AFB/PPRC.22-23/10
11 June 2018

Adaptation Fund Board
Project and Programme Review Committee
Twenty-First Meeting
Bonn, Germany, 11 June 2018

# PROPOSAL FOR COTE D'IVOIRE AND GHANA

**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;*
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> *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;*
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> *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*
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> *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. This is the third submission of the project document using the three-step submission process. It was first submitted as a project pre-concept for consideration by the Board at its thirtieth meeting and the Board decided to:

12. It was first submitted for endorsement to the Board at its thirtieth meeting as a pre-concept using the three-step process, and the Board decided:

*(a) To endorse the project pre-concept, as supplemented by the clarification response provided by the United Nations Human Settlements Programme (UN-Habitat) to the request made by the technical review;*

*(b) To request the secretariat to transmit to UN-Habitat the observations in the review sheet annexed to the notification of the Board's decision, as well as the following recommendations for the project concept stage:*

*(i) The project concept should provide further description of the climate-change related hazards at the municipal and community levels;*

*(ii) The project concept should specify the concrete measures envisaged by the project;*

*(iii) The project concept should provide details of the consultative process, stating clearly the marginalized and vulnerable populations consulted (women, girls, youth and indigenous groups);*

*(iv) The project concept should demonstrate how community-based income generation activities will be gender inclusive to ensure benefits are shared equally by all members of the community;*

*(v) The project concept should provide additional details on, for example, aspects of the projects and resources devoted to the selected local governments in Ghana and Côte d'Ivoire, as well as resources specially*

*targeting vulnerable groups, such as the number of vulnerable persons (gender-disaggregated) targeted in training and other capacity-building activities;*

*(vi) The project concept should specify the allocation of resources to knowledge sharing activities for target and vulnerable populations at the local level;*

*(vii) The project concept should provide details on how different revenue-generating activities would be developed and adopted by communities in collaboration with the private sector; and*

*(c) To request UN-Habitat to transmit the observations under subparagraph (b) above to the Governments of Côte d'Ivoire and Ghana; and*

*(d) To encourage the Governments of Côte d'Ivoire and Ghana to submit, through UN-Habitat, a project concept that addresses the observations under subparagraph (b) above.*

**(Decision B.30/31)**

13. The project was then submitted as a concept at the thirty-first meeting of the Board. Having considered the comments and recommendation of the Project and Programme Review Committee, the Adaptation Fund Board (the Board) decided:

*(a) To not endorse the project concept, as supplemented by the clarification response provided by the United Nations Human Settlements Programme (UN-Habitat) to the request made by the technical review;*

*(b) To suggest that UN-Habitat reformulate the project concept, taking into account the observations in the review sheet annexed to the notification of the Board's decision, as well as the following issues:*

*(i) The proposal should clarify how the development of spatial/land-use planning strategies at district level will be linked with national planning, and if there is any co-ordination between the two countries;*

*(ii) The proposal should provide more detailed information on how the projects at two different scales (inter-district versus community) will be executed, and what are the benefits of having initiatives of such different scales in one project;*

*(iii) The proposal should provide more detailed information on establishing the "private sector alliance" and a realistic assessment of role and expectations from such an alliance;*

*(iv) The proposal should indicate how selections of consultants and firms is planned to be carried out; and*

*(v) The proposal should clearly outline linkages and synergies with all relevant potentially overlapping projects or programmes, and indicate how the experiences from similar interventions implemented in the region have been used to influence the project design;*

*(c) To not approve the project formulation grant of US $100,000; and*

*(d) To request UN-Habitat to transmit the observations under subparagraph (b) to the Governments of Côte d'Ivoire and Ghana.*

14. The present project-concept along with a project formulation grant (PFG) was received by the secretariat in time to be considered at its thirty-first – thirty-second intersessional meeting.The secretariat carried out a technical review of the project proposal, assigned it the diary number AFR/RIE/DRR/2017/1, and completed a review sheet.

15. The secretariat is submitting to the PPRC the summary the final technical review of the pre-concept for a regional project, both prepared by the secretariat, along with the final submission of the proposal in the following section. The proposal is also submitted with changes between the initial submission and the revised version highlighted.

**Project Summary**

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| Cote d'Ivoire, Ghana : | Improved Resilience of Coastal Communities in Cote d' Ivoire and Ghana |

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| Implementing Entity: | United Nations Human Settlements Programme (UN-Habitat) |
| Project/Programme Execution Cost: | USD 1,225.806 |
| Total Project/Programme Cost: | USD 12,903,226 |
| Project Management Fee: | USD 1,096,774 |
| Financing Requested: | USD 14,000,000 |

Project Background and Context:
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 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.

