the loss of national revenue from cash crops such as cocoa;
- Severe impacts on land use, leading to loss of biodiversity, land surface, soil fertility, land degradation and increased deforestation which would all contribute to loss of ecosystem services;
- Deteriorating health as a result of increased incidence of disease and reduced access to water and food compounded by disruption of the delivery of health services, e.g., flooding of health facilities, and the loss of transport infrastructure;
- Water scarcity causing increased pressure on water for communities and economic activities and reducing the potential for hydropower;
- The impact on women and the girl child, who are particularly vulnerable to the impact of climate change, given their higher levels of poverty and their responsibilities for obtaining household water, food and fuel;
- Increased rural-urban migration that will add to the pressure on cities and urban services.

Ghana's National Climate Change Policy states that:[16] 'sea level rise will affect many communities within the 30-metre contour of the national coastal zone. Ghana's coastal zone is pivotal to the economy, with five large cities and significant physical infrastructure situated here. The coastal areas are already extremely vulnerable to flooding and erosion. Erosion, submergence and seawater intrusion is expected to lead to the loss of economic, ecological, cultural and subsistence values through loss of land, infrastructure, and coastal habitats. Sea level rise and changes in freshwater inflows could affect the habitats and biodiversity of coastal and marine ecosystems.'

Land loss and degradation will occur through erosion from extreme rainfall events, swelled rivers and streams, floods and sea level rise and storm surges. One study estimates that a sea-level rise of 30 centimeters by 2050 would result in the loss of over 20,000 hectares of land. Another study[17] of three communities at Dansoman near Accra—predicts a loss of over 200 meters of coastline or about 0.80 km2 of land by 2100, affecting over 650,000 people and 900 buildings. Salt water intrusion will occur as a result of sea level rise and erosion. The impact of salt water intrusion into the coastal aquifer will render well-water unfit for drinking and require the development of alternative sources. It will also reduce agriculture yield.

Current development dynamics and demographic changes put even more people at risk in the coastal areas in Ghana. Similar to trends for the West Africa region as a whole, these dynamics are related to increasing rural poverty and related to rapid urbanization, growing urban and coastal settlements and declining ecosystems. A high dependence on natural resources, lack of secure livelihoods and limited informal and formal social safety nets contribute to these vulnerabilities.

Regional Economic, social and environmental context

[16] Ghana National Climate Change Policy, 2013, p 1-3

[17] Impacts of Coastal Inundation Due to Climate Change in a Cluster of Urban Coastal Communities in Ghana, West Africa, 2011

Urban West Africa

A large percentage of West Africa's urban population lives in coastal cities. The population concentrated in coastal urban areas, (in 11 coastal countries from Senegal to Nigeria), could double by 2030 and double again by 2050. In Lagos only, the number of inhabitants could almost reach 90 million by 2100, making it the largest city in the world by then.[18]

Regarding these urban areas growth, the 2010 UNHABITAT State of the World Cities report identified "megaregions" and "urban corridors" as new urban forms that could be "one of the most significant developments—and problems—in the way people live and economies grow in the next 50 years". The Abidjan-Lagos corridor is one of these megaregions, with a fast-growing urban population of over 30 million. Many experts[19] consider this coastal urban corridor to be the engine of West Africa‘s regional economy. Prevention of coastal risks taken in this context is absolutely crucial, also from an economic point of view as countries such as Côte d’Ivoire, Ghana, Benin, Togo and Nigeria, have most of their economic activities located within the coastal zone.

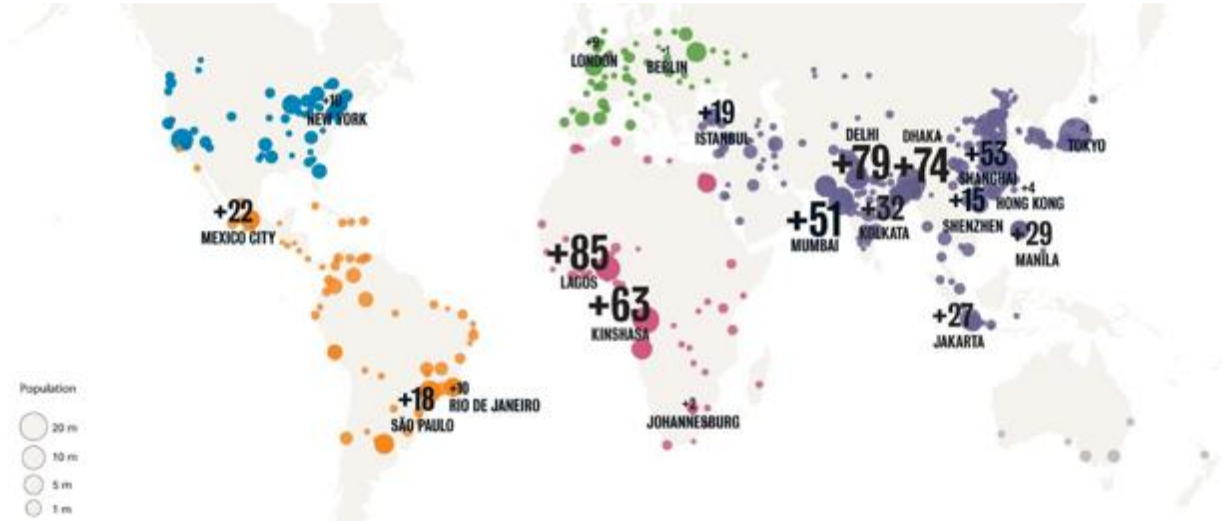


Figure 5: Urban growth per hour. Source: Visual Capitalist.

[18] According toUN estimations, as presented here online: http://www.visualcapitalist.com/animated-map-worlds-populous-cities-2100/

[19] https://www.uneca.org/sites/default/files/PublicationFiles/int_progr_ri_inceptionecowaseng.pdf

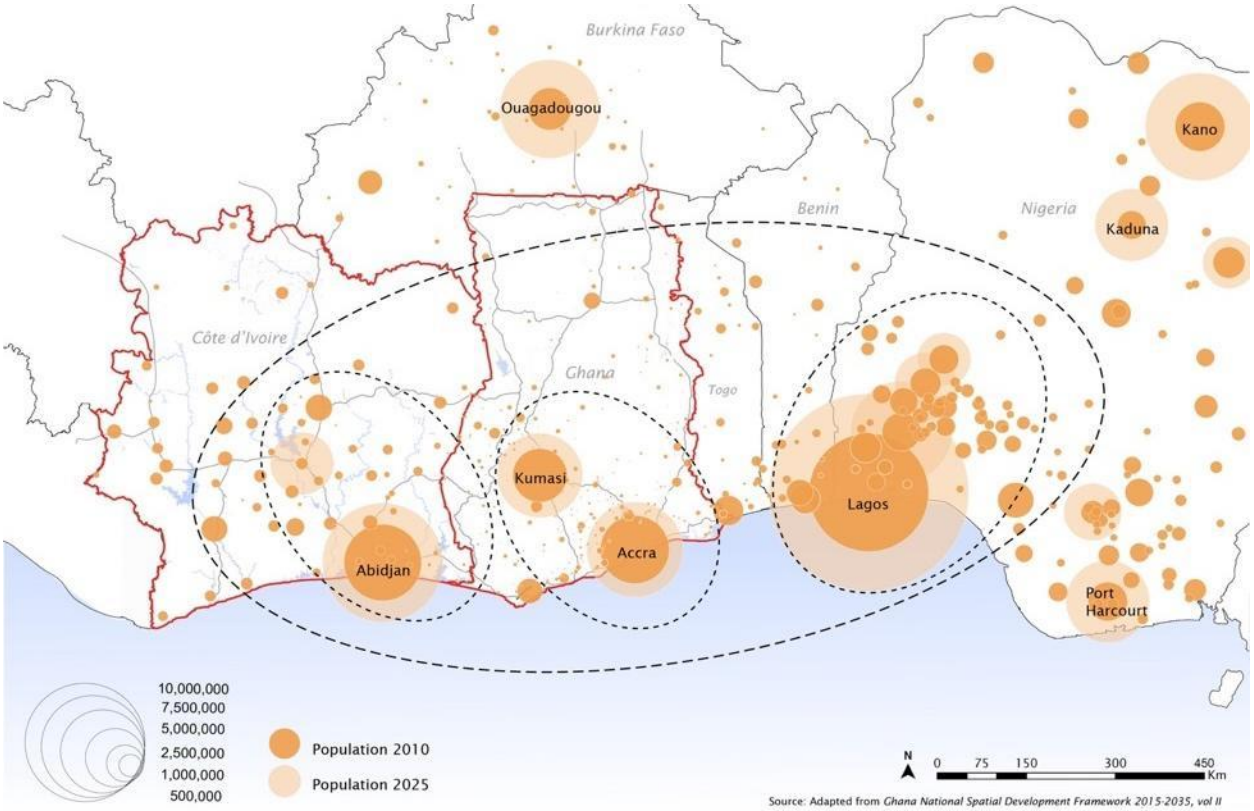
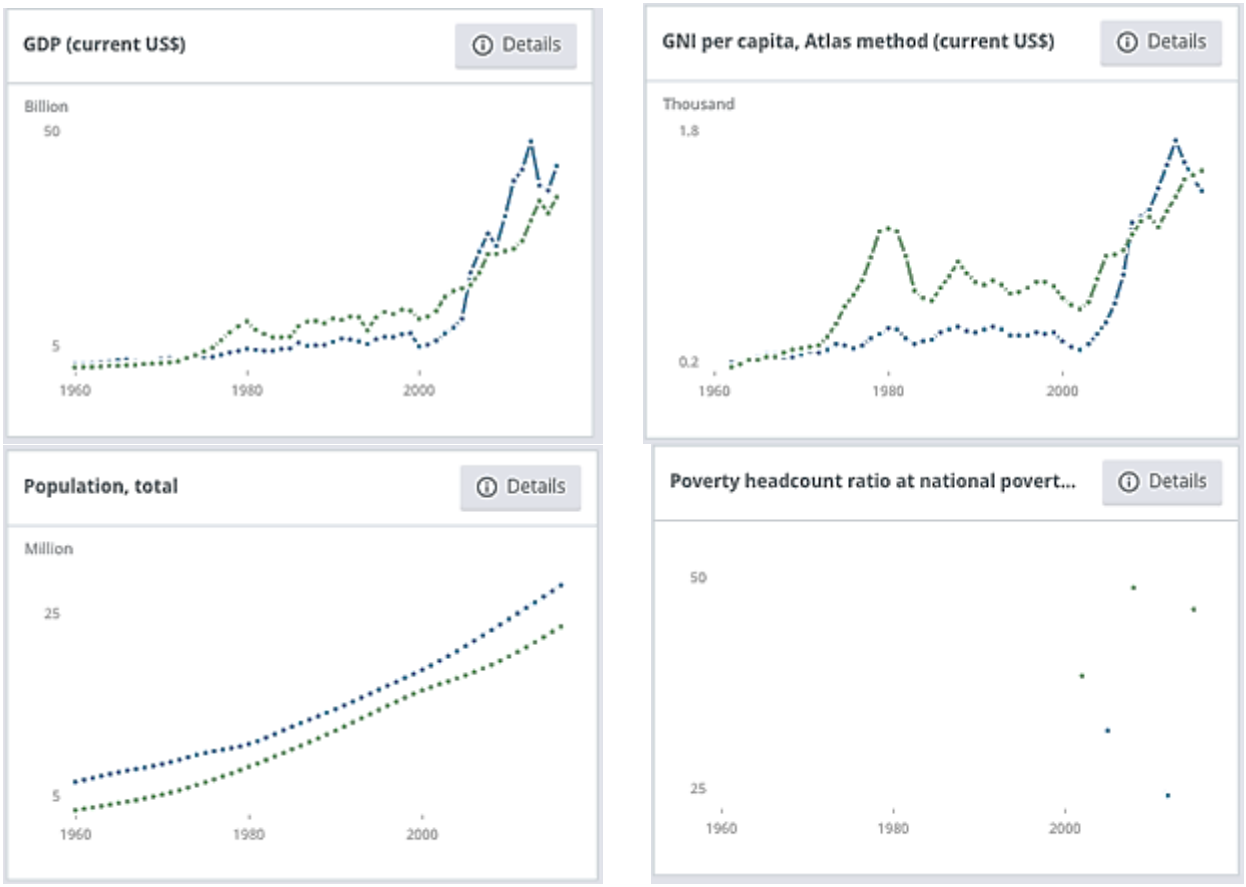


Fig 6: Abidjan-Lagos corredor mega región.

In this unprecedented context, national, provincial and local governments, with limited human and financial resources, have not been able to plan adequate development for secondary and intermediate cities to cope with the population growth and adapt to climate change. Growth is currently (20Xx) 6 percent per year, which implies a doubling of population within every 12 years. As a result, provision of adequate land for different uses, safe space for settlement extension and infrastructure such as street networks, public spaces, housing and facilities such as schools and hospitals are lagging behind. The result is unplanned and often informal settlements that are built in high risk areas and in an unsustainable urbanization pattern in the urban coastal areas of greater Abidjan and Accra.

Ghana and Cote d'Ivoire overview

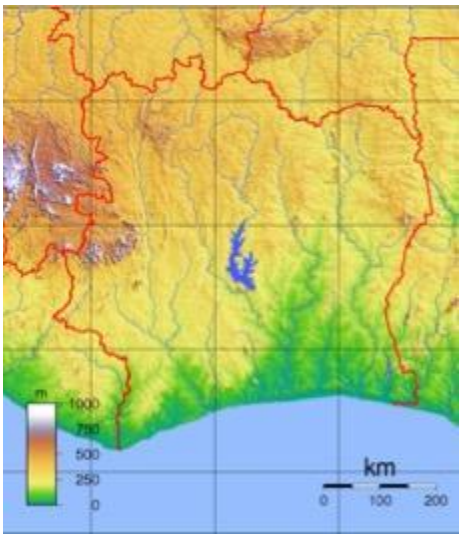


Source: WB. Ghana (blue) and Cote d'Ivoire (green). Poverty headcount ratio Ghana: 24,2 percent (2012) and Cote d'Ivoire: 46,3 percent (2015)[20]

Cote d'ivoire

Cote d'Ivoire sits on the Atlantic Ocean facing south and borders Liberia, Guinea, Ghana, Mali and Burkina. The country has a population of approximately 24 million. The country is home to a variety of ethnic, religious and linguistic groups. Most are Akan (around 42 percent), followed by Voltaiques / Gur, Northern Mande, Krous and Southern Mande. The country is close to the equator, giving it a warm climate. Due to the political-military crisis between 2002 and 2011 socio-

[20] The gross national income (GNI) is the total domestic and foreign output claimed by residents of a country, consisting of gross domestic product (GDP), plus factor incomes earned by foreign residents, minus income earned in the domestic economy by nonresidents



economic development got a big hit.

Economic context

Cote d'Ivoire has, for the region, a relatively high income per capita and plays a key role in the region as it functions as transit trade for neighboring, landlocked countries.
Figure 7: Cote d'Ivoire

The country is the largest economy in the West African Economic and Monetary Union and has experienced a favourable GDP growth rate since 2012, estimated at 8,3 percent in 2014. The country is the world's largest exporter of cocoa beans, and the fourth-largest exporter of goods, in general, in sub-Saharan Africa. The coastline is the principal economic resource of Cote d'Ivoire. The diverse habitats that characterize the littoral constitute a valuable asset and ecologic wealth for the country, in addition to its cultural and touristic value. The principal activities in the coastal area include forestry, plantations, factories, tourism and fishing.

The Ebrie Lagoon is an important socio economical location on a countrywide scale, mostly due to Abidjan that is situated there. Abidjan is the economic capital and main port with a population of around 4.5 million, which represent 22,3 percent of the national population. Abidjan represents 60 percent of the industrial sector employment, 80 percent of the industrial production and concentrates 90 percent of the commercial added value of the country, due to its coastal location.

Social context

In 2015, Côte d'Ivoire ranked 171st among 188 countries on the United Nations Human Development Index (HDI). Between 1985 and 2011, the depth and severity of poverty increased considerably, moving from approximately 10 percent to 51 percent of the population. However, the findings of the Living Standards Monitoring Survey carried out by the World Bank in 2015 indicate that the recent economic upturn has brought the poverty rate back down to 46 percent.[21]

Environmental context

Coastal habitat: the coastal habitats in the country are key environmental assets. The lagoon system is parallel to the Gulf of Guinea, it is nearly 300 km and covers a total surface area of about 1 200 km2. It consists of three distinct lagoons: the Grand-Lahou, the Ebrié lagoon and the Aby lagoon. *Figure 8: Cote d'Ivoire poverty map*

[21] http://www.worldbank.org/en/country/cotedivoire/overview

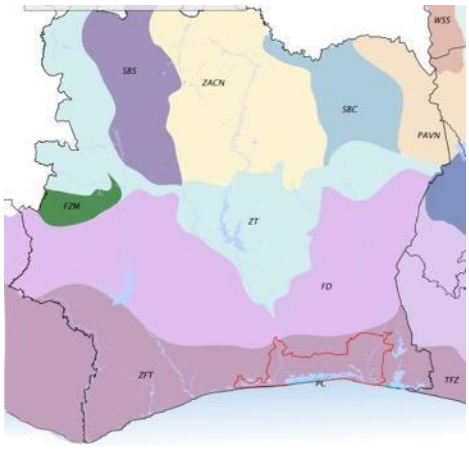


Figure 9: Cote d'Ivoire ecoregions

Water flow in rivers and impact on biodiversity: In many rivers in the south of Côte d'Ivoire dams have been built. As a result, the water flow in the rivers as well as the sedimentation along the coastline are decreasing. Along with vegetation on the land, sedimentation along the edges of water volumes, form a second form of natural defense against erosion.

At several locations along the coastal rivers, lagoons and the ocean come together. Because the strength of the stream of the inland rivers has decreased, ocean water comes land inwards. This influences the water type in the systems is negatively influenced: biodiversity decreases and thereby influences local economy, which is strongly based on the fishing industry.

Waste: Waste is everywhere. It has an impact on the health of people, animals and nature in general. This issue is not directly linked to the matter of coastal erosion, but forms an important factor that is to be taken into account. Especially in the light of the strong population increase: waste streams will become larger and larger, threatening people's and nature's health.

Pressures on coastal ecosystems and degradation are rapidly increasing. Various forests and national parks are increasingly being occupied by farmers and some forests have been completely converted into villages. The Ivorian forest has taken a worrying step backwards from 16 million hectares at the beginning of the century to less than 2 million hectares nowadays. In addition, waterways, particularly those in the Ebrie lagoon, have been affected by pollution as the result of been turned into dump sites.

Ghana

Ghana sits on the Atlantic Ocean facing south and borders Togo, Cote d'Ivoire, and Burkina Faso. It has a population of about 28 million (2016). The country is home to a variety of ethnic, religious and linguistic groups. Most are Akans (around 47 percent), followed by Dagbani / Mole and Ewe. The country is located at the Gulf of Guinea, close to the equator, giving it a warm climate.

<u>Economic context</u>

'Ghana is well-endowed with natural resources. Agriculture accounts for one fifth of GDP and employs more than half of the workforce, mainly small landholders. Fish provide 40-60 percent of the protein in the Ghanaian diet, and fisheries contribute about 4.5 percent to the national GDP.[22] The services sector accounts for about half of GDP. Gold and cocoa exports, and individual remittances, are major source

[22] USAID Ghana climate change vulnerability and adaptation assessment, 2011

of foreign exchange.

Fig 10: Ghana

Expansion of Ghana's nascent oil industry has boosted economic growth, but the recent oil price crash reduced by half Ghana's 2015 oil revenue.[23] For the last few years, Ghana's GDP growth has been around 3-4 percent but is expected to increase. GDP per capita is around US$ 4,400 (2016).

According to Ghana's National Government,[24] 'Ghana has moved from a Low Income to a Lower Middle Income country (as defined by the World Bank) and is both high-growth and energy-hungry. It has been recognized, however, that climate change and the cost of the climate change response is a serious threat to this progress. There is already evidence of the impact of climate change on the national economy, with clear signs that the coastal zone, agriculture and water resources are all affected, as are health and livelihoods, especially for women, resulting in increasing levels of poverty. It is already affecting national economic output and, therefore, Ghana's long-term development prospects.'

'The 2008 national sectoral climate change vulnerability and adaptation assessments revealed the substantial impact of climate change on the national economy. Flooding, for example is an obvious and immediate threat to economic growth, energy supply, roads and transport, food and agriculture, education, health, water and sanitation, and social protection.

The National Disaster Management Organization (NADMO) responds to flooding disasters every year. The June 2010 floods demonstrated how climate change can reverse development investments, with a total of 24 deaths, more than 1,000 homes destroyed, millions of dollars in property losses, 5,000 people evacuated in Tema, and the collapse of a bridge linking Ghana and neighbouring Togo, cutting off travel between the two West African countries.'[25]

[23] https://theodora.com/wfbcurrent/ghana/ghana_economy.html

[24] Ghana National Climate Change Policy, 2013, p 1-4

[25] Ghana National Climate Change Policy, 2013, p 1-5

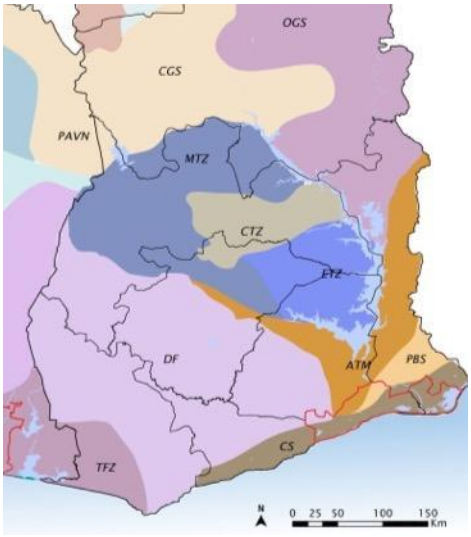
Figure 11: Ghana poverty map

Social context

'Ghana has made significant progress on reducing levels of poverty in recent decades. However, poverty persists in the north, rural areas and in urban slums, and it is these poorest and most vulnerable groups who bear the brunt of climate change. In 2015, Ghana ranked 139th out of 188 on the HDI ranking. It is recognized that people experience and respond to climate shocks in various ways across diverse socio-economic groups, geographic locations and seasons of the year, with men, women and children all experiencing different levels of hardship and opportunity in the face of climate change.'[26]

Environmental context

Ghana is endowed with abundant natural resources, both renewable and non-renewable (forests, wildlife, coastal wetlands, rivers and lakes, minerals, crude oil, etc.), which play an important role in the development of the country.



The country can be divided into different ecological zones; one is the coastal savanna zone, a narrow belt parallel to the coast. The zone consists of a coastline strand of vegetation along the seashore, mangrove vegetation (mostly degraded) associated with lagoons and coastal estuaries, and inland vegetation primarily of scrub, grasses, and scattered trees with relatively poor soils. The major vegetation types are classified as southern marginal forest from about Accra westward, southern outlier forest in the Accra Plains, and savanna in the Ho Plains. The southern marginal forest type occurs in a narrow strip from Cape Coast to Akosombo within the vegetation zone classified as coastal savanna. Because of population growth, southern marginal forests now are reduced to fragments and mosaics of forest mainly restricted to rocky hills.[27] *Figure 12: Ghana ecoregions*

Target areas and population

Cote d'Ivoire and Ghana

The project focuses on the 'urban' coastal areas hardest hit by climate change (i.e. sea level rise, storms and floods) and erosion. As mentioned earlier, coastal erosion is a major problem for the

[26] Ghana National Climate Change Policy, 2013, p 1-6

[27] USAID Ghana climate change vulnerability and adaptation assessment, 2011

coastal area, as up to 10 meters of coastal erosion annually along the southeastern coasts of both Cote d'Ivoire and Ghana has been reported. Coastal erosion is already posing a threat to many towns and villages in danger of disappearing and is starting to threaten critical infrastructure, economic development, livelihoods and the tourism sector (which mostly depends on the seafront locations and beaches); it causes flooding, loss of agricultural land and fresh water. Due to disappearing ecosystems fish breading grounds are also disappearing.

Fig 13: Targeted regions in Cote d'Ivoire and Ghana.

For more info on coastal climate change impacts and dynamics in target areas see annex 1.

Cote d'Ivoire

The focus in Cote d'Ivoire will be on Greater Abidjan region, on the area along the coast between Grand-Lahou district in the west and Adiake district in the east. The reason to select this area is because it's the main area of urban development and population growth, where most of the

industrial, commercial, residential, educational, etc. facilities are concentrated while hosting also very poor communities. This area is severely exposed to erosion and climate change risks as it is surrounded by the Ebrie Lagoon and the sea. Abidjan appears in the top of the twenty list of world port cities with higher population exposure to coastal flooding.[28] The Ebrie Lagoon has a total length of 130 km and an area of around 566 km2 and is the largest coastal ecosystem in West Africa, connected to the Atlantic Ocean through the Vridi canal and the Bassam inlet, and fed by the Come, the Egneby and the Me rivers. It is very spatially heterogeneous – with some parts being influenced by the Atlantic Ocean, some by the continental rivers, and some by human waste discharge. Furthermore, the selection also responds to criteria to avoid overlap with other ongoing projects at the west coast region. Data has been collected from 14 vulnerable communities within five departments / communes: Jacqueville Department, Bingerville Department, Grand-Bassam Department, Cocody commune, Port Bouet commune.

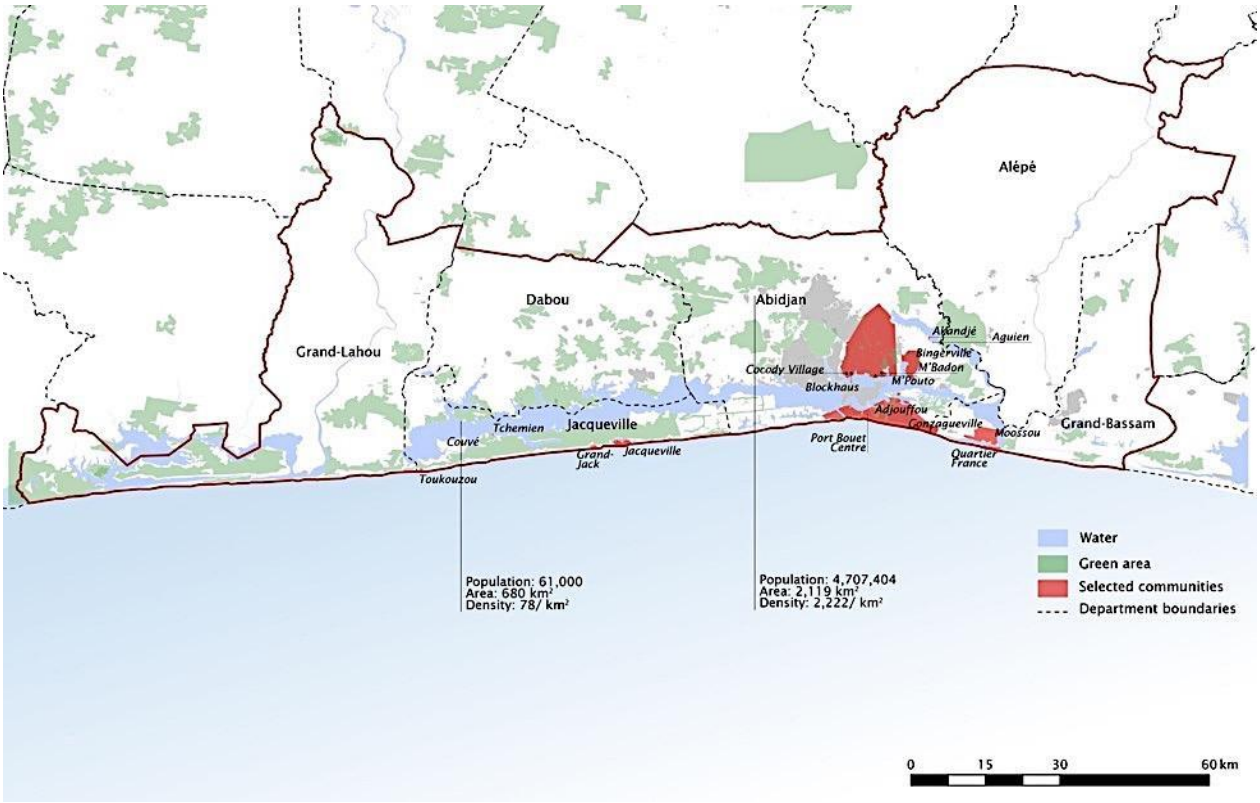


Fig 14: Target departments, communes and communities in Cote d'Ivoire

[28] Sally Brown et al.,2011. Sea-Level Rise and Impacts in Africa, 2000 to 2100

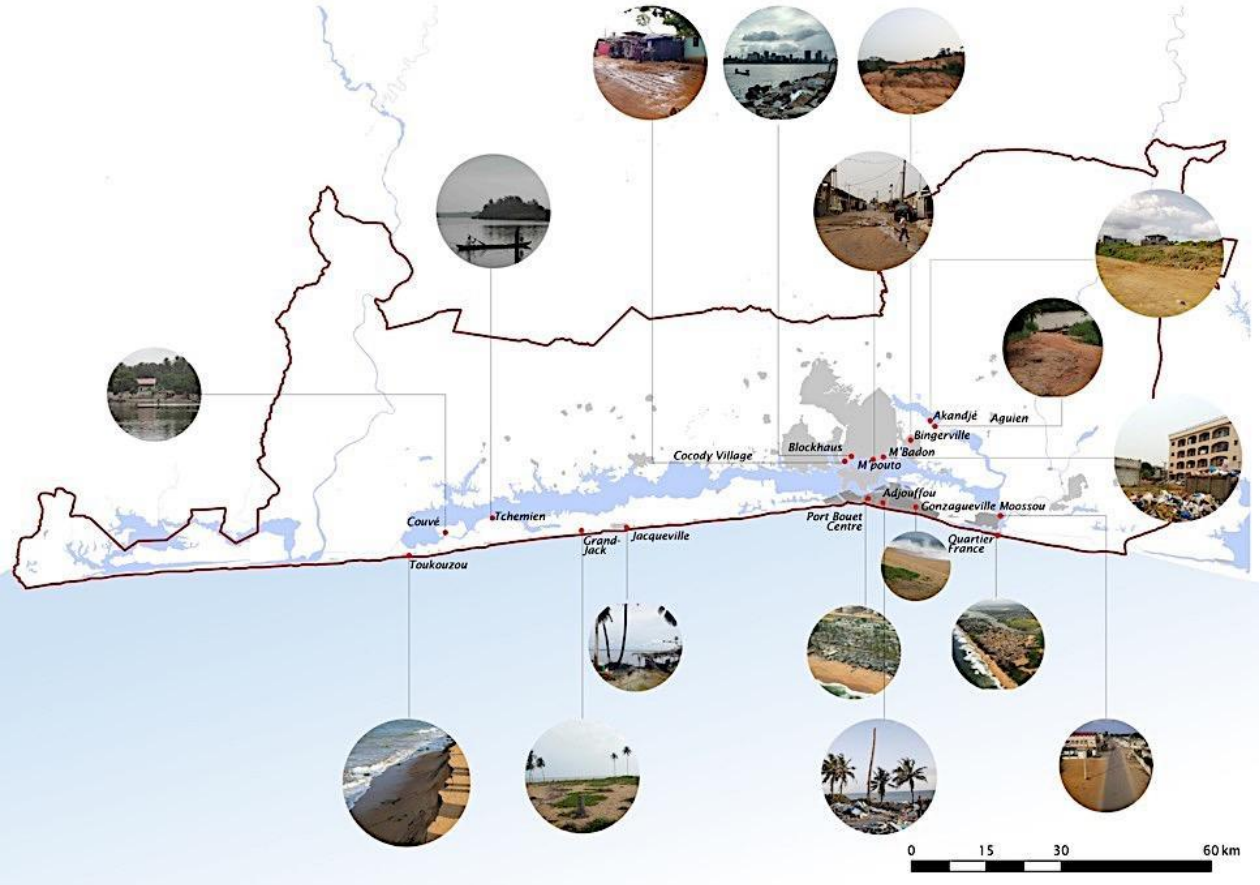


Fig 15: Target departments, communes and communities in Cote d'Ivoire

The components directly benefitting the local communities, districts and vulnerable groups are : Component 1 - working on coastal management and territorial planning strategies at district level, component 2 - planning for resilience at community level , component 3 – implementing transformative concrete coastal resilience building interventions at inter-district level, and component 4 - implementing catalytic concrete interventions at community level taking into account local needs and impacts/livelihood opportunities.

Table 1: Target districts and communities populations

Component	Districts / communes beneficiaries													
	Jacqueville Department			Cocody Commune				Bingerville Department			Port Bouet Commune		Grand bassam department	
C 1/3 Female	56.308 27.397			447.055 240.619				91.319 46.997			419.033 210.583		179.063 90.142	
	Communities beneficiaries													
	Grand-Jack	Tchemien	Kouve	Cocodyvillage	Blockhaus	M'Pouto	N'Badon	Akanje	Aghien	Bingerville commune	Adjoufou / Gonzagueville	Port Bouet Centre	Quartier France	Moossou
C 2 Female	6000 58%	800 59%	400 55%	2500 60%	4000 40%	8000 40%	4000 50%	450 60%	2000 60%	50.000 (appr) tbd	10.000 (appr) tbd	20.000 (appr) tbd	2.000 (appr) tbd	4.000 (appr) tbd
C 4 Female	6000 58%	800 59%	400 55%	2500 60%	4000 40%	8000 40%	4000 50%	450 60%	2000 60%	20.000 (appr)	10.000 (appr)	20.000 (appr)	2.000 (appr)	4.000 (appr)

The total population of the target districts is: 1.192.778. The total population of the surveyed communities is: 114.700. In the target districts and communities, women are overrepresented (up to 60 percent) as well as children in most communities. The main religions in the target areas are Christian (approximately 2/3 of total) and Islam (approximately 1/5 of total). The main ethnic group is Akan (almost 4/5 of total), followed by Krou and mande du Nord. Within the Akan population there are ethnic sub-groups, including e.g. Adioukrou and Baoule. Quite a large portion (i.e. up to 1/3 of total) of the population does not originate from Cote d'Ivoire. Communities are often dependent on specific livelihoods, especially fishing and farming. Tourism has a high potential with heritage and cultural sites and beautiful beaches. Some areas in Jacqueville and the districts east of Grand-Bassam are known as tourism spots, including some high-end options. The project may also include these 'resorts' in the private sector / tourism sector alliance', as discussed later. Many of the fishing communities are Ghanaian or from other countries because many Cote d'Ivoire inhabitants believe the sea is too dangerous, which means they only fish in the lagoons. In the target communities, women, fishermen, youth and elderly have been consulted through focus group discussions. Women, Fishermen, youth and religious groups exist in the communities, and play an important role within them. In addition, there are immigrants from surrounding countries living in these communities.

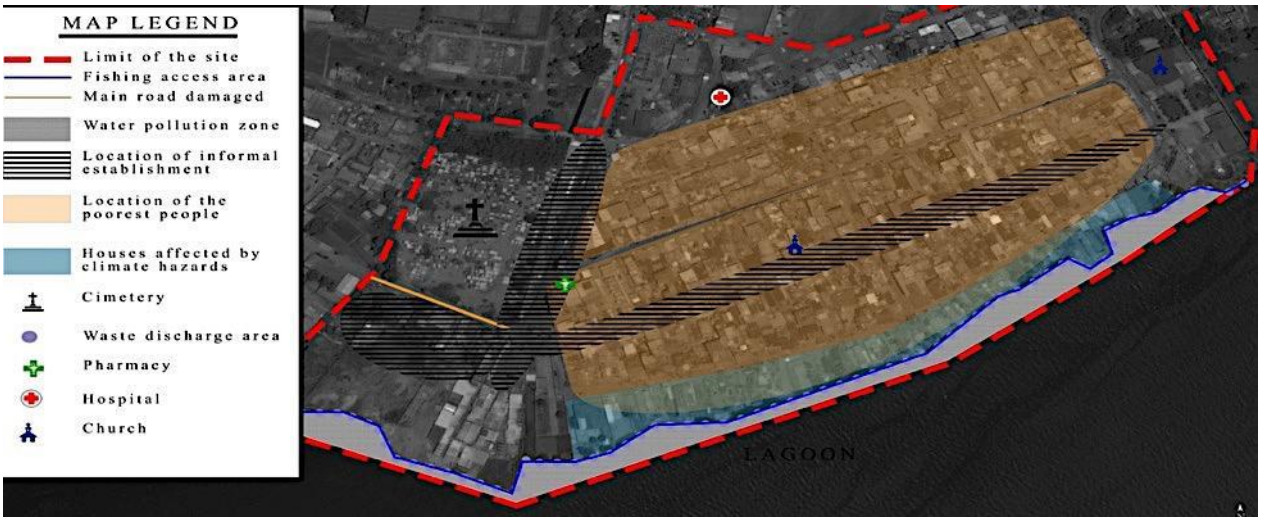
For a detailed overview of community level data, localized climate change impacts / hazards and effects, underlying vulnerabilities, barriers to adapt and resilience building needs, see annex 2. For more detailed info about vulnerable groups see section II.C

Department: Jacqueville
Communities: Grand Jack (1st below), Tchemien (2nd below) and Kouve (3rd below)

Jacqueville department is located on the west of Abidjan on a strip between the sea and the Ebrie lagoon. Grant-Jack is located next to the sea and is experiencing coastal erosion, sea flooding, flash floods and extreme heat. Fishermen here are mainly Ghanaians and Togolese. The main indigenous and minority groups are Alladjan, Baoulé, Malinké, Burkinabes, Malians and Mauritanians. Techmien and Kouve are both located at the lagoon. These communities experience river flooding, flash flooding and erosion combined with diseases. The main indigenous and minority groups are Ahizi, Alladjan, Malians, Burkinabes, Togolese and Nigerians. Communities are dependent on fishing and farming. Community members say they do not see any other option than to live in their current communities. The sustainability of agriculture, coastal erosion, bank erosion, uncontrolled urbanization, deforestation, pollution, deforestation and lack of money and skills are the main environmental and social issues. The management of garbage and the fight against sea erosion are major issues for the populations of Grand Jack. Floods (especially plantations) are perceived as factors of exposure to famine. Inhabitants of the communities say they are not aware of any concrete policy action with a view to alerting them or informing them on the risks incurred in the face of climate hazards. Their ability to adapt remains rudimentary and inefficient (e.g. use garbage as a barrier against erosion and flooding). Their

adaptation capacity is based on inherited ancestral traditions. As a result, the populations are powerless in the face of the 'new' coastal disasters.