Component 1: Coastal management and spatial / land use planning strategies at district and department level – feeding into national and regional coastal management strategies (USD 1,400,000).

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 outputs:
- 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 and 4 departments in Cote d'Ivoire.

It also 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

Component 2: Resilience planning at the community level. (USD 800,000 )

This component aims to strengthen community capacities to anticipate and respond to climate change related coastal hazards through the following output:

- 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.

In the same way that national planning feeds into district/department level and vice versa, the district/department planning documents will inform and support decision making at community level planning.

Component 3: Transformative concrete coastal resilience building interventions at inter-district level taking into account (inter-) national and local needs and impacts (USD 4,000,000).

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:

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

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:

- Sand bypassing: Dredging sediment from areas with surplus due to changes in erosion dynamics
- Sand bypassing: Beach nourishment and foreshore nourishment (e.g. sand motor from dredging activities)
- Green belt coastal buffer zone

Component 4: Catalytic concrete interventions at community level taking into account local needs and impacts / livelihood opportunities (USD 4,000,000).

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:

-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. Focus 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:

- Introduce crops that are suited for a salty environment
- Introduce aquaculture to adapt to current erosion dynamics (e.g. Shrimp farm, clams or the other type of fish)
- Replant and monitor forests and mangroves
- Artificial barrier inland with natural elements (e.g. Dune/barrier nourishment)
- Planting of vegetation in existing dunes to prevent erosion
- Set up early warning systems and temporary flood defences, such as sand bags

For the execution of these interventions the key role will be developed by the Local Planning Departments along with Local Assemblies. Capacity of the government and the communities will be assessed for community contracting. In case there is need of more capacity support, companies will be hired as per section I.

Component 5: Knowledge management, communication and institutional and regulatory framework at the regional, national and local level (USD 1,477,356)

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:

- 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;
- 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;
- Training of national and district staff to operate and maintain the transformative concrete interventions through revenue-generating activities and to share lessons.

# ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regional Project Concept

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Countries/Region: **Cote d' Ivoire and Ghana /Africa**
Project Title: **Improved Resilience of Coastal Communities in Cote d' Ivoire and Ghana**
Countries: **Cote d' Ivoire and Ghana**
Thematic Focal Area: **Disaster Risk Reduction and Early Warning Systems**
Implementing Entity: **United Nations Human Settlements Programme (UN-Habitat)**
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**
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**
AF Project ID: **AFR/MIE/DRR/2017/1**
IE Project ID: Requested Financing from Adaptation Fund (US Dollars): **USD 14,000,000**
Reviewer and contact person: **Saliha Dobardzic** Co-reviewer(s): **Dirk Lamberts**
IE Contact Person: **Javier Torner**

| Review Criteria | Questions | Comments on May 3, 2018 | Comments on May 23, 2018 |
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| Country Eligibility | 1. Are all of the participating countries party to the Kyoto Protocol? | Yes. Ghana and Ivory Coast are parties to the Kyoto protocol | |
| | 2. Are all of the participating countries developing countries particularly vulnerable to the adverse effects of climate change? | Yes. Ghana and Cote d' Ivoire are vulnerable to coastal erosion, a projected one-meter rise in sea level by the end of the century. Furthermore, climate change impacts in the two countries are combined with unsustainable land and water management. This pressure on coastal communities is combined with severe forms of anthropogenic pollution from economic activities in settlements, especially in harbour areas, lagoons and 'urban coastlines.' | |
| Project Eligibility | 1. Has the designated government authority for the Adaptation Fund endorsed the project/programme? | Yes. Endorsement letters by the designated authorities of Ghana (April 4, 2018) and Cote d'Ivoire (April 9, 2018) have been submitted. | |
| | 2. Does the regional project / programme support concrete adaptation actions to assist the participating countries in addressing | Concrete adaptation interventions have been included in component 3 and 4. The project proposes the following solutions to climate change adaptation by testing and promoting low-cost alternative solutions and innovative techniques (i.e. | |

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| | 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? | 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.<br><br>Th “transformative interventions” include:<br><br>1. Sand bypassing: Dredging sediment from areas with surplus due to changes in erosion dynamics<br>2. Sand bypassing: Beach nourishment and foreshore nourishment (e.g. sand motor from dredging activities)<br>3. Green belt coastal buffer zone<br><br>The “catalytic interventions” (i.e. at community level) include:<br><br>1. Introduce crops that are suited for a salty environment<br>2. Introduce aquaculture to adapt to current erosion dynamics (eg. Shrimp farm, clams or the other type of fish) | |

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| | | 3. Replant and monitor forests and mangroves<br>4. Artificial barrier inland with natural elements (eg. Dune/barrier nourishment)<br>5. Planting of vegetation in existing dunes to prevent erosion<br>6. Set up early warning systems and temporary flood defenses, such as sand bags<br><br>Regional rationale – This is quite clear based on the transboundary character of the existing challenges related to coastal erosion, sea level rise and pressures on coastal communities. Through a regional rationale, the transboundary aspects of the problem, namely coastal erosion, can be addressed through a coordinated approach. The project addresses the hazards causing inter-related negative impacts on the coast, including to lagoons located close to the sea.<br><br>There is an intention to provide clarity on specific interventions, matched with community priorities, feasibility and Environmental and Social impacts and | |

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| | | risks under these components at full proposal stage.<br><br><u>At full proposal stage,</u> the range of interventions identified with the support of technical experts should be specified. The potential environmental and social impacts and risks should be identified, based on the expert analysis combined with outcomes of the initial community consultations.<br><br>**CR 1** | |
| | 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? | Not clear.<br><br>At this time, the concrete actions are yet undecided upon, which makes it difficult to precisely evaluate economic, social, and environmental benefits. Furthermore, it is unclear what are the potential negative impacts of the potential activities proposed, as mentioned above.<br><br><u>At full proposal stage,</u> the specific interventions' economic, social, and environmental benefits, and specific information on Environmental and Social Policy compliance should be provided. | |

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| | | **CR 2**<br><br><u>At the full proposal phase</u>, the framework for selecting and monitoring interventions should be developed and interventions responding to different needs and situations, matching community needs and priorities with innovative but feasible interventions.<br><br>**CR 3**<br><br><u>At full proposal stage</u>, please provide a clear description of the consultation techniques used specifically for each target group of stakeholders and a description of the key consultation findings for each group, including how any issues raised were addressed in the project designs.<br>**CR 4** | |

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| | 4. Is the project / programme cost-effective and does the regional approach support cost-effectiveness? | Not clear, as most interventions are not yet specified.<br><br>A cost-effectiveness rationale has been presented for each of the project components, but it is not possible to assess realistically assess the cost-effectiveness of interventions that have not been specified.<br>**Refer to CR 2-4**<br><br>At full proposal stage**,** please complete and present the cost-effectiveness assessments of the remaining proposed "relatively low-cost" interventions by comparing with alternative intervention options by considering the exact environmental and social circumstances.<br><br>**CR 5** | |
| | 5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction | Yes, as specified on pages 71-73 | |

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| | 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. | | |
| | 6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund? | Yes. The proposal identifies provisionally the key national technical standards that are relevant to the project.<br><br><u>Full proposal stage</u> - The full proposal will need to spell out how compliance with the national technical standards in both countries is achieved (p.73- 78), simultaneously in compliance with the Environmental and Social Policy of the Fund.<br><br>**CR 6** | |
| | 7. Is there duplication of project / programme with other funding sources? | The table regarding non-duplication with other funding sources has been provided with relevant programmes/projects. The non-duplication is highlighted here as well as the compatibilities/synergies with | |

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| | | this project and lessons to be learnt and applied in this proposal. (Section G)<br><br>For the fully developed proposal, the linkages and synergies with all relevant potentially overlapping projects / programmes need to be clearly outlined, including areas of overlap and complementarity, drawing lessons from the earlier initiatives during the project design, learning from their problems/mistakes, and establishing a framework for coordination during implementation.<br><br>**CR 7** | |
| | 8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons? | Yes. A learning component has been included as part Component 5. | |
| | 9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations? | Yes, sufficiently for concept stage.<br><br>The full proposal should include further information on the consultations held in compliance with the ESP and GP during full project development. | |

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| | | **CR 8**<br><br><u>The full proposal</u> will require further identification of marginalized and vulnerable groups, as well as a further gender assessment.<br><br>**CR 9** | |
| | 10. Is the requested financing justified on the basis of full cost of adaptation reasoning? | Yes, adequate information is provided for the concept stage | |
| | 11. Is the project / program aligned with AF's results framework? | Yes. The proposed components and project outcomes align with AF outcomes. | |
| | 12. Has the sustainability of the project/programme outcomes been taken into account when designing the project? | Not sufficiently addressed. Sustainability can only be assessed once interventions have been specified. At full proposal stage, when interventions have been clearly specified, the proposal must demonstrate sustainability, including financial sustainability.<br><br><u>At full proposal stage,</u> (financial) sustainability should be analysed of each intervention and a specific business model be developed for the prioritized proposals, based on former experience, | |