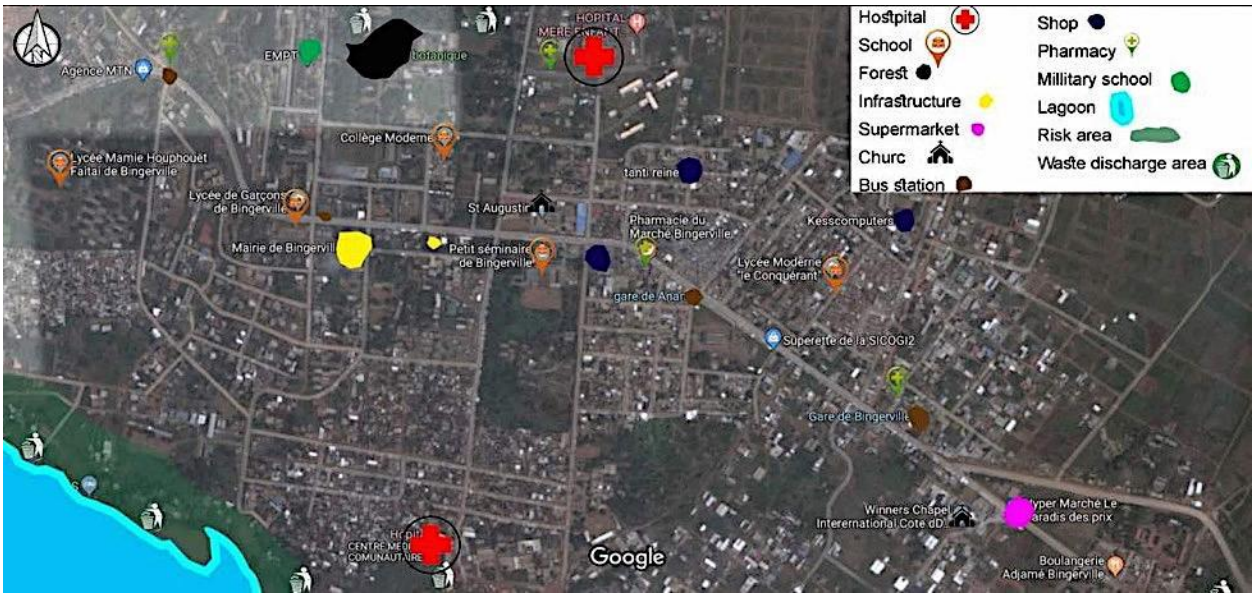
Commune: Cocody
Communities: Cocody Village (1st below), Blockhauss (2nd below), M'Pouto (3rd below) and M'Badon (4th below)


MAP LEGEND
Limit of the site
Fishing access area
Main road damaged
Water pollution zone
Location of informal establishment
Location of the poorest people
Houses affected by climate hazards
Cimetery
Waste discharge area
Pharmacy
Hospital
Church
LAGOON


MAP LEGEND
Limit of the site
Fishing access area
Main road damaged
Water pollution zone
Location of informal establishment
Location of the poorest people
Houses affected by climate hazards
Cimetery
Waste discharge area
School
Hospital
Church
Tourist area
LAGOON

The Cocody commune is located in Abidjan at the north side of the Ebrie lagoon. Although Cocody is a relatively rich commune, the communities along the lagoon are poor and mostly informal (50-70 percent. All four target communities are located next to the lagoon. The lagoons experience lagoon flooding, including affecting houses and roads, flash flooding, diseases (also due to lagoon pollution) and extreme heat. There are problems related to sanitation and drainage, land scarcity / rapid urbanization and especially waste management, which is often dumped in the lagoon. An indigenous group living in this area is Ebrie. Minority groups are Akan, Wê, Dan and Cedeao. The main income sources are small businesses / production of attiéké and fishing. However, due to extreme heat, garbage dumping and water pollution caused by companies, fish stocks are reducing in this area. This leaves many people without jobs.

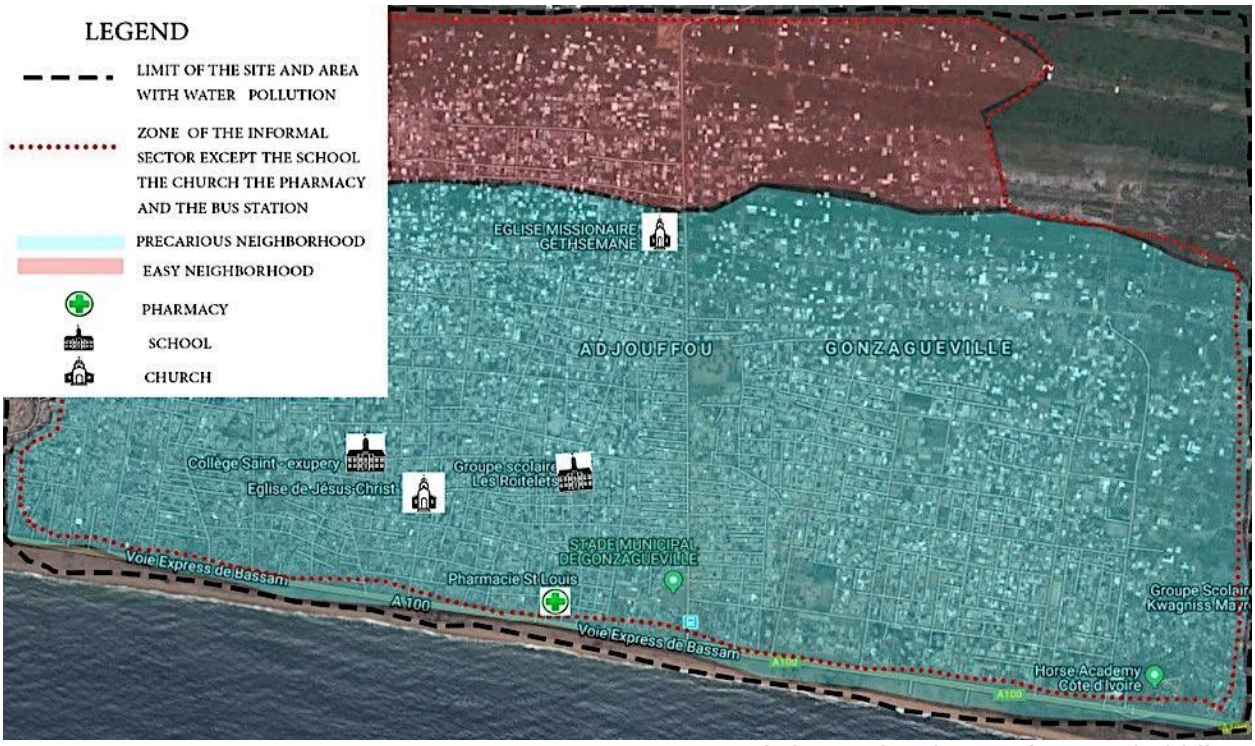
Department: Bingerville
Communities: Bingerville commune (1st below), Aghien (2nd below) and Akandjé (3rd below)



The Bingerville department is located at the east side of Abidjan. It is basically surrounded by the lagoon, with the main water body south of it and sourcing water in the north. Bingerville commune

is located north of the Ebrie lagoon, while Aghien and Akandje are located south of the main soure ‘arm’ of the Ebrie lagoon.
The main climate change hazards are lagoon and flash flooding, erosion due to flash floods and malaria. The main indigenous groups living here is Ebrie. Minority groups include Abey, Atie and M’Gbato. In Aghien and Akandje, the community almost totally informal (90-95 percent) and the poverty rate is very high (50-60 percent). In Aghien basic services, and especially clean water and sanitation is almost absent. Inhabitant in Akandje mainly depend on fishing. Both Aghien and Akandje lack government support. There is a need to reduce diseases, fight land degradation, floods and deterioration of the roads and enhance fishing options. Lagoon pollution is a major issue. In Bingerville, these issues also exist, but there is also a problem of rapid urbanization and siltation of the lagoon.

Commune: Port Bouet
Communities: Centre and Adjoufou / Gonzagueville



Port Bouet is located at the south east of Abidjan. Port Bouet centre is located between the lagoon on the north west and the sea in the south. Adjoufou / Gonzagueville at the coast. Climate hazards include coastal erosion, flooding, flash floods and extreme heat. This has resulted in damaged houses. Fish reduction and diseases are problems. The diseases have been linked to lacking water quality. Most of the inhabitants work in the informal sector. Compared to the other target areas, rapid urbanization / density and thus the lack of space is a major issue.

Department: Grand-Bassam

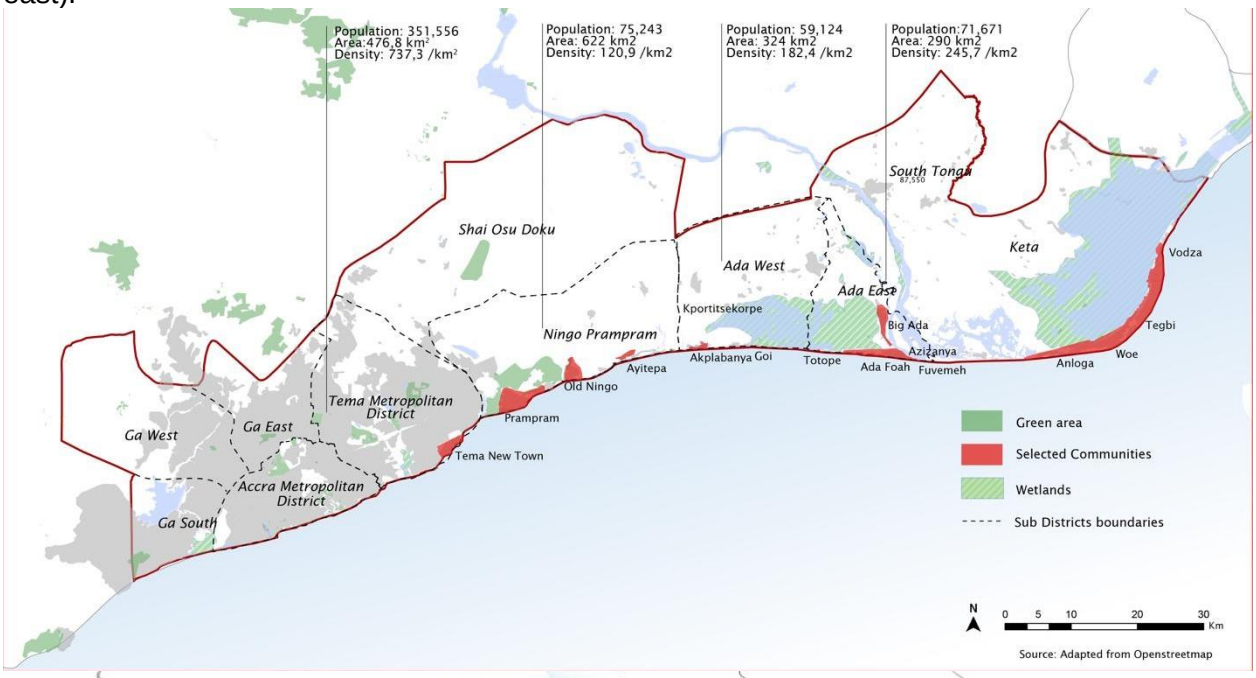
Communities: Moossou and Quartier France

Grand-bassam is located east of Abidjan and Port Bouet. The town is situated at along the coast, including a small strip of land between the town and the lagoon and a river at the east-side. The town is a tourism area with heritage sites. The population income comes from fishing, the sale of attieke small local shops, etc. The majority of people work in the informal sector. Grand-Bassam

is regarded as a coastal erosion hotspot area. Issues are coastal flooding, river flooding, flash flooding and diseases. Houses and roads have been destroye

Ghana

The project's focus in Ghana will be on improving climate resilience of the Greater Accra region and the Volta region, specifically on the vulnerable coastline strip between Accra and the border with Togo. The reason to select this area is because it is the hardest hit by climate change. Furthermore, the selection also responds to criteria to avoid overlap with other ongoing projects at the west coast region. Data has been collected from fourteen vulnerable communities within five districts: Tema Metropolis, Ningo-Prampram, Ada West, Ada East and Keta (from west to east).



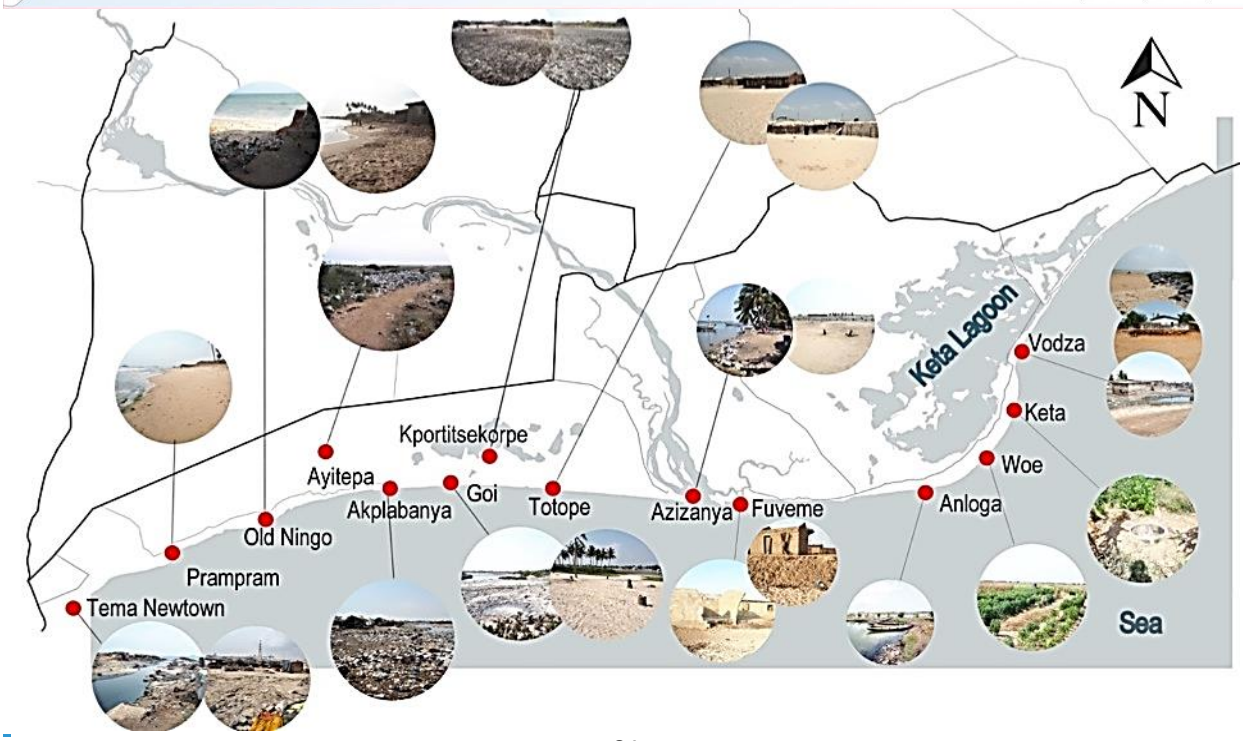


Fig 16: Target districts and communities in Ghana

The components directly benefitting the local communities, districts and vulnerable groups are : Component 1 - working on coastal management and territorial planning strategies at district level, component 2 - planning for resilience at community level , component 3 – implementing transformative concrete coastal resilience building interventions at inter-district level, and component 4 - implementing catalytic concrete interventions at community level taking into account local needs and impacts/livelihood opportunities.

Table 2: target districts and communities populations

Component	Districts beneficiaries													
	Tema	Ningo Pram-pram			Ada West			Ada East			Keta			
C 1/3 Female	292.773 52.2%	70.923 52.7%			59.124 50.99%			71.671 52.5%			147.168 53.3%			
	Communities beneficiaries													
	Tema	Pram-pram	Old Ningo	Ayitepa	Akplabanya	Goi	Kpor titsejorp	Totope	Azizanya	Big Ada	Fuveme h	Anloga	Woe	Vodza
C 2 Female	71.711 51.69%	14.897 53.61%	9.078 55.8%	1.375 54.76%	5.101 50.99%	3.657 53.32%	1.890 52.6%	902 47.89%	2.830 50.03%	6.864 56.4%	813 52.15%	22.722 53.12%	12.164 52.25%	3.369 54.52%
C 4 Female	15.000 (appr) 51.69%	5.000 (appr) 53.61%	5.000 (appr) 55.8%	1.375 54.76%	5.101 50.99%	3.657 53.32%	1.890 52.6%	902 47.89%	2.830 50.03%	6.864 56.4%	813 52.15%	22.722 53.12%	12.164 52.25%	3.369 54.52%

The total population of the target districts is: 641.659. The total population of the surveyed communities is: 157.373 (roughly 25 percent of total population of target districts). In the target districts and communities, there is a slight overrepresentation of women (approximately 53 percent) as well as youth (28 percent in Woe and up to 40 percent Tema). The target districts are typically homogenous in terms of ethnicity. The districts in Greater Accra typically exist of Ga-Adangbes and those in the Volta region (i.e. Keta Municipality) of the Ewe ethnic group. Communities are often dependent on specific livelihoods, including fishing, farming, clam collection and to some extent salt mining. Tourism has a high potential with heritage and cultural sites, water sports, beautiful beaches and diverse wildlife (e.g. sea turtles). Due to a lack of skills and education, it is especially difficult for the youth and elderly to find more contemporary income sources, which sometimes results in illicit activities, drug use etc. In addition, the growing landless population, including some youth, disabled and elderly people, have an overall challenge of finding jobs. Under the government Livelihood Empowerment Against Poverty (LEAP) Programme, some of the most poverty-prone groups are supported with cash hand-outs. In fishing communities, often both men and women work in fishing, where men go out fishing and women

are responsible for smoking and selling the fish. Women are also responsible for finding and collecting wood for cooking and smoking, adding pressure on the already weak coastal ecosystem, lowering its capacity to support adaptation to climate change. For each work sector, organized groups exist at the community level. These are the farmers/vegetable Producers Associations, Fishermen Associations and salt miners' groups. Similarly, for women, there are fish-, processors- and traders' groups. These form the specific identifiable bodies with which formal contacts or project interventions can be directed. In some communities, there are youths and physically challenged groups exist for similar groups.

For a detailed overview of community level data, localized climate change impacts / hazards and effects, underlying vulnerabilities, barriers to adapt and resilience building needs, see annex 2. For more detailed info about vulnerable groups see section II.C

District: Tema Metropolis
Community: Tema Newtown

Tema is known as an industrial hub. The combination of sea-level rise, swells and the Tema harbor leads to coastal erosion at the east-side of the harbor, where the Tema Newtown community is located. The Chemu lagoon, a small lagoon west and in front of Newtown, is heavily polluted, mainly due to industrial liquid waste. This has led to a reduction of sea life in the lagoon and health issues. Tema Newtown itself is an informal settlement prone to flooding. Sanitation is a big challenge and housing and basic service provisions are very poor.

District: Ningo-Prampram

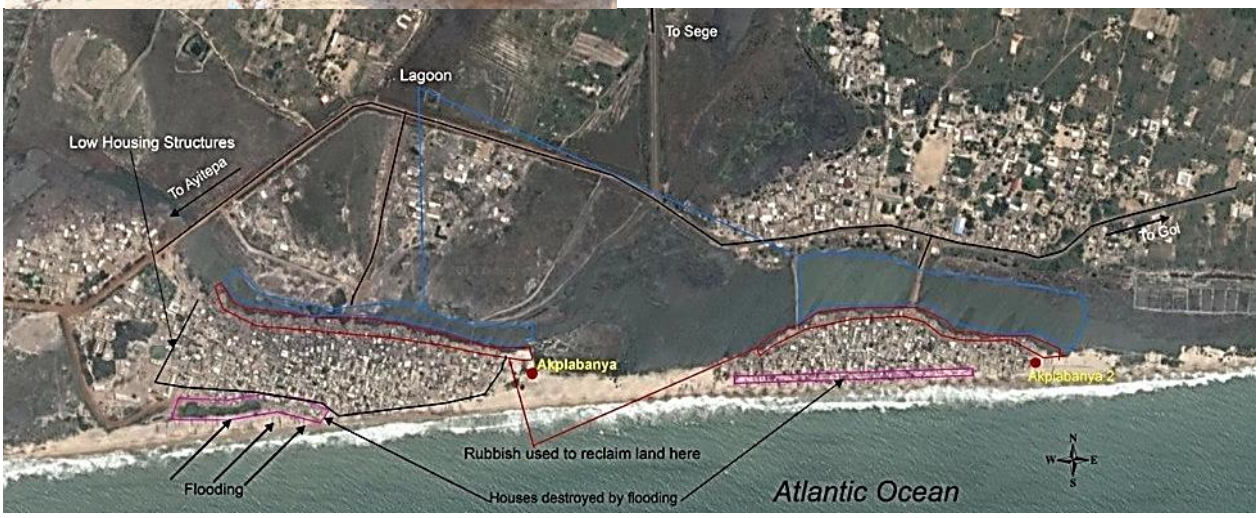
Communities: Prampram informal harbor; Old ningo; Ayitepa

The main climate change hazards in Ningo-Prampram are coastal erosion, flooding, droughts and

high temperatures. East of the Ningo river, in old Ningo, during the community consultations, Ningo fishermen reported a shift of the coast of hundreds of meters over the last 40 years and 90 meters since 2008, leading to the destruction of houses and assets). The protective Mangroves disappeared and fish stocks are decreasing. High waves make it dangerous to go out fishing in Prampram, especially in summer when storms and swells also destroy boats and threaten the lives of fishermen. Due to the lack of adequate infrastructure, for example a Jetty, fishermen see the number of fishing days reduced due to bad weather conditions, Furthermore, fishermen spend an average a minimum of two months per year during which they cannot fish due to bad weather conditions. Besides that, droughts are an increasing problem for agriculture and malaria and cholera have been reported as major health issues.

District: Ada West

Communities: Akplabanya, Goi, Kpotitsekope



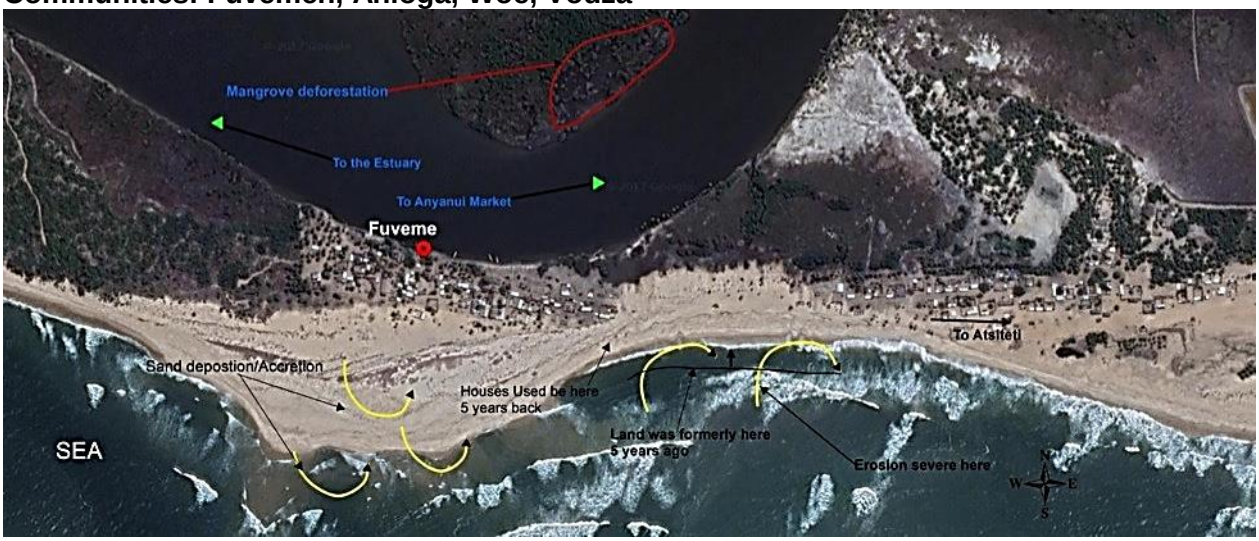
Ada West district is located on the west side of the Songor Lagoon. Akplabanya community is surrounded by the sea in the south and an arm of the Songor Lagoon in the north. The community is experiencing coastal erosion and sea flooding, often forcing community members to move out for several weeks. In the north, land is being reclaimed from the lagoon using solid waste. This is a result of land scarcity due to floods and coastal erosion and also due to rapid population growth. Goi community is located north of a small lagoon and the sea. Coastal erosion, flooding and droughts (i.e. lack of potable water) are the main climate hazard affecting the community. The practice of land reclamation using solid waste, results in the pollution of water and land. Poor health and diseases are a major issue in this community as well as the reduction in fish harvests. Kpotitsekope community is located directly at the Songor lagoon. Due to the 'open' location where the community is located, storms and floods have damaged houses and assets. Salinity is

threatening agriculture while fish stocks are reducing and prices of salt (i.e. salt mining) are reducing. Diseases are also common in this community.

District: Ada East
Communities: Totope, Azizanya and Big Ada

Ada East district is located on the east side of the Songor Lagoon. This lagoon was an important wetland but is drying up and losing its ecological and economic importance. The dryer parts are now used for salt mining. The district was affected badly by coastal erosion but the construction of groynes has significantly slowed down the erosion process. Farming, especially vegetable production, is mainly done under irrigation. However, this is being affected by increasing soil salinity due to droughts and sea level rise. Fishing is another major economic activity in the district and is done in the River Volta and the sea. However, fish harvests are also reducing. The district is endowed with numerous tourist sites, which include forts, estuary, holiday chalets, and outstanding beaches along the bank of the Volta River. However, the district is experiencing flooding, storms and disease like malaria and bilharzia, affecting the inhabitants. Totope community is located between the lagoon and the sea. The main climate change hazard that affects the community is flooding, lasting up to 3-4 months. Land reclamation is also a common practice in this community, by using garbage as filling material. The settlement is also characterized by low quality services and infrastructure, including lack of drinking water that results in increasing number of health issues. In Azizanya and Big Ada, both located next to the Volta river, river flooding represents the biggest challenge combined with the reduction in fish harvests. In Big Ada, bilharzia parasite has come back and spread amongst the population because of the lack of salt water coming in from the sea that used to eliminate the parasite before.

District: Keta
Communities: Fuvemeh, Anloga, Woe, Vodza



Keta district is located on the east side of the Volta river. Most settlements are established on a small strip of land between the sea and the Keta lagoon, the largest lagoon in Ghana. The whole strip has been affected badly by coastal erosion, damaging houses, assets and roads. The construction of 6 groynes has stopped the erosion in some areas but increased it in adjacent areas. The Keta lagoon is becoming saltier, leading to agriculture and fishing problems and the lack of potable water. The main economic activity for women in the district is fish processing through smoking it. This is done by using wood, which is also the main natural resource used for cooking. Because this is in most cases sourced from mangrove forests, there has been a gradual reduction of the surface occupying by mangroves. Due to high population densities, land scarcity is also an issue. In Woe and Anloga, the horticultural sector represents an important economic activity but salt water intrusion and the lack of energy supply to support an efficient irrigation system is becoming a major issue. In Fuvemeh, where more than 90 percent of the community has been destroyed by sea wave erosion and stagnant water is common, there are no basic

services or infrastructure (i.e. drainage, roads, health facility, schools, electricity, waste management and toilet facility). Here, inhabitants have expressed the willingness to relocate.

Summary

Considering the above, the proposed project focuses on some of the most climate vulnerable and economically and environmentally challenged districts along the Ghanaian and Ivorian coast and on the most climate vulnerable communities. The various climate challenges are exemplary for large parts of the West African coast.

Due to lacking capacities and funding options, the Ghanaian and Cote d'Ivoire governments requested UN-Habitat to support increasing the resilience of these coastal areas, also with the purpose of replication and upscaling elsewhere.

Project approach / conceptual framework

During full proposal development phase		During project	After project
1. Aligned with national and local government priorities, **develop a framework for selecting and monitoring** interventions based on consultations and AF criteria.	**2. Create prioritization list** of adaptation interventions built upon data and evidence-based analysis, together with communities, experts and key stakeholders engagement.	**3.** Select low cost / high impact **projects** / prototype solutions (with manageable ES risks)	**4. monitor, evaluate** and learn based on defined goals and targets	5. **replicate** in West Africa at community and inter-community scale
Data and evidence-based decision making Selection criteria Goals / targets Monitoring framework and tools	**Reduce exposure to hazards:** • Coastal protection • Coastal nourishment / management • Ecosystem restoration • Groundwater management/ Reduce saltation **Adapt to exposure**: • Urban and territorial planning to avoid urbanization in risk areas • Adapt buildings and assets • Relocate communities that can't be protected • Etc. **Reduce sensitivity / increase adaptive capacity** • Improve resilience of communities focused on livelihoods and protection: • Develop salt tolerant crops • Enhance ecotourism / fish stock / safe fishing • Improve awareness and management skills • Etc.	• Transformative intervention focused on coastal protection / nourishment / management • Transformative intervention focused on ecosystem restoration and / or saltation management • Catalytic community interventions focused on above but then very localized • Urban and territorial planning strategies • Community planning • Catalytic community interventions focused on adapting buildings and assets • Catalytic community interventions focused on improving income options • Community planning • Community trainings **Implementation tools:** • Urban Labs • Knowledge center	Replicate and scale-up

Figure 17: project conceptual framework

The project is designed to comprehensively improve coastal resilience in target communities in Ghana and Cote d'Ivoire. The project addresses the hazards causing inter-related negative impacts on the coast, including to lagoons located close to the sea. A combination of sea level rise and storms / swells cause coastal erosion, as well as flooding, rising of lagoon water levels and saltation (as lagoons are often only separated from the sea by a small land strips. Addressing pollution of lagoons is not a direct goal but will be considered as possible co-benefit of addressing the hazards mentioned before. The project will consist of five components to analyze and plan resilience of coastal settlement communities, identify and implement concrete coastal resilience building interventions that are effective and low-cost and can be used as prototypes and thus be replicated at different scales in West Africa. This will also be supported through capacity building. To identify these 'prototype' interventions, the selection responds to the main resilience building needs from the regional to the community level and then matched with 'common' coastal situations (i.e. common types / causes of erosion and lagoon issues) with the aim to develop a comprehensive community-driven portfolio. The lessons learned and replication approach also account for the land use planning component.

During the full proposal development phase, the framework for selecting and monitoring interventions will be further developed and interventions responding to different needs and situations will be selected - matching community needs and priorities with innovative but feasible interventions as identified and analyzed by experts (see part II section A: components). For the mapping and identification of financially and technically feasible interventions, a support expert team will be engaged, including UN-Habitat experts, private sector experts such as from the consultancy Arcades and Deltares, the Delta Alliance and local experts from academia, private sector and government institutions. Where possible, these will be ecosystem-based / building with nature options and interventions that can be developed, maintained and replicated by communities themselves. The priority list of interventions will be fully screened and assessed to identify potential environmental and social risks, including following national standards and processes with the aim to select the interventions with manageable potential risks and impacts. Through this process, all project activities will be fully identified, also at community level, at the full proposal stage.

Project / Programme Objectives:

The overall objective of the project is to increase the climate change resilience of coastal settlements,communities and their resources in Ghana and Cote d'Ivoire.

The sub-objectives of the project, which are in line with the project component below and AF outcomes, are:

- Strengthen the technical and institutional capacity of national, local governments as well as private sector and local experts to increase coastal resilience through coastal management and spatial /land use planning[29]

  This is in line with AF outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socio economic and environmental losses

[29] The combination of spatial planning and land use planning results into more flexible and implementable plans due to the less prescriptive and more propositive nature of the plans

- ❑ Strengthen community capacities to anticipate and respond to climate change related coastal hazards.

  This is in line with AF outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level)

- ❑ Increase the resilience of coastal ecosystems and the built environment in target areas taking into account national and local needs and impacts.

  This is in line with AF outcome 4 (Increased adaptive capacity within relevant development and natural resource sectors) and 5 (Increased ecosystem resilience in response to climate change and variability-induced stress)

- ❑ Increase the resilience of coastal ecosystems and the built environment at the community-level by developing and supporting income generating activities through a community based adaptation approach

  This is in line with AF outcome 4 (Increased adaptive capacity within relevant development and natural resource sectors) and 5 (Increased ecosystem resilience in response to climate change and variability-induced stress) and 6 (Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas).

- ❑ Support the (inter-) national systematic transformation of spatial, financial and regulatory frameworks to improved coastal management, urban planning, urban resilience and concrete intervention examples through knowledge management, knowledge sharing and the creation of enabling institutional and regulatory frameworks.

  This is in line with AF outcome 7 (Improved policies and regulations that promote and enforce resilience measures)

Project Components and Financing:

Table 3: Project components and financing

Table 3: project components and financing

Project Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
1. Coastal management and spatial / land use planning strategies at district level – feeding into national and regional coastal management strategies	1.1. Strengthened technical and institutional capacity of national and local governments to increase coastal climate change resilience through coastal management and land use planning strategies Areas currently at risk identified and plans to avoid future development in risk areas developed	1.1.1. Eight (8) district / department-level coastal management and strategic spatial / land use planning strategies developed with specific focus on addressing coastal climate change and erosion impacts and risks. ❑ 4 districts in Ghana ❑ 4 departments in Cote d'Ivoire Above includes workshops, trainings and a "learning by doing process" (through the urban lab) of ministry staff and district / department level government staff. Per country: ❑ 4 workshops/trainings at ministry level ❑ 8 workshops/trainings per district at district/department level Above includes UN-Habitat's tested 'Planning for Climate Change' tools and methodologies	Cote d'Ivoire + Ghana (With UN-Habitat Cities and Climate Change Initiative and Urban Planning and Design Lab support)	1.400.000 (200.000 per department plan in Cote d'Ivoire and 150.000 per district plan in Ghana) Total: 1.400.000
2. Resilience planning at the community level	2.1. Strengthened community capacities to anticipate and respond to climate change related coastal hazards, including protecting and / or enhancing livelihoods	2.1.1. Eighteen (18) Community-level climate change resilience building interventions implementation strategies / plans / maps developed focused on local coastal (asset) protection and livelihood protection and / or enhancement, including operation and maintenance arrangements ❑ 10 communities in Ghana ❑ 08 communities in Cote d'Ivoire Above includes workshops and trainings following UN-habitat's tested 'Planning for Climate Change' tools and methodologies and a "learning by doing process" (through the urban labs	Cote d'Ivoire + Ghana (Through NGOs with support from the urban living lab and UN-Habitat Cities and Climate Change Initiative)	800.000 (45.000 per community)

		methodology[30]) at community level. Community members are supported by national and international experts to develop a fast-track plan and implement concrete solutions for adaptation to climate change related coastal hazards. Per community: ❑ 4 workshops / trainings		Total: 800.000
3. Transformative concrete coastal resilience building interventions at inter-district level taking into account (inter-) national and local needs and impacts District / Department scale interventions	3.1. Increased resilience of coastal ecosystems and built environment at national / district level Development of larger scale projects with the potential to positively impact a larger population	3.1.1. 1-2 concrete interventions focused on coastal protection / nourishment / management (i.e. reducing erosion / enhancing the protection of the coast. These can be restoring the sediment deposits obstructed by man-made dams by implementing sand motors / nourishment of the coast in both countries. 3.1.2. 1-2 concrete interventions focused on ecosystem restoration and / or saltation management (i.e. enhancing 'healthy' ecosystems for fishing, agriculture, etc.). These can be the restoration of part of key natural systems (Brie Lagoon in Cote d'Ivoire and Volta river delta in Ghana) to benefit coastal protection and / or livelihood options. The technical focus will be on 'building with nature' and low-cost alternative interventions. The following options will be considered for implementation during the full proposal development phase: - Beach nourishment and foreshore nourishment - Dune/ barrier nourishment - Perched beach - Sand bypassing. Dredging sediment in river mouth and relocating it - Open up river mouth by dredging/ sediment bypassing - Replant resilient forests / mangroves - Change aquaculture (e.g. shrimp farms or othe type of fish - Open up river arm to lagoon to refresh water For more detailed info see table 5 and annex 3	Cote d'Ivoire + Ghana (Through local procurement and where possible, community contracting with support from the urban lab / international expert (companies)	2.000.000 2.000.000 Total: 4.000.000

[30] Methodology publication: Urban Labs: A tool for integrated and participatory urban planning: https://unhabitat.org/books/urban-planning-and-design-labs-tools-for-integrated-and-participatory-urban-planning/

4. Catalytic concrete interventions at community level taking into account local needs and impacts / livelihood opportunities Neighborhood / community scale interventions	4.1. Increased resilience of coastal ecosystems and the built environment at the community-level	4.1.1. Eighteen (18) community-level interventions to enhance the protection of local communities (and assets) and to increase income generating options The technical focus will be on 'building with nature' and community-made low-cost alternatives. The following options will be considered for implementation during the full proposal development phase: - Local dune / barrier nourishment - Make artificial barrier inland with natural elements - Sand bypassing. Dredging sediment in river mouth and relocating it - Set up system with temporary flood defenses - Replant resilient forests/ mangroves - Change crops suited for a salt environment - Change aquaculture (e.g. shrimp farms, clams or other type of fish) - Other options identified and prpposed by communities will be considered For more detailed info see table 5 and annex 3	Cote d'Ivoire + Ghana (Through direct community contracting, where possible with support from the urban lab)	4.000.000 (average 222.000 per community) Total: 4.000.000
5. Knowledge management, communication and institutional and regulatory framework at the regional, national and local level	5.1. Improved (inter-) national institutional and legal framework's and knowledge management mechanisms that promote coastal resilience measures Identification of bottlenecks leading to proposals for modification of policies, rules and regulations based on lessons from project execution	5.1.1. Set up and running of West African Climate Change Resilience Building 'Urban Lab' (with 1 arm per country) to locally support the development of plans, execution and monitoring and sharing of knowledge at regional, national and local level with (inter)national and local expertise support. Above will also include setting up a 'chiefs alliance' and possibly women and youth alliance,' building on existing community committees for decision-making and in-kind contribution on project execution and to share knowledge and lessons at the community level, including documentation and promotion of appropriate indigenous knowledge and best practices. Above will also include setting up a 'private sector alliance' (considering tourism / hotels, fishing and agriculture sectors) to involve them (financially) in the resilience building of the coast and to produce and share knowledge and lessons. The involvement of the tourism sector / hotel owners will be done	Cote d'Ivoire + Ghana (through Abidjan Convention, Delta-Alliance (wings) / universities (professors and students), etc. Abidjan Convention is setting up a transboundary committee for the creation and management of the MPA between the two countries. This can be a platform	800.000

		during the full proposal development phase and throughout the project. The execution of all project components will be independent from the possible contribution / support of hotel owners; thus the support from these possible alliances should be seen as 'extra.' Above will also include a review of institutional and legal frameworks and development of proposals for institutional and legal change to support implementation, ensuring long-term sustainability. 5.1.2. Establish initial monitoring sensor-system for coastal climate change impacts, erosion and urban development to provide recurrent data for analysis of natural and urban transformations. This includes full understanding of geomorphology (see innovation section) and a quantitative data analysis based on availability of data to develop a benchmark of both countries and districts / departments and to deduct data and evidence-based strategies and policies 5.1.3. Training of national and district staff to operate and maintain the data systems and the transformative concrete interventions through revenue-generating activities and to share lessons.	for the ministerial level meetings (through procurement of expert firm or institution such as Delta alliance and Deltares	300.000 377.356 Total: 1.477.356
Total components				11,677.420
6. Project/Programme Execution cost				1,225.806
7. Total Project/Programme Cost				12,903,226
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				1,096,774
Amount of Financing Requested				**14,000,000**

Projected Calendar:

Table 4: Project calendar

Milestones	Expected Dates
Submission of Full Project Proposal	01-2019
Start of Project/Programme Implementation	06-2019
Project/Programme Closing	05-2023
Terminal Evaluation	08-2023

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Project components

Complex linked challenges

There are three key challenges that tend to block or slow-down coastal climate adaptation and resilience building efforts in Ghana and Cote d'Ivoire (and West Africa).