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| | | experts and on ground analysis and through consultations.<br><br>**CR 10** | |
| | 13. Does the project / programme provide an overview of environmental and social impacts / risks identified? | Consistent with the comments made above, all activities will be fully developed/designed during the full proposal preparation. This will allow adequate and comprehensive risks identification before submission in line with the ESP.<br><br><u>During the full proposal development phase</u>, interventions selected should be detailed and UN-Habitat by provide evidence that screening of all proposed interventions and assessments of possible impacts was completed.<br><br>**CR 11** | |
| | 14. Does the project promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms? | Yes. Additional information on shortlisted innovative solutions / interventions has been provided in table 5, section II.B and annex 3.<br><br>The project aims for 1) technical innovation (low-cost building with nature solutions), and innovation through an | |

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| | | 'urban lab' that involves a wide range of stakeholders in assessments, monitoring and implementation. | |
| Resource Availability | 1. Is the requested project / programme funding within the funding windows of the pilot programme for regional projects/programmes? | Yes, at USD 14,000,000. A PFG of 100,000 has also been requested. | |
| | 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. Implementing entity fee is 8.5 % of total project/programme budget. Project execution costs are at 9.5% of total project/programme budget. | |
| Eligibility of IE | 3. Is the project/programme submitted through an eligible Multilateral or Regional Implementing Entity that has been accredited by the Board? | Yes. UN-habitat is a multilateral implementing entity of the Fund. | |
| Implementation Arrangements | 1. Is there adequate arrangement for project | n/a (Not applicable at the concept stage). | |

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| | / 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? | | |
| | 2. Are there measures for financial and project/programme risk management? | n/a (Not applicable at the concept stage). | |
| | 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 | n/a (Not applicable at the concept stage). | |

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| | encouraged to refer to the Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, for details. | | |
| | 4. Is a budget on the Implementing Entity Management Fee use included? | n/a (Not applicable at the concept stage). | |
| | 5. Is an explanation and a breakdown of the execution costs included? | n/a (Not applicable at the concept stage). | |
| | 6. Is a detailed budget including budget notes included? | n/a (Not applicable at the concept stage). | |
| | 7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators? | n/a (Not applicable at the concept stage). | |

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| | 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? | n/a (Not applicable at the concept stage). | |
| | 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? | n/a (Not applicable at the concept stage). | |
| | 10. Is a disbursement schedule with time-bound milestones included? | n/a (Not applicable at the concept stage). | |

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| Technical Summary | The final technical review finds that the submission is adequate for the concept stage. However, a number of issues were highlighted with the expectation that these will be resolved during the project formulation stage, which will be supported by the project formulation grant funding. The following clarifying requests (CRs) are expected to be reflected in the fully-developed project proposal: |

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| | - The range of interventions identified with the support of technical experts should be specified. The potential environmental and social impacts and risks should be identified, based on the expert analysis combined with outcomes of the initial community consultations. **CR 1**<br><br>- The specific interventions' economic, social, and environmental benefits, and specific information on Environmental and Social Policy compliance should be provided. **CR 2**<br><br>- The framework for selecting and monitoring interventions should be developed and interventions responding to different needs and situations, matching community needs and priorities with innovative but feasible interventions. **CR 3**<br><br>- A clear description of the consultation techniques used specifically for each target group of stakeholders and a description of the key consultation findings for each group, including how any issues raised were addressed in the project designs, should be provided. **CR 4**<br><br>- The cost-effectiveness assessments of the remaining proposed "relatively low-cost" interventions by comparing with alternative intervention options by considering the exact environmental and social circumstances should be completed. **CR 5**<br><br>- The compliance with the national technical standards in both countries (p.73- 78), also in compliance with the Environmental and Social Policy of the Fund, should be elaborated upon. **CR 6**<br><br>- The linkages and synergies with all relevant potentially overlapping projects / programmes need to be clearly outlined, including areas of overlap and complementarity, drawing lessons from the earlier initiatives during the project design, learning from their problems/mistakes, and establishing a framework for coordination during implementation. **CR 7**<br><br>- Further information on the consultations held in compliance with the ESP and GP during full project development should be included. **CR 8** |