First of all, there is a lack of understanding on how the coastal dynamics, natural and socio-economic systems interact and how these interdependencies lead to increased vulnerability for climate change. This is because basic data is not available or unreliable and scientific knowledge is fragmented or not integrated on a systemic level. It is thus needed to invest in supporting a better understanding of the regional, national and local interdependencies between climate change, morphological change, ecosystems, and livelihood, and how these interactions affect the resilience of coastal communities. Given the data-scarce environment, this can be done by bringing together the already available scientific knowledge and experts, both formal and traditional local knowledge derived from communities and local leaders, and to do more research. Responding to this challenge, the project aims at generating cost-efficient, recurrent and open data related to coastal climate change impacts, vulnerabilities, erosion, floods and urban growth, and will provide decision-makers and the general public with evidence for the formulation of policies, strategies, programmes and projects. Through the integration of local academic institutions in the participator analysis, planning and implementation process, the project generated data will be made available.

Secondly, sustainable development of the Ghana and Cote d'Ivoire coastal areas requires both effective spatial planning and governance structures that can ensure the implementation of plans and the development of new economic drivers based on improved awareness of the socio-cultural value and vulnerability of the natural landscape. This requires both the development of long term strategies, and the translation of these strategies to territorial plans, land use plans, adaptation plans, guidelines and regulations as well as the development of educational and awareness programs at the community level. This second challenge strongly relates to the previous one, as climate-informed spatial plans require scenarios and accurate, evidence-based models for risk area. Further, functional spatial planning requires the existence of state institutions to oversee, steer and coordinate such a risk informed and planned development.

Finally, given the remaining uncertainty and the urgency to adapt rather quickly to rapid coastal erosion, there is a dire need to develop a more agile way to identify, design, test, implement and scale-up adaptation measures. This implies the need to develop a community-informed learning-by-doing environment in which a wide range of low-cost, multi-benefit solutions can be developed, tested and monitored to rapidly find the most cost-effective or socially impactful solutions, using

the green principle of building with nature and not against it.[31] This also requires the development of a selection framework and the criteria for monitoring these interventions.

To address these three challenges requires a coherent articulation of different stakeholders through a participatory planning process in which the objectives and priorities of each group can be clearly defined and negotiated to achieve a common and shared vision.

The five components of the proposal (discussed in detail below) respond to the challenges and needs presented above and in the background and context section. **To achieve the overall objective of the project, to 'increase the climate change resilience of coastal settlements,communities and their resources in Ghana and Cote d'Ivoire and ultimately in West Africa'** it is required to develop a sustainable vertical and horizontal learning environment and institutional framework which allow approaches and interventions that respond to local needs but can also be replicated and scaled up elsewhere.

The specific needs of especially women, youths and ethnic and indigenous groups will be considered at all stages of the project. This will be achieved by engaging the representatives of vulnerable groups in community and stakeholder consultations with a community-based approach following the tested and proven 'Planning for Climate Change' principles, where the project will build on existing community groups, or form new committees where necessary, and sustain these throughout all stages of the project and through which communities participate in project implementation.

Component 1: Coastal management and spatial / land use planning strategies at district and department level – feeding into national and regional coastal management strategies

In line with AF outcome 2 and Cote d'Ivoire and Ghana National priorities (see section D and annex 4) this component aims to strengthen the technical and institutional capacity of national and local governments to increase coastal resilience through coastal management and spatial / land use planning through the following output:

1.1.1. Eight (8) district / department-level coastal management and strategic spatial / land use planning strategies. This includes conducting workshops, trainings and a "learning by doing process" (through the urban lab) of ministry staff and district / department level government staff, including government agencies and private sector stakeholders providing services to national and local government.

In Cote d'Ivoire, the target departments are: Jacqueville, Bingerville Department, Grand-Bassam and Grand-Lahou. Grand-Lahou will be included in cooperation with the WACA project to complement the coastal protection infrastructure interventions planned under the WACA project in this department. Because there is no clear spatial / land use planning framework in Cote d'Ivoire, developing the plans will be costlier than in Ghana, where a spatial / land use planning framework does exist. In Ghana, the target districts will be: Ningo-Prampam (building on a pilot spatial planning project), Ada West, Ada East and Keta. Tema district is excluded because it's part of plans being developed for Great Accra.

[31] See for example: https://theconversation.com/why-ghana-needs-a-new-approach-to-stop-the-erosion-of-its-coastline-44018

This component is required to plan urban areas in suitable land and to avoid future urban development in risk-prone areas. Spatial planning also allows identifying open green areas that should be preserved for environmental protection and designating non-aedificand areas in which housing, industrial and commercial activities are not permitted. Non-complaint activities in these non-aedificandi areas represent a high-risk for residents and would be subject to relocation. For more info, see the 'promotion of innovative solutions section' below.

This component, upon implementation of the plan, has the potential to impact a large number of people inside the targeted population, enhancing resilience through improved access to land, jobs, housing, open spaces, services and facilities. Specific activities such as inter-ministerial meetings, working sessions, expert meetings, and workshops will be developed during the project to promote the plans endorsement and support by the majority of stakeholders. Furthermore, competent authorities will be supported through technical assistance to facilitate the adoption of plans and the designation of working groups and focal points for its implementation.

Component 2: Resilience planning at the community level.

In line with AF outcome 3 and Cote d'Ivoire and Ghana National priorities (see section D and annex 4) this component aims to strengthen community capacities to anticipate and respond to climate change related coastal hazards through the following output:

1.1.1. Eighteen (18) community-level climate change strategies / plans / maps to enhance resilience, focused on local coastal (assets) protection and livelihood protection and / or enhancement, including operation and maintenance arrangements.

This component is required to ensure that interventions are fully in line with communities and vulnerable groups climate change resilience building needs and to ensure concrete interventions under component 4 will remain operational after the project has concluded. This will be done by fully involving communities in the planning and execution of the proposed interventions. Where possible, communities will be directly contracted to execute the concrete interventions. The communities will develop plans to execute these interventions, including management and maintenance arrangements.

To ensure that inhabitants are aware of the main issues and risks (including environmental and social risks of interventions) in their communities, and to be able to respond to these issues and risks, awareness raising campaigns will be set-up and trainings conducted. Special attention will be put into gender and youth regarding challenges from climate change and opportunities for resilience.

Component 3: Transformative concrete coastal interventions to enhance resilience at inter-district level taking into account (inter-) national and local needs and impacts

In line with AF outcome 4 and 5 and Cote d'Ivoire and Ghana National priorities (see section D and annex 4) this component aims to increase the resilience of coastal ecosystems and the built environment in target areas taking into account (inter-) national and local needs and impacts through the following outputs:

3.1.1. 1-2 concrete interventions focused on coastal protection / nourishment / management
3.1.2. 1-2 concrete interventions focused on ecosystem restoration and / or saltation management.

This component is required to physically increase the resilience of larger coastal areas from a strategic point of view, taking into account regional, national and district level priorities, as well needs and impact assessments. Local resilience building interventions (see component 4) are important to the communities they serve, but need to achieve a relevant impact at larger scales. Therefore, long-term resilience needs to be addressed at the national and regional levels.

The focus of the interventions will be on 'building with nature' and low-cost alternative interventions. The following options will be considered for implementation during the full proposal development phase:

- Beach nourishment and foreshore nourishment
- Dune/ barrier nourishment
- Perched beach
- Sand bypassing. Dredging sediment in river mouth
- Open up river mouth by dredging/ sediment bypassing
- Replant resilient forests / mangroves
- Change aquaculture (e.g. shrimp farms or othe type of fish
- Open up river arm to lagoon to refresh water

For more detailed info see table 5 and annex 3

Component 4: Catalytic concrete interventions at community level taking into account local needs and impacts / livelihood opportunities.

In line with AF outcome 4, 5 and 6 and Cote d'Ivoire and Ghana National priorities (see section D and annex 4) this component aims to increase the resilience of coastal ecosystems and the built environment at the community-level by promoting and supporting income generating activities through the following output:

1.1.1. Eighteen (18) community-level interventions to enhance the protection of local communities (and assets) and to increase income generating activities through a community based adaptation approach linked to environmental preservation.

This component is required to physically increase the resilience of the most vulnerable coastal communities and groups. Detailed plans for this are developed under component 2.

Focused will be on (but will not be limited by) 'building with nature' and community-made low-cost alternatives. The following options will be considered for implementation during the full proposal development phase:

- Local dune / barrier nourishment
- Make artificial barrier inland with natural elements
- Sand bypassing. Dredging sediment in river mouth and relocating it
- Set up system with temporary flood defenses
- Replant resilient forests/ mangroves
- Change crops suited for a salt environment
- Change aquaculture (e.g. shrimp farms, clams or other type of fish)

For more detailed info see table 5 and annex 3

Component 5: Knowledge management, communication and institutional and regulatory framework at the regional, national and local level.

In line with AF outcome 7, AF knowledge management objectives and Cote d'Ivoire and Ghana National priorities, (see section D and annex 4) this component aims to support the (inter-) national systematic transformation of spatial, financial and legal frameworks that would result into improved coastal management, articulated spatial urban planning and financial mechanisms for sustainable urban development. Concrete intervention for knowledge management and the articulation of spatial, regulatory and financial frameworks would be done through the following outputs:

5.1.1. Set up and running of West African resilience 'Urban Lab' (with 1 arm per country) to locally support the development of plans, execution and monitoring and sharing of knowledge at regional, national and local level with (inter)national and local expertise support;
5.1.2. Establish initial monitoring sensor-system for coastal climate change impacts, erosion and urban development to provide recurrent data for analysis of natural and urban transformations. This includes full understanding of geomorphology (see innovation section) and a quantitative data analysis based on availability of data to develop a benchmark of both countries and districts / departments and to deduct data and evidence-based strategies and policies;
5.1.3. Training of national and district staff to operate and maintain the transformative concrete interventions through revenue-generating activities and to share lessons.

This component is required to produce knowledge and capture lessons, including prototype concrete resilience building interventions, suitable for replication and scaling up in communities and larger coastal areas in other countries in West Africa. This component is also required to develop enabling institutional and legal frameworks for the operation and sustainability of this project but also to improve cooperation in the region. Even though regional cooperation is challenging, it is the most sustainable way to face the existing issues. It has proven to be successful in many places, particularly where the issue addressed represented a priority challenge to the countries affected. Efforts to build trust and coordinate efforts will help policymakers and community chiefs to protect the lives and livelihoods of the people in the region and allow their countries to build on the development gains made in recent years rather than see them rolled back as a result of climate change.

Table 5 below provides an overview of possible concrete interventions as identified by Acradis in response to community needs. During the full proposal phase these possible interventions will be ‘matched’ with community priorities and suitable contexts, including manageable potential environmental and social impacts and risks.

Table 5: Concrete intervention options (under components 3 and 4) – to be matched with community priorities and feasibility and environmental and social impacts and risk selection criteria during the full proposal development phase. Analysis / assessment conducted in cooperation with Arcadis in target area. For more details see annex 3. The intervention highlighted 'green' will be considered for implementation; thus, these will be further analysed during the full proposal development phase (if matched with authority and community priorities). Relocation will only be considered when requested by communities and if local circumstances allow it (i.e. low risks). The interventions written in red can be regarded as innovative techniques.

Area	Hazard and typical scenario	Cause	Impacts	Intervention options	Potential environmental and social impacts and risks	Proven	Cost	Planning (time required)	Can be done/rep-located by other com-munity
Coast	Coastal erosion	Negative sediment budget due to gradients in *longshore* transport	Coastal retreat/ flooding	Zero - option: no coastal defense, relocate people or avoid people moving into risk area through spatial planning. (This can be considered as a not a concrete intervention but shows the role of land use planning versus concrete interventions)	Social: high Environmental: low Most relevant Principles: 1, **2**, **3**, **4, 5, 7, 8,** 13 Although some communities requested reloation, this is only an option when all inhabitants agree and plans for relocation are adherent to their needs. However, land use plans can avoid people moving into high risk areas	Yes e.g. UN-H land use plans in Haiti avoids people moving into high risk areas	Depends on the costs of relocating communities Land use plans are a low-cost solution for avoid costs associated with cc risks.	-	yes
				Beach nourishment and foreshore nourishment (i.e. sand motor) Level / type applicable: - Transformative	Social: low Environmental: low, but needs to be repeated periodically (sediments could be obtained through the regular dredging required in the lagoons due to the reduction of the river water flow) Most relevant Principles: 1, 2, 6, 11, 15	yes Dutch "weak links" projects)	roughly €10, - per m3 sand + labor coast (*) Increased affordability of labor-intensive activities in developing economies	1 year	yes
				Deploy groynes to interrupt littoral drift	Social: low	Yes (Dutch coast and	roughly €10000, - per meter	3 years	no

					Environmental: high (translates erosion problem to down drift side) Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** Has shown negative downstream impacts in Ghana	many other coasts	groyne (very high) E.g. US$ 180 million for 15 groynes in Keta		
		Negative sediment budget due to *cross-shore* transport	Coastal retreat/ flooding	Zero - option: no coastal defense, relocate people or avoid people moving in risk area through spatial planning (This can be considered as a not a concrete intervention but shows the role of land use planning versus concrete interventions)	See above	Yes (see above)	See above	-	yes
				Beach nourishment and foreshore nourishment (i.e. sand motor) Level / type applicable: - Transformative	See above	Yes (see above)	roughly €10, - per m3 sand + labor cost (commercial prize)	1 year	yes
				Dune/ barrier nourishment (to prevent for storm erosion) Level / type applicable: - Transformative - Catalytic (community)	Social: low Environmental: low risk, but needs to be repeated periodically Most relevant Principles: 1, 2, 6, 11, 15 As long as sources sand from areas that won't cause negative impacts, risks are low	Yes Dutch "weak links" projects) Barrier at Prampram harbor has been successfully heightened by fishermen	roughly €10, - per m3 sand + labor cost (commercial prize)	1 year	yes

				Perched beach: submerged dams combined with beach nourishment. Submerged dams may be possible areas for aquaculture	Social: low Environmental: could be high / depends on local situation (not applicable when also gradients in longshore currents cause erosion Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15**	Aquaculture on dams has not been proven	roughly €10, - per m3 sand plus costs to construct submerged dams (*)	< 3 years	yes
		Combination of the above	Coastal retreat/ flooding	Zero - option: no coastal defense, relocate people or avoid people moving in risk area through spatial planning (This can be considered as a non-concrete intervention but shows the role of land use planning versus concrete interventions)	See above	yes	See above	-	yes
				Beach nourishment and dune nourishment Level / type applicable: - Transformative - Catalytic (community)	Social: low Environmental: low, but needs to be repeated periodically Most relevant Principles: 1, 2, 6, 11, 15	yes	roughly €10, - per m3 sand (commercial prize) (*)	1 year	yes
				Beach nourishment and dune nourishment in combination with groynes	Social: low Environmental: high (translates erosion problem to down drift side) Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** Has shown negative downstream impacts in Ghana	yes	roughly €10, - per m3 sand plus €10000, - per m groyne (very high) E.g. US$ 180 million for 15 groynes in Keta	< 3 years	yes

				Make artificial barrier inland with natural elements to create a lagoon during storm conditions. Community will not get flooded, fishing boats can take shelter in lagoon. Options to start aquaculture in salty lagoon Level / type applicable: - Catalytic (community)	Social: low Environmental: unknown (not implemented yet). Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15**	No This has been requested by prampram fishing community	unknown	< 3 years	yes
		River delta erosion due to decreased river discharge (damming of river)	Sediment is trapped in river mouth. Coastal retreat down stream of net longshore current	Sand bypassing. Dredging sediment in river mouth and relocating it down stream in erosive areas Level / type applicable: - Transformative - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15**	Yes By various governments; not so much by communities	low costs, can be done by local communities. People have to be compensated for their work	1 year	yes
				Same as above, but with construction of groyne upstream of river mouth. Sediment is trapped at the groyne, which makes bypassing easier	Social: low Environmental: high **(**possibly increases negative effects at downstream side of river mouth). Most relevant Principles: 1, 2, 6, **9, 10**, **11**, 15 Has shown negative downstream impacts in Ghana	yes, see current cross shore groyne at Volta river mouth. Sediment is trapped, but no artificial bypassing takes place (opportunity to start artificial bypassing).	roughly €10000, - per m groyne. (very high) E.g. US$ 180 million for 15 groynes in Keta	< 3 years	no
	Flooding	Swell wave overwash	flooding	Dune/ barrier nourishment Level / type applicable: - Transformative - Catalytic (community)	Social: low Environmental: low (may need to be repeated periodically in combination with cross shore sediment transport)	Yes Dutch "weak links" projects)	roughly €10, - per m3 sand	1 year	yes

	from sea				Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** As long as sources sand from areas that won't cause negative impacts, risks are low	Barrier at Prampram harbor has been successfully heightened by fishermen			
				Set up system with temporary flood defenses (e.g. sand bags) Level / type applicable: - Catalytic (community)	Social: medium Environmental: low (awareness and knowledge on flooding needs to be created. Discipline to deploy temporary flood defense during rainy season is difficult to create) Risk to deploy sand bags and do not collect them back results into environmental pollution Most relevant Principles: 1, 2, 6, **9, 10**, **11**	Not on a small community scale with no experience on these kind of solutions	probably cheap (materials for sand back/ sand and workshops)	1 year	yes
lagoon	Lagoon flooding	Sedimentation in river mouth due to decreased river discharge (damming of river)	flooding of lagoon potentially in combination with down drift erosion	Zero - option: do nothing, relocate people people or avoid people moving in risk area through spatial plannin(This can be considered as a non-concrete intervention but shows the role of land use planning versus concrete interventions)	See above	yes	See above	-	yes
				Sand bypassing. Dredging sediment from river mouth and relocating it down stream in erosive areas Level / type applicable: - Transformative - Catalytic (community)	See above	Yes By various governments; not so much by communities	low costs, can be done by local communities. People have to be compensated for their work	1 year	yes

				Same as above, but with construction of groyne upstream of river mouth. Sediment is trapped at the groyne, which makes bypassing easier	See above Has shown negative downstream impacts in Ghana	See above	roughly €10000, - per m groyne. (very high) E.g. US$ 180 million for 15 groynes in Keta	< 3 years	no
	Erosion of lagoon banks	Increased water levels (during monsoons in lagoon due to sedimentation in river mouth	Flooding, decreasing land area	Open up river mouth by dredging/ sediment bypassing Level / type applicable: - Transformative	Social: low Environmental: can be high Opening up a river mouth needs to be done very carefuly to control water flow Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15**	Yes Many examples around the world and some in Ghana and Cote d'Ivoire.	low costs, can be done by local communities. People have to be compensated for their work	1 year	yes
		Deforestation	Erosion of banks since sediment is no longer being captured by vegetation	Replant resilient forests/ mangroves (mainly Cote d'Ivoire), start agriculture on the banks (salt / brackish water crops) Level / type applicable: - Transformative - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, 2, 3, 5, 6, 7, 9, 10 Although risks are low participatory processes to address needs are required	Yes	low costs, can be done by local communities.	< 3 years	yes
	Salt water intrusion	Decreased river discharge due to damming of river	Lack of fresh water for agriculture	Change crops suited for a salt environment Level / type applicable: - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, 2, 3, 5, 6, 7, 9, 10 Main risk is related to identifying the most suitable	Identify most suitable proven option	low costs, can be done by local communities.	< 2 years	yes

					crop and to operate / maintain these.				
			Decrease population of fresh/ brackish water fish	Change aquaculture (e.g. shrimp farms or othe type of fish) Level / type applicable: - Transformative - Catalytic (community)	Social: low Environmental: medium Most relevant Principles: 1, **2**, 3, 5, 6, 7, **9**, **10**, **12**, 15 Main risk is related to identifying the most suitable species and that these can be managed by specific groups / addressing their specific vulnerabilities	unknown	unknown	< 3 years	yes
				Start salt mining on lagoon marshes Level / type applicable: - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, **2**, 3, 5, 6, 7, 9, 10, 12, 15 Main risk is related to ensuring communities / vulnerable groups benfit from the intervention	unknown	unknown	< 2 years	yes
			Lack of fresh drinking water	Provision of fresh / potable water (e.g. through water harvesting) Level / type applicable: - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, **2**, 6, 9, 10,	Yes (but not in target area) Many technical options	unknown	3 years	Possibly
	Pollution of lagoon	Lack of refreshment from sea since river mouth is blocked	Lack of fresh drinking water	Provision of fresh / potable water (e.g. through water harvesting)	See above	Yes (but not in target area) Many technical options	unknown	3 years	Possibly
			Lack of fresh	Open up river arm to lagoon to refresh water	Social: low	Yes (but not in target area)	unknown	1 year but maintena	no

		by sediment	water for agriculture	Level / type applicable: - Transformative	Environmental: may be high (may results in negative environmental effects up and downstream in river and in lagoon if not well managed One positive impact would be the reduction of bilharzia parasite due to water salinity increase Most relevant Principles: 1, 2, 6, **9, 10**, 11, 12, 15 Opening up a river mouth needs to be done very carefuly to control water flow			nce required	
			Diseases	Create awareness on polluted water (possibly combined with above) (This can be considered as a non-concrete intervention to support above) Level / type applicable: - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, 2, 3, 5, 7	yes	low costs	1 year	yes
		Dumping of waste in the lagoon	see above	Create awareness/ set up a waste management program This may need to be combined with some of the above interventions to ensure sustainability Level / type applicable: - Catalytic (community)	Social: low Environmental: low Most relevant Principles: 1, 2, 3, 5, 7, 12, 13	yes	low / medium costs	1 year	yes
		People use lagoon as open toilet	see above	Create awareness/ deploy sanitary facilities This may need to be combined with some of the above interventions to ensure sustainability	Social: low Environmental: low Most relevant Principles: 1, 2, 3, 5, 7, 12, 13,	yes	low / medium costs	1 year	yes

				Level / type applicable: - Catalytic (community)					

B. Promotion of innovative solutions

The present project promotes new and innovative solutions to climate change adaptation by:

- Testing and promoting low-cost alternative solutions and innovative techniques (i.e. building with nature) to protect the coast (i.e. reduce the impacts of climate change and erosion) and enhance community level income generation, which can be replicated in West Africa.

  Transformative interventions

  The following technical options will be considered for implementation during the full proposal development phase:

- Beach nourishment and foreshore nourishment
- Dune/ barrier nourishment
- Perched beach
- Sand bypassing. Dredging sediment in river mouth
- Open up river mouth by dredging/ sediment bypassing
- Replant resilient forests / mangroves
- Change aquaculture (e.g. shrimp farms or othe type of fish
- Open up river arm to lagoon to refresh water

  Catalytic interventions (i.e. at community level

- Local dune / barrier nourishment
- Make artificial barrier inland with natural elements
- Sand bypassing. Dredging sediment in river mouth and relocating it
- Set up system with temporary flood defenses
- Replant resilient forests/ mangroves
- Change crops suited for a salt environment
- Change aquaculture (e.g. shrimp farms, clams or other type of fish)

For more detailed info see table 5 and annex 3

The Ghanean government attempted to reduce coastal erosion in Ada district through the construction of 15 groynes. Despite these structures are trapping sediments and building up the beach at Keta, they are starving of sediment other coastal areas resulting in increased erosion. this came at a cost of US$183 million and with no effective results . ~~Although effective at the beginning and end of the series of groynes~~, the government can't bare such cost to further protect the coast in other areasthe government can't bare such cost to further protect the coast in other areas. The same accounts for Cote d'Ivoire, where the government doesn't have the financial means for such interventions. This project will test the effectiveness and implementation speed of low-cost coastal protection alternatives and innovative techniques and promote the best options in West Africa. The same will be done for community level income generation options. During the project, the effectiveness and impacts of these interventions will be monitored, including at the

international scale. For this purpose UN-Habitat works together with internationally recognised institutions and companies including Arcadis, Deltares and Delta Alliance.

- ❑ Developing strategic coastal urban and territorial plans that will integrate all different stakeholders, provide a common long-term vision and define short-term priorities.

Strategic planning is an innovative approach to development that will integrate urban legislation, urban finance, and planning and design, while having climate resilience as a crosscutting element. Through focusing on the spatial dimension th project will define a framework for economic growth and social equality, enabling a more sustainable, inclusive and resilient development.

This new understanding of urban and territorial planning shifts from current trends of detailed, prescriptive and static plans to developing more flexible and dynamic guiding tools for national and local governments. Strategic planning aims at being flexible to continuously changing demands, directing efforts towards processes through rapid planning methodologies which will focus on the urban structure. This methodology will be integrating the knowledge acquired from the to-be-tested interventions as to guide the planning processes at the larger scale and define new prioritiy projects, supporting the long and short term decision making. Sustainability of this approach is ensured by collective knowledge playing a key role through participation, and by targeting implementation through strategic and feasible interventions.

These planning processes will tackle potential areas for growth and development, key infrastructure development,areas for environmental preservation and non-aedificandi areas. [32]It includes the assessment of the urban and territorial form, structure and dynamics, the understanding of challenges and objectives, the identification of lanscape elements, and the definition of future development, possible scenarios, and urban-infrastructure model.

[32] Areas not suitable for the development of human activities

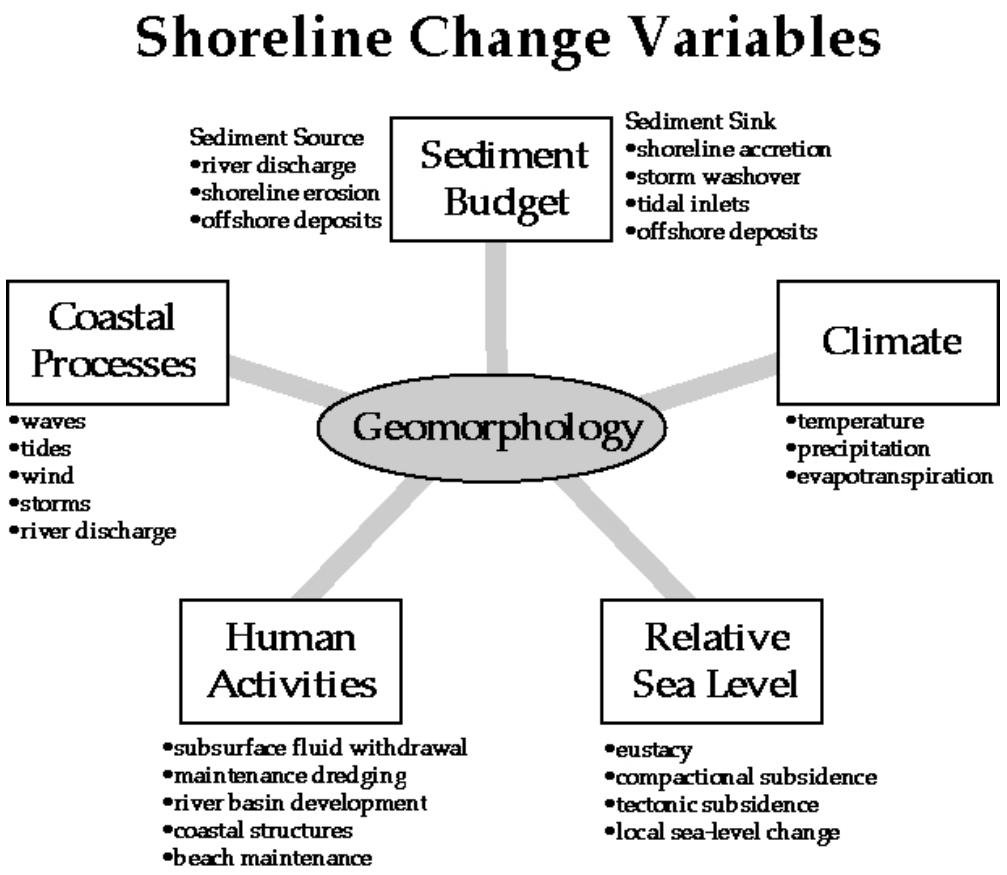


Figure 18: information needed to develop a erosion and flood impact and risk prediction model

At any scale these plans will establish a strategy for development that is flexible to regular updating and evaluation. Furthermore, it enables the integration of key issues not always considered in planning processes such as environmental protection or climate change resilience. Its strategic level and flexibility allows the synthesis of all these urban critical parameters to structuraly input the future development of an area. However, crucially important is the identification of high risk coastal erosion and flooding areas, where development should be avoided and / or, where possible, existing infrastructure and assets should be protected. For this, an impact and risk prediction model needs to be developed, including information on predicted sea level rise, coastal processes (especially swells / waves), climate, sediment behavious and human activities (see below). Although some models exist, combining all elements influencing the behaviour of the coast has not been done properly.

- Set up and running of West African Climate Change Resilience Building ‘Urban Living Lab’ (with 1 arm per country), which is a low-cost way of generating and sharing knowledge in a sustainable way among a wide range of stakeholders.

Addressing the challenges for West Africa and this project requires the involvement of and close collaboration between academic experts, engineers, decision-makers and local communities within a joint learning environment. Therefore, a ‘learning’ Lab will be set-up. This lab brings together experts, decision makers, companies and community leaders within several selected cases to jointly develop knowledge on the linked socio-economic vulnerabilities of coastal

communities and to design, select and monitor effects after implementation. The lab will be managed by Ghanaian and Cote d'Ivoire partners, as a collaboration between government, universities (perhaps through Delta Alliance) and international and local companies, experts, ngo's and students and linked to the Abidjan Convention for sharing knowlede in West Africa. The Delft University of Technology will support the lab under the framework of its UN-Habitat partnership with knowledge, training and students exchange.

Within this framework, 'alliances' of the private sector (especially tourism, but perhaps fishing and agriculture) and community chiefs will be set-up. Although the tourism sector is and will be hit hard by climate change at the coast, responses are ad hoc, not coordinated and not sustainable due to the lack of knowledge and long-term understanding of the erosion dynamics. The project will set-up a cooperation mechanism to respond to the issues more strategically, including the option to (co-) finance coastal protection measures for larger areas through the "alliances". The same accounts for sharing knowledge and approaches at the community level, thus between community chiefs, a network that does not exist yet.

C. Economic, social and environmental benefits

The current unsustainable growth patterns and inadequate infrastructure development, coupled with climate change trends are already causing loss of lives, assets, livelihoods and ecosystems. If no action is taken, risks in the already vulnerable communities are expected to potentially increase. By implementing a combination of concrete coastal protection measures, initiatives to protect and / or enhance livelihoods, and spatial / land use planning strategies to avoid future development in risk areas, this project is expected to reduce future climate change related risksand erosion-related economic, social and environmental losses.

Given that communities, and especially vulnerable groups and women, are involved during the project design phase and will be involved during the project implementation, they willhave the opportunity to directly influence the design and selection of project activities and outcomes, thus influencing their direct project benefits. For instance, the way livelihood options will be enhanced depends on the inputs (i.e. specific needs and issues expressed) from vulnerable groups and women. The project will specifically target women committees and select only women groups for certain trainings.

The design and implementation of the project focuses on maximizing the impact of 'concrete' interventions under component 3 and 4 to directly benefit the most vulnerable populations. Criteria to select interventions during the full proposal phase include benefits to the communities and specific groups and maximizing the beneficiaries (i.e. cost-effectiveness) where possible. Beneficiaries from interventions including disaggregated data are detailed in Table 1 and Table 2.

Lessons learned will benefit governments not only at the national, district and community level in Cote d'Ivoire and Ghana, but also other governments in West Africa through the activities that have been designed for the outreach and communication of the impacts of the project.

Economic benefits

The impact of climate change on the economic activities of the coastal area has been widely recognized by the targeted communities. Sea level rise, erosion, coastal and inland flooding, salt water intrusion, are leading to increasing economic, households assest and land losses, while also threatening the livelihoods these communities rely on. Natural dynamics that support the ecosystems and its biodiversity are being unbalanced, compromising local and national economy. Food security is also at risk, increasing the vulnerability of communities.

The project targets the most vulnerable coastal groups, low income communities, who base their economy on natural resources such as fisheries and agriculture. In the case of fishermen, on the one hand, the changing climate is exacerbating the periods when saling is unsafe and fishing practice is suspended. This specially affects women, who become the only household support for families. In many cases, women sell what it is fished by men so during this period they do not have product for the market. On the other hand, erosion and flooding impact key economic assests such as areas for markets, fish processing and boat reparing. Again, women are particularly vulnerable to this as many of them rely on such markets for subsistence.

In the case of Cote d'Ivoire the coastline is the principal economic national resource. The diverse habitats that characterize the littoral constitute a valuable asset, with important cultural and touristic value. The principal activities in the coastal area include forestry, plantations, factories, tourism and fishing. Also, the Ebrie Lagoon has an important socio economical location at a countrywide scale, mostly due to Abidjan being situated there. Abidjan represents 60% of the industrial sector employment, 80% of the industrial production and concentrates 90% of the commercial added value of the country, due to its coastal location

In Ghana, the Government has recognized how climate change and the cost of climate change response is a serious threat to progress, with clear signs that the coastal zone, agriculture and water resources are all affected. This especially impacts women and increases the level of poverty. The 2008 national sectoral climate change vulnerability and adaptation assessments revealed the substantial impact of climate change on the national economy. Flooding, for example is an obvious and immediate threat to economic growth, energy supply, roads and transport, food and agriculture, education, health, water and sanitation, and social protection.

The above highlights how the existing degradation of the environment in the coastal areas is a major threat to national and local economies. Planning for a more sustainable development (as per components 1 and 2) and the implementation of concrete interventions (as per components 3 and 4) will reduce losses, support food security, and generate economy. The project will protect and enhance the communities' assests and sources of income through a more resilient way of interacting with the territory. It will also aim at generating revenue through community work whenever possible.

Regarding elderly, the project will work on enabling livelihood opportunities. As raised during consultation, elderly indicate that they are affected by poverty and low standard of living due to job opportunities in the area being mostly related to hard work they cannot do anymore. However, elderly women are more vulnerable than men as they have had more privilege during their lives, such as more job opportunities and land ownership. Through the protection of the coast and the improvement of the urban and natural environment, by urban and territorial planning and concrete physical interventions, larger opportunities for community-based tourism will come. New sources of income for this vulnerable group will be developed.

The above could also support women as they also face challenges related to working opportunities and its derived poverty. Another way for economic resilience could be supporting women developing working groups, for example fish or art-craft markets, and women saving groups, that will empower them on reducing their vulnerability. Incorporating the communities, specially the most vulnerable, to resilience implementation will also enhance ownership towards the interventions which will facilitate the sustainability of the project.

Social benefits

When dealing with climate change, it is frequent to find that most socially vulnerable communities are the ones located in risk areas with high exposure to climate change hazards. These communities tend to be socially excluded being often neglected from development investments which implies, among other challenges, lack of basic services and possible health problems. In addition, current trends of development are deriving in inefficient use of resources usually leaving the most vulnerable behind, enhancing insecurity, inequality and social disgregation. Women are specially suffering these impacts due to persisting gender inequalities that undermine their adaptive capacities.

In Cote d'Ivoire this inequality and its derived poverty, have led to an increased need for means of livelihood with consequent migration of the population towards the coastal zones. This pressure on ecosystems is enhancing several problems such as over-exploitation of resources, land property and social conflicts.

In Ghana urban sprawl and unplanned growth is having the same effects. In our targeted area, the Greater Accra region, the direct linkage between highest levels of poverty and low density rural areas has been identified. This also explains rural migration to urban areas which frequently derive in informality. As indicated in the National Development Framework 2015-2035, urbanization is a driver of Ghana's economy and it is clearly linked to poverty reduction.

The above illustrates the need of a more resilient and social inclusive planning approach towards development (as per components 1 and 2) that will reduce climate change induced poverty, mortality, diseases and insecurity. These components will work on preventing communities from settling in high risks areas which will reduce their exposure, and increase empowerment and long-term opportunities. Planning can also avoid diseases coming from environmental pollution and bad quality of urban spaces, and support on ensuring better services provision. These issues were highlighted by elderly people as a challenge they face.

The implementation of infrastructure interventions (as per components 3 and 4) will protect these communities, reducing their vulnerability and improving their quality of life. This will directly increase their social resilience since their current poverty and lack of capacity prevents them from coping with the impacts of climate change.

Regarding social resilience, children have been identified as specially vulnerable. Due to lack of adequate infrastructure and healthy neighbourhoods they are at risk of death from diarrhea or respiratory infections. Some educational services have been destroyed by coastal erosion and children have to travel for long through poor infrastructure. This situation threatens their safety, health and education. Through planning and concrete interventions the project will aim at reverting and improving these conditions, ensuring long-term resilience.

Ultimatelly, capacity building to strengthen community knowledge and response to climate change related hazards (as per component 2), as well as the participatory process through the whole project, will enhance the inclusion and empowerment of minorities and vulnerable population in the decision making processes. The integration of most vulnerable groups, for example women, will be ensured by quotas of participation, women group discussions and collaborations with women organizations.

Environmental benefits

As previously mentioned, the way urbanization and development is taking place together with the changing climate are strongly affecting the environment. For long time growth has not taken into account the natural dynamics in which it settles and it has derived in land reclamation from environmental areas. The misused of natural resources is altering to a great extent the ecosystems and its biodiversity, also increasing vulnerability to climate change.

In Cote d'Ivoire, due to industrial development coastal habitats have degraded. It is estimated that 60% of mangroves areas around Abidjan have been lost. Infrastructure development has also impacted natural dynamics by reducing the amount of sediment that will flow downstream, deriving in coastal erosion and salt water intrusion. The erosion in the littoral zone from Abidjan to Assinie is currently around 1-2 m per year putting shoreline settlements at risk, and the salinization of water and soil are negatively affecting mangroves and crops.

In Ghana deforestation is a critical problem, being the extraction of mangrove for fuel wood and urban encroachment particularly alarming. In the Volta region grassland gain and cropland loss has reached 30% in the last decade, while in Greater Accra region 22% of wetlands have been lost. In coastal areas erosion rates is around 1.5 per year, with bigger rates in the Volta estuary, 2-3m a year, and in Keta, around 8m per year.

Urban and territorial planning both at district/department level and at local level (as per components 1 and 2) will aim at integrating the territory and its dynamics into the planning process. Nature and its systems will become part of the resilience development strategy in order not only to restore what has been lost and protect what remains, but also to potentialize and maximaze the interaction of the built and natural environment. This will be implemented through the ecosystem-based interventions (as per components 3 and 4) which will tackle the roots of climate change challenges by working with nature. The community-based interventions will also benefit the environment by raising awareness and ownership from the local people on the importance of the ecosystems as a structural and indispensable element for their resilience.

Coastal and Inland Erosion Protection

- Economic benefits: reduced cost of coping with erosion; protection of the city/urban assets, services, investments and community livelihoods from the erosive action of the sea and lagoons;
- Social benefits: increase gender equality, temporary income for the community members involved in the coastal protection works; increased protection and awareness, reduced vulnerability and improved quality of life;

- Environmental benefits: Increasing resilience of coastal ecosystems and improving the way human settlements interact with their territories and environment promoting sustainability

Coastal and Inland Flooding Protection

- Economic benefits: reduced high cost of coping with flooding; protection of livelihoods; labour intensive works will bring temporary jobs for the poor and most vulnerable and reduce unemployment; flood risk reduction increases confidence of investors in the city;
- Social benefits:increase gender equality;Involvement of communities and vulnerable groups brings awareness and ownership of the intervention and a higher probability of sustainability;
- Environmental benefits: protection from flooding will reduce land and biodiversity degradation; sustain human settlements and ecosystems

Salt Water intrusion Management

- Economic benefits: water management systems will be important to sustain agriculture and fisheries activities;
- Social benefits: optimal sustainable clean freshwater is crucial for the health of people;
- Environmental benefits: Water management will sustain and protect ecosystems and its biodiversity

Pollution Management

- Economic benefits: waste management will open up opportunities for jobs and income; a cleaner city becomes more attractive for investments;
- Social benefits: creation of awareness on waste management and polluted water; reduce health risks
- Environmental benefits: protection of the environment through sustainable planning, proper waste management will have benefits on the environment through reduced water and soil pollution

Table 6. Addressing challenges of most vulnerable groups

Transformative and catalytic interventions	Vulnerable groups **information on more vulnerable groups to be developed at full proposal stage*	Addressing their challenges
Beach and foreshore nourishment	Women, children and elderly	Protection of services, livelihoods, infrastructure, housing etc. from coastal erosion and flooding.
Dune/Barrier nourishment	Women, children and elderly	
Perched beach	Women, children and elderly	
Make artificial barrier inland with natural elements	Women, children and elderly	

Set up system with temporary flood defenses	Women, children and elderly	*Reduce risks of poverty, lack of basic services (education and health care), unemployment and deseases.*
Sand bypassing. Dredging sediment in river mouth and relocation down stream	Women, children and elderly	Protection of services, livelihoods, infrastructure, housing etc. erosion. *Reduce risk of poverty, desease and unemployment.*
Open up river mouth by dredging/sediment bypassing	Women, children and elderly	Protection of services, livelihoods (agriculture), infrastructure, housing etc. from lagoon flooding. *Reduce risks of food insecurity, lack of basic services (education and health care), unemployment and deseases.*
Open up river arm to lagoon	Women, children and elderly	Protection of livelihoods (agriculture) by allowing water refreshment for agriculture. *Reduce risk of unemployment.*
Change aquaculture (e.g. shrimp farms or other type of fish)	Women, children and elderly	Protection of livelihoods (fishing). *Reduce risk of food insecurity and unemployment.*
Replant resilient forests/mangroves	Women, children and elderly	Protection of services, livelihoods, infrastructure, housing etc. from lagoon erosion. *Reduce risk of poverty, lack of basic services (education and health care), and unemployment.*
Change crops suited for a salt environment	Women, children and elderly	Protection of livelihoods (agriculture). *Reduce risk of food insecurity and unemployment.*

D. Cost-effectiveness

As mentioned above, the design and implementation of the project focuses on maximizing the size of the 'concrete' interventions under component 3 and 4 to directly benefit the most vulnerable populations; thus, limiting the 'soft' components to those activities required to supporting the appropriate implementation of the 'concrete' interventions (components 3 and 4), to further develop a framework to enhance climate resilience through spatial and land use planning (component 1) and to ensure ownership, sustainability and replication of the whole project (component 2 and 5).

In the full project proposal document, a priority list of concrete interventions will be provided, which will have been developed by target communities and with the consultation of government and other relevant stakeholders, and considering cost-effectiveness and total number of beneficiaries as a prioritization criteria. For this, a table will be developed discussing in detail each concrete intervention and alternative options and the rationale why priority interventions / activities have been selected from a cost-effectiveness perspective.

Cost-effective rational - component 1 - Urban and territorial management and planning at National and district / department levels:

Spatial and land use planning is considered to be one of the most cost-effective ways to understand and respond to climate change risks and vulnerability, especially to avoid future development in risk areas (and cost associated with this potential risk, such as destroyed houses and assets. By applying spatial planning tools at an early stage, governments and communities can anticipate and react in due time to challenges, with results into economic savings associated to prevention instead of reaction as well as social and environmental benefits.

Cost-effective rational - component 2 - Resilience planning at the community level:

The project aims to maximize the positive impacts of the concrete interventions for communities. To achieve these positive impacts, the supporting role of NGO's, by working directly with communities and vulnerable groups, represents a key aspect of the project. The role of NGO's and will be focused in assessing communities and establishing working relations with them, to ensure that capacity gaps are covered. NGO's will also play a key role to ensure ownership of the project by the communities and to contribute in the operation and maintenance of the projects that due to its specificities cannot be directly run by the community.

Cost-effective rational - component 3 - Transformative concrete coastal resilience building interventions

The project aims to select the interventions that benefit most communities and people. This will be done by conducting a cost-effectiveness analysis of the different interventions during the full proposal development phase. The selection criteria will prioritize the interventions that have the largest social, economic and environmental impacts with the lowest financial implications.
Besides that, whenever possible, the project will seek to achieve cost-effectiveness through economies of scale in procurement processes and contracts. The regional scale will facilitate that activities can be developed in the two countries to achieve economies of scale. The project will also seek to develop procurement and partnerships with governments and its agencies (e.g. using dredging machines) and the private sector (co-funding from the tourism sector) to minimize project costs.

Cost-effective rational - component 4 – catalytic concrete coastal resilience building interventions: Although the project aims to reduce cost of the execution of selected concrete interventions by pursuing economies of scale, the proposed community-level interventions will be scaled down to a size so that the interventions are manageable by communities. This is required to enhance ownership and sustainability of the project and to mitigate potential social and environmental risks. Related to this, a community-based approach, which has been used across multiple cities and sectoral contexts, is found to be the most cost effective compared to larger scale procurement, as it builds on community decision-making, local know-how and networks and facilitation, where the maximum value of each dollar is utilized to the maximum benefit of the community, in a transparent decision-making process.

Cost-effective rational component 5 - institutional and regulatory framework:

Although this component is also required to institutionalize the project, the replication of lessons and interventions focuses on is effective and low-cost options, which will benefit countries and communities in West Africa, also from a cost-effectiveness point of view.

Altogether, the project will be cost-effective by:

- Avoiding future costs associated with damage and loss due to climate change impacts (especially floods) and to ensure the interventions are sustainable;
- Efficient project operations because of 'in-house' technical support options and capacity building expertise and because of direct partnering with the municipality (thereby building their capacity as well as reducing costs);
- Community involvement with development / construction of concrete interventions and because of community capacity building
- Selected technical options based on cost-, feasibility and resilience/sustainability criteria

E. Consistency with national or sub-national strategies

Ghana

Tthe project will help achieving the goals of Ghana's Intended Nationally Determined Contribution (INDC) which is based on Ghana's Shared Growth Development Agenda II, the 40-year socio-economic transformational plan and the National Climate Change Policy. The project will focus on building climate resilient strategic infrastructure, which is identified as an strategic area for policy action in the INDC. More specifically, it addresses the objectives, strategies and priority actions specified by the National Climate Change Adaptation Strategy (see annex 4 for an analysis). The different components will focus on the areas prioritised by the National Climate Change Policy, also supporting and giving continuation to Ghana's Plan of Action on Disaster Risk Reduction and Climate Change Adaptation (2011/2015). The components of the proposed project will support activities of the plan such as ensuring regional, national and local coordination; identification and assessment of disaster risks; use knowledge, innovation and eductation to build culture of safety and resilience; and reinforcing land-use planning and other technical measures to build resilience. Ultimately, the project will leverege the achievements of the National Adaptation Planning (NAP) process established under the UNFCCC. In relation to sustainable urban development of cities and towns the project will be aligned with the National Urban Policy

Framework (2012) and Action Plan and be consistent with the National Spatial Development Framework 2015-2035 and the pertinent Regional Spatial Development Frameworks, District Spatial Development Frameworks, structure plans and local plans.[33]

In the National Spatial Development Framework 2015-2035 more issues and challenges are identified, such as the need for environmental protection and conservation, more sustainable development in the coastal zones and shift from the urban sprawl trend. The project will aim at tackling these challenges as well as promoting proposed strategies, like urbanisation as a driver for economic growth and poverty reduction. These issues are not only a concern at national level but also at regional level. The Greater Accra Spatial Development Framework also showcases population growth, open space degradation and urban sprawl as problems and aims at a more sustainable, liveable and safe region.

Ultimately, through improved development planning the project will assist on mantaining the ecological integrity of wetlands and other ecosystems, guiding on healthy development practices, integrating environmental considerations in sectoral structural planning, and facilitating a more efficient use of natural resources. This approach is directly aligned to main needs and issues described in the Coastal Wetlands Management Plan, the Environmental Action Plan and the Ghana National Aquaculture Development Plan.

Other relevant strategies are:

- Nationally Appropriate Mitigation Action
- Ghana's First (2002), and Second (2006) National Communications to the UNFCCC
- Climate Change Technology Needs Assessment (2003)
- Ghana Climate Change Impacts, Vulnerability and Adaptation Assessments (2008)
- The Clean Development Mechanism

Cote d' Ivoire:

The project will work on several of the most relevant national challenges and will be aligned with strategies from the INDC (see annex 4 for an analysis), the National Adaptation Plan, the National Environment Action Plan, the National du Developpement durable en Cote d'Ivoire dans la perspective de Rio+20, the National Development Plan 2012-2015, and the Programme National Changement Climatique 2015-2020. Regarding risk reduction, the main document the project will be aligned with is the Stratégie Nationale de Gestion des Risques de Catastrophes & Plan d'Action d'Action and the Cadre National des Services Climatiques. The project will support initiatives from these plans such as: improvement of disaster risk reduction and coastal areas management, elaboration of a coastal adaptation strategy, build active protection structures, ecosystems restoration, better management of natural resources, and consolidation of co-operation links between Cote d' Ivoire, the West African region and the international community. The project will also leverage the achievements of the National Adaptation Planning (NAP) process established under the UNFCCC. In relation to development the project will be aligned with the Plan National de Developpement 2016-2020 and the Territorial Development Policy Framework (2006).as well as the pertinent development schemes and plans.

[33] As described in the National Urban Policy Framework of Ghana (2012)

Regarding spatial development, at the national scale the project will be alligned with the key actions of the Territorial Development Framework adopted in 2006. This document sets a legal framework for central and local development. It ensures coherence between country, urban and sector infrastructure plans, and links national objectives with regional planning, through a participatory development process. At the district scale, the project for the Development of the Urban Master Plan in Greater Abidjan remarks managing pressure for urbanization, urban sprawl, and planning for population growth and competing land-uses, as key planning issues in the area. The document raises the concern of the continious degradation of the environment that will take place if these issues are not tackled. This degradation will keep evolving in loss of natural forest and biodiversity assests, low quality living, increasing pollution etc. The project will align with this Plan by addressing these challenges through the different components, aiming at a more sustainable and resilient urban area. Ultimately, the project approach strongly supports the strategic assests described in the Plan National de Développement 2016-2020, such as accelerating the development of human capital and social well-being, development of infrastructure harmoniously over the national territory and preservation of the environment, and stregthening regional integration and international cooperation.

In the full proposal document, sub-national and sectoral strategies relevant for the selected concrete interventions, will be included.

F. Compliance with relevant national technical standards

The proposed interventions adhere to all national technical standards in both Ghana and Cote d'Ivoire, particularly the concrete interventions under components 3 and 4 as shown in the table below:

Table 7: Compliance with relevant national technical standards

Expected concrete output/intervention	Ghana Relevant rules, regulations, standards and procedures (to comply to AF principle 1)	Ghana Compliance, procedure and authorizing offices	Cote d'Ivoire Relevant rules, regulations, standards and procedures (to comply to AF principle 1)	Cote d'Ivoire Compliance, procedure and authorizing offices (to be completed in full proposal)
1.1.1. District / department-level strategic coastal management and spatial / land use planning strategies	National Building Regulations 1996, LI 1630; Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002); Metropolitan, Municipal & District Assembly by Laws Ghana National Spatial Development Framework, 2015 – 2035 Relocation Lands Commission Act 2008 act 767; Ghana National Spatial Development Framework, 2015 – 2035; Metropolitan, Municipal & District Assembly by Laws; National Building Regulations 1996, LI 1630; Local Government Act 1994 Act 462; Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002);	An authorisation from Town & Country Planning Department, Environmental Protection Agency, Metropolitan, Municipal & District Assembly will be required. Permits, certificates and Environmental Impact Statements are required from project proponents. An authorisation from the Lands Commission, Environmental Protection Agency, Metropolitan, Municipal & District Assemblies will be required. In addition, sectoral collaboration and coordination is imperative.	Orientation Law on Territorial Development Decree n ° 96-894 of November 08, 1996 determining the rules and procedures applicable to studies relating environmental impact of development projects	Ministry of Construction, Housing, Sanitation and Urban Planning Local planning departments (including BNETD) Authorization required from the Ministry of Environment

	National Museum Act 1969 (NLCD 387)			
2.1.1. Community-level climate change resilience building strategies / plans / maps	Community- based approach	The project will include training and awareness building with target population groups on climate change adaptation actions		
Possible concrete interventions under component 3 and 4 ● Beach dune/barrier nourishment ● San bypassing – dredging of sediment	Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002); Metropolitan, Municipal & District Assembly by Laws Ghana National Spatial Development Framework, 2015 - 2035 Buffer Zone Policy Water Resources Commission Act, 1996 Act 522; Water Use Regulation 2001;	& Country Planning Department, Environmental Protection Agency, Metropolitan, Municipal & District Assembly will be required. Permits, certificates and Environmental Impact Statements are required from project proponents An authorisation from the Environmental Protection Agency, Metropolitan, Municipal & District Assembly and Water Resources Commission needs to be obtained	Decree n ° 2012-988 of October 10, 2012 establishing, attributing, organizing and operating the National Platform for Risk Reduction and Disaster Management. Law No. 96-766 of 3 October 1996 on the Environment Code;	Ministry of Urban Sanitation, Environment and Sustainable Development. Ministry of Construction, Housing, Sanitation and Urban Planning. The National Agency of Environment Protection (ANDE)
● (Temporary) flood defense and drainage	National Building Regulations 1996, LI 1630; Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002); Metropolitan, Municipal & District Assembly by Laws	An authorisation from Town & Country Planning Department, Environmental Protection Agency, Metropolitan, Municipal & District Assembly will be required. Permits, certificates and Environmental Impact	Decree n ° 2012-988 of October 10, 2012 establishing, attributing, organizing and operating the National Platform for Risk Reduction and Disaster Management. Law No. 96-766 of 3 October 1996 on the Environment Code;	Ministry of Urban Sanitation, Environment and Sustainable Development. Ministry of Construction, Housing, Sanitation and Urban Planning

	Ghana National Spatial Development Framework, 2015 - 2035	Statements are required from project proponents		The National Agency of Environment Protection (ANDE)
• Replanting fores/mangroves	Plant and Fertilizer Act, 2010 Act 803; Forestry Commission Act 1999 Act 571 Environmental Protection Act, Act 490 1996	Plant Protection and Regulatory Services regulates the introduction of exotic plant materials foreign to Ghana. Authorisations, collaboration and coordination needed with Forestry Commission and the Environmental Protection Agency.	Decree n ° 2012-988 of October 10, 2012 establishing, attributing, organizing and operating the National Platform for Risk Reduction and Disaster Management. Law No. 96-766 of 3 October 1996 on the Environment Code;	Ministry of Urban Sanitation, Environment and Sustainable Development. Ministry of Construction, Housing, Sanitation and Urban Planning The National Agency of Environment Protection (ANDE)
• Agriculture/ salt / brackish water crops	National Nutrition Policy for Ghana Ghana Irrigation Development Authority Act 1977 (SMCD 85); Plant and Fertilizer Act, 2010 Act 803; Pesticides Control and Management Act 1996 Act 528; Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002); Metropolitan, Municipal & District Assembly by Laws; Water Resources Commission Act, 1996 Act 522; Water Use Regulation 2001;	Ghana Irrigation Development Authority, Plant Protection and Regulatory Services, Environment Protection Agency and Water Resources Commission have supervisory and regulatory roles with regard to the introduction of exotic plant materials foreign to Ghana, pesticides and water usage respectively. Authorisations, collaboration and coordination is also required with these entities.	Politique Nationale de Nutrition - 2015 Decree n ° 2012-988 of October 10, 2012 establishing, attributing, organizing and operating the National Platform for Risk Reduction and Disaster Management. Law No. 96-766 of 3 October 1996 on the Environment Code; Decree No. 2013-440 of 13 June 2013 determining the legal regime for the protection of water resources, hydraulic installations and structures;	The project will build sustainable communities by ensuring food security alongside the primary economic goal of increasing income and employment opportunities. Ministry of Urban Sanitation, Environment and Sustainable Development. Ministry of Construction, Housing, Sanitation and Urban Planning
• Aquaculture (shrimp, other tipe of fish)	An EIA is required for areas larger than 20 ha Fisheries Commission Act 2002 Act 625 Amended 2014; Plant and Fertilizer Act, 2010 Act 803;	Fisheries Commission, Plant Protection and Regulatory Services, Environment Protection Agency and Water Resources Commission have	Law No. 96-766 of 3 October 1996 on the Environment Code; Decree No. 2013-440 of 13 June 2013 determining the legal regime	The National Agency of Environment Protection (ANDE)

	Pesticides Control and Management Act 1996 Act 528; Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002); Metropolitan, Municipal & District Assembly by Laws; Water Resources Commission Act, 1996 Act 522; Water Use Regulation 2001; Energy Commission Act 1997 Act 541; National Board for Small Scale Industries Act 1981 Act 434; Non- Bank Financial Institutions Act 2008 Act 774; Cooperative Credit Unions Regulations 2015 (LI 2225).	supervisory and regulatory roles with regard to the introduction of exotic fish species, plant materials foreign to Ghana, pesticides and water usage respectively. Authorisations, collaboration and coordination is also required with these entities.	for the protection of water resources, hydraulic installations and structures;	Ministry of Urban Sanitation, Environment and Sustainable Development. The National Agency of Environment Protection (ANDE)
• Salt mining • Potable water • Sanitation and waste management	Water Resources Commission Act, 1996 Act 522; Water Use Regulation 2001; Local Government Act 1994 Act 462; Pesticides Control and Management Act 1996 Act 528; Environment Protection Act, Act 490, 1994; Environmental Assessment Regulation 1999 (LI 1652 amended 2002); Metropolitan, Municipal & District Assembly by Laws; Ghana National Spatial Development Framework, 2015 - 2035	Scale Industries and the Bank of Ghana oversee the activities of group organization and funds management in the non-banking informal sector. Environment Protection Agency and Water Resources Commission have supervisory and regulatory roles Sectoral collaboration and coordination	Law No. 96-766 of 3 October 1996 on the Environment Code; Law No. 98-755 of 23 December 1998 on the Water Code with its implementing decrees; Decree No. 87-1472 of 17 December 1987 establishing the National Water Fund, abbreviated "FNE" and setting the terms of its operation;	Ministry of Urban Sanitation, Environment and Sustainable Development. The National Agency of Environment Protection (ANDE) The project will enhance water management in compliance with the rules, regulations of the water code
			Decree No. 2006-274 of 23 August 2006 establishing the State Corporation known as the	

			"Office National de l'Eau Potable" (ONEP); Decree No. 2008-44 of 21 February 2008 approving the leasing contract signed between the State of Côte d'Ivoire and SODECI; Decree No. 2012-239 of 7 March 2012 declaring public utility of close perimeters and securing immediate perimeters of fields from the Autonomous District of Abidjan; Decree No. 2014-25 of 22 January 2014 amending Decree No. 2013-224 of 22 March 2013 regulating the purge of customary land rights for general interest. • Decree No. 2011-483 of 28 December 2011 establishing the National Fund for Sanitation and Drainage, abbreviated "FNAD" and setting the terms of its operation; • Law No. 96-766 of 3 October 1996 on the Environment Code; • Law 98-755 of 23 December 1998 on the Water Code; • Decree No. 99-257 of 25 March 1999 approving the lease agreement for the maintenance and operation of the sewerage and drainage networks and works of the City of Abidjan;	
			• Decree No. 99-258 of 25 March 1999 on the sanitation charge applicable to public sanitation	

			service users in the city of Abidjan. • Order N ° 065 / PM / CAB of 19 February 2014 • Order N ° 131MSHP / CAB / DGHP / of June 03, 2009 • Decree No. 2013-327 of 22 May 2013 prohibiting the production, importation, marketing, possession and use of plastic bags	
5.1.1. Set up and running of West African Climate Change Resilience Building 'Urban Lab'	Not relevant			
5.1.2. Establish initial monitoring sensor-system for coastal erosion and urban development	Not relevant. Based on (inter)national expertise			
5.1.3. Training of national and district staff	Not relevant			

In both countries the basic requirement for assessing if an environmental and social impact assessment is required is to present scoping reports of proposed interventions to authorities responsible for EIAs and based on these reports. Then the authorities decided whether EIAs are required. This will be done at the early stage of the full project development phase.

Ongoing consultations with the following entities will take place at all stages of project design and implementation to ensure that all project activities comply with the relevant national technical standards:

Cote d'Ivoire

- Ministry of Urban Sanitation, Environment and Sustainable Development.
- Ministry of Construction, Housing, Sanitation and Urban Planning
- The National Agency of Environment Protection (ANDE)
- The National Anti-Pollution Centre (CIAPOL)
- The Laboratory of Building and Publics Works (LBTP)
- Local planning departments (including BNETD)

Ghana:

- Ministry of Local Government and Rural Development
- Ministry of Environment, Science, Technology and Innovation (MESTI);
- Local planning departments

The necessary safeguards will be incorporated into project design through environmental and social risk screening and assessments and during implementation through monitoring and evaluation. The project will comply to national standards and guidelines.

G. Duplication with other funding sources

Table 8: Relevant projects, lessons learned and complimentary potential

Relevant projects/programme, executing entity and budget	Lessons learned (relevant for proposed interventions)	Complimentary potential And non-duplication
West Africa		

West Africa Coastal Areas Management Programme (WACA)[34] - WB 2015 – US$300 m Three pillars - Strategic investment planning; - Knowledge, information, and capacity building; - Country and regional engagement and resource mobilization	- There is strong political support in Cote d'Ivoire - Process is slower in Ghana – multi-sector risks assessment still to be finalized	Complementary - WACA suggested to cooperate on strengthening the spatial planning component in Grand-Lahou - Knowledge sharing on coastal management in West Africa Coastal Areas - There is clear will to coordinate and share lessons learned - WACA suggested to consider working together on coordinate on the multi-sector assessment in Ghana Non-Duplication - A part from the collaboration on Grand-Lahou, the project focuses on different target areas
West Africa biodiversity and climate change (WA-BICC) – USAID (2015-2020) WA-BiCC will address both direct and indirect drivers of natural resource degradation to improve livelihoods and natural ecosystems across the region.	- Initiation stage (vulnerability assessments so little lessons learned)	Complementary - Lessons learned and collaboration on their programme objective 2 Non-Duplication - WA-BICC project focuses on Sierra Leone and West coast of Cote d'Ivoire; Not common target areas
Mami Wata project[35] - by GRID-Arendal and the Abidjan Convention Secretariat	- Started in 2016 so no lessons learnt reported yet	Complementary - The project will complement their capacity building initiative on coastal ecosystems protection and conservation Non-Duplication - The project will address resilience through a different sector: urban and territorial planning as a tool for climate change adaptation

[34] http://www.worldbank.org/en/programs/west-africa-coastal-areas-management-program

[35] https://mamiwataproject.org/

Transboundary projects climate-resilient Ministry of Environmental and Sustainable Development 2016 African climate Change Fund (ACCF)	No lessons learned yet, ongoing project	Complementary The project complement climate resilience in different regions of the Abidjan-Lagos coastal corridors Enhances knowledge and capacity, and facilitating partnerships for climate-proofing African infrastructure projects. Non-Duplication Non geographical overlap regarding infrastructure projects; the ACCF project works in Togo Benin Zambia and Zimbabwe

Ghana

Ghana-Netherlands Universities Volta Delta Design Project Delta Alliance Ghana Wing	Focus on sustainable management of the Volta Delta including coastal engineering, policy, institutions and livelihoods.	Complementary Delta Alliance will cooperate also on the urban lab Ongoing collaboration: Ghana Delta Wing / The Development Institute / students conducted the community assessments The project will maximize the use of findings from Delta Alliance Both projects will complement on transboundary strategies Non-Duplication The Volta Delta Design Project work with upstream communities of rivers Tordzie and Kplikpa (Blikpa); which are not included in our target areas
Global Alliance for Green and Gender Advocacy This project is in its second phase of building capacity for gender and environmental justice community organizations to better engage duty bearers on sustainable management of the Keta Lagoon Complex Ramsar site	Find ways to Empower community gender and environmental justices' groups	Complementary The project works with the Development Institute to make use of their gender approach Non-Duplication Both projects have different core objectives, GAGGA is focused on women

Both ENDS/MoF Netherlands and the Development Institute		empowerment at decision-making leve. UN-Habitat project will make use of this gender advocacy as an input on the resilience strategies
Economic Empower of Women and Youth Both ENDS/Global Green Grants/ Women 2030 and The Development Institute	▪ Skills training in soap making and reed weaving into bags etc. and setting up of Village Saving and Loans Association have shown to be successful	Complementary ▪ The project works with the Development Institute to empower women and youth and to promote gender equality Non-Duplication ▪ The Development Institute project focuses mainly on women empowerment training and skills training, no spatial planning are included.
Enhancing community food security through management of saline soils Salt Farm Texel, Netherlands/ Crop Science Dept. Univ. of Ghana and The Development Institute	▪ Initial feasibility done for a potential area to manage soil salinity and introduce salt resistant vegetable/crops but no funding secured yet.	Complementary ▪ The project will use findings and work together with the Development Institute to enhance the management of saline soils and water Non-Duplication ▪ Both projects have different thematic area of focus
Community conservation & pro-poor tourism Project Wildlife conservation in Ada and Keta Calgary Zoo/ DI and The Development Institute	▪ Eggs of turtles also affected by erosion; therefore, they try to monitor erosion in Ada and Keta ▪ Protection of Turtles and whales, Manette, Sitatunga) through Marine protection area (MPA) concept and livelihood/ tourism	Complementary ▪ The project will identify hotspot areas along with the Development Institute and Wildlife conservation and align efforts ▪ UN-Habitat will work together with the development institute and Wildlife conservation to monitor coastal erosion and enhance livelihood options Non-Duplication ▪ (to be completed further)
Sustainable Land and Water Management Project in Ghana[36] - WB	▪	Complementary ▪ Lessons learned from improved sustainable land and water management

[36] http://projects.worldbank.org/P132100?lang=en

(2014 -)		practices will be incorporated into the approach of the project Non-Duplication - The project will focus on spatial planning at large scale which is not included in the WB project - The WB project has a different target area: Nothern Savannah region
Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin[37] - WMO Not yet started	- At pre-concept note phase so no lessons learned	Complementary - Knowledge sharing on long-term Environmental development Non-Duplication - The project will not focus on implementing early warning systems - The WMO project does not address coastal resilience
Increased Resilience to Climate Change in Northern Ghana through the Management of Water Resources and Diversification of Livelihoods[38] - UNDP / AF 2016 - 2020	- At start-up phase. Project will monitor lessons learned regarding livelihoods	Complementary - Knowledge sharing regarding water management in Ghana - Both projects will support different regions in Ghana on building climate change resilience Non-Duplication - The project will focus on Southern areas not included in the UNDP/AF proposal - The project will address resilience through a different sector: urban and territorial planning as a tool for climate change adaptation
UN-Habitat National Priority Planned City Extension in the Greater Accra Region	- Strategic Development Framework for the physical plan for the extension of the urbanized area inside Ningo-Prampram District	Complementary - The project will support inputing coastal erosion and climate change impacts in plan for the coastal area of the Ningo-Prampram District

[37] https://www.adaptation-fund.org/wp-content/uploads/2017/08/Pre-concept-AF-Volta-Basin-v5-18092017.pdf

[38] https://www.adaptation-fund.org/wp-content/uploads/2015/09/RESUBMISSION_Ghana-AF_proposal_-29-January-2015.pdf

		Coordination to align resilient development strategies Non-Duplication The city extension project only focuses on Ningo-Prampram District
Accra on the Greater Accra Resilient and Integrated Development (GARID) project	Focus on Odaw basin in Accra Metropolitan area where 200 people died due to floods Most of the floods are caused by a combination of high tide and increased discharge. Erosion of lagoons and settlements does not only occur from the sea side but also from the river side	Complementary The project will use assessed hotspot mapping and hydrologically modelled of all basins in GA-region and flood hazard and risk maps for the spatial plans. Non-Duplication The project wll not include Odaw basin as a target area
Ghana Government Livelihood Empowerment Against Poverty (LEAP) Programme	Cash-outs can help the most vulnerable but drug use is difficult to change	Complementary Map all areas where the government (plans) to intervene and cooperate Consider cash for work approach for certain interventions Lessons learned from enhanced livelihood options of vulnerable groups will be integrated Non-Duplication The project will address poverty through a different mechanism, urban and territorial planning
Sustainable fisheries project USAID and Hen Mpoano	Effective stakeholder engagements through one-on-one discussions and focus group discussions promotes high participation. Effective stakeholder engagements through communication (peer to peer discussion, study tour, focus group discussions) enhance behavioural change communication.	Complementary The project will incorporate the lessons learned from the Sustainable fisheries project regarding stakeholder engagements and participation Fishermen are part of the targeted groups Non-Duplication USAID Project focuses on fisheries management through policy and

	▯ Ownership is key to project success.	institutional strengthening, which the project does not focus on
Sustainable Fisheries Management project EU and FoN / Care Int.	▯ Recently launched so no lessons learned	Complementary ▯ Fishermen are part of the targeted groups Non-Duplication ▯ Focuses on ensuring sustainability of marine fisheries resources, which UN-Habitat does not focus on.
Ada coastal protection works 1st and 2nd phase[39] - Ghana government / Deme Concluded in 2015 US$ 183 m 15 Groynes over 14.7 km stretch	▯ It is working at the beginning and the end of the stretch ▯ It is very expensive; thus, the UN-Habitat project should propose affordable interventions with results that come close	Complementary ▯ Lessons learned from these interventions should be integrated in the project approach Non-Duplication ▯ UN-Habitat could focus on livelihood enhancement /protection affords at the lagoon site
Keta coastal protection works Concluded 2002 / 2003 US$ 52 million 6 Groynes over 6,5 km stretch		

Cote d'Ivoire

Grand-Bassam opening of river mouth project – Cote d'Ivoire government and Morocco No funding yet	▯ Not started yet but Deltares study is useful to understand dynamics	Complementary ▯ Sand could be used to create a sand motor ▯ Opportunities to integrate Deltares studies into the approach of the project Non-Duplication ▯ The project will not focus on Grand-Bassam river mouth
Climate finance readiness in Côte d'Ivoire Ministry of Environmental and Sustainable Development 2016	▯ Advanced climate finance readiness at national level.	Complementary ▯ Both project could collaborate on capacity building on climate change at national level

[39] https://www.deme-group.com/references/ada-coastal-protection-works

http://www.franki.co.za/ada-coastal-protection-works-phase-2/

African climate Change Fund (ACCF)		Mobilization of resources to fight against climate change (objective of ACCF project) could support replicability of successful intervention of UN-Habitat project Non-Duplication ACCF project only focuses on climate finance
Emergency Infrastructure Renewal Project World Bank 2012-2020	The incorporation of local labor and women integration has proven to provide a positive social impact for people in the project area. The project aimed at supporting economic and social development of the municipality.	Complementary The project will incorporate and complement interventions from World Bank on basic infrastructure improvement: urban transport, water supply, sanitation and waste management. Non-Duplication No geographical overlap
Cocody Bay rehabilitation Marchica Med Company. 2014-ongoing	Ecological review of the lagoon Ébrié and the Bay of Cocody. Cocody Bay Master Plan	Complementary The project will integrate strategies and plans from the Cocody Bay master plan Non-Duplication The project doesn't target Cocody bay
Abidjan integrated sustainable urban planning and management[40] Ministry of Environment and Sustainable Development, Autonomous District of Abidjan. 2015 - ongoing	Recently started not lessons learnt reported yet.	Complementary Coordinate on working on establishing an urban observatory with an urban planning data base. Coordinate on working on a city-wide drainage and climate change adaptation strategy for the Greater Abidjan area Non-Duplication The project will focus on improving urban planning and management in other departments

[40] https://www.thegef.org/project/cities-iap-abidjan-integrated-sustainable-urban-planning-and-management

Strengthened Environmental management System for Coastal Development to meet Rio Convention Objective Ministry of Environment MINESUDD. 2013 – ongoing GEF	▪ Environmental Management Information System (EMIS) for decision making on coastal zone development. ▪ Piloting the use of improved environmental information systems for better decision making related to coastal zone management	Complementary ▪ The project will incorporate the GEF project lessons learned and database for the analysis and decision making on coastal resilience Non-Duplication ▪ The GEF project only focuses at policy and governance level
Protection of mangroves through the creation of firewood plantation[41] UNDP. 2008-2009	▪ Deforestation linked to firewood supply for urban areas is becoming an increasingly significant problem in Côte d'Ivoire. ▪ Successful experience in creating a firewood park demonstrates that this model can be a solution for sustainable firewood management in urban areas, while also generating income for poverty alleviation. In coastal zones, these firewood parks can also contribute to preserve the mangrove ecosystem and increase the awareness of the communities involved.	Complementary ▪ The project will contribute to the protection and restoration of mangroves ecosystems. ▪ Gender mainstreaming as part of the GEF project will enhance effectiveness of gender inclusive activities as part of this project Non-Duplication ▪ In Anan village (Bingerville). No geographical overlap. ▪ To address environmental protection, this project will focus on spatial planning

H. Learning and knowledge management

Component 5 is dedicated to achieving long-term sustainability of the project. This will be achieved through developing enabling governance and legal frameworks and integrated spatial planning tools and funding mechanisms, as well as knowledge management and communication strategies and actions. Whilst this component provides the cornerstone for capturing and disseminating lessons learned, other project components directly contribute to this at the local, national and international scales.

Central to the knowledge management and communication approach is the setting up a West African Resilience 'Urban Lab', which is a value-for-money way of generating and sharing knowledge among a wide range of stakeholders and capturing the expertise generated in the

[41] https://sgp.undp.org/index.php?option=com_docman&view=download&alias=47-mangrove-project&category_slug=fact-sheets&Itemid=257

development of the projects locally. For more info, see the promotion of innovative solutions section.

At the local level, the 'Urban Lab' will include setting up a 'chiefs alliance' and possibly women and youth alliance,' building on existing community ties and committees for decision-making and in-kind contribution on project execution and to share knowledge and lessons at the community level, including documentation and promotion of appropriate indigenous knowledge and best practices. Besides that, a participatory approach (involving communities and local authorities in planning and implementation activities) will lead to increased local knowledge on climate change adaptation, especially related to local coastal protection and income generating options. Project demonstration sites will contribute, from the start and in an on-going way, to sharing lessons and training. Community level trainings will be held on identified needs and to operate and maintain interventions. Another component of these trainings will be increasing knowledge on gender-responsive adaptation which will support women inclusion and integration as key actors in ensuring climate resilience. In order to achieve this, a women quota for participation will be applied for each training, at the same time outcomes from community consultations regarding women challenges, vulnerabilities and opportunities will be incorporated in the trainings agenda. The project will also use a participatory monitoring process, which will enable the beneficiary communities to work directly with the project's M & E and Public Information officer, to highlight issues in delivery and to strengthen adaptation benefits, including in replication and sustaining the project's gains.

At the national level, the 'Urban Lab' will also include setting up a 'private sector alliance' (considering tourism / hotels, fishing and agriculture sectors) to involve them (financially) in the resilience building of the coast and to produce and share knowledge and lessons. The involvement of hotel owners will be done during the full proposal development phase and throughout the project. The execution of the project components will be independent from the possible contribution / support of hotel owners. Besides that, the government will be training on operation and maintenance of the transformative concrete interventions through revenue-generating activities and to share lessons and though this, be able to draw lessons interventions, including replication and scale-up of good practices. Information will be consolidated in reports and tools methodologies, guidelines and public information products.

Through platforms such as the Abidjan Convention, it is expected that the project and its inputs to regional and national frameworks will be actively shared with other governments, as well as the lessons learnt.

Table 9: outputs, learning objectives and indicators and knowledge products

Expected concrete output/intervention	Learning objectives (lo) & indicators (i)	Knowledge products
1.1.1. District / department-level strategic coastal management and spatial / land use planning strategies	(lo): strengthen capacity of district and national government staff to develop strategic management and spatial / land use planning instruments (i): number of government staff trained trainings and number of plans	8 land use plans Collected data and risk maps

2.1.1.	Community-level climate change resilience building strategies / plans / maps	(lo): increase awareness, ownership of proposed interventions and improve the capacity to operation and maintain these (i): number of community members trained and number of plans	18 community plans Documentation of action planning processes and training modules
3.1.1. 3.1.2.	1-2 concrete interventions focused on coastal protection / nourishment / management 1-2 concrete interventions focused on ecosystem restoration and / or saltation management	(lo): understand which interventions are most effective and low cost with replication and scale-up potential in other areas and countries (i): number of interventions focused on coastal protection / nourishment / management and number of interventions focused on ecosystem restoration and / or saltation management	Portfolio of large scale effective low cost interventions appropriate for different 'common' coastal situations / scenarios that can be replicated and /or scaled-up
4.1.1.	Eighteen (18) community-level interventions to enhance coastal protection and livelihood options locally.	(lo): understand which interventions are most effective and low cost with replication and scale-up potential in other areas and countries (i): number of community-level interventions that enhance coastal protection and livelihood options locally.	Portfolio of community level effective low-cost interventions appropriate for different 'common' coastal situations / scenarios that can be replicated and /or scaled-up
5.1.1. 5.1.2. 5.1.3.	Set up and running of West African Climate Change Resilience Building 'Urban Lab' Establish initial monitoring sensor-system for coastal erosion and urban development Training of national and district staff	(lo): Understand coastal dynamics and impacts of interventions comprehensively by linking data sources, knowledge and capacities from experts, decision makers, companies and communities (i): number of knowledge products, plans and models developed to fill existing gaps and trainings conducted	Reports, plans and models developed to fill existing gaps and trainings modules developed

I. Consultative process

The Governments of Ghana and Cote d' Ivoire have requested UN-Habitat to support coastal communities and cities to adapt to Climate Change and build resilience to coastal erosion. In the case of Ghana, the Ningo-Prampram District Assembly requested for technical assistance in urban design, planning and capacity development for coastal planning, erosion and flood prevention. Subsequently, the former President of the Republic of Ghana requested the

Secretary-General of the United Nations for assistance in addressing rapid urbanization in the Greater Accra Region. During a UN Habitat mission to Cote d' Ivoire during July 2016, the Ministry of Environment and the municipalities of Grand-Bassam and Grand-Lahou requested for technical support to develop coastal planning and climate change adaptation strategies and projects. This project proposal is the result of these requests to ensure the continuation of the engagement of UN-Habitat in Ghana and Cote d' Ivoire.