| | |
|---|---|
| | - Further identification of marginalized and vulnerable groups, as well as a further gender assessment will be required. **CR 9**<br>- Sustainability (financial) should be analysed of each intervention and a specific business model be developed for the prioritized proposals, based on former experience, experts and on ground analysis and through consultations. **CR 10**<br>- Interventions selected should be detailed and UN-Habitat should provide evidence that screening of all proposed interventions and assessments of possible impacts was completed, along with the description for the approach used. The related process should also include arrangements for identifying and meeting relevant national technical standards.<br>- Include an Environmental and Social Management Plan (ESMP) that specifies for each USP, *how*, *at what stage* and *by whom* during project implementation, risks of negative environmental and social impacts will be identified according to the 15 principles of the ESP.<br>- The ESMP should include provisions for the identification of subsequent safeguard measures, their implementation, and monitoring and reporting. **CR 11** |
| Date: | May 23, 2018 |

ADAPTATION FUND

# REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

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**:<br>*Leading:* Ministry of Local Government and Rural Development.<br>*Supporting:* Ministry of Environment, Science, Technology and Innovation (MESTI); and Local planning departments[2].<br>**Government of Cote d' Ivoire**:<br>*Leading:* Ministry of Urban Sanitation, Environment and Sustainable Development.<br>*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)*

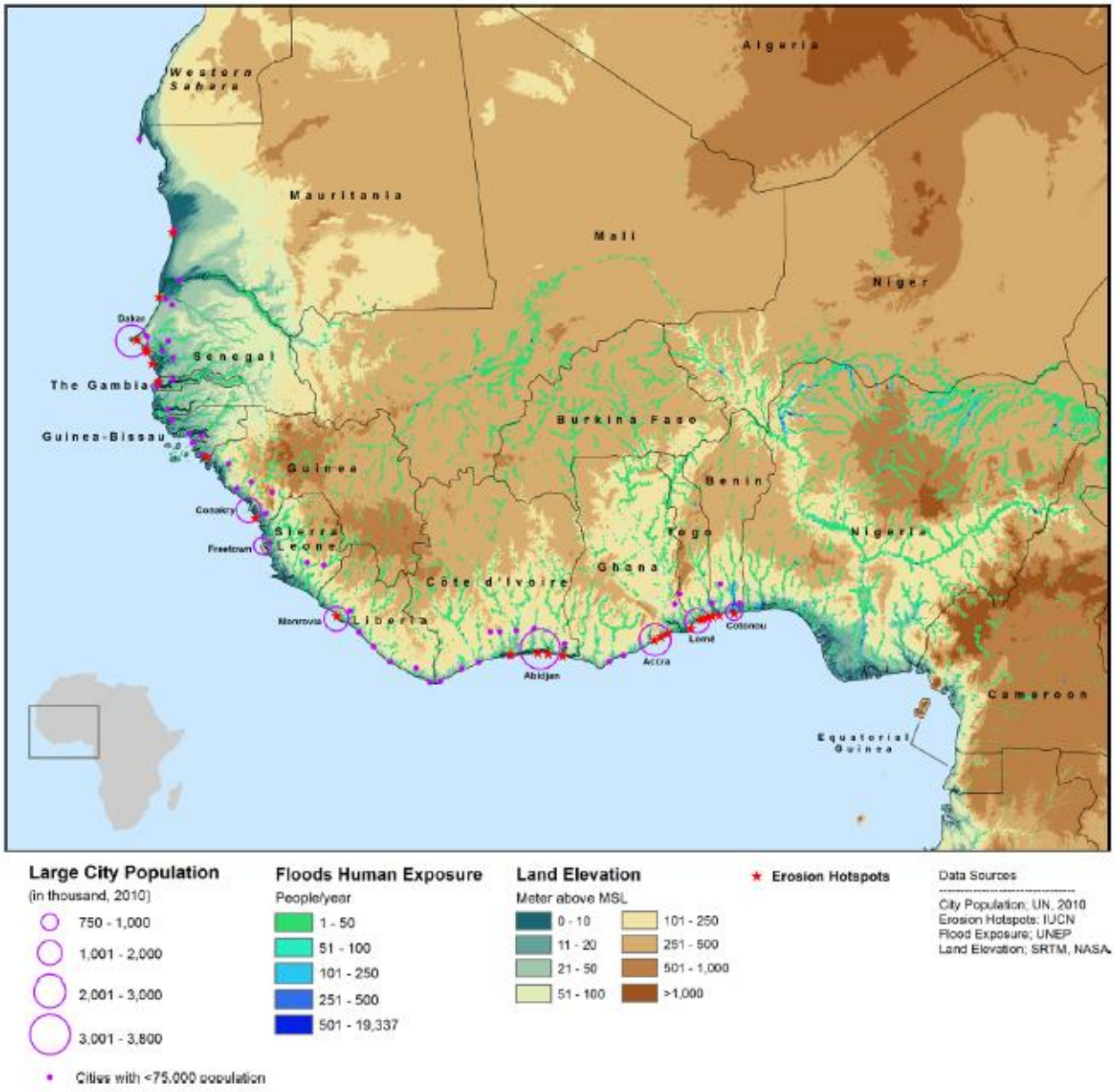


*Figure 1: Vulnerable urban coastal areas in Western Africa. Source: WB WACA project 2017 (with identified large urban populations, flood exposure, land elevation and erosion hotspots).*

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.

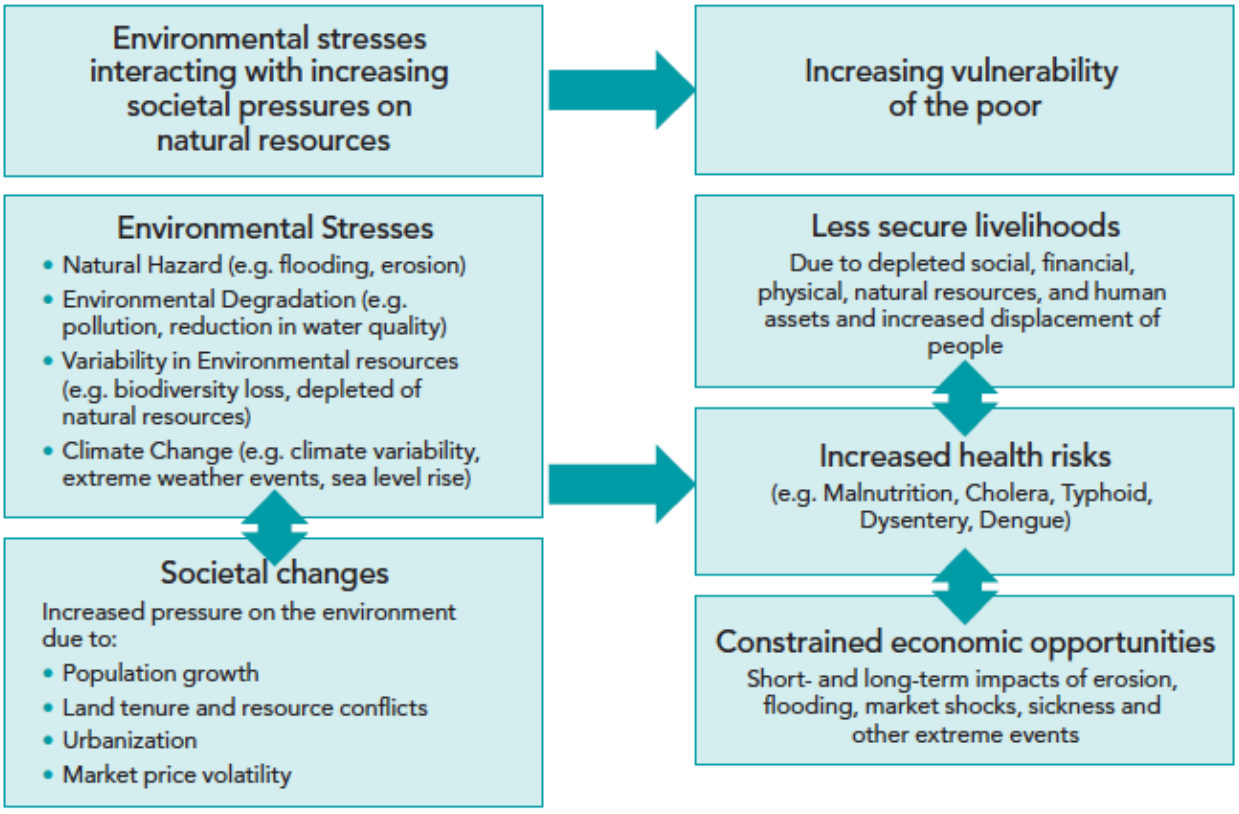



*Figure 2: Vulnerability Profile of West Africa. Source: Dow, K., 2005. Stockholm Environment Institute.*

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 harbours resulting in changes in sedimentation flows), leading

[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.