Related to above request, previous work conducted by UN-Habitat in Ghana and Cote d' Ivoire forms the base of this project. In Ghana, the ongoing National Priority Planned City Extension in the Greater Accra Region has managed to mobilize national and local governments as well as private sector and communities. UN-Habitat, in a partnership with the Creative Industries Fund of the Netherlands developed a plan for the coastal area of the Ningo-Prampram District. The plan includes initial adaptation strategies related to sea level rise, temperature increase, floods and draughts and environmental preservation. In Cote d'Ivoire, initial consultations and a first site visit for the participatory process took place following the Government requests in July 2016. Meetings were held with different Ministries, municipalities, communities and international organizations to define the scope of the intervention to promote participative urban planning and environmental protection in coastal cities.

For the concept note stage of this project, consultations with key stakeholders, communities and vulnerable groups in target areas in both Cote d' Ivoire and Ghana have been held in November and December 2017. In November, consultations took place with representatives from ministries, district governments, NGO's, Universities and other relevant stakeholder. A full list of outcomes is presented in annex 6.

In December 2017, community and vulnerable groups consultations took place in cooperation with the Development Institute / Ghana Delta alliance Wing in Ghana and the École d'architecture in Cote d'Ivoire. The consultations techniques used were a combination of structured questionnaires and focus group discussions with women and vulnerable groups. These consultations aimed at further collection of specific data/information about the communities:

- Target population, poverty, livelihoods, gender-disgregation (women and youth), vulnerable groups (elderly and disabled), etc. and their specific chanllenges and needs.
- Climate change related hazards, risks and vulnerabilities.
- Difficulties faced that prevent from addressing resilience.
- Community assets.

As part of the gender responsive strategy of the project, during consultations special attention was put into gender balance participation in order to address gender equality in the resilience building process. The results are further presented in the context and background sections and in annex 2 and 6.

Figure 19: Meeting with some women and the elderly at Old ningo. Ghana

For the full proposal, the following consultations are planned:

Table 10: planned consultations for the full proposal development stage

Date	Stakeholder	Consultation objective
07-13 February 2018 at World Urban Forum	Leading ministries from Ghana and Cote d'Ivoire	- Bring together leading ministries from Ghana and Cote d'Ivoire to: o Agree on regional approach and coordination mechanisms o Agree on / confirm list of priority interventions and target areas (especially related to larger interventions with potential international impacts)
March 2018 In Ghana and Cote d'ivoire	Leading ministries and target districts in Ghana and Cote d'Ivoire	- Bring together leading ministries and target district / department governments in both Ghana and Cote d'Ivoire to: o Agree on implementation and coordination modalities o Agree on / confirm list of priority interventions and target communities (especially related to spatial / land use planning and larger interventions)
April 2018 In Ghana and Cote d'Ivoire	Target communities and vulnerable groups	- Agree on list of priority interventions at community level and understand specific needs and issues per vulnerable group
April – November	Institutions to	- Develop models / collect data required to understand

2018	develop required models and conduct assessments	impact of proposed interventions - Conduct detailed vulnerability / risk mapping - Conduct impact assessments / risk screening of proposed interventions / feasibility studies
December 2018	Target communities and vulnerable groups	- Final selection / verification of proposed interventions by discussing the following criteria: o Benefits to communities / groups o Cost-effectiveness o Sustainability / maintenance arrangements o Environmental and social risks - Confirm / identify design needs per vulnerable groups of proposed intreventions

J. Justification of funding request

The proposed project components, outcomes and outputs fully align with national and local government priorities and gaps identified, with identified community and vulnerable groups needs and with the Adaptation Fund outcomes as stated in the Adaptation Fund results framework. This alignment has resulted in the design of a comprehensive approach in which the different components strengthen each other and in which outputs and activities are expected to fill identified gaps of Cote d'Ivoire's, Ghana's and West Africa's current climate change response. The project aims at maximizing the funding amount for the concrete adaptation component (component 3 and 4) directly benefitting local communities and the two countries. Funding allocation to the other (softer) components is required to support the effective execution and sustainability of components 3 and 4 and to share knowledge and lessons learned. The table below provides a justification for funding requested, focusing on the full cost of adaptation reasoning, by showing the impact of AF funding compared to no funding (baseline) related to expected project outcomes.

Table 11: Overview of impact of AF funding compared to no funding (baseline) related to expected project outcomes

Outcomes/planned activities	Baseline (without AF)	Additional (with AF)	Comment and alternative adaptation scenario's
Outcome 1.1. Strenghtened technical and institutional capacity of national and local governments to increase coastal climate change resilience through coastal management and spatial / land use planning strategies Areas currently at risk identified and plans to avoid future	Detailed / specific climate change threat and hazard risk and impact information / evidence is not available (and integarted in strategic coastal management and spatial / land use plans for the coastal áreas in Cote d'Ivoire and Ghana	The activities related to this outcome will allow the national government and district / department governments to underatand what áreas are at risk, what needs to be protetcted and what can't be saved, allowing strategic decsiions about sócio-econiomic and spatial development decisions.	Without relevant threat and hazard information / evidence integrated into plans, no strategic decisions about the future of target áreas can be made. Alternatively, the government plans for coastal resilience, possibly with private sector support, but the government lacks the financial resources and the private sector the capacities to develop strategic plans in a cost-effetcive way while ensuring

development in risk areas developed			high quality
Outcome 2.1. Strengthened community capacities to anticipate and respond to climate change related coastal hazards, including protecting and / or enhancing livelihoods	Communities are not aware of possible resilience building measures and don't have the capacity and don't own the process to develop, operate and maintain (thus plan) possible interventions.	The activities related to this outcome will allow communities to develop, operate and maintain (thus plan) possible interventions.	The district government and communities lack the capacity to organize communities and plan effectively for adaptation / resilience. Alternatively a top-down planning approach could be used but this would not build community awareness and capacities and would risk implementing non-appropriate interventions
Outcome 3.1. Increased resilience of coastal ecosystems and built environment at national / district level Development of larger scale projects with the potential to positively impact a larger population	There is little district – national - regional cooperation (and financing) to increase coastal resilience through concrete interventions. Some larger interventions have focused on hard infrastructure that is very costly and, in some cases, had negative impacts in other areas	The activities related to this outcome will allow more strategic / holistic appraoch to building coastal resilience through concrete low-cost building with nature interventions, understanding larger needs and impacts	Alternative adaptation scenarios are resettlement, construction of large, more expensive physical infrastructure and community-level interventions. These community interventions (outcome 4.1.) will fit into the wider systems planned under this outcome.
Outcome 4.1. Increased resilience of coastal ecosystems and the built environment at the community-level	There is limited government attentions on specific community-level needs in the target áreas and the communities have limited knowledge and capacity to respond to climate change in a concrete way	The activities related to this outcome will allow communities and vulnerable groups to respond to climate change impacts concretely with a localised / specific needs focus.	Large scale interventions have the risk of not being community driven and appropriate, which would lead to adaptation benefits for fewer people with the same project cost and a greater chance of negative social and environmental impacts. Therefore activities under outcome 4.1. will feed into this outcome
Outcome 5.1. Improved (inter-) national institutional and legal framework's and knowledge management mechanisms that promote coastal resilience measures	Communities and district, national and regional governments and the private sector have limited knowledge of coastal dynamics in relation to climate change and coastal resilience planning	The activities related to this outcome will allow communities, district, national and regional governments and the private sector to increase knowledge of possible concrete resilience building	Without activities related to this outcome, there is a risk that interventions won't be replicated and sustained. Alternatively no 'urban lab' will be set-up, but this will redcue local knowledge production and capacity development, which will also

Identification of bottlenecks leading to proposals for modification of policies, rules and regulations based on lessons from project execution	and possible concrete interventions	interventions and capacities to implemente these, also adjust institutional and legal frameworks where needed	reduce the sustainabiliy and ownership.

K. Sustainability

Institutional sustainability
The project will pave the way for the national and local government, but also communities, in Cote d'Ivoire, Ghana and other west African countries, to replicate, up-scale and sustain 'tested' concrete interventions and develop strategic spatial and land use plans, including risk mapping in other areas affected by coastal hazards by using the 'portfolio' of effective low-cost interventions, the 'urban lab' and by adjusting the institutional and legal framework, where necessary, to sustain this coastal management approach.

Social sustainability
By fully engaging communities, women, youth and other vulnerable groups in project activities, including, assessments (during the project development phase), the development of plans / strategies and monitoring, the project aims at achieving long-lasting awareness and capacities of these communities. Besides that, community households will be trained to construct and self-maintain the proposed interventions and to enhance their livelihood options in a sustainable and resilient way. Moreover, through an 'alliance of chiefs, lessons and approaches will be shared and replicated among communities, also beyond the target areas and in other countries of the region.

Economic sustainability
Investing in increasing the resilience of coastal areas, vulnerable assets and ecosystems is a sustainable economic approach. It will not only avoid future costs related to climate change and disaster impacts but it will also enhance livelihood options. Besides that, the strategic spatial and land use plans will also avoid future costs related unsustainable urbanization and to climate change hazards by identifying the high risk areas and sustain or open-up investment options in the 'suitable' areas.

Environmental Sustainability
The protection and or enhancement of ecosystems will be sustained through spatial and land use (as well as environmental protection) plans and other institutional and legal adjustments where needed. At the community level, awareness raising campaigns and trainings related to ecosystem protection and revenue-generating activities will support the sustainability of ecosystem-related interventions.

Financial sustainability
This project is designed to identify and replicate low-cost building with nature coastal protection and livelihood enhancement interventions. Through the spatial and land use plans (with identified high and low risk areas) governments and the private sector will be able to develop business

cases for focused protection and development of priority areas. Besides that, the institutional and legal framework will allow and promote interventions where they are more needed.

Technical sustainability
The 'portfolio' of interventions will be attractive for national and local governments and communities because solutions will be low-cost and promote the building with nature alternative for coastal protection and livelihood enhancement. Besides that, interventions concerning increasing the resilience of certain assets, will be developed using resilience and building back better principles. This will enhance the durability and sustainability significantly. Besides that, the proposed interventions will be maintained in partnership with local governments, public utilities and communities. This will ensure that after the project, interventions are will be properly maintained and remain operational.

In the full proposal document, the maintenance and sustainability arrangements per concrete intervention will be analyzed.

L. Environmental and social impacts and risks

The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP). Outlined below is a summary of the findings of the preliminary screening process to evaluate potential environmental and social impacts and risks of proposed interventions and based on that, of the entire project. The 15 safeguard areas outlined in the Adaptation Fund's ESP have been considered during the screening.
Proposed spatial and land use planning, community planning, trainings and workshops and knowledge management activities under Components 1, 2 and 5 have been categorized as low risk. Despite this, steps will be taken to ensure that no environmental or social impacts can occur. Proposed preventive / mitigation measures and management / monitoring arrangements will be provided in the full project proposal document.

Activities under Components 3 and 4 are 'concrete' interventions, and as such, some interventions have the potential, without an environmental and social safeguarding system, including mitigation measures and management arrangements, to create negative environmental and social impacts. As such, some interventions under these components fit into the medium (B) risk category and some into the low (C) risk category. Under component 4 (i.e. catalytic concrete interventions at community level), risks will be relatively low because of the scope of the proposed interventions, that are numerous, small scale and very localized, and proposed and managed by communities, who have a stake in avoiding environmental and social impacts. As for component 3 (i.e. transformative concrete coastal resilience building interventions at inter-district level), the impacts and risks could be more significant, including transboundary. To avoid selecting interventions that fall into the high risk category A, UN-Habitat and partners will use one year to conduct detailed impact and risk screening and, if nenessary, Environmental and Social Impact Assessment required by law, of possible 'larger' concrete interventions. Based on the outcomes, the interventions with the lowest (or manageable) potential impacts and risks will be selected. The same will be done for the proposed interventions under component 3, with the difference that Environmental and Social Impact Assessment required by law won't be necessary because the initial criteria to select interventions will include not having to conduct assessments required by law (thus low risk interventions).

Because of the nature of some activities under components 3 and 4, the entire project is regarded

as a medium risk (Category B) project. Therefore, an ESMP will be developed during the full proposal development phase.

The project has been designed to generate positive economic, social and environmental impacts, using inputs from especially women and marginalized and vulnerable groups in target communities and by incorporating best practices from other projects. The adaptation measures proposed have been selected together by the communities and local authorities, making sure they are culturally appropriate and local.

Table 12: project components, expected outputs and potential risk areas triggered (and further assessment required)

Project Components	Expected Outputs	Principle possibly triggered and further assessment required during full proposal development phase
1. Coastal management and spatial and land use planning strategies at district level – feeding into national and regional coastal management strategies	1.1.1. District / department-level strategic coastal management and spatial and land use planning strategies Workshops, trainings and "learning by doing process"	Although principles are not expected to be triggered, they will all be taking into account when developing spatial and land use strategies and community-level climate change resilience building strategies, thus ensuring compliance. For workshops, trainings and planning processes, principles 2, 3, 5 and 7 may be triggered; thus, the project will ensure different groups will be appropriately involved and represented. Special focus on women empowerment as to promote gender equality.
2. Resilience planning at the community level	2.1.1. Community-level climate change resilience building strategies / plans / maps Workshops, trainings and "learning by doing process"", including Women focus group discusions	
3. Transformative concrete coastal resilience building interventions at inter-district level taking into account (inter-) national and local needs and impacts		

4. Catalytic concrete interventions at community level taking into account local needs and impacts / livelihood opportunities	Possible concrete interventions under component 3 and 4 1. Beach, dune / barrier nourishment 2. Sand bypassing – dredging of sediments 3. (Temporary) flood defence and drainage 4. Replanting forests / mangroves 5. Agriculture / salt / brackish water crops 6. Aquaculture (shrimp, other type of fish) 7. Salt mining 8. Potable water 9. Sanitation and waste management	Principle 1: depending on the details, size and selection of concrete interventions, EIAs may be required by law. After the preliminary selection of the concrete interventions during the full proposal development phase, these assessments will be conducted if required; thus ensuring compliance with principle 1 and to avoid other risks. For the concrete interventions on the left, possible risks related to all 15 principles will be identified and mitigation and management measures proposed during the full proposal phase. Universities and international recognized institutes and consultancy companies will be involved to do this. For the coastal protection / flood defence possible interventions (1-3), all principles may be triggered. For the larger interventions, high attention will be given to principles 4, 8, 9, 10 and 15, ensuring that possible negative impacts related to involuntary resettlement are negative impacts on nature are minimized and managed / monitored with great attaention. For the ecosystem and livelihood related possible interventions (4- 7), emphasis will be given to ensuring different groups benefit equally (principles 2, 3, 5 and 7) and natural habitats and biodiversity will not be impacted negatively (principles 9 and 10) , while also ensuring compliance to the other principles. For resilient infrastructure and services related possible inyerventions (8 and 9), equall access is also of crucial importance. For more detail on possible environmental and social impacts and risks related to concrete interventions, see table x in part II, section A: components
5. Knowledge management, communication and institutional and regulatory framework at the regional, national and local level	5.1.1 Set up and running of West African Climate Change Resilience Building 'Urban Lab' 5.1.2 Establish initial monitoring sensor-system for coastal erosion and urban development 5.1.3 Training of national and district staff	Although principles are not expected to be triggered, they will all be taking into account when developing the monitoring system, thus ensuring compliance. For the set-up and running of the Urban Lab and workshops, trainings and planning processes, principles 2, 3, 5 and 7 may be triggered; thus, the project will ensure different groups will be appropriately involved / represented.

Table 13: Checklist of environmental and social principles

Checklist of environmental and social principles	No further assessment required for compliance	Further assessment required for compliance (during the full proposal development phase)
1. Compliance with the Law		x
2. Access and Equity		x
3. Marginalized and Vulnerable Groups		x
4. Human Rights		x
5. Gender Equity and Women's Empowerment		x
6. Core Labour Rights		x
7. Indigenous Peoples		x
8. Involuntary Resettlement		x
9. Protection of Natural Habitats		x
10. Conservation of Biological Diversity		x
11. Climate Change		x
12. Pollution Prevention and Resource Efficiency		x
13. Public Health		x
14. Physical and Cultural Heritage		x
15. Lands and Soil Conservation		x

PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[42]

Jean Douglas Anaman *DA Adaptation Fund and head of Adaptation Unit at National Climate Change Programme,* *Ministry of urban sanitation, environment and sustainable development*	Date*: Jan, 11, 2018*
Fredua Agyeman *DA Adaptation Fund and director for environment* *Ministry of environment, science, technology and innovation*	Date*: Jan, 12, 2018*

[42] 6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

MINISTRY OF URBAN SANITATION, ENVIRONMENT AND SUBSTAINAIBLE DEVELOPMENT

NATIONAL CLIMATE CHANGE PROGRAMME

N° 0 0 0 0 1 /MINSEDD/CAB1 /PNCC/jda

REPUBLIQUE DE COTE D'IVOIRE

Union – Discipline – Travail

Abidjan, le 11 JAN. 2018

Letter of Endorsement by Government of Côte d'Ivoire

To: **The Adaptation Fund Board**
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for Improved Resilience of Coastal Communities in Cote d'Ivoire and Ghana Programme

In my capacity as designated authority for the Adaptation Fund in Côte d'Ivoire, I confirm that the above regional programme proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Côte d'Ivoire.

Accordingly, I am pleased to endorse the above programme proposal with support from the Adaptation Fund. If approved, the programme will be implemented by United Nations Human Settlements Programme (UN-Habitat) and executed by Ministry of Urban Sanitation, Environment and Sustainable Development, Ministry of Construction, Housing and Urban Planning and Local planning departments of Abidjan, Grand-Bassam and Grand-Lahou.

Sincerely,

Jean Douglas ANAMAN
Head of Adaptation Unit at
National Climate Change Programme

MINSEDD – Cité administrative – Tour D – 10ème / Tél. : 20 22 07 01 – Fax : 20 21 08 76

MINISTRY OF ENVIRONMENT, SCIENCE, TECHNOLOGY & INNOVATION

Our Ref: MESTI/LDN/GM/035/01

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Republic of Ghana

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Ministries Post Office
Accra. Ghana.

Private Mail Bag
Ministries Post Office
Accra, Ghana.

12th January 2018

THE ADAPTATION FUND BOARD
C/O ADAPTATION FUND BOARD SECRETARIAT
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Dear Sir/Madam,

Subject: Endorsement for Improved Resilience of Coastal Communities in Cote d'Ivoire and Ghana

In my capacity as designated authority for the Adaptation Fund in Ghana, I confirm that the above regional project proposal is in accordance with the government's national and regional priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Ghana.

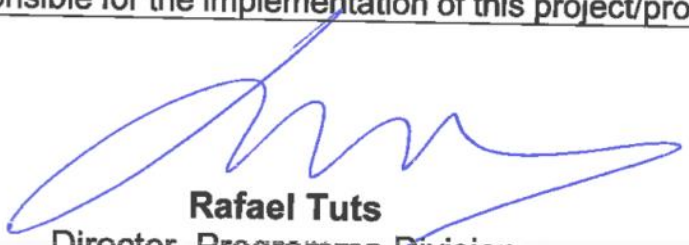
Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Human Settlements Programme (UN-Habitat) and executed by the Ministry of Local Government and Rural Development with the co-lead of the Ministry of Environment, Science, Technology and Innovation (MESTI) and the local district planning departments of Tema, Ningo-Prampram, Ada West, Ada East and Keta.

Yours sincerely,

FREDUA AGYEMAN
ADAPTATION FUND NATIONAL DESIGNATED AUTHORITY
DIRECTOR FOR ENVIRONMENT

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans to help achieve the goals of the Ghana's Intended Nationally Determined Contribution (INDC) based on the Ghana's Shared Growth Development Agenda II, the National Climate Change Policy 2013, the National Climate Change Adaptation Strategy, Ghana's Plan of Action on Disaster Risk Reduction and Climate Change Adaptation (2011/2015), the National Adaptation Planning (NAP) process, and National Urban Policy Framework (2012) and Action Plan as well as the National Spatial Development Framework.
For Cote d' Ivoire the proposal will help to achieve the goals of the Cote d' Ivoire's Indented Nationally Determined Contribution (INDC) based on the National Adaptation Planning (NAP) process, the National Environment Action Plan, the Plan National du Developpement durable en Cote d'Ivoire dans la perspective de Rio+20, the National Development Plan 2012-2015, the Programme National Changement Climatique 2015-2020, the Stratégie Nationale de Gestion des Risques de Catastrophes & Plan d'Action, the Plan National de Developpement 2016-2020 and the Territorial Development Policy Framework (2006), and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.



Rafael Tuts
Director, Programme Division
UN-Habitat

Date: *January 12, 2018*	Tel. and email: +254-20-762-3726 Raf.Tuts@un.org
Project Contact Person: Javier Torner – Urban Planning and Design Branch	
Tel: +254-20-762-4160 Email: Javier.Torner@un.org	

Annex 1: Coastal dynamics in target areas (which is complemented with lagoon dynamics

Coastal processes (with Ghana target area example)

Introduction

In this section several typical processes that might cause coastal erosion/retreat are discribed. Identification of the responsible process is essential to identify suitable intervention options.

Coastal erosion

Coastal erosion is the process of permanent loss of sand from the active beach profile. The active beach profile is defined as the profile that is affected by waves and currents. Permanent losses occur when there is a positive gradient in the longshore sediment transport. That is, the capacity of the alongshore currents to transport sediment increase in longshore direction, hence sediment gets eroded from the foreshore. This is particularly the case at the downdrift side of harbor breakwaters or groynes (for instance the groynes at Ada). Sediment accumulation takes place at the updrift side of a shore attached structure, where the sediment transport capacity decrease again. Cross shore transport can both bring or borrow sediment from the beach. Generally, sediment is brought by short low energetic (wind) waves, while sediment is borrowed by long high energetic (storm/ swell) waves. Wave washovers caused by the long swell waves stir the sand at the beach. The return currents transport the sediment to deeper water. A typical example of this process can be seen at Goi.

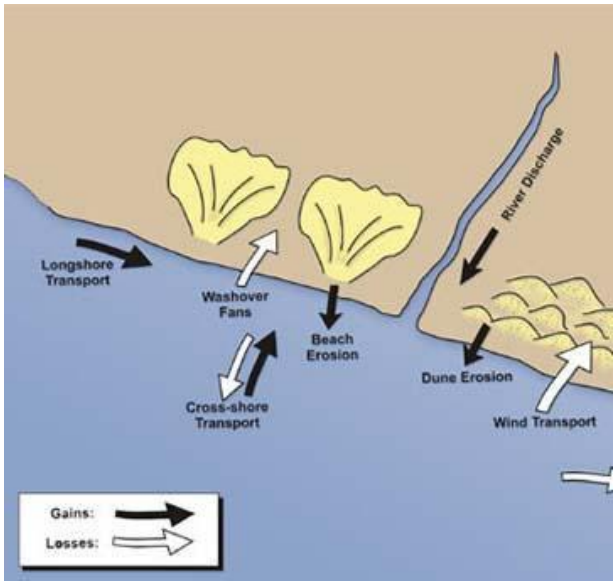


Figure 20: coastal erosion scheme

Coastal variability

Coastal variability takes place when sediment is both brought and borrowed from the active profile. The net difference between these processes determine whether beach accretion of erosion takes place. The yearly averaged net trend might be accretion, while erosion takes place during the storm season. This process is often encountered in breaker bar area.

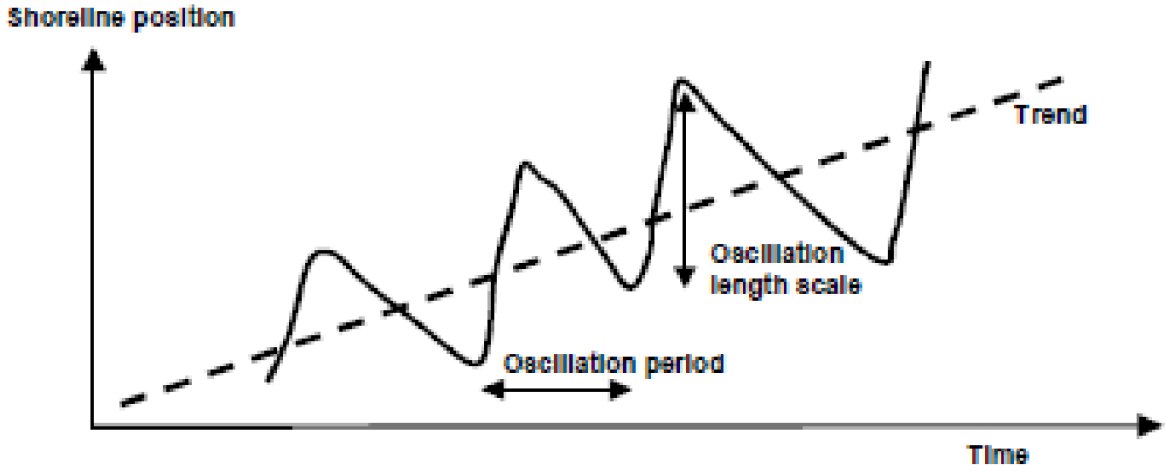


Figure 21: Difference between net trend and coastal variability

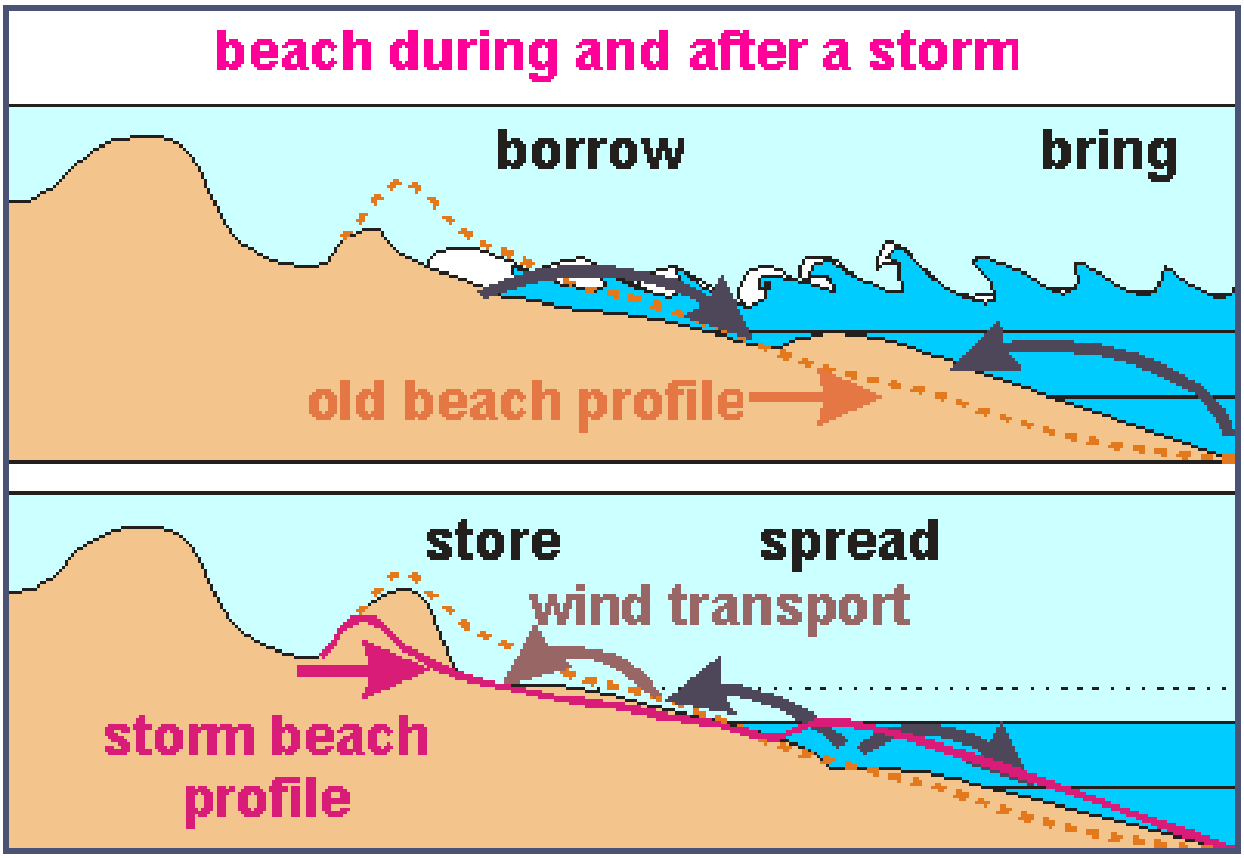


Figure 22: Process that cause coastal variability

Beach/ dune erosion

Beach and dune erosion only occurs during high energetic waves. Sediment is eroded high in the dune profile and deposited at the foreshore. The timescale is hours/ days. In a tidal regime the deposited sediment is transported back to the dunes by short waves, tides and wind. However, since natural dune restoration is a slow process (time scale years) the dunes need to be restored artificially. The beach itself is often compensated within a couple of months.

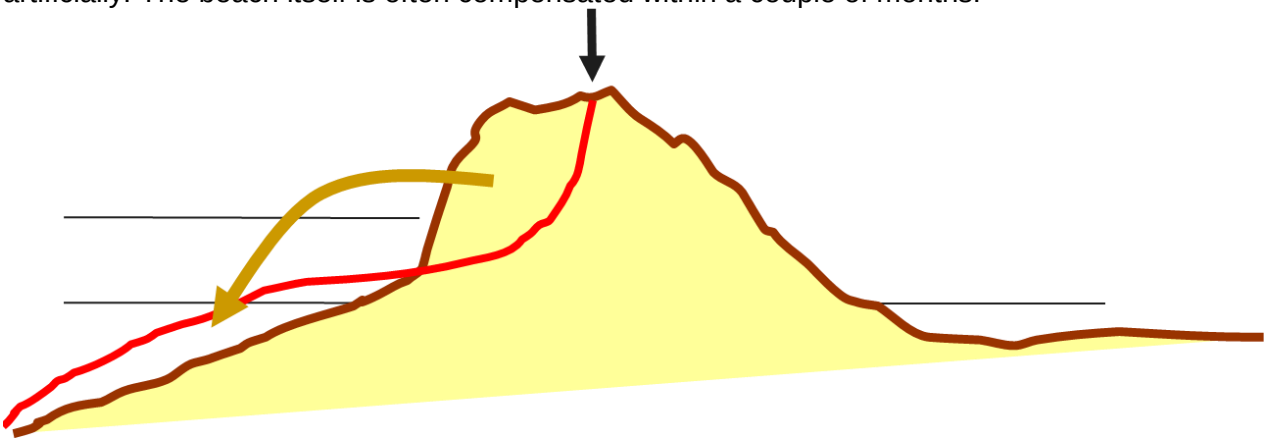
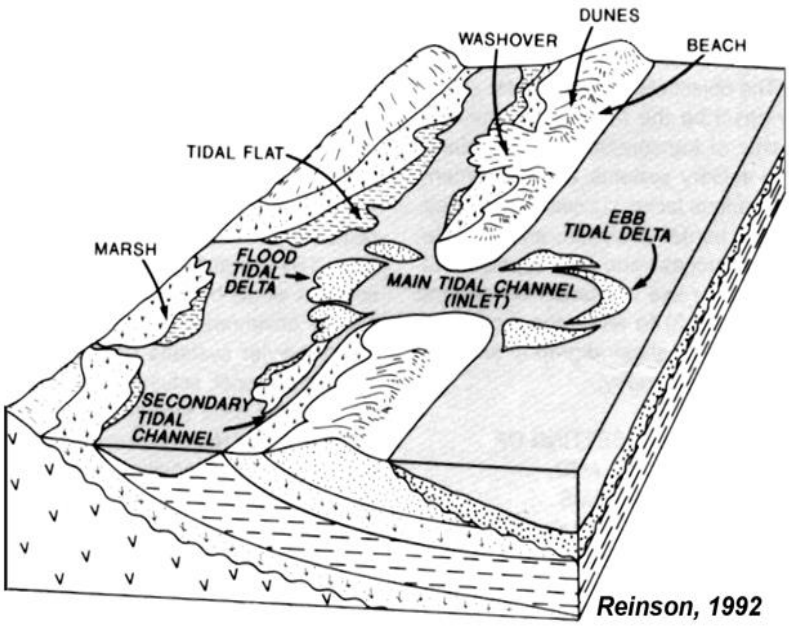


Figure 23: Beach / dune erosion

Coastal retreat



Contrary to coastal erosion, for coastal retreat no net loss of sediment is encountered. Sediment is redistributed both landward and seaward, but is not lost from the active profile. This is often encountered in ebb tidal deltas. Washovers might transport sediment from the dunes/ barrier to the landward lagoon. This sediment is then transported to the tidal inlet and then eventually deposited again at the beach. Net there is no loss of sediment, but the barrier/ dunes might show a landward trend. This might be the natural behavior at Goi.
Figure 24: coastal retreat

Morphological cycle
In coastal systems often morphological cycles can be identified. Especially in deltas or estuaries, where fresh river discharges interact with salt water tidal motion. In a schematic overview is shown of the potential natural variability of a delta inlet, in this case the Volta mouth at Ada (figure x). The river mouth is initially deflected to the east by a sandy barrier. Due to overwash from ocean waves, or increased discharge during monsoon from the river, a breach develops in the barrier. Sediment from the barrier is transported seaward and deposited to the east and the west, resulting in beach accretion. The breach is than closed again by river sediment decreasing the available sediment budget for beach accretion. Due to longshore sediment transport gradients the beach starts eroding again.

Since these morphological cycles may have timescales of several decades, constant erosion or accretion might be experienced. However, the experienced trend is part of a cycle. Human interventions (river dams, coastal structures) will disturb this natural behavior. However, even after a huge intervention such as the Akosombo dam the coastal system will eventually set to a new equilibrium cycle.

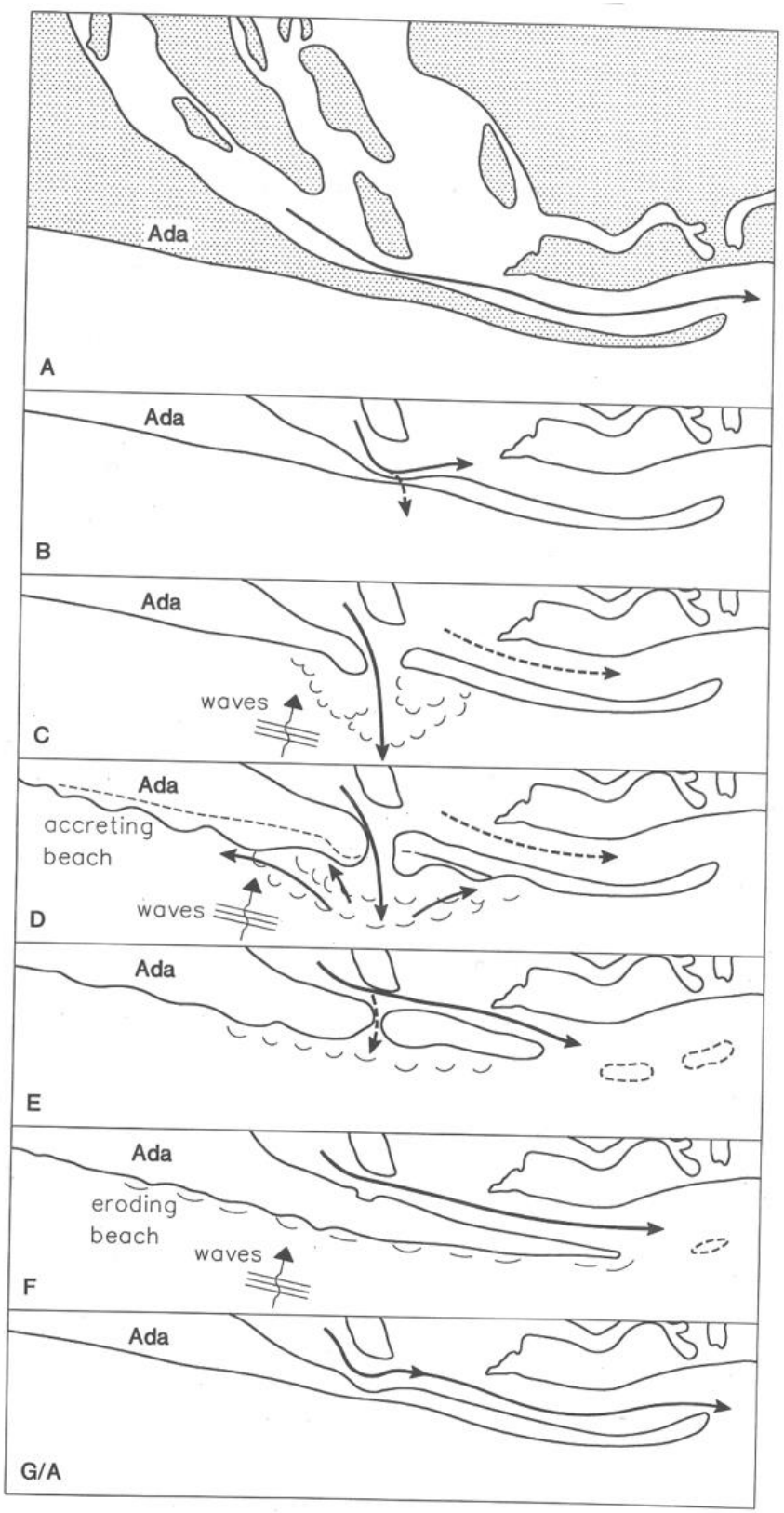


Figure 25: Schematic overview of the natural morphological cycle of the Ada coast

Cote d'Ivoire overview of vulnerability and developments

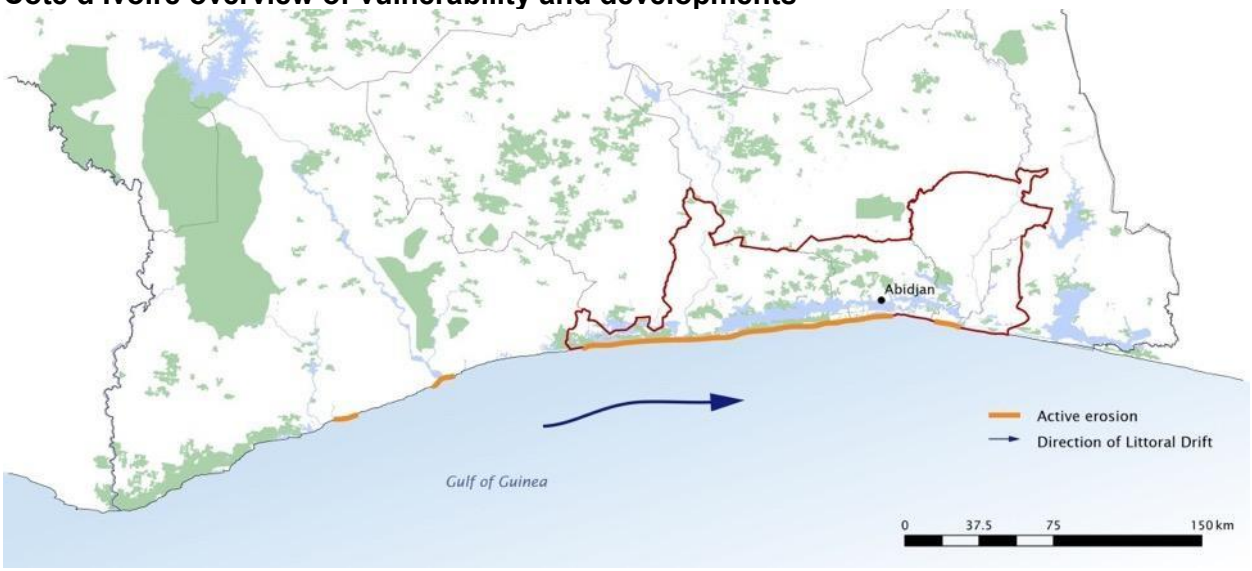


Fig 26: Active erosion in Cote d'Ivoire Coast

Pressures on the natural environment are increasing due to the expected population growth in Greater Abidjan, from 5.0 million in 2014 to 7.6 million in 2030 at an average annual growth rate of 2.72% for the area of 3,500 Km^2. However, even higher growth rates, around 4.7%, have been forecast for existing urban centers and its peripherial areas. Abidjan approximately represents 51% of the national urban population.

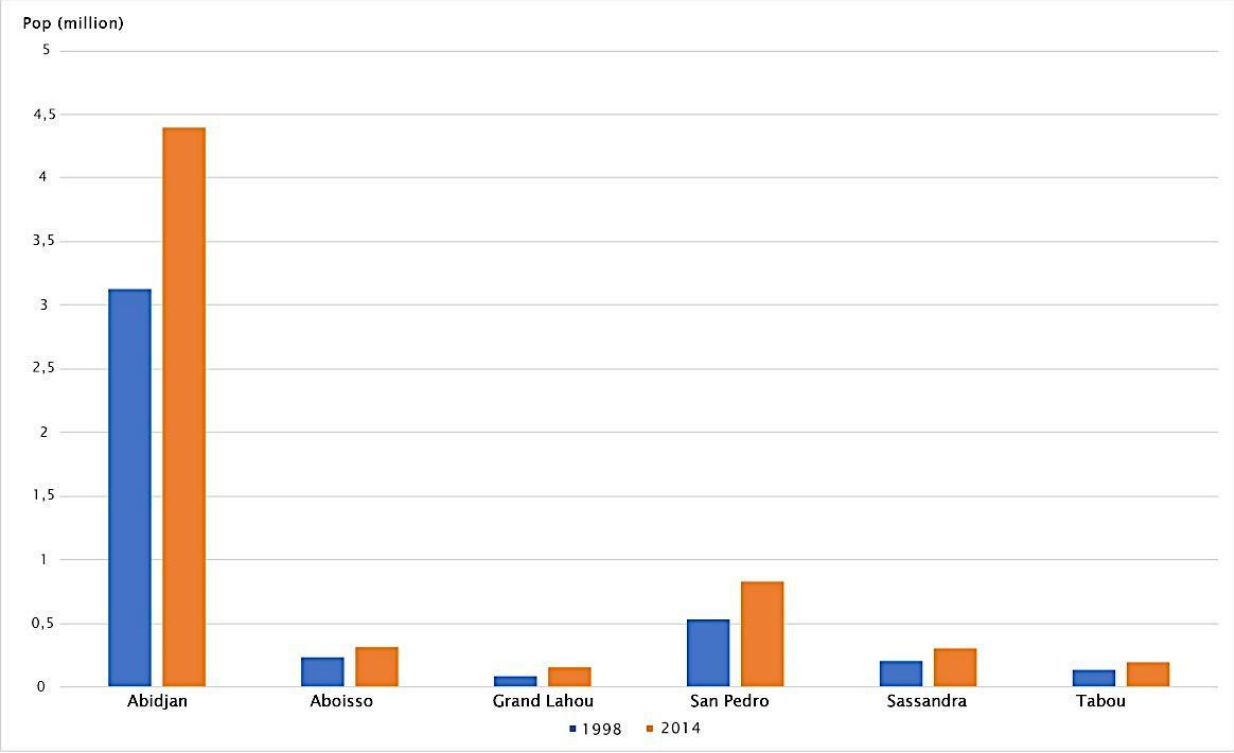


Fig 27: Population growth in coastal areas

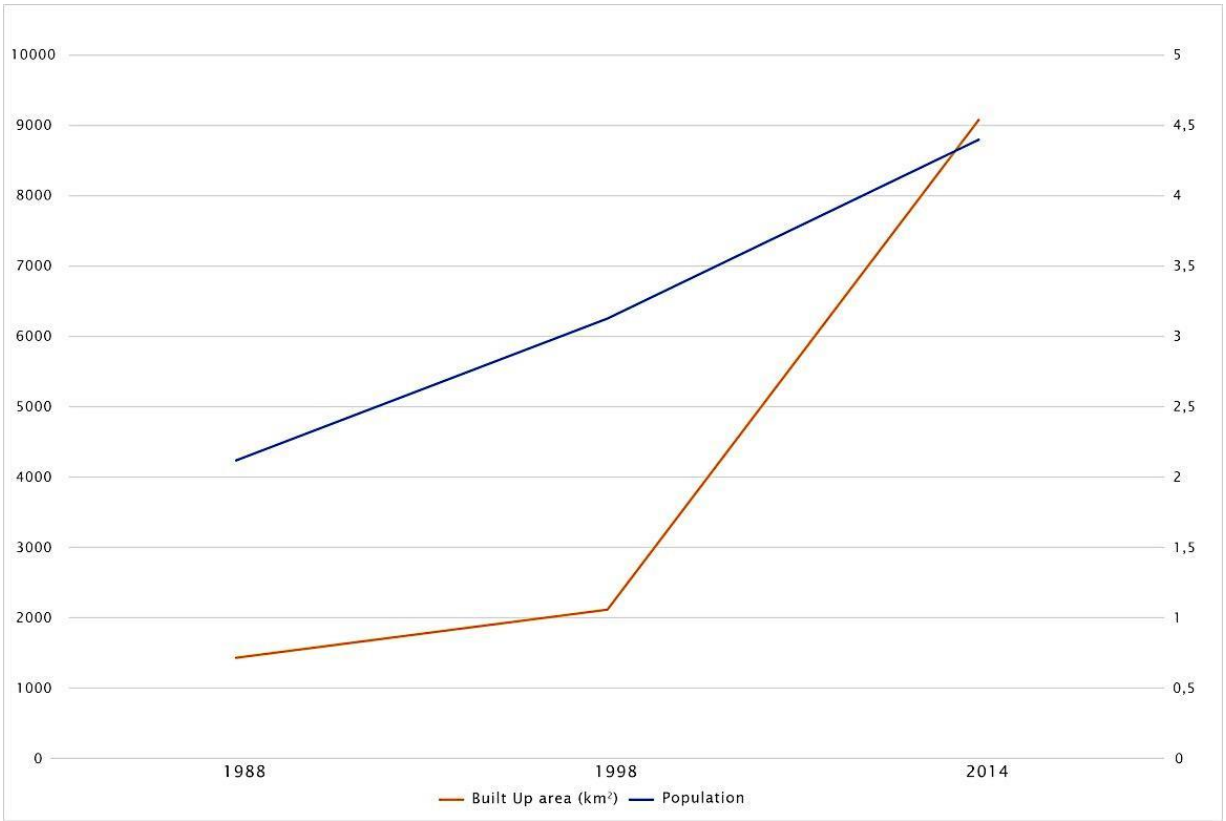


Fig 28: Urban growth pattern in Abidjan region.

This population growth led to rapid urbanization which is generally accompanied by significant urban sprawl and, as a result, the creation of many precarious neighborhoods, like Gonzagueville.The ratio of these developed and undeveloped areas in Greater Abidjan is 1 to 3, leading to one third of the population living in informal settlements. Currently out of the whole Greater Abidjan area only 54% has a land-use plan, with developed areas divided into 60% for residential, 16% for institutional/utility, 6% for commercial/industrial area, and 18% for other areas.

This inequality and its derived poverty, have led to an increased need for means of livelihood among communities with consequent migration of the population towards the coastal zone and increased pressure on coastal resources. This pressure enhances several problems such as over-exploitation of resources, land property conflicts and the degradation of the environment.

Migration has been triggered by several socio-economic activities taking place in the littoral, including commercial fishing, dredging and dumping, oil and gas exploration, shipping and port, and agricultural plantations. Along the coast and near Abidjan, more than 60% of the industry is located resulting in pollution, overexploitation, coastal erosion, and habitats degradation, especially between Grand-Lahou and Assinie.. It is estimated that about 60% of mangrove areas around Abidjan have been lost.

This showcases how the infrastructure development that thrived the economy, has led to negative impacts on the natural and urban environment. The creation of Abidjan’s port in 1950 made of Abidjan the principal economic center of Cote d’Ivoire and Africa. The port contributes to 96% and 66% of the country's import and export respectively. Since the port was built, Port Bouet became

the principal area of work due to its wide industrial sites. Because of this unplanned development, urban sprawl occurred and became a driver of risk, leading the city to extend in areas where hazards were higher.

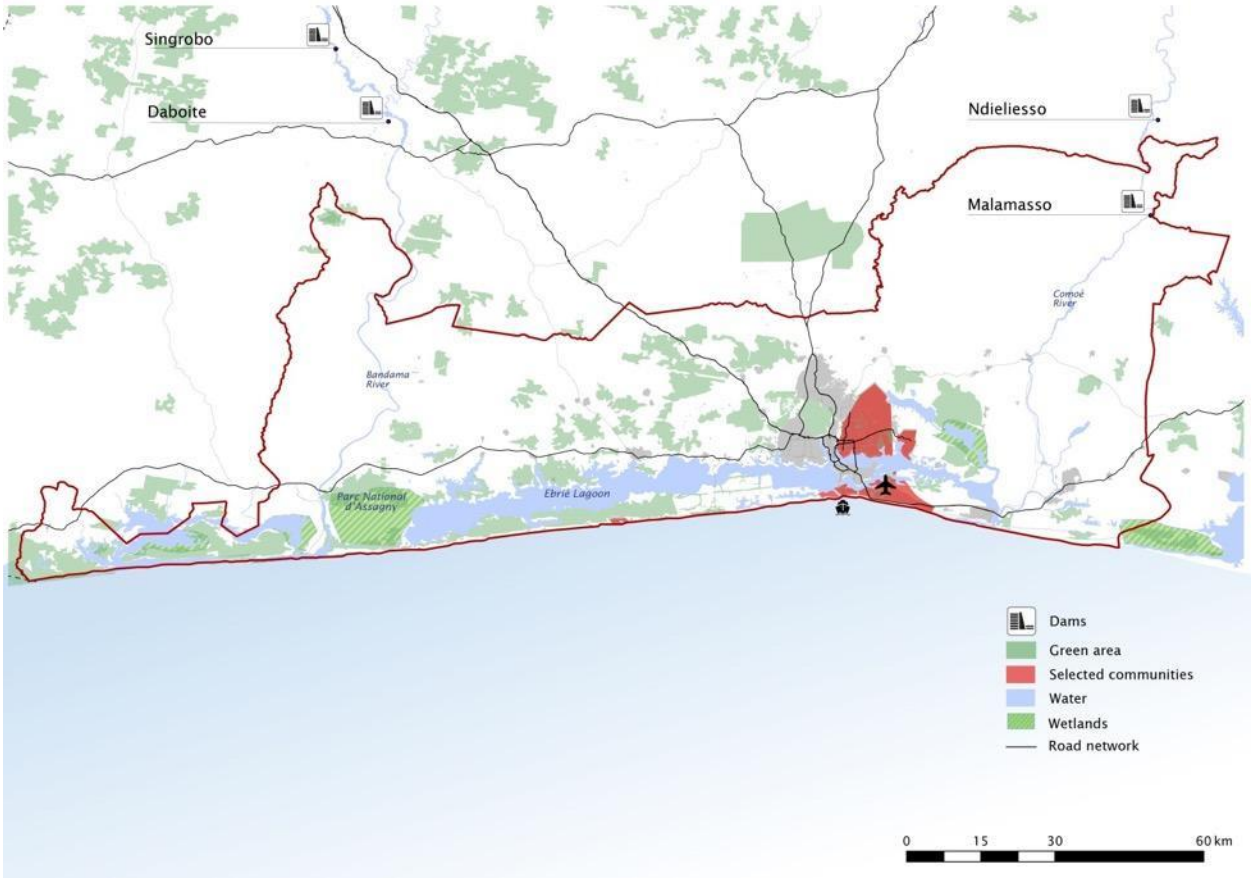


Fig 29: Infrastructure in coastal area

Other infrastructures like dams have also impacted natural dynamics by reducingthe catchment area for sediment, due to the effective entrapment of particles in the reservoirs.Dam construction has lead to a decreasing of freshwater input in the lower estuarine r of the rivers and the alteration of intrusion of the estuarine salt inland, with ecological effects on the mangroves.The loss of sediment input due to infrastructure construction and sea level rise have been indentified as the key drivers of erosion in the Ivorian coast.

The coastal dynamics are dominated by the Guinean Current eastward in the upper layer and by the Ivorian undercurrent running west ward in the subsurface layer. Waves from the open sea are very energetic and the swell originating from the South Atlantic Ocean produces permanent surf parallel to the coastline. The prevailing coastal winds are the Monsoon Trade winds blowing from the southwest with a speed of about 3-4 m/s.This eastward long shore current, in the form of littoral drifts and tidal currents as well as rivers, are the main sources of sediment in the littoral

Due to the reduction of these sediments, the eastern part of the littoral from Abidjan to Assinie has been identified as a hot spot of erosion, rating between 1 to 2 m per year. This problem has become a major challenge in the area with a persistent net loss of land over the years. The

shoreline retreat is putting infrastructure and urban settlements at high risk especially considering the current trends of sea level rise and coatal recession.

For example, the rising waters in Gonzagueville caused significant material losses, such as the destruction of about 187 houses whose fragility is increased by the local construction material made of planks and used earth. In terms of consequences, the beaches were also reduced of 15 to 20 meter.

It is important to highlight that the existing degradation of the coastline is a major threat also to local economies. It was estimated that this degradation caused a loss of the land value, developed or non developed, of approximately 1,9 billion in 1998. Community livelihoods are highly vulnerable, fishery production is decreasing as a result of the pollution of lagoons and loss of mangroves. A study of the World Bank estimates that the cost of the decrease in fisheries in the Ebrie lagoon was around 557 million FCFA in 1998.

Population pressure, poverty and lack of regulation have been identified as root causes of the described chanllenges. Therefore, there are key planning issues that need to be tackled such as: managing pressure form urbanization, planning for growth and competing land-uses, and protecting the environment. Even more, if not adequately planned, the degradation of the environment, loss of biodiversity, increased pollution, vulnerability to climate change, and threat to health, safety and economy will worsen.

Ghana overview of vulnerability and developments

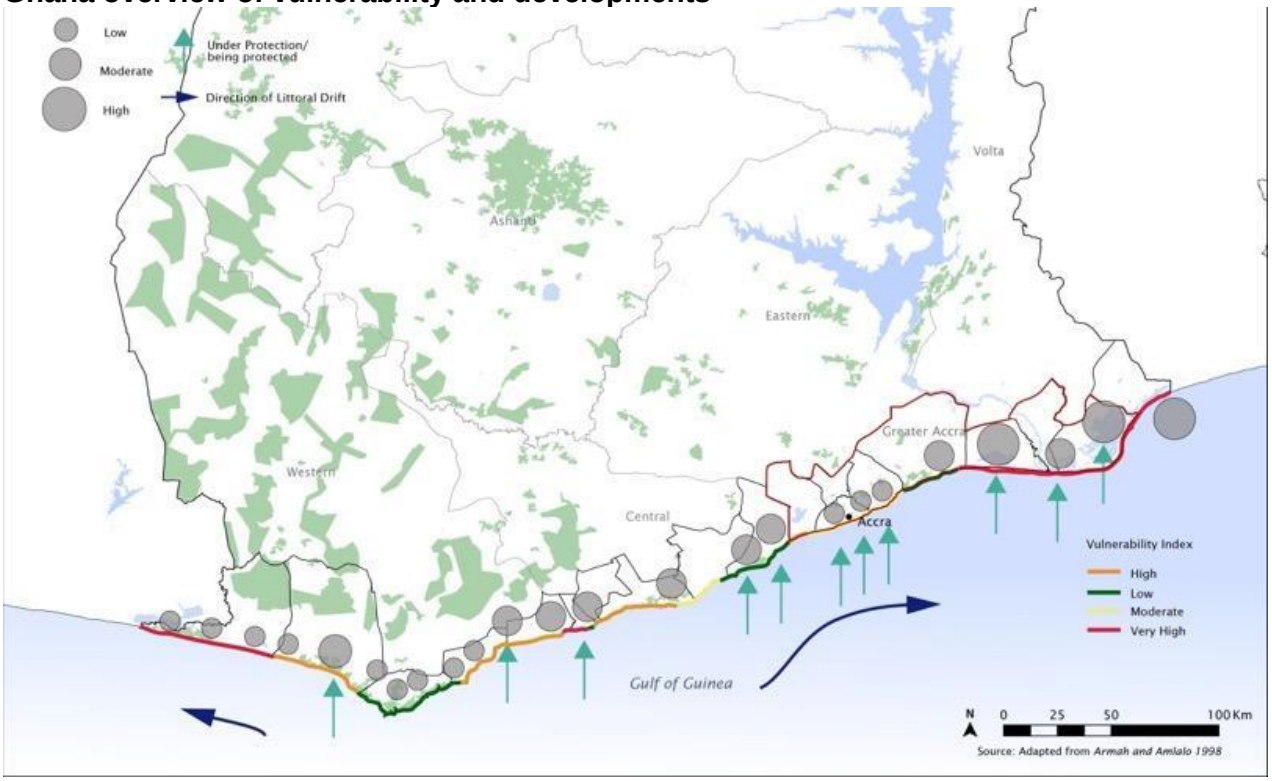


Fig 30: Vulnerability index and erosion severity in Ghana's coast

It is relevant to the Ghanian context to understand the importance of its coastal regions- Western, Central, Accra and Volta..From these regions, the focus of the projects will be on the area along

the coast between Accra and the Volta river delta, Greater Accra and Volta region, due to their highest vulnerability and erosion level, as indicated in the map below.

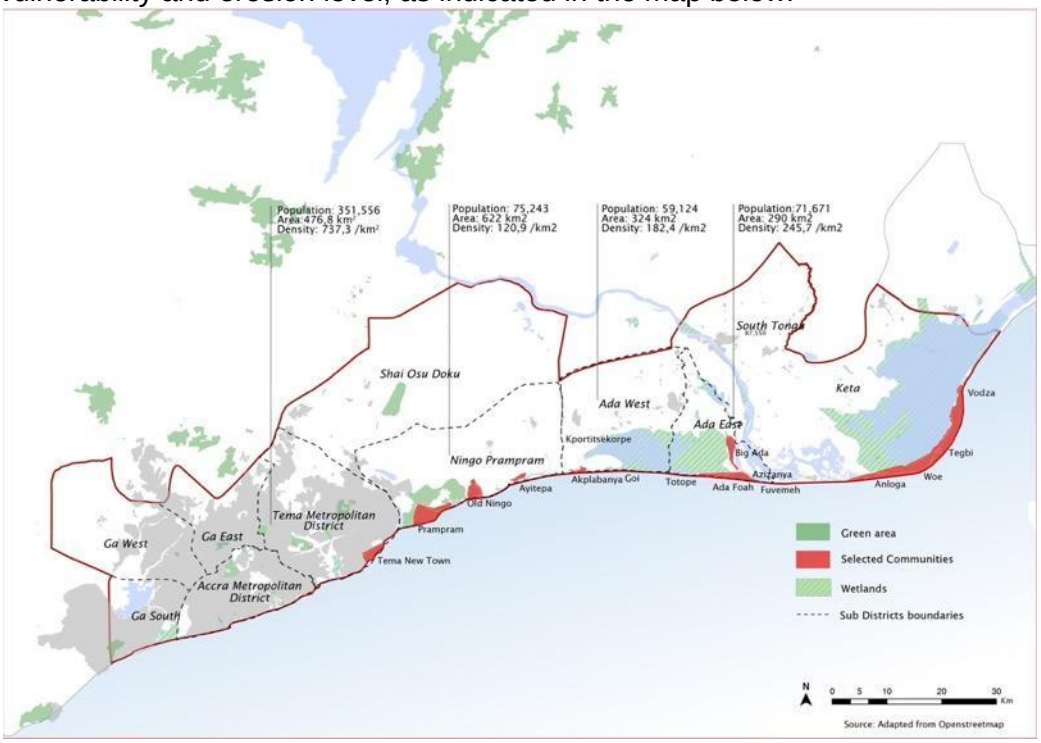


Fig 31: Target districts and communities in Ghana

These areas while with 24% of the land, they have 44% of the national population. Over 60 % of major industries (manufacturing, refinery, mining, port and harbour, textile and smelting), urban settlements (Accra, the capital city, Tema and Takoradi, port cities), tourism, heritage and conservation sites are located in the coastal zone.

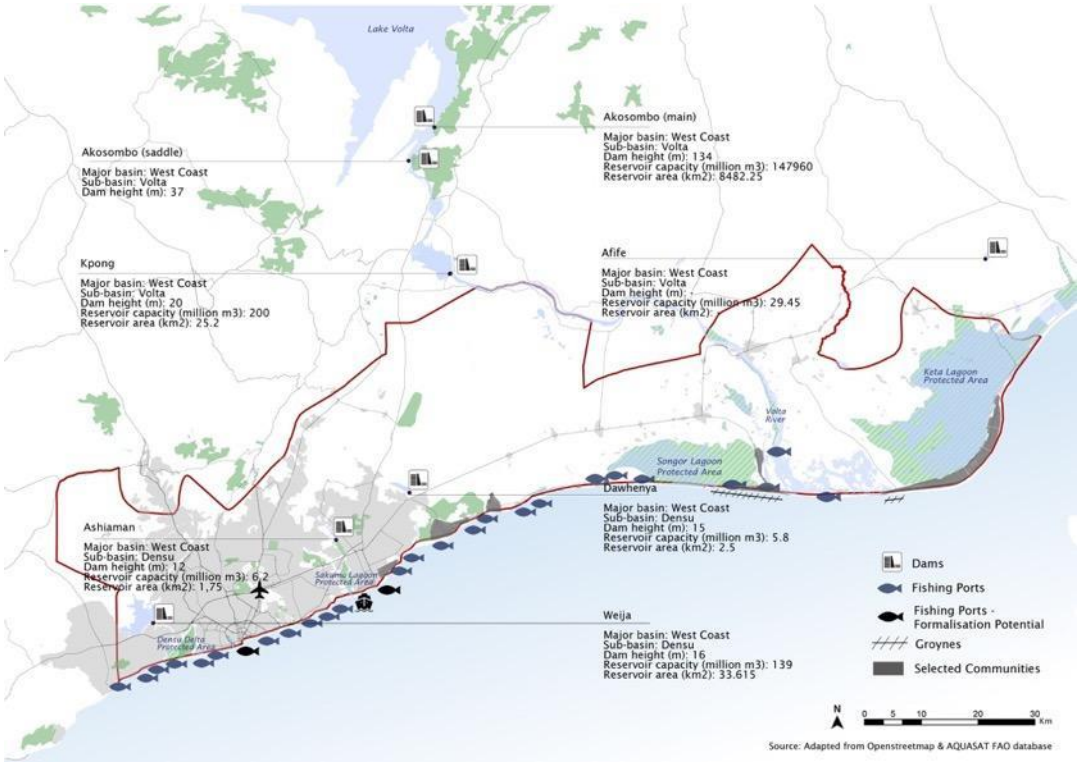


Fig 32: Coastal areas infrastructure

Coastal communities in this area are struggling with multiple interacting problems such as severe coastal erosion, increasing flood risk both from the ocean and the lagoons, a declining fish stock, one of the highest HIV infection rates of Ghana, limited excess to education,and pressure from industrial activities (aquaculture) and recreation activities (secondary houses/private estates/ ecotourism) on the common pool resources.

Under these pressures, parts of the delta that are hit the hardest are now depopulating (with youth moving to Accra and larger villages) and some communities have expressed willingness to relocate, whereas other communities feel that they should stay and fear to be pushed aside by tourism initiatives.[43]

This challenging context is exacerbated by the uncontrolled development of this coastal area. Satellite images of built-up land over two decades provide evidence of urban sprawl, fragmentation and declining densities (at an average rate of about 1.2 percent per year).

[43] Data collected by Delta Alliance / Delft University 9-13 October 2017

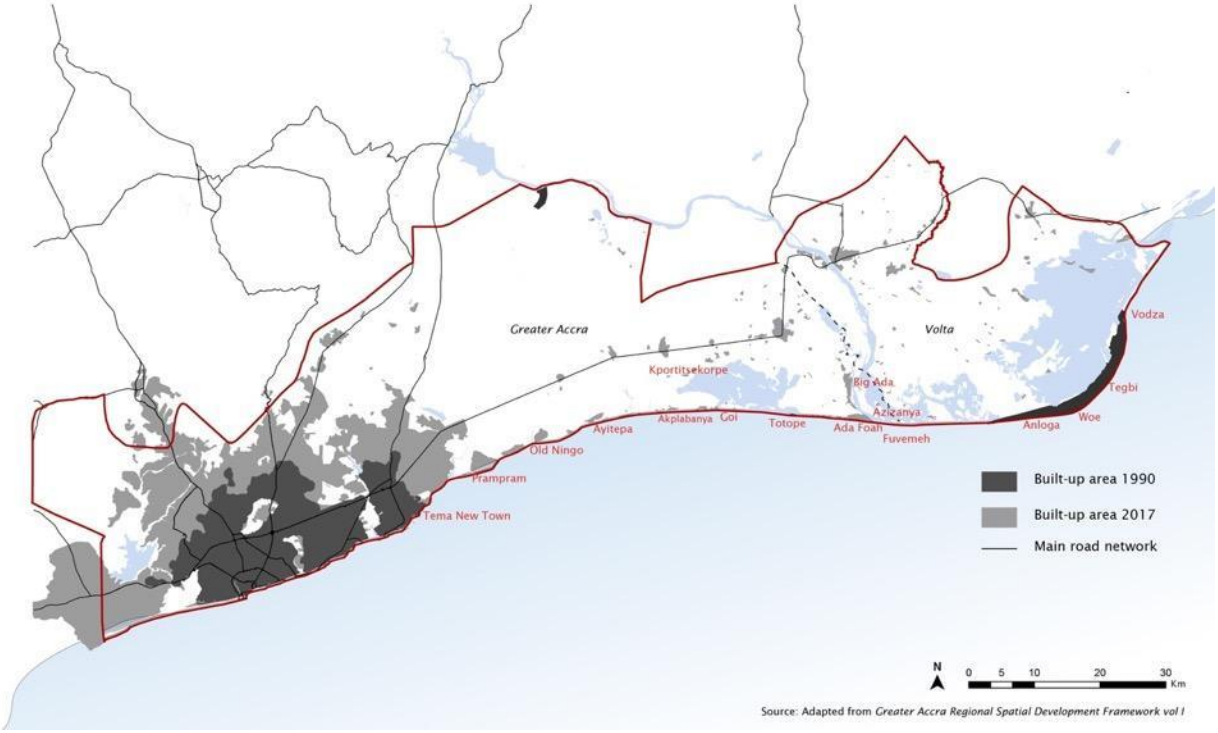
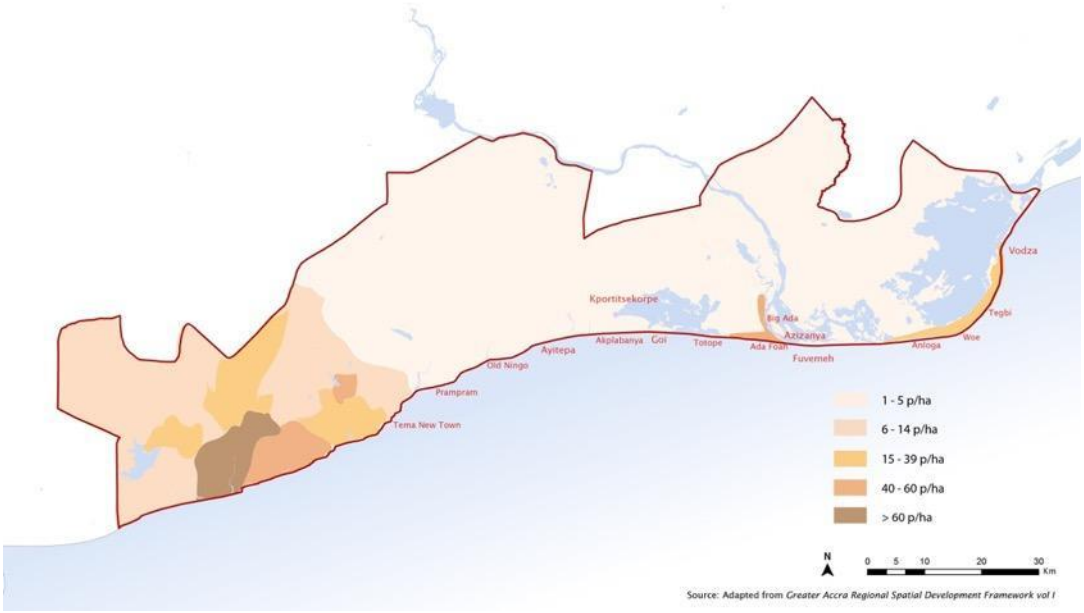

Greater Accra
Volta
Vodza
Kportitsekorpe
Big Ada
Tegbi
Azizanya
Ayitepa
Akplabanya
Goi
Totope
Ada Foah
Anloga
Woe
Fuvemeh
Old Ningo
Prampram
Tema New Town
Built-up area 1990
Built-up area 2017
Main road network
N
0 5 10 20 30
Km
Source: Adapted from Greater Accra Regional Spatial Development Framework vol I

Fig 33: Greater Accra and Volta region population densities



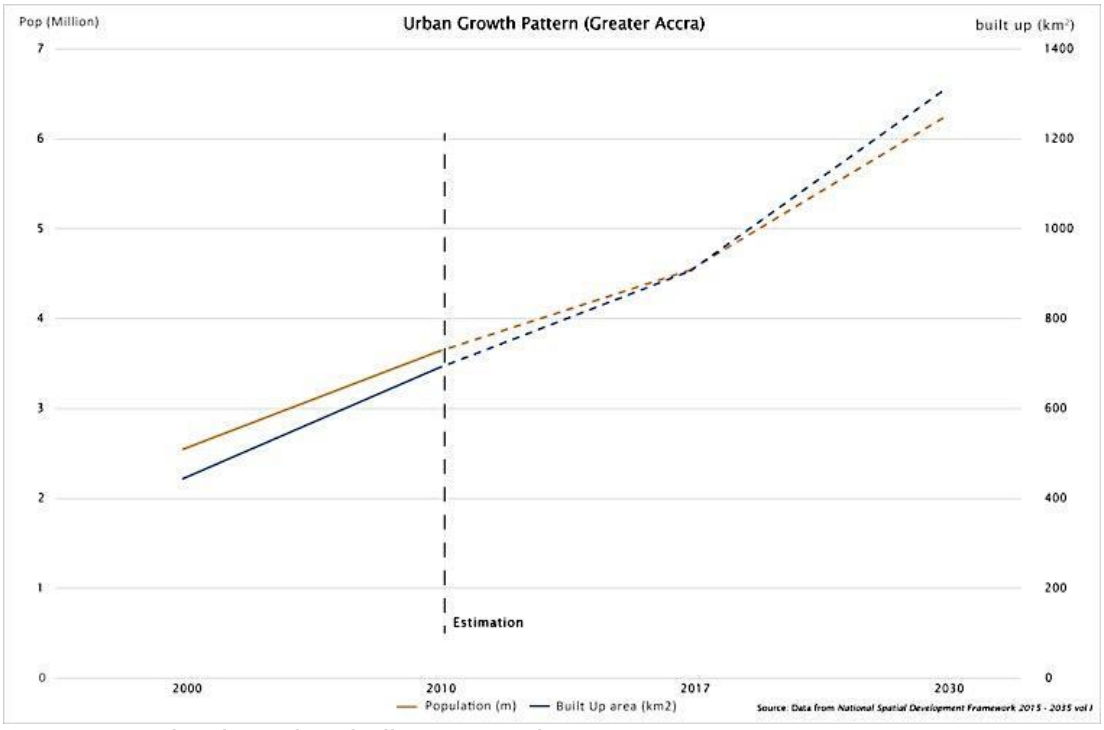


Fig 34: Greater Accra and Voltaregion built-up area change

Fig 35: Urban growth pattern in Greater Accra region

Furthermore, between 2000 and 2010, the annual growth rate of built-up cover (5.4%) was 1.2% faster than the urban population growth rate (4.2%). Volta and Greater Accra region have been identified as two of the regions with the highest density decrease rates.

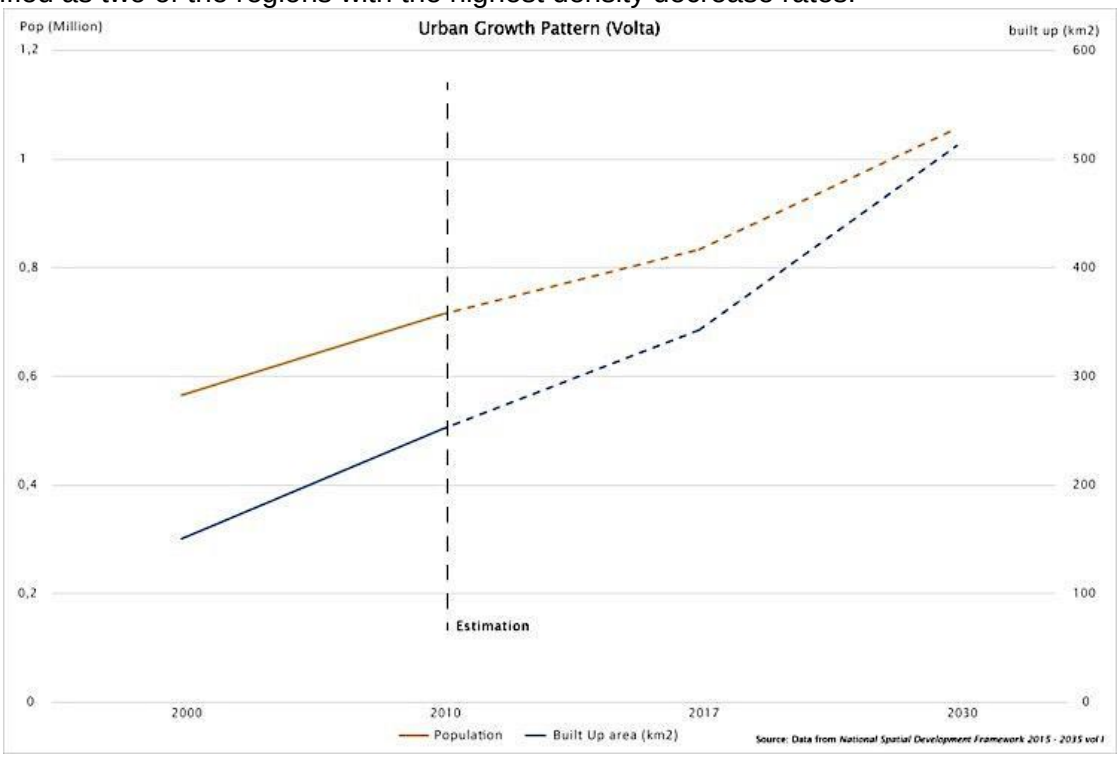


Fig 36: Urban growth pattern in Volta region

This development, due to the low density pattern and lack of planning, is deriving in an inefficient use of resources. This means, large amounts of land and materials are needed while it only provides services to a small amount of the population. Moreover, this trend usually leaves the most vulnerable behind, enhancing inequality and social disgregation.

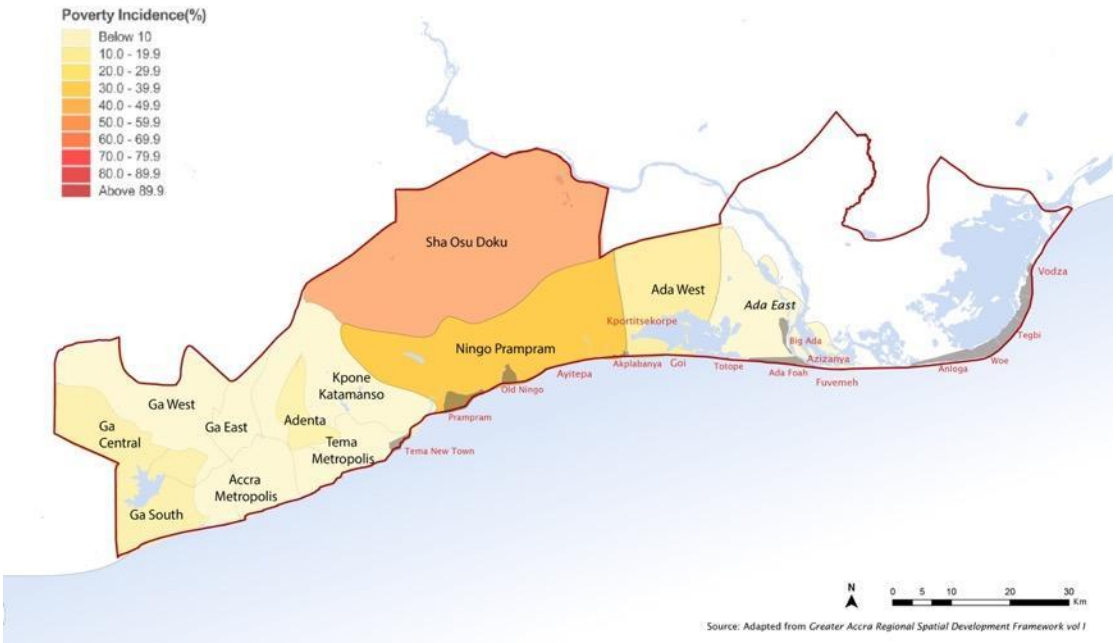


Fig 37: Poverty incidence in Greater Accra region

For this analysis, information on the poverty incidence was available for the Greater Accra region, showcasing the direct linkage between highest poverty levels and low density rural areas, This explains why there is big influx of population moving to urban areas, and illustrates the need of a more sustainable planning approach towards development that would improve urban-rural linkages at spatial and socio-economic level.

As indicated in the National Developmetn Framework 2015-2035, urbanization is a driver of Ghana's economy and it is clearly linked to poverty reduction. Areas with higher urbanization levels have higher GDPs and job opportunities, and their poverty rates (10%) are four times lower than in rural areas (38%). Shifting the already existing investment to a more compact, efficient, and inclusive development is key to foster economic growth and create opportunities for all.

Equally important is the negative impact this development is having on the ecosystems and natural environments where it allocates, Deforestation is a critical problem, in the Volta region grassland gain and cropland loss has reached 30% in the last decade and the extraction of mangrove for fuel wood and urban encroachment is particularly alarming. In Greater Accra region wetlands have also been lost, aproximately 22%, This situation is specially important because these natural elements have high economic and natural values for its communities, especially the water-related assets: wetlands, beaches and lakes. These features are currently being degraded by pollution, incompatible development and climate change, putting communities at high risk and increasing their vulnerability.