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.
- ☐ Between 1961-2000, the incidence of warm spells has increased and the incidence of cold days has decreased.

[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

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

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

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.

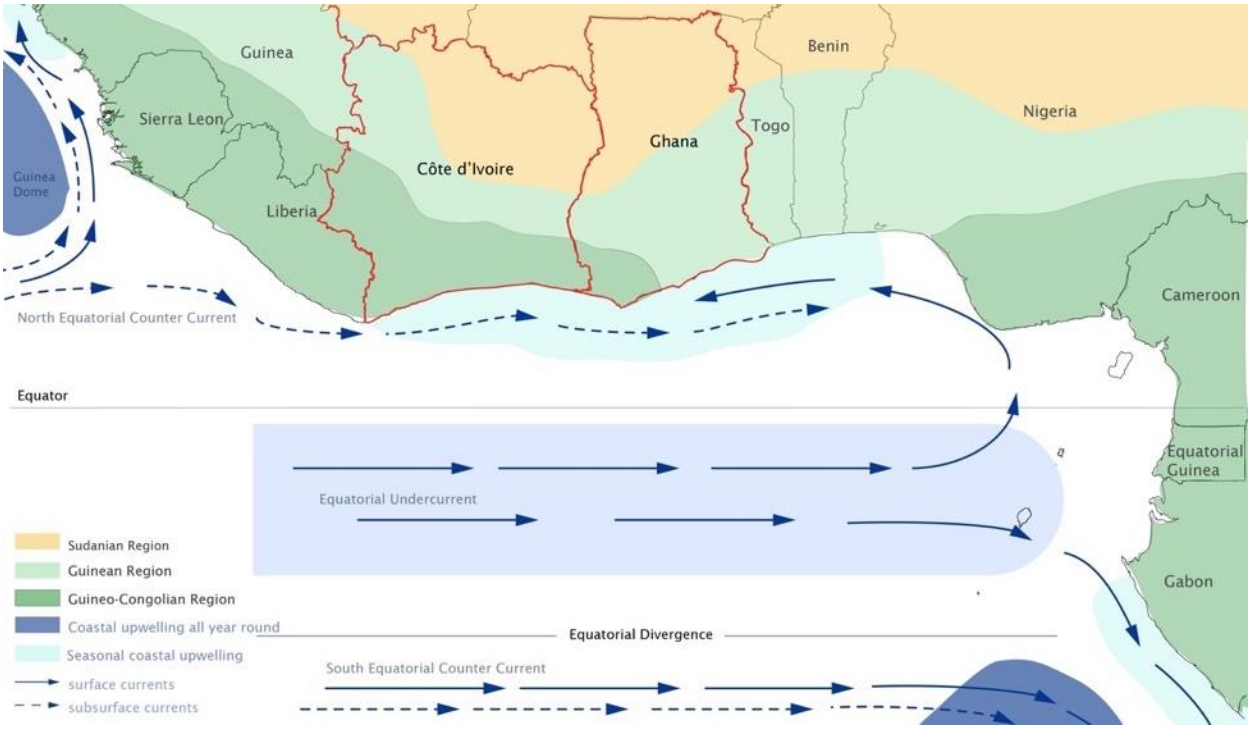



*Fig 3 Bioclimatic regions and coastal dynamics in Gulf of Guinea*

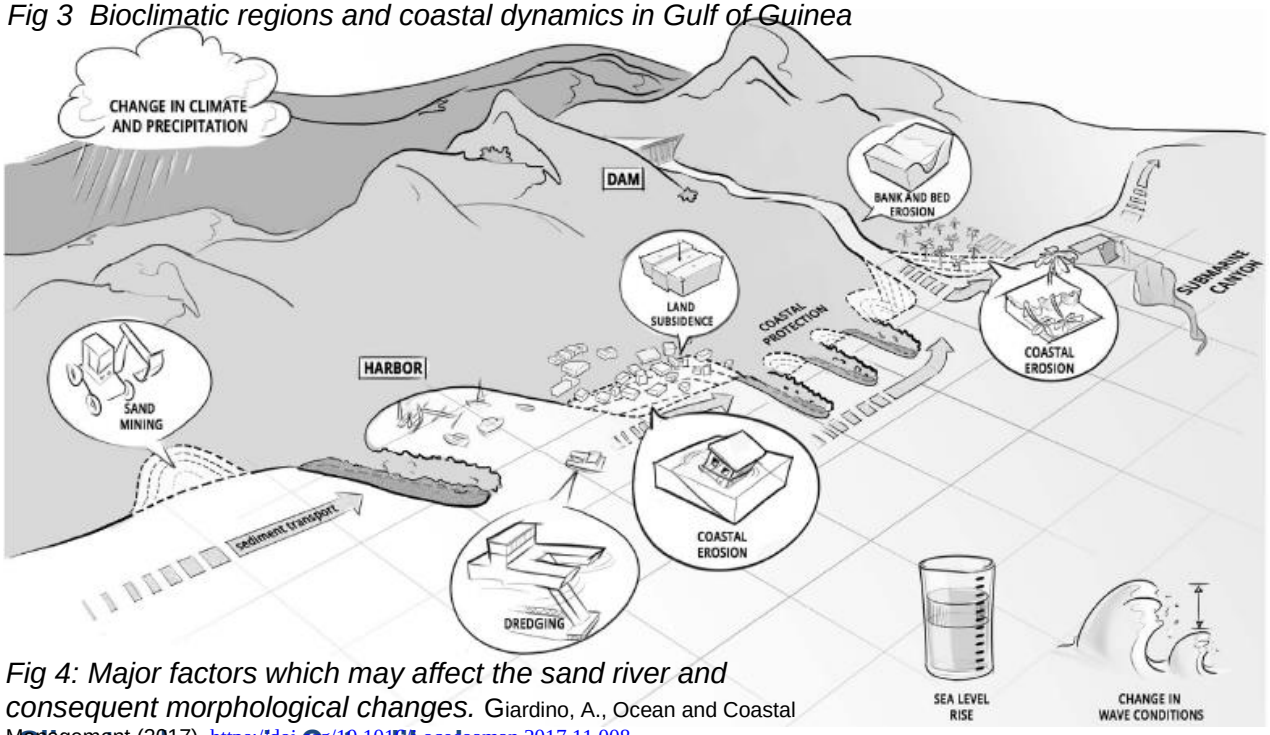



*Fig 4: Major factors which may affect the sand river and consequent morphological changes.* Giardino, A., Ocean and Coastal Management (2017), https://doi.org/10.1016/j.ocecoaman.2017.11.008