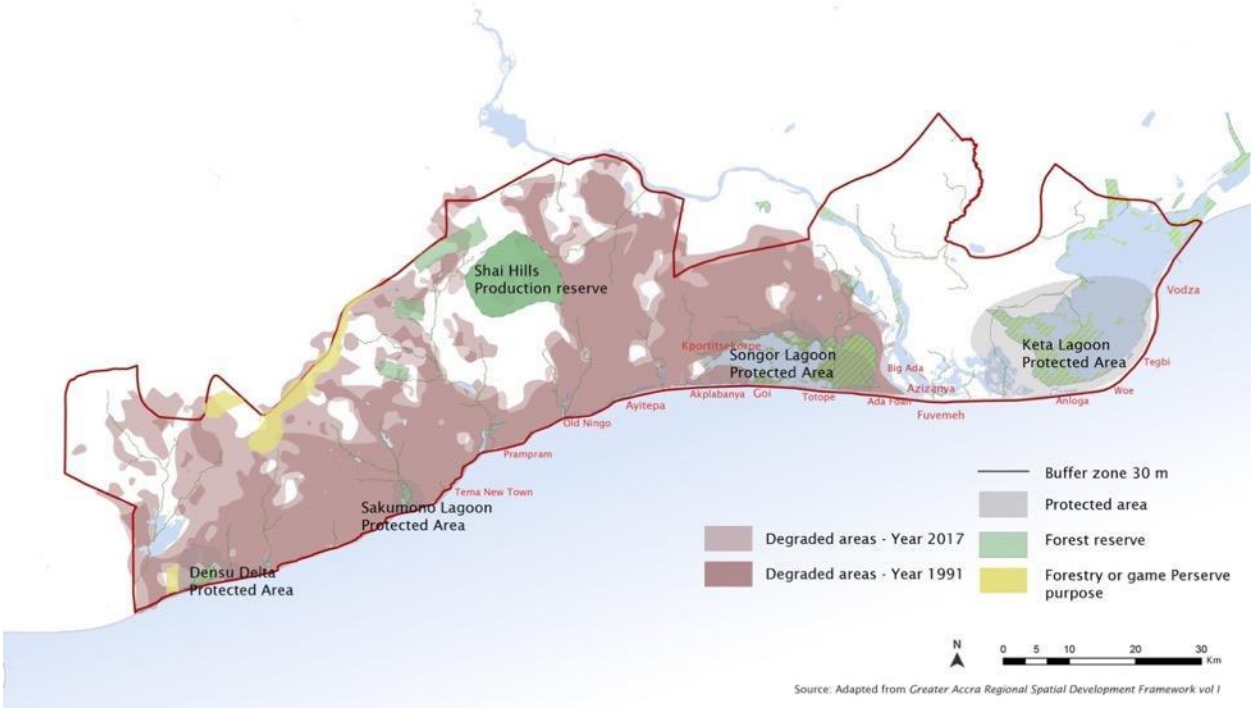
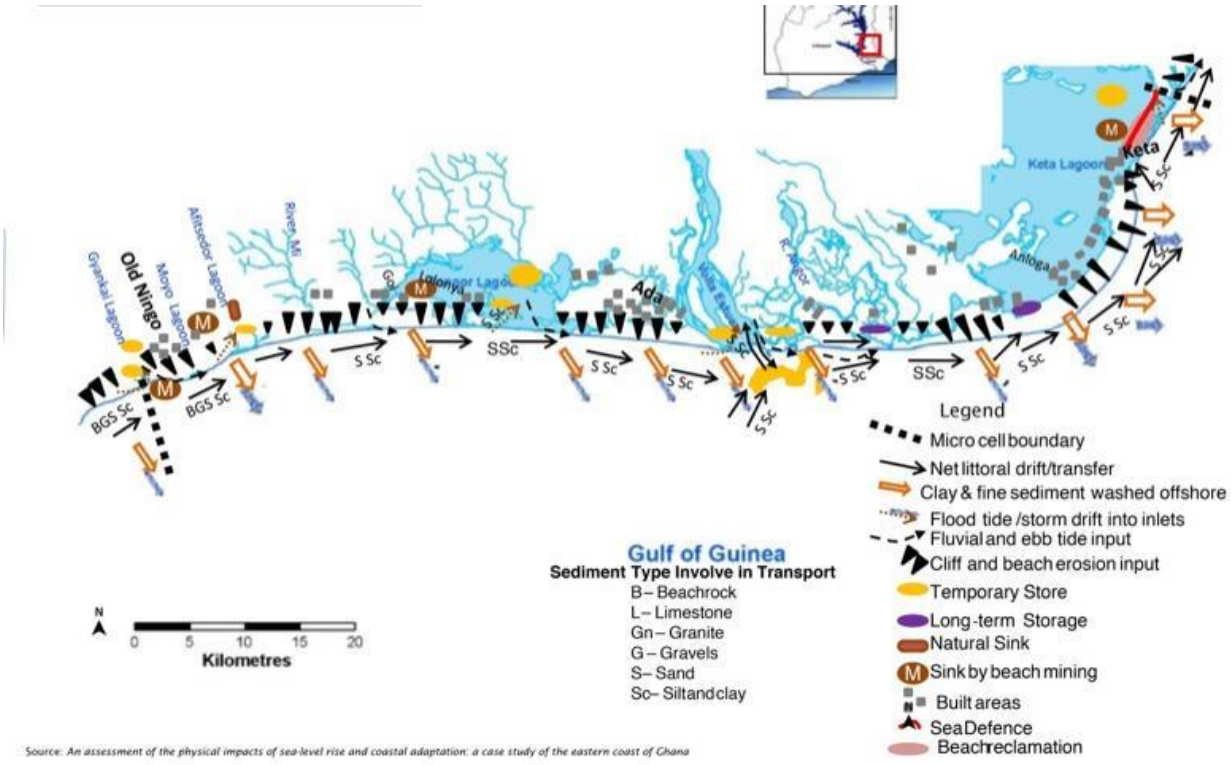


Fig 38: Degraded and protected areas.

Risks are also driven by sea level changes. Projections with respect to 1999, predicts an average rise of 5.8cm, 16.5cm and 34.5cm by 2020, 2050 and 2080 respectively, demonstrating the severity of the situation. Sea level rise is leading not only to increasing storm surges and coastal flooding but also to coastal erosion, at an alarming rate of more than 1.5m per annum. This rate is even higher in some of our areas of study due to the construction of dams upstream the Volta river, reaching 2-3m/year in the Volta estuary and 8m/year in Keta.

To understand this phenomenon, it is important to acknolewdge that the sediment along this coastline is redistributed mainly by a primarily eastward long shore current, in the form of littoral drifts and less importantly, tidal currents. In general, sediment is transported both by longshore trans-port (i.e. parallel to the shoreline) and onshore transport (i.e. perpendicular to the shoreline). However, the main sources of sediment to the littoral zone are from rivers and erosion of shores and cliffs. There are several coastal streams and lagoons along the coastline that deposit sediment into the marine environment, such as the mentioned Volta river. This amount of sediment transported is closely related to levels of river discharge into the sea. The latter is a factor dependant on the amount of rainfall during the rainy season, parameter that is also been altered by climate change.



Source: An assessment of the physical impacts of sea-level rise and coastal adaptation: a case study of the eastern coast of Ghana

Fig 39: Area of study sedimentary transport

Sea level rise modelling in the eastern coast of Ghana indicates the areas that are at risk. This modelling has been done for one meter, predicted global mean sea level rise, for two meters, the upper limit of global mean prediction for sea level rise, and for five meters, a long term scenario involving catastrophic conditions. As per the maps below, the area of study is in serious threat of flooding, landward (lagoon water) and seaward (sea water), and coastal recession due to the soft geology, low-lying topography and the reduction of sediment supply. Episodes of shore erosion over the last several decades caused about 70 % losses of buildings and the coastal road along the coast of Keta.

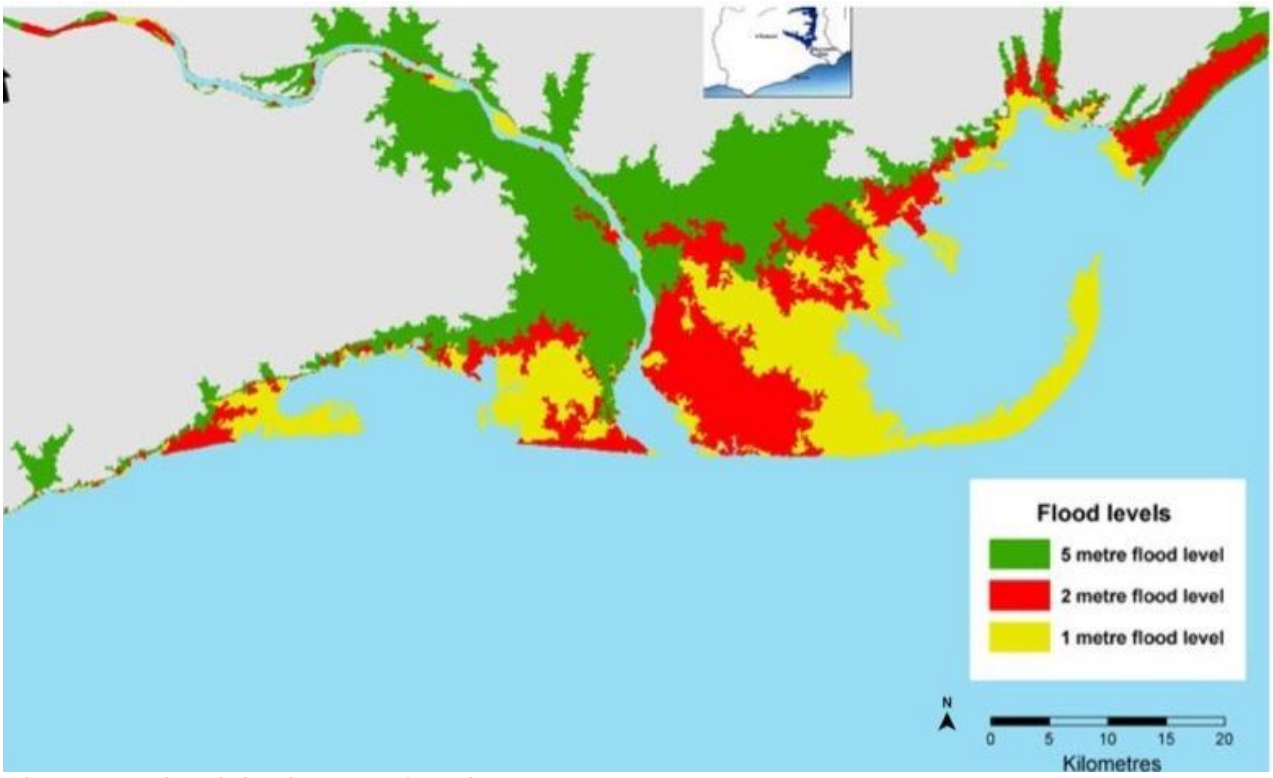


Fig 40: Sea level rise in area of study.

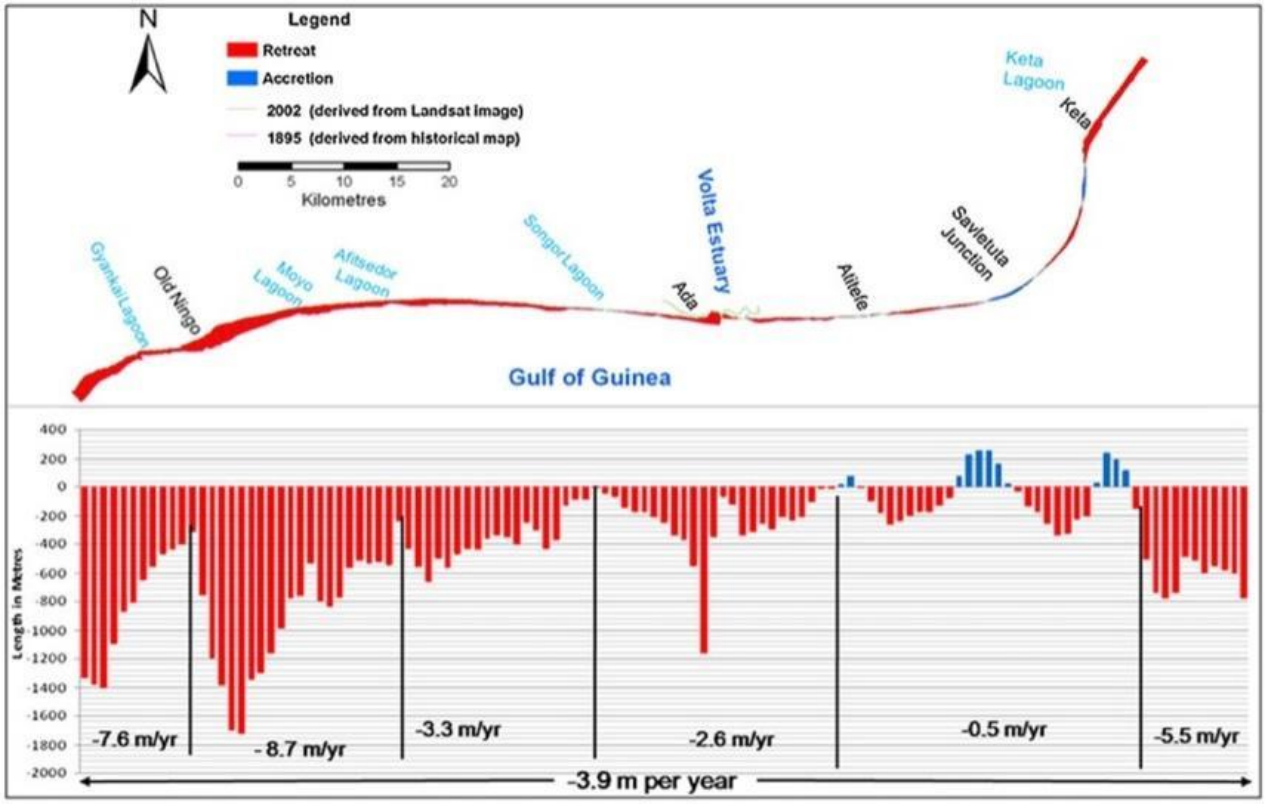


Fig 41: Sea level rise in area of study.

Annex 2: Overview of localized climate change impacts / hazards and effects, underlying vulnerabilities, barriers to adapt and resilience building needs

Table 14: Cote d'Ivoire

District and Communities	Population / beneficiaries	Main climate change impacts / Hazards	Effects on communities	Underlying Vulnerabilities	Barriers to adapt	Identified climate resilience building needs
JACQUEVILE	Total population: 56.308 Females: 27.397					
Grand Jack	Total: 6000 Female: 58 % Children: 42 % Disabled: >15	Erosion coast (last 20 years) Flash floods/rain (every year) Diseases Extreme heat	• Damaged houses • Destruction of plantations	• Poverty • Dependency on specific income • Deforestation (in Grant-Jack) • Problems with access to clean water (and Pollution / rubbish issues in lagoon) • Uncontrolled urbanization and tenure security issues	• Lack of awareness • Inadequate access/funding • Health issues related water quality • Very poor population • Weak government support	• Protect from the sea • Protect from the lagoon (high tides) • Warn for floods • Relocating is an option for Kouve
Techmien	Total: 800 Female: 59 % Children: 50 % Disabled: >4	River flooding Flash flooding Diseases	• Destruction of road • Damaged house			
Kouvé	Total: 450 Female: 55 % Children: 44 % Disabled: >5	Erosion Flash floods (every year Diseases	• Damaged houses • Destruction of plantations • Diseases outbreaks			
COCODY	Total population: 447.055 Females: 240.619					
Cocody vilage	Total: 2500 Female: 60 % Children: 20 % Disabled: 0,2 %	Flash floods River flooding Diseases	• Destruction of road • Damaged house • poverty	• Poverty • Informality • Sanitation problems	• Uncontrolled urbanization/construction • Pollution (dirty air, dirty water, dirty soil)	• Capacity building • Flood preparedness and forecasting

Blockhaus	Total: 4000 Female: 40 % Children: 24 % Disabled: 0,75 %	Flash floods/rain Extreme heat River flooding	• Damaged houses • Fish reduction	• Tenure security issues and land conflicts • Dependency on specific income	• Rubbish (waste management issues) • Lack of money / income • Lack of government support • Lack of skills • Low quality drainage	• Prevention: lagoon protection • Hygiene awareness • Improve the road system • Building codes / spatial planning • Waste / lagoon management • Resilient building construction
M'pouto	Total: 8000 Female: 40 % Youth: 6,25 % Children: 12,5 % Elderly: 10 % Disabled: 0,6 %	Erosion river banks Flash floods Extreme heat	• Destruction of roads • Fish reduction			
M'Badon	Total: 4000 Female: 50 % Children: 12,5 % Disabled: 0,5 %	Flash floods Diseases Extreme heat	• Land reduction • Destruction of roads • Fish reduction			
BINGERVILLE	Total population: 91.319 Females: 46.997					
Bingerville commune	Total: 91500 Female: 58 % Children: 42 % Disabled: >15	Lagoon flood Flash floods Erosion (due to rain) Diseases (Malaria)	• Damaged houses • Agriculture destruction • Fish reduction • Diseases • Sanitation Problem	• Low quality housing • Dependence on agriculture and fish • Informal status • Pollution of lagoon	• No knowledge • No money • No help from government • Waste in drainage • Need for wood – thus cutting trees • Low quality drainage • Pollution of lagoon • Need for wood – thus cutting trees	• Capacity building • Flood preparedness / EWS/forecasting • Prevention: more mangroves to protect • Insurance • Land use control and urban planning • Building codes (enforcement) • Prevention: more mangroves to protect
Aghien	Total: 2000 Female: 60 % Children: 50 % Disabled: 0,15 %	Lagoon flood Erosion Diseases Droughts	• Damaged houses • Agriculture destruction • Fish reduction			
Akandje	Total: 450 Female: 60 % Youth: 10 % Children: 10 %	Storm Lagoon flood Erosion	• Damaged houses • Agriculture destruction • Fish reduction			

	Disabled: 0,6 %					
PORT BOUET	Total population: 419.033 Females: 210.583					
Centre	Total: 10.000 Disaggregated data to be defined during next phase	Coastal erosion Flash floods/rain Extreme heat River flooding	● Damaged houses ● Fish reduction	● Informality ● Low quality of housing ● Low quality drainage ● Sanitation problems ● High density of population	● Uncontrolled urbanization/construction ● Pollution (dirty air, dirty water, dirty soil) ● Rubbish (waste management issues) ● Lack money/ income ● No government help ● Waste in the drainage	● Capacity building ● Flood preparedness and forecasting ● Prevention: lagoon protection ● Land use control and urban planning
Adjoufou-Gonzaguevill e	Total: 20.000 Disaggregated data to be defined during next phase	Flash floods/rain Extreme heat River flooding Erosion Coastal flood	● Damaged houses ● Fish reduction ● Malaria			
GRAND-BASSAM	Total population: 179.063 Females: 90.142					
Moossou	Total: 2.000 Disaggregated data to be defined during next phase	Flash floods/rain Erosion Coastal flood	● Damaged houses ● Fish reduction ● Destruction of agriculture	● Informality ● Low quality of housing ● Low quality drainage ● Sanitation problems ● High density of population	● Uncontrolled urbanization/construction ● Pollution (dirty air, dirty water, dirty soil) ● Rubbish (waste management issues) ● Lack money/ income ● No government help ● Waste in the drainage	● Capacity building ● Flood preparedness and forecasting ● Prevention: lagoon protection ● Land use control and urban planning
Quartier France	Total: 4.000 Disaggregated data to be defined during next phase	Flashfloods River flooding Diseases Coasta floods Erosion	● Destruction of road ● Damaged house ● Poverty ● Fish reduction			

Table 15: Ghana

District and Communities	Population / beneficiaries	Main climate change impacts / Hazards	Effects on communities	Underlying Vulnerabilities	Barriers to adapt	Identified climate resilience building needs
TEMA DISTRICT	Total population: 292.773 Females: 52.2% Youth: 34.5% Disabled: 2.5%					
Tema (Newtown)	Total: 71,711 Female: 51.69% Youth: 40.03% Children: 34.02% Elderly: 6.28%	Coastal erosion; Severe heat.	● Diseases outbreaks especially Malaria, Diarrhea. ● No farming activities. ● Fish catch has also dwindled.	● Poverty ● Pollution / sanitation issues ● Dependency on specific income (fishing). ● No job opportunities especially for the youth. ● Drainage problems (contributing to flash flood when it rains), ● No rubbish bins or appropriate site for dumping refuse. ● Air pollution.	● Inadequate access/funding for collecting the waste, which is then disposed into the lagoon, gullies, drains, open spaces, pits or burnt. ● There has also been little help from government. ● Inadequate knowledge/technical know-how among community members on how to solve problems in the community. ● Uncontrolled development in communities contributing to no land for farming. ● Low awareness and community enforcement of sanitation and hygiene/ low public health standards.	● Reduce health impacts of related disease outbreaks (cholera, malaria) ● Ensure vulnerable people are safe. ● Spatial planning to protect vulnerable areas from human development. Specific: ● Dredging of their lagoon ● Creation of jobs ● Constructing drainage ways ● Establishing aquaculture.
NINGO-PRAMPRAM DISTRICT	Total population: 70.923 Females: 52.7% Youth: 38.2% Disabled: 2.1%					
Prampram Informal Harbor	Total: 14,897 Female: 53.61%	● Coastal erosion and flooding; Shorelines in	● Fish reduction. ● Going out for fishing has become dangerous, leading to	● Poverty ● Dependency on specific income such	● Little help from government.	● Reduce flood impacts on

	Youth: 36.01% Children: 37.55% Elderly: 8.96%	this area are said to have shifted or moved 500m to its present state within the last forty years	multiple casualties per yesr. ● Disease outbreaks especially malaria and Cholera.	as fishing and farming. ● Lack of skills especially among the youth and elderly ● Drainage problems (contributing to flash flood when it rains) ● Inadequate toilet facilities ● Inconsistent access to potable drinking water (taps are opened once a week).	● Inadequate funds especially for resettlement ● Inadequate knowledge / technical know-how among community members on how to solve problems in the community. ● Continuous need of wood for cooking leading to deforestation and soil erosion / land degradation ● Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways. ● Inadequate information and communication about hazards (e.g. floods) ● Low awareness and community enforcement of sanitation and hygiene/ low public health standards ● Inadequate access / funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt.	people, assets and livelihoods ● Reduce the need for use of firewood ● Reduce health impacts of floods and related disease outbreaks (cholera, malaria) ● Reduce impacts of strong winds on people, assets and livelihoods ● Ensure vulnerable people are safe with regard to floods and strong winds ● Spatial planning to protect vulnerable areas from human development.
Old Ningo	Total: 9,078 Female: 55.80% Youth: 33.93% Children: 38.53% Elderly: 11.13%	● Coastal erosion and flooding; ● Flash flooding; ● Drought.	● Damaged houses and farms as a result of flash flooding. ● Mangrove farms have also been destroyed by the sea erosion. ● Reduction in fish harvest ● Disease outbreaks especially malaria.			
Ayitepa	Total: 1,375 Female: 54.76% Youth: 35.56% Children: 43.64% Elderly: 7.85%	● Coastal flooding and erosion; ● Severe drought.	● Farming activities have been adversely affected due to drought, less access to water for irrigation purposes. ● Fish catch has also dwindled. ● Diseases especially malaria and waist pains are dominant in this community.			

ADA WEST DISTRICT	Total population: 59.124 Females: 50.99% Youth: 42.8% Disabled: 2.2 %					
Akplabanya	Total: 5,101 Female: 50.99% Youth: 35.34% Children: 42.82% Elderly: 6.86%	● Coastal erosion and flooding, mostly during Easter (April) and August; ● Severe storms especially on sea.	● Reduction in fish harvest. ● Destruction of boats burked on the sea.	● Poverty ● Dependency on specific income that is salt mining and fishing. ● Lack of skills especially among the youth ● Poor access to potable drinking water, only two stand pipes serve the entire community (especially in Kpotitsekorpe), Goi has eight water tanks. ● Low quality drainage. No drainage ways to dispose of liquid waste. ● No toilet facilities ● No rubbish bins or appropriate site for dumping refuse. ● Heavy pollution of the Akplabanya Lagoon.	● Inadequate funds especially for resettlement. ● There has also been little help from government. ● Lack of knowledge/technical know-how among community members on how to solve problems in the community. ● Continuous need of wood for cooking leading to deforestation and soil erosion/land degradation ● Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways. ● Inadequate information and communication about hazards (e.g. floods) ● Low awareness and community enforcement of sanitation and hygiene/ low public health standards ● Inadequate access/funding for collecting the waste, which is then disposed in rivers,	● Reduce flood impacts on people, assets and livelihoods ● Reduce the need for use of firewood ● Reduce health impacts of floods and related disease outbreaks (cholera, malaria) ● Reduce impacts of strong winds on people, assets and livelihoods ● Ensure vulnerable people are safe with regard to floods and strong winds ● Spatial planning to protect vulnerable areas from human development.
Goi	Total: 3,657 Female: 53.32% Youth: 33.90% Children: 35.96% Elderly: 12.31%	● Coastal erosion and flooding; ● Severe drought.	● Reduction in fish harvest due to less access to fishing inputs such as boats, good nets and capital just to mention a few. ● Diseases such as malaria, fever and skin rashes are predominant in this community.			
Kpotitsekope	Total: 1890 Female: 52.6% Youth: 33.77% Children: 35.80% Elderly: 12.62%	● Coastal flooding and erosion; ● Flash flooding; ● Severe storms.	1. Damaged houses and properties due to storm and flooding. 2. No crop farming due to salinity of soil. 3. Less fish catch during fishing. 4. Low prices for salt during sale. 5. Diseases outbreaks especially diarrhea and malaria.			

					gullies, drains, open spaces, pits or burnt.	
ADA EAST DISTRICT	Total population: 71,671 Females: 52.5% Youth: 54% Disabled: 4.3%					
Big Ada	Total: 6864 Female: 56.4% Youth: 32.43% Children: 37.46% Elderly: 13.01%	● River and flash flooding.	● Reduction in fish catch especially tilapia. ● Diseases outbreaks such as Malaria.	● Poverty ● Dependency on specific income (fishing and fish mongering) ● lack of skills among the youth ● Poor infrastructure such as roads, community clinics ● No toilet facilities ● No drainage ways/channels contributing to flooding.	● Inadequate funds especially for resettlement. ● There has also been little help from government. ● Inadequate knowledge/technical know-how among community members on how to solve problems in the community. ● Continuous need of wood for cooking leading to deforestation and soil erosion/land degradation ● Uncontrolled development in communities	● Reduce the need for use of firewood ● Reduce flood impacts on people, assets and livelihoods ● Reduce health impacts of floods and related disease outbreaks (cholera, malaria) ● Reduce impacts of strong winds on people, assets and livelihoods ● Ensure vulnerable people are safe with
Azizanya	Total: 2,830 Female: 50.03% Youth: 34.6 Children: 41.84% Elderly: 7.42%	● Coastal erosion and flooding; ● River and flash flooding pose serious threats to the lives of community members.	● Damaged houses due to flooding. ● Dwindling fish catch as compared to previous harvest due to light fishing by other communities such as elavanyo, Totope and Pute. ● Diseases outbreaks such as Malaria.			

Totope	Total: 902 Female: 47.89% Youth: 30.71% Children: 44.68% Elderly: 10.31%	● Coastal erosion and flooding occurs once a year; ● Flash flooding lasting 3-4 months in a year.	● Disease outbreaks especially Malaria and Cholera. ● Damaged houses. ● Less fish catches during fishing. ● No crop farming due salinity of soil.	● No appropriate site for dumping refuse as well as rubbish bins ● Low quality housing. Inadequate access to potable drinking water. ● Heavy pollution of the Songor Lagoon.	contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways. ● Inadequate information and communication about hazards (e.g. floods) ● Low awareness and community enforcement of sanitation and hygiene/ low public health standards ● Inadequate access/funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt.	regard to floods and strong winds ● Spatial planning to protect vulnerable areas from human development.
KETA DISTRICT	Total population: 147,168 Females: 53.3% Youth: 34.6% Disabled: 7.2%					
Fuvemeh	Total: 813 Femal: 52.15%	● Coastal erosion and flooding; ● Storms/Strong winds; ● Heat waves	● Less fish catches during fishing; ● Damaged houses and, properties such as schools; ● Coastal erosion has caused deforestation; ● Haphazard building; ● No land for farming; ● No health facility; ● No electricity; ● Disease outbreaks especially malaria.	● Poverty; ● Lack of skills among the youth; ● Dependency on specific income (fishing, fish mongering, petty trading); ● Land scarcity; ● No drainage ways; ● No toilet facilities; ● No rubbish bins;	● Inadequate funds especially for resettlement. ● There has also been little help from government. ● Inadequate knowledge/technical know-how among community members on how solve problems temporarily or permanently.	● Reduce the need for use of firewood ● Reduce flood impacts on people, assets and livelihoods ● Reduce health impacts of floods and related disease outbreaks (cholera, malaria) ● Reduce impacts of strong winds on

Anloga	Total: 22,722 Female: 53.12% Youth: 33.00% Children: 32.70% Elderly: 14.98%	● Flash flooding; ● Severe drought.	● Damaged houses. ● Less fish catches during fishing. ● Inadequate water for irrigating most farms especially during dry seasons; ● Disease outbreaks especially malaria.	● Low quality housing.	● Continuous need of wood for cooking leading to deforestation and soil erosion/land degradation ● Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways. ● Inadequate information and communication about hazards (e.g. floods) ● Low awareness and community enforcement of sanitation and hygiene/ low public health standards ● Inadequate access/funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt.	people, assets and livelihoods ● Ensure vulnerable people are safe with regard to floods and strong winds ● Spatial planning to protect vulnerable areas from human development.
Woe	Total: 12,164 Female: 52.25% Youth: 28.72% Children: 36.64% Elderly: 12.76%	● Heavy flash flooding; ● Extreme heat; ● Drought.	● Less fish catches during fishing.			
Vodza	Total: 3,369 Female: 54.52% Youth: 30.99% Children: 35.17% Elderly: 13.68%	● Coastal erosion and flooding especially in September; ● Flash flooding; ● Storms/Strong Winds.	● Haphazard building; ● Indiscriminate sharing of state sponsored houses meant for resettlement; ● land conflicts; ● Less fish catches during fishing. ● Poor crop yield due to saline soil; ● Dilapidated houses			

Annex 3: Potential innovative building with nature concrete interventions in line with those identified in the components and financing table and table 5. Only the 'uncommon' inerventions are discussed here.

Introduction
Considered concrete interventions can be subdivided into the following groups:

- The zero-option: do nothing but awareness raising, traing and spatial planning measures
- Interventions that take away the cause of the erosion / flooding and related hazards
- Interventions to counteract the erosion / flooding and related hazards
- Interventions to alleviate the effect of coastal erosion / flooding and related hazards

For all interventions it is necessary to know the causes of erosion / flooding and other negative effects of sea level rise and storms, etc. on the coast (see background and context section and annex 3. Besides that, UN-Habitat works with top-experts from the water sector, including from Arcadis, Deltares and Delta Alliance and the Abidjan conventions internationally and Delta arms and universities locally.

The zero-option
The decision of not defending parts of the coastal zone should be taken only after a careful analysis (through modelling and risk related land use planning) of the consequences of such not defending. A consideration with respect to the zero-option is that the longer the moment of taking counter-measures can be postponed the simpler the solutions become. This is because of the fact that the rates of erosion, after a certain major event or man-made intervention (such as a river dam), in general decrease as a function of time.

Measures to take away the cause of erosion
An intervention to take away the cause of erosion can be taken in case a river dam disturbs the natural availability of sediment. Before the construction of the dam, the river sediments were transported undisturbed towards the mouth of the river, where the waves were distributing the sediments along the coast. In order to re-establish this situation, one could think of the installation of a by-pass system at the dam. This could be a in the form of a small cutter dredger that is cleaning continuously the basins formed upstream of the dam. the spoil is transported by a pipeline downstream of the dam into the river. The quantity of by-passing should depend on the actual river discharge-during its new regime, to avoid possible flooding of the banks downstream of the outfall of sediment, where a bar may be formed.

Alternatively, the decreased discharge might also enhance sedimentation in the river mouth. Because of the high discharges this was not possible before the construction of the dam. This sediment might be dredged and transported downdrift to restore the sediment budget.

Such a by-pass system can also be installed in case of disturbing harbor dams. Disadvantage of a by-pass system is the relatively high maintenance and operational effort.

Interventions to counteract the erosion
These measures can be subdivided according to their operating principles into 3 groups:

1. Measures to restore the beach
   - Artificial sand nourishment

- Perched beach

2. Structures to slow down the rate of the longshore and/or cross-shore transport
   - Groynes (not being considered for this project)
   - Detached breakwater (not being considered for this project)
   - Artificial barrier (not being considered for this project)
3. Structures to prevent the waves to reach the erodible material
   - Sea wall (not being considered for this project)
   - Detached breakwater (not being considered for this project)

Interventions to restore the beach

Artificial sand nourishment
Beach nourishment is a flexible method to counteract coastal erosion under favorable conditions. It can be a relatively low-cost operation, which should be repeated periodically. It could also be used in combination with structures such as groynes.

The following types of nourishment can be distinguished:

Dune/ barrier nourishment

The sand is placed high up the dry beach against or on top of the dune/ barier. This is done to provide an additional safety against storm surges. The sand is only eroded during the more extreme wave conditions.

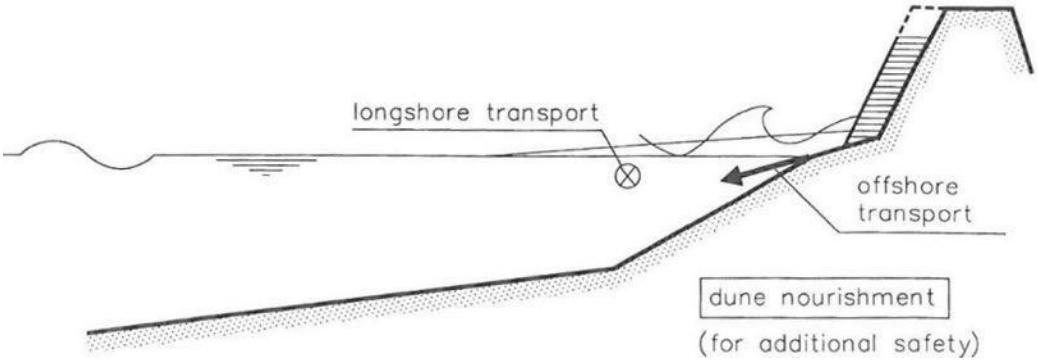


Figure 42. Dune/ barrier nourishment

Beach nourishment

The sand is placed on the wet and dry beach. The sand will initially be transported with a relatively high rate along the shore and in an offshore Direction till a dynamic equilibrium profile has been formed. After that the erosion will continue with a similar rate as before the nourishment.

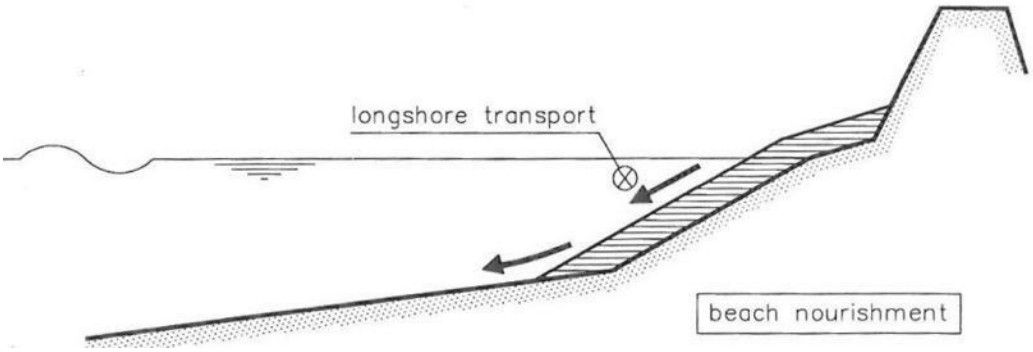


Figure 43. Beach nourishment

Foreshore nourishment (i.e. sand motor)

The sand is placed at the foreshore (tit a depth of say 8 m). The sand will be transported in an offshore direction but also in an onshore direction till a dynamic equilibrium profile has been formed. It is clear that offshore nourishment is less effective than beach nourishment, but at the other side it may be cheaper. The dredger can just unload at the foreshore, instead of pumping the hopper content through a pipeline-booster-system towards the shore. Nevertheless, foreshore nourishment is considered not be effective in the encountered project site due to the lack of low energetic waves that are able to transport the sand up to the beach.

Figure 44. Foreshore rainbowing

Interventions to restore the beach: perched beach

The perched beach combines a beach nourishment (elevated or perched above the original beach profile) with a low underwater dam this alternative provides a sand buffer against wave action and is used if little or sand or only fine sand is available. Development of aquiculture might be possible on top of the dam.

Just like the nourishment, the enclosed sand will also be transported along the shore and offshore till a dynamic equilibrium profile has been formed. Therefore, the perched beach should be re-filled regularly. Please not that the underwater dam might have a wave reducing effect. This results in the decrease of the sediment transport capacity, both in a longshore and offshore direction. At the downdrift area, the alongshore transport is increasing again, which results in local erosion there. This measure might shift the erosion problem and is therefore not favorable, although it might increase livelihoods.

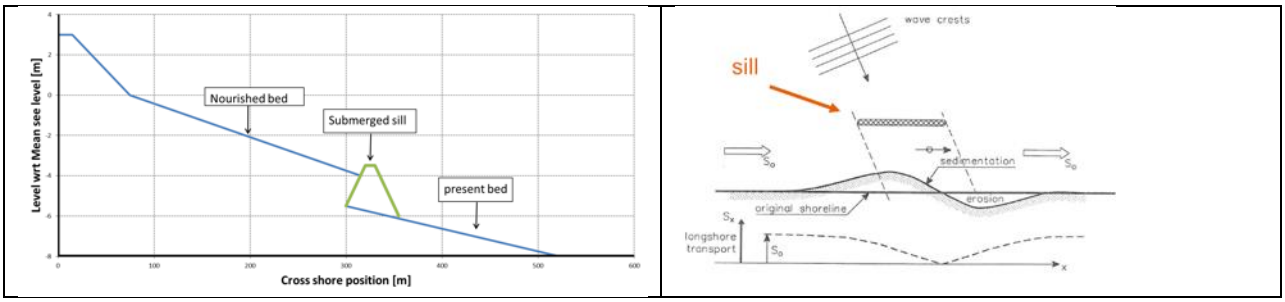
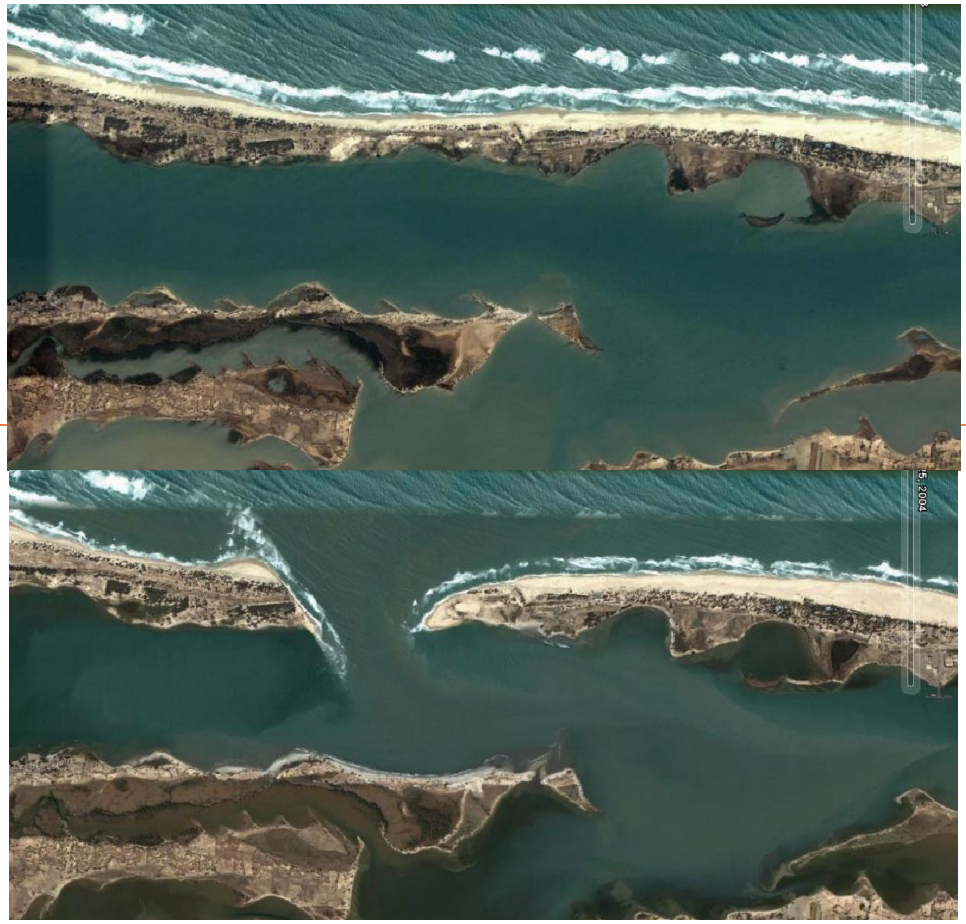


Figure 45. Example of perched beach

Intervention to refresh water in lagoons or to release water from the lagoon into the sea
This interventions is only possible at places with a present (small) opening, otherwise breach may get (irreversibly) out of control.



Annex 4: National priorities analysis

Table 16: Ghana National climate change priorities analysis – relevant priorities in red

Ghana's climate change strategic focus areas (National Climate Change Policy)	Relevant Programme areas	Relevant Policy actions
Agrculture and food security		
Develop climate resilient agriculture and food systems	**P1.** Institutional capacity development for research and dissemination **P2.** Development and promotion of climate-resilient cropping systems **P3.** Adaptation of livestock production systems **P4.** Support to adaptation in the fisheries sub-sector **P5.** Support to water conservation and irrigation systems **P6.** Risk transfer and alternative livelihood systems **P7.** Improved post-harvest management **P8.** Improved marketing policies	Improve and harmonize research activities in Build and strengthen the capacity of extensio to enhance support to farmers and fisherme Promote capacity-building for farmers and fis climate change issues Build capacity for community-level weather d dissemination for agricultural planning Document and promote appropriate indigeno Develop climate-resilient cropping and livesto and livestock breeds tolerant to flooding, drou Promote diversified land use practices, includ urban/backyard vegetable production, to redu farmers to cope with droughts and floods Prepare and enforce spatial plans to address agriculture and human settlements Improve productivity through improved farmi as the integration of trees into farming systen under various crops, green/organic farming, e Promote and support agricultural diversificati as management practices) as a coping strate Design and implement programmes on fishe which integrate climatic and hydrological para Provide sustained support in the use of simpl conservation measures (e.g., agro-forestry, c contour earth mounds, vegetative barriers an Promote appropriate technologies for small-s harvesting (e.g., waste/water recycling), rainw Improve efficiency of farming practices throug pricing policies and access to credit Institute risk transfer schemes (e.g., insuranc harvest failure or weather risk Promote alternative livelihood systems to div poultry production, piggery, snail rearing, mu aquaculture, etc. Improve post-harvest capacity, e.g., storage infrastructure Build capacity for recycling and conversion o Improve marketing policies that increase com international market.
Disaster preparedness and response		

Build cliamte resilient infrastructure	**P1.** Building capacity to design climate-resilient infrastructure **P2.** Knowledge management and coordination **P3.** Climate-resilient sectoral and local development planning **P4.** Ensuring that existing key infrastructure is climate proof **P5.** Flood prevention activities **P6.** Development of climate-resilient infrastructure for key services **P7.** Protection of coastal resources and communities	Improve technical and institutional capacity th Conduct research on appropriate infrastructu requirements against extreme weather-relate Improve hydro-meteorological observation ne and information, and communicate early war Collect relevant data on coastal zone geomo groundwater for modelling coastal flooding Provide enabling policy environment to ensu planning, construction codes and manageme Revise design standards, building codes and change parameters Climate-proof important infrastructure that pr communities are less exposed and vulnerabl Construct proper storm drainage systems, riv undertake afforestation along embankments flooding Construct channels, water collecting reservoi store water for the dry season Encourage relocation of settlements and eco disaster-prone areas Use information and communication technolo events and providing an early warning syster Develop and implement strategies to change to climate change, e.g., harvesting rainwater communities in adapting Ensure that rural communities have reliable a lifeline facilities Develop climate-resilient standards for key c coastal communities from storm surges, coas
Increase resilience of vulnerable communities to climate related risks	**P1.** Early warning mechanism **P2.** Public education and adaptation skills **P3.** Rapid response and disaster management **P4.** Improved key public social services **P5.** Financial support and insurance schemes **P6.** Social support systems	Document and improve community-based ea disasters and effective dissemination, especi languages Promote timely use of strategic information to Promote development of modern information Enhance access to public information Create an enabling environment for media Improve awareness and provide skills trainin change and adaptation strategies Avoid mal-adaptation by reversing trends tha Rationalize a system of incentives, deterrents change Strengthen the institutional framework for dis Enhance institutional capacity of agencies in the National Disaster Management Organiza Improve technical capacity and facilities for, a of, rapid response to disasters and disaster r Facilitate regular interaction between commu NGOs on emerging problems and best practi Reinforce partnership among government an strengthen their capacity to respond in emerg

		networks - Improve public adaptation strategies, includir road infrastructure, land tenure administratio - Support livelihood activities in rural and urba income of vulnerable communities - Enhance awareness of financial instruments - Provide supportive social safety nets for com - Increase investment in social services and in supported by public-private partnership in se - Strengthen traditional social support systems - Include a focus on the vulnerability of migran - Promote conflict resolution mechanisms.
Natural resource management		
- Increase Carbon Sinks	**P1.** Improved governance, capacity and regulatory structures **P2.** Secure integrity of forest and other natural ecosystems **P3.** Sustainable wood fuel production and development of alternative biofuel sources for domestic energy supply **P4**. Plantation development (afforestation, reforestation and forest restoration) **P5**. Conservation of trees through sustainable forestry and on-farm practices	- Strengthen institutional and technical capacit - Improve legislation to effectively address lan - Improve regulatory mechanisms to reduce ill - Reduce the pressure on forests and mangro efficiency of production, harvesting, conversi improved efficiency in cook stoves, communi charcoal producer associations, community l planning - Promote alternative sources of fuel for dome LPG as an alternative to wood fuel, etc. - Promote, through increased funding and opp and management in off-reserve areas for priv - Rehabilitate degraded natural ecosystems th degraded forest reserves and off-reserve are - Support initiatives for the enhancement of ca afforestation/reforestation measures, includir Governance and Trade (FLEGT), the Non Le of Forests (NLBI), REDD+ and the Clean De - Support agro-forestry programmes initiated t crops - Promote the establishment and consolidation - Reinforce local community involvement in res Encourage diversification from natural-resource-l activities such as trading
- Improve management and resilience of terrestrial and aquatic ecosytems	**P1.** Improved governance and natural resource management **P2.** Community-based natural resource management **P3.** Economic incentive measures **P4**. Ecosystem-based adaptation	- Improve the management of important ecosy - Promote effective spatial planning and land z land resource management plans at all levels - Support local, national and international polic terrestrial, aquatic and marine ecosystems - Improve mechanisms for fair and equitable s including defining tenure rights, minimizing th and reducing conflict over permitted farms ar - Support scientific research, including traditio monitoring, and collaboration with national ar - Improve knowledge capacity for effective ma example through sustained extension activiti - Apply technologies to provide information for

		for weather-related hazards Support awareness creation and disseminati Encourage and promote community-based a quality Establish ecological networks or biological co e.g., the establishment of Community Resou or linking up with existing CREMAs for syner Promote afforestation to enhance dry season Encourage the protection of river courses, ar Promote the use of biodiversity and ecosyste strategy to climate change Promote economic and social incentive meas management.
Equitibe social development		
Adressing impacts of climate issues on human health	P1. Capacity-building of health care providers and groups P2. Research and improved data management and storage P3. Strengthened disease surveillance and response systems P3. Improved public health measures (immunization, improved drainage, sanitation and hygiene) especially in vulnerable communities P4. Emergency health preparedness, e.g., provision of ambulances in vulnerable areas P5. Collaboration and partnerships for improved nutrition, water and sanitation P6. Social protection and improved access to health care	Establish community health groups and deve risks and facilitate access to services and de Strengthen technical capacity to manage clim Strengthen disease surveillance systems thr Improve data sharing and develop health info diseases including climate-sensitive diseases system Improve partnerships between relevant minis improve access to potable water, instead of c bodies, and environmental sanitation Map disease incidence and identification of v diseases Strengthen existing units within the health de related epidemics Collaborate with relevant stakeholders to imp processing capacity, food banks, nutrition ed control Improve surveillance systems for existing an care systems are geared up to meet future d Mainstream climate change health risks into health policy levels Identify, document and incorporate climate-re health delivery systems and practices Develop structures to effectively manage and change health risks.
Minimize impacts of climate change on access to water and sanitation	P1. Environmental sanitation education and hygiene education P2. Improved access to safe drinking water P3. Research P4. Construction of water storage systems P5. Improved drainage in urban areas P6. Recycling P7. Waste re-use and reduction e.g., composting, biogas	Develop rainwater harvesting and increased and dams for water use Make water accessible for domestic, agricult and energy production Recycle water for domestic and industrial pur Develop efficient irrigation drainage systems Build capacity in water resources manageme Promote water supply and sanitation delivery climate change Develop and introduce flood and drought mo Develop and implement environmental sanita

	P8. Improved access to sanitation facilities P9. Water and land management	change Strengthen District Assemblies to assume a management of water and sanitation facilities Reduce methane from landfills through waste Improve construction of hydropower scheme infrastructure to improve efficiency Implement drinking water and sanitation prog change (e.g., coastal areas, flood- and droug Provide economic incentives to manage wate furnish a sustainable and clean supply of wat services and climate benefits Improve the status of environmental sanitatio and enforcement of laws
Addressing gender issues in climate change	P1. Gender-responsive climate change research P2. Livelihood protection and alternative livelihoods and poverty reduction P3. Budget allocation on gender issues and climate change P4. Gender-responsive disaster risk reduction and management (GRDRRM)	Ensure the integration of gender equality prin education, health, water and sanitation Generate gender-specific information includi determining the gender impacts of climate ch Develop effective gender and climate change indicators Collaborate with CSOs, especially women's r climate change discussions and processes Build the capacity of the relevant institutions climate change policy formulation, planning, Prepare and implement gender and climate c by institutions, which would provide a sound gender mainstreaming Identify and analyse gender-specific needs, i measures related to climate change and vari diseases Promote gender equitable financing as a mea impacts of climate change by gender. This w mechanisms for integrating a gender dimens and monitoring of all climate funds Increase the resilience of vulnerable groups, through the development of community-led a better access to basic services and social pro Integrated biomass strategies for food, fuel, f including income generation Promote effective and equal participation of r policy and decision-making processes Strengthen the implementation of gender res management
Addressing climate change and migration	P1. Alternative livelihoods P2. Social protection for migrant poor P3. Structures for dialogue between migrants and hosts communities to prevent conflicts P4. Improve access to health and	Promote vocational training, especially for yo receiving in-migration Invest in agriculture in vulnerable areas, such that are pest and drought resistant, early yiel promoting irrigation, to help curb rural-urban Facilitate movement between source and des transport systems

	education P5. Measures to enhance existing livelihoods P6. Measures to enhance remittance flows	- Facilitate flows of remittances and goods and destination areas - Target social transfers and safety nets; includ - Improve access to microcredit among migran - Promote alternative livelihood programmes to - Facilitate the proper utilization of rural and pe and land management schemes (move to na - Provide social protection for immigrants - Increase accessibility to quality health care fo - Mainstream migration into national developm - Establish a national institution for the manage - Enforce rules and regulations of housing and
Energy, industrial and infrastructure development		
- Minimize Greenhouse Gas Emissions	P1. National institutional framework for greenhouse gas inventory P2. Improved capacity of relevant sectors (public and private) for national GHG emissions reduction P3. Low emission and clean technology research, development, diffusion, deployment and transfer P4. Improve energy efficiency in production and consumption of energy P5. Renewable energy development P6. Comprehensive wastes (solid, liquid and human) management P7. Minimize gas flaring	- Improve technical capacities, data collection emissions, inventories and reporting - Improve institutional arrangements and existi collection, data sharing and archiving in appr - Support research, development and transfer natural gas combined cycle, natural gas distr hydroelectricity projects - Promote energy efficiency and management innovative energy efficiency methodologies a especially power generation, oil and gas, tran - Promote the use of cleaner and more efficien methods that minimize resulting emissions ar - Create an enabling environment, including in to encourage and support the use of renewal - Establish effective mechanisms for reducing controlled and safe disposal of unavoidable w - Establish sustainable recycling and waste ma generate energy (e.g., biomass energy, bioga emissions from solid and liquid wastes, espe - Support public awareness of efficient use of sources - Establish efficient infrastructures and mechan products from oil fields to prevent gas flaring

Table 17: Cote d'Ivoire National climate change priorities analysis – relevant priorities

Activities	Objectives and description	Co-be
INDC – Forests and land use		
Fight against deforestation and degradation of lands	Reducing Vulnerability and Increasing Resilience - Simplify species, promote agroforestry, restore degraded lands - Promote the sustainable management of land by techniques for improving the conservation of water and soil (CES). - Developing the approach for sustainable management of land and the conservation of soils.	
INDC - Hydrometeorological Disaster Management		
Building resilience, especially against coastal erosion	Reducing vulnerability and increasing resilience, especially for the Sassandra - Vridi - Port-Bouët - Evaluate hydrometeorological risks and implementation of mitigation measures - Set up a multi-hazard alert system - Establish a contingency plan and plans Response Systems - Informing, educating and communicating about risks hydrometeorological - Strengthen the capacity of actors in Disaster Risk Reduction (DRR) and disaster management - Systematically assess the losses and damage and ensure the rehabilitation and construction post-disaster - Develop coastline observation and identify territories at risk of erosion (monitoring of coastal erosion). - Protecting habitat (enforcing the construction and extraction of sand on the coast, relocate and rebuild the structures in danger on a retreat line, construct works of active protection-épis, breakwater, passive, restoration - windbreaks, revegetation, even reforestation). - Establish an experimental micro-projects fund for protection against erosion	

Annex 5: Overview of consultations, incldiuing objectives, outcomes and conclusions

Table 18: Cote d'Ivoire

Date	Stakeholder,	Consultation objective	Outcome
13 nov 2017 Bonn / COP 23	Ministry of Urban Sanitation, Environment and Sustainable Development	- Agree on AF proposal priorities and target areas (districts level) - Understand national priorities - Identify relevant projects and lessons, concerns and complementary potential	- Agreement of roadmap for developing this proposal
Through	Ministry of		

above ministry	Construction, Housing, Sanitation and Urban Planning		
16 nov 2017	Cocody Department	- Agree on AF target areas (community level) - Identify focal point - Understand local issues and needs - Identify relevant projects and lessons, concerns and complementary potential	- Priority community: Cocody village, Blockhaus, M'pouto, M'Badon - Focal point: Mayor: N'goan Aka Mathias - M'Pouto: Ceke Nangai - M'Badon: Djoman Bogue
16 nov 2017	Bingerville Department		- Priority community: Bingerville, Aghien, Akanje - Focal point: Mayor: Beugre Djoman - Aghien: Alle allee Jean Pierre - Bingerville: Bagodou Augustin - Akanje: Mobio
17 nov 2017	Jacqueville Department		- Priority community: Gand-jacq, Techmien, Kouve; - Focal point: Aka Auguste (mayor_ - Grand-Jack: M Soppy Tiakpa Justin - Techmien: N'Geussan Francois
17 nov 2017	Grand-Bassam Departments		- Priority community: Moossou and Quartier France - Focal point: Georges Ezalé, Mayor of Grand-Basam - Brindoumi, Chief Technical officer of the town hal - Aketchi Anselme, the youth leader
17 nov 2017	Port Bouet Department		- Priority community: centre and Adjoufou / Gonzagueville - Focal point: Tanoh (technical service of the Town hall)
13 nov 2017	World Bank	- Agree on cooperation modality for potential coastal interventions in target areas - Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp WACA project	- Multi sector risk assessment has been done but not in Ghana - Based on the assessment, interventions will focus on eco-systems, stabilisation of the coast and opening of the lagune in Grand-Lahou worth US$ 30 m - They lack complementary spatial planning intervention and are very open to coordinate - Spatial planning important for ministry of Interior - There will be a regional climate change observatory
13 nov 2017	AfDB	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp related to CC and urban development and AF projects	- AfdB uses ACCF to develop projects with national government for AF and GCF as a means to create government need for loans - No overlap with AF proposal and AfdB process is new and therefore

			not fast
14 nov 2017	Abidjan Convention / UNEP	- Agree on cooperation modality for knowledge management - Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp related to Abidjan	- There will be a regional resource center funded by USAID and IBM - They have great knowledge of regional and national initiatives, projects and relevant documents which they will share - They suggested to use scenario's for interventions and emphasize using a blue economy (spatial planning) approach (tunring bad situations in opportunities)
14 nov and 16 nov 2017	Université Felix Houphouet Boigny, Abidjan / CURAT (remote sensing and GIS)	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp government and NGO related projects - Discuss cooperation options for community assessments	- CURAT does modeling of coastal morphology and hydrology in target areas and can do impact assessments - Recent study: ocean current goes west – east except in Grand-Lahou and Grand-Bassam - They work with WACA project - There are 5 climate change / erosion hotspot areas in Cote d'Ivoire: Fresco, Grand-Lahou, Abidjan, Grand-Bassam and Assinie
17 nov 2017	Oceanographic Research Centre		- They have experience with conducting vulnerability assessments for the WB and USAID
14 nov 2017	École d'architecture D'Abidjan		- Cocody has a good 'eco-city' plan with climate change being central - There is a need to better coordinate between the minstry of environment, departments and local planning - Director has experience with developing GEF project proposals
13, 15 and 16 nov 2017	Earth Right Institute	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp. government and NGO related projects - Discuss cooperation options for implementing (part) of the climate change plan for Cocody.	- Showed us relevant departments and introduce dus to mayors - Option to involve ERI for conducting rapid community surveys with Oceanic research center

Table 19. Community survey Cote d'Ivoire

LOCATION	Date	NAME	SEX	OCCUPATION	CONTACTS
Community: Cocody village, Blockhaus, M'Pouto, M'Badon District; COCODY COMMUNE Country; COTE D'IVOIRE	06 - 31/12/17	N'GUESSAN M'Gbra Roger	Male	Director of the School of Architecture of Abidjan (EAA)	59 18 81 99
		IPOU Ahou Céline	Female	Journalist	07 62 28 33
		MOUSSAVOU Diaby Audrey	Female	(Diaspora CEDEAO agent)	08 48 47 27
		GOLE Lou Yolande	Female	Household	57 54 90 23
		FOFANA Souleymane	Male	Economic operator	08 08 54 57/02 88 38 04
		ANON Jules Narcisse Aholia	Male	Teacher	59 49 23 98/02 08 63 55
		ASSEMIAN Jude	Male	Economic operator	07 79 63 90
		APPIA Pascal Davis	Male	Artisans' teacher	47 80 47 11
		KOUADIO Arnaud	Male	Student	49 80 11 71
		N'FRANI Meya	Male	MJVC	58 35 36 88
		N'DRI KUOADIO Marcel	Male	AJDY	08 73 70 29/01 65 23 49
		KOUASSI Konan Eric	Male	President of the disabled	57 30 60 81
		SAHI Rémi	Male	Chiefs' President	05 79 21 47/09 79 47 68
		AKPOE NEE KONAN Affoué	Female	President of women's associations (Cocody)	78 03 99 83
		TIE Jeannette	Female	Trader	08 96 53 71
		YAPO Julienne	Female	Household	07 10 80 71
		NEME Gisèle	Female	Household	08 33 07 22
		N'GUESSAN	Female		
		MOUROUFIE	-		
		OUATTARA Adjara	Female	Cassava producer	07 92 62 68
		KOUAME AYA Antoinette	Female	Trader	07 96 75 00

Community: Akandjé District; BINGERVILLE DEPARTEMENT	06 - 13/12/17	MOBIO Atsin	Male	Customary Chief	07 83 68 50

Community: Aguien District; BINGERVILLE DEPARTEMENT	07/12/17	ALLE ALLE Jean	Male	Chief	
		DIDJA Boni	Male	Teacher	09 94 02 22
		DJOKRE Olivier	Male	Fisherman	44 25 79 25
		AKE Alice	Female	Women's agent	40 11 56 57
		MOBIO Jacqueline	Female	*Young woman*	42 20 62 98
		ALISSIKA Benjamin	Male	Farmer	41 48 43 93
		Yves	Male	*Young man*	

Community: Bingerville commune District; BINGERVILLE DEPARTEMENT	07 - 08/12/17	BAGODOU Augustin	Male	Secretary General of the Town Hall	89 10 08 93
		KOUASSI Monique	Female	Women's agent	07 51 20 61
		BEUGRE Jean-Martin	Male	Teacher	
		BOHOU Serge	Male	*Young man*	07 96 59 17
		ALLAH Grâce	Female	*Young woman*	09 11 88 61

Community: Port-Bouet Centre District: PORT-BOUET COMMUNE	06 - 13/12/17	TANOH	Male	Technical Manager of the Town Hall	

Community: Adjouffou/Gonzagueville District: PORT-BOUET COMMUNE	12-14/12/17	AMAN Niangran Arsène	Male	President of ACCQROB ("Alliance des Chefs de Communautés et de Quartiers Route de Bassam") Alliance of Community and Neighborhood Heads Bassam Road	41 10 28 43
		KOUAKOU Konan Anatole	Male	Chief	07 45 98 09
		TOUAN Nah Anatole	Male	Chief	07 65 69 27
		EHOUMAN Hyacynthe	Male	Chief	01 17 12 52
		EBI Kouakou	Male	Chief	41 52 53 65
		DRO Emile	Male	Chief	03 58 94 80
		GOH Diomandé	Male	Chief	07 43 10 41
		KETCHI Blaise	Male	Chief	47 89 76 07

Community: Moossou, Quartier France District: GRAND-BASSAM DEPARTMENT	06 - 31/12/17	EZALAY Georges Philippe	Male	Mayor of Grand-Bassam	
		ALLOU Georges	Male	King's Advisor	
		M'BALLA Gnoan Roger	Male	1rst King's Advisor	

Community: Tchemien District: JACQUEVILLE DEPARTMENT	10/12/17	N'GUESSAN François	Male	Chief of the village	59 35 63 48
		DOSSO Aboubacar	Male	School Director	48 90 75 23
		N'GUESSAN Avy Serges	Male	1st Notable and Secretary of the Chief	48 15 10 34
		YESSO Elise	Female	Women's President	59 88 15 08
		NOUFOU Seydou Pierre	Male	Secretary of Youth	04 52 10 75
		KODIA Ignace	Male	Planter	47 23 42 58
		AKA Evariste	Male	Fisherman / Alert Officer	08 50 44 34

Community: Grand-Jack District: JACQUEVILLE DEPARTMENT	06 - 13/12/17	SOPPY Tiakpa Justin	Male	Chief of the village	07 93 77 27
		BODO Ahui Samuel	Male	1st Notable	46 88 24 57
		LOGON Cyrille	Male	Spokesperson	47 13 46 99
		BODO Beugré	Male	School Director	07 06 98 66
		BABON Mathieu	Male	Planter	01 96 00 12
		AHUI Ezéckiel	Male	Resident	09 25 38 20
		OKPO Cyrille	Male	Fishermen's leader	47 37 98 08
		AMENAN Elisabeth	Female	Women's President	

Table 20: Ghana

Date	Stakeholder	Consultation objective	Outcome	Conclusion
16-17 nov Bonn	Ministry of Environment, Science, Technology and Innovation	- Agree on AF proposal priorities and target areas (districts level) - Understand national priorities - Identify relevant projects and lessons, concerns and complementary potential	- Agreement of roadmap for developing this proposal	- Invite both leading ministries for World Urban Forum 9 (7-13 Feb 2018) to discuss international cooperation and needs - Organise National – district workshop to agree on national – local implementation modality and interventions after the WUF
6 nov 2017	Ministry of Local Government and Rural Development	- Agree on AF proposal priorities and decentralized implementation modality - Identify relevant projects and lessons, concerns and complementary potential	- Agreement on AF proposal priorities and decentralized implementation modality, including for spatial planning - Need to complement WB project for Resilient Greater Accra Metropolitan Area (GAMA) where ministry takes a coordinating role	
December 2017	Tema metropolis	- Agree on AF target areas (community level) - Identify focal point - Understand local issues and needs - Identify relevant projects and lessons, concerns and complementary potential	- Priority community: newtown informal settlement - Focal point: Ofori Joseph (assembly representative)	- District and community focal points have been identified - District agreement on target areas - Communities don't always trust government involvement - Overlap with other projects has been checked
December 2017	Ningo Prampram district		- Priority communities: Prampram informal harbour area, old ningo and Ayitepa - Focal point: Aboagye Aaron (Physical Planning Officer) - Old Ningo: Dzamaku Enoch - Prampram: Solomon Tangman - Ayitepa: Sampson Adjaklo	
December 2017	Ada West district		- Priority communities: Akplabanya, Goi and Kportitsekorpe - Focal point: Agbeve S. S. (Planning Officer) - Akplabanya: Amos Kwao - Goi: John Tsiri - Kportitsekorpe: Joseph Ahuakese	
December 2017	Ada East district		- Priority communities: Totope, Azizanya and big Ada - Focal point: Gyamfi Kwadwo (assistant director)	

			- Big Ada: Awal Iddrisu	
December 2017	Keta district		- Priority communities: Fuvemeh, Woe, Anloga, Vodza - Focal points: - Fuvemeh: Oswald Etse - Woe: Victor Amekudzi - Anloga: Ernest Agbota	
6 nov 2017	UN Residence coordinator	- Agree on cooperation modaility / alignment with other UN projects	- Complement UNCDF LoCal project	
6 nov 2017	UNDP	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp. AF Funded project: 'Increased Resilience to Climate Change in Northern Ghana through the Management of Water Resources and Diversification of Livelihoods and NAP process	- Align with NAP process - Northern project not relevant	
10 nov 2017	UNCDF	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp. LoCal project	- Will align with LoCal project but is very small (US$125,000)	- Possible option to scale up LoCal within UN-Habitat / AF project framework
7 and 10 nov 2017	Development Institute / Ghana Delta alliance Wing	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp. government and NGO related projects - Discuss cooperation options for community assessments	- Basic assessments already conducted with Delta alliance in Keta - Good understanding of local issues and good network - DECCMA project leader is part of Delta Wing board.	- Cooperate to conduct community level surveys and focus group discussions - Use DECCMA assessments already done
7 and 10 nov 2017	Hen Mpoano NGO	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp spatial mapping, fishing and community level related work - Discuss potential cooperation options	- Good understanding community level work and spatial (drone) mapping and modelling	- Possibly cooperate to fully map communities and risk areas for full proposal - Partner for community level work during project

7 nov 2017	USAID / Ghana CRC/URI PACT Tetra tech	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp. West Africa Biodiversity and Climate Change Program (WA BiCC) and Ghana sustainable fisheries management project'	- WA BICC project has no implementation in Ghana - Little lessons available from other countries because of initial stage	- Monitor possible lessons in Cote d'Ivoire
7 nov 2017	Spatial solutions	- Understand main issues, concerns and needs in target areas / communities; - Understand relevant projects and lessons, concerns and complementary potential, esp. related to spatial planning in target areas	- Good understanding of spatial planning needs and processes - No spatial plans exist in target areas (except greater accra plan which included Tema and Prampram at high level) but new government prioritizes spatial planning - Government did not prioritze the development of spatial plans in target areas because of lack of oil and economic need - Estimated cost for s structure plan done by private company is US$ 1,3 m and for a district US$370,000	- Willingness and need to develop spatial plans in target areas at district and local level focused on identifyin risk areas, current and future land use needs and long-term coastal management needs

Table 21: Community survey – Ghana

LOCATION	DATE	NAME	AGE	SEX	OCCUPATION
Community: Prampram District; Prampram District, Country; Ghana	04/12/17	David Awulu Ayi	44	Male	Fisherman
		Ayi Botwoe	46	Male	Fisherman
		Isaac Mensah	52	Male	Fisherman
		Quianor Gblim	60	Male	Fisherman
		Mensah Doku	36	Male	Fisherman
		Ashong Shamo	74	Male	Fisherman
		Jonas Quianor	68	Male	Fisherman
		Albert Oko Allotey	56	Male	Fisherman
		Lartey Mason	58	Male	Fisherman
		Isaac Lartey Tettey	48	Male	Fisherman

		Kwashie Mensah	65	Male	Fisherman
		Mensah Sossey	66	Male	Fisherman
Community: Old Ningo District; Prampram District Country: Ghana	04/11/17	Hon. Enoch Narteh Brown	39	Male	Farmer
		Simon Acquaah	20	Male	Student
		Moses Tetteh Bamflo	27	Male	Driver/Fisherman
		John Teye Bamflo	29	Male	Mason/Farmer
		Cecilia Tetteh	54	Female	Trader
		Doris Kweinortey	33	Female	Trader
		Samuel Teye Narteh	66	Male	Pensioner
		David Siaw	27	Male	Fisherman
		Mabel Teye Kiwablah	29	Female	Trader
		Mary Oye Nartey	58	Female	Trader
		Vivian Addo	41	Female	Fisherman
		Moses Tetteh	68	Male	Carpenter
		Awisi Siaw	26	Female	Farmer
		Joyce Kwaku	36	Female	Trader
		Lydia Tetteh	38	Female	Trader

Community: Ayetepa District: Prampram District Country: Ghana	04/11/17	Kwao Djan Kwasi	30	Male	Fishing and Farming
		Emil Peter Kwaku	65	Male	Farming and Fishing
		Aye Obodai	85	Male	Chief Fisherman
		Joseph Obodai Tei	65	Male	Fishing and Farming
		Obodai Bensco	65	Male	Fishing and Farmer
		Duamor Love	44	Male	Fisherman
		Adzah-Tettey	55	Male	Fishing and Farming
		Richard K. Kwasi	45	Male	Fishing
		Kodjo Sampson Adgaklo	43	Male	Assembly Man
Community: Akplanbanya District: Ada West Country: Ghana	05/11/17	Avinu Isaiah	52	Male	Fisherman
		Eam Avinu Brabo	60	Male	Fisherman
		Katey Emmanuel	38	Male	Seaman
		Alimo Buortey	58	Male	Fisherman
		Okutu Richard	35	Male	Mason
		Atlas Amanor	50	Male	Fisherman
		HB Samuel	30	Male	Fisherman

		Nene Raphel Alimo	50	Male	Chief Fisherman
Community: Goi District: Ada West Country: Ghana	05/11/17	Isaac Alipue Armah	30	Male	Farmer
		Olipeseku Doe	30	Male	Mason
		Kumadoe Juliana	37	Female	Fishmonger
		Kumadoe Peter	35	Male	Store-Keeper
		Tamaklo Sackey	42	Male	Fisherman
		Joseph A. Sebie	46	Male	Fishmonger
		Enoch Teye Otipeseku	32	Male	Child Advocacy
		Maxwel O. Ledi	46	Male	Mason
		Ernestina Agama	55	Female	Fish monger
Community: Kportitsekope District: Ada West Country: Ghana	05/11/17	Tetteh Tsu Agbove	47	Male	Fishing/Sait Miner
		Korletey Tetteh Doku	50	Male	Fishing/ Salt Miner
		Christian Otipeseku	34	Male	Driver/Salt Retail
		Gabriel Osabutey	45	Male	Fishing
		Gloria Doku	23	Female	Petty Trader
		Ahakesi T. Rockson	37	Male	Assembly Man
Community: Azizanya District: Ada East Country: Ghana	30/11/17	John Tefekpeli	37	Male	Fishing
		Agboshi Mary	32	Female	Fish Monger
		Augustina Asamenya	32	Female	Fish Monger
		Hordo Beauty	33	Female	Fish Monger
		Kwesi Fugdzi	40	Male	Fishing
		Fredrick Doe	31	Male	Fishing
		Esther Agbashi	44	Female	Fish Monger
		Korkor Koranteng	40	Female	Fishing
Community: Totope District: Ada East Country: Ghana	30/11/17	George Numo	27	Male	Fishing
		Dokuyo Numo	50	Female	Fish Monger
		Hannah Numo	40	Female	Fish Monger
		Jonathan Nartey	45	Male	Fishing
		Yohana Matsmasey	52	Male	Fishing
		Mary Numo	42	Female	Fish Monger
		Rose Ameyah	55	Female	Fish Monger
		Akweley Agbalaba	70	Female	Fish Monger
		Korkor Numo	61	Female	Petty Trading
		Eben Okine	46	Male	Fishing
		Joshua Kugblenu	30	Male	Fishing
Community: Big Ada	30/11/17	Felicia Ametepey	80	Female	Oyster Trading

District: Ada East Country: Ghana		Kaki Koranteng	65	Female	Oyster Trading
		Comfort Wormenor	55	Female	Oyster Trading
		Aybonyua Martha	45	Female	Oyster Trading
		Theresh Agbongua	47	Female	Oyster Trading
		Kadakie Keranteng	41	Female	Oyster Trading
		Martha Buernor	30	Female	Oyster Trading
		Mary Oha	40	Female	Oyster Trading
		Klomika Felicity	22	Female	Oyster Trading
		Ayeetey Adobea	25	Female	Oyster Trading
		Patience Wayagbor	25	Female	Oyster Trading

Community: Vodza District: Keta Municipal (Volta Region) Country: Ghana	29/11/2017	Nani Kukubor	Male	Stool Father
		Chaka Demabia Kukubor	Male	Stool Secretary
		Ben Atsu Kukubor	Male	Pump Attendant
		Edward Kukubor	Male	Carpenter
		Daniel Kukubor	Male	Teacher
		Sariki Gariba Haokimu	Male	Businessman
		Prosper Kukubor	Male	Pump Attendant
		John Daba Adikah	Male	Pensioner
		Dodzi Nyavor	Male	Electrician
		Sosu Makattah	Male	Fisherman
		Christopher Mensah	Male	Teacher
		Moses Nutsugah	Male	Fisherman
		Victor Ahedor	Male	Announcer
		Joshua Agbexudor	Male	Fisherman
		Mliwonor Fiatorwogbor	Male	Fisherman
		Kwashie Gawugah	Male	Fisherman
		Emmanuel Amekuedi	Male	Pensioner
Community: Woe District: Keta Municipal (Volta Region) Country: Ghana	28/11/17	Awleshi Azaglo	Female	Food Seller
		Kudedzi Judith	Female	Petty Trader
		Kudite Mary	Female	Petty Trader
		Yadome Beneditha	Female	Petty Trader
		Gawuga Patience	Female	Food Seller
		Kanitsi Confident	Female	Fish Monger
		Ameavor Doris	Female	Fish Monger
		Ameavor Esther	Female	Food Seller
		Sukumea	Female	Petty Trader

Community: Anloga /Alagbati/Alagbasi District: Keta Municipal (Volta Region) Country: Ghana	28/11/17	Lucky Deffore	Female	Fish Monger
		Esinam Whoenyegah	Female	Fish Monger
		Augestina Agbetshi	Female	Fish Monger
		Rose Abohor	Female	Fish Monger
		Patience Ativor	Female	Petty Trader
		Aforzazu Gakor	Female	Food Seller
		Lena Vormahor	Female	Petty Trader
		Awunor Kafui	Female	Student
		Nawukoenya Asimah	Female	Trader
		Klu Denueme	Male	Farmer
		Edward Adrnyi	Male	Fisherman
		Eril Fianoo Edem	Male	Student
		David Zaglago	Male	Fisherman
		Gbeve Benjamin	Male	Fisherman
		Peace Kusitor	Female	Trader
		Peace Agbonyo	Male	Petty Trader
		Hodogbe Emmanuel	Male	Fisherman
		Rose Kporxa	Female	Coconut Seller
		Governor Tamakloe	Male	Fisherman

Table 22: International technical experts

Date	Stakeholder, incl. role / function	Consultation objective	Outcome	Conclusion
Many skype calls + 6 -10 nov 2017	Arcadis	- Discuss cooperation options - Identify technical intervention options and feasibility responding to local needs	- Arcadis joined the mission to Ghana - They did an assessment in greater Abidjan area with UN-Habitat before - Arcadis proposed possible technical interventions responding to local needs	- Conduct assessment together durig project development phase - Use proposed technical interventions that are relatively low-cost and focus on livelihood enhancement or protection
Many	Delateres	- Discuss cooperation options:	- They did some of the larger studies	- Possibly involve them when

skype calls		- Understand causes of erosion from coastal morphology and dynamics, hydrology of the lagoons and environmental and social impacts of proposed interventions at local and regional scale	in Cote d'Ivoire on sedimentation, including for opening river mouth in Grand Bassam (to be done by Marocco but no funding) - They are interested in working together	coastal morphology study is needed
Many skype calls	Delta Alliance / Dimi group / Delft university	- Discuss cooperation options - Identify main issues and needs in target areas and parallel academic programme	- Cooperate with Ghana Delta Wing - Consider cooperating on creating 'urban lab' in both countries	- Cooperation with Delta Wing in Ghana - Assist setting-up Delta wing in Cote d'Ivoire
Skype 29 nov	HKV consultatnts (in Ghana)	- Discuss complementary potential WB (GFDRR group) funded Greater Accra climate change risk mitigation strategy and investment plan - Discuss complementary potential UNDP / Royal Haskoning project community resilient for early warning in Ghana	- Great accra plan focuses on river in Accra - HKV developed risk / hot spot maps for greater Accra region - HKV will be 'Kernadviseur' from Dutch water sector	- They will share risk maps and relevant docs - Explore option to work together / build on their work for full proposal