## 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 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.

[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.

[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

## 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 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

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

[15] Idem

[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

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

### 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.

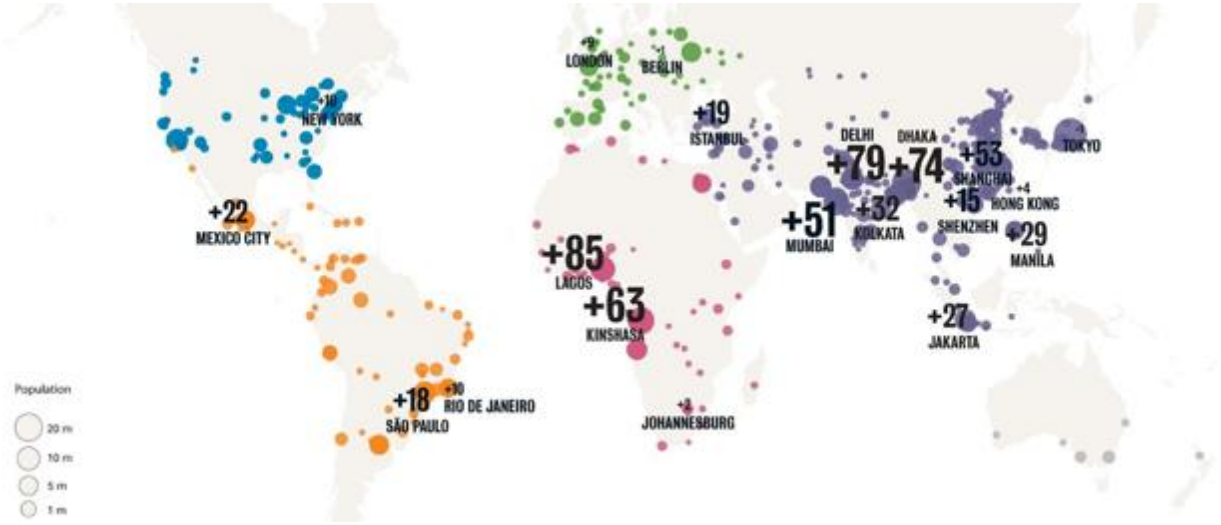



*Figure 5: Urban growth per hour. Source: Visual Capitalist.*

[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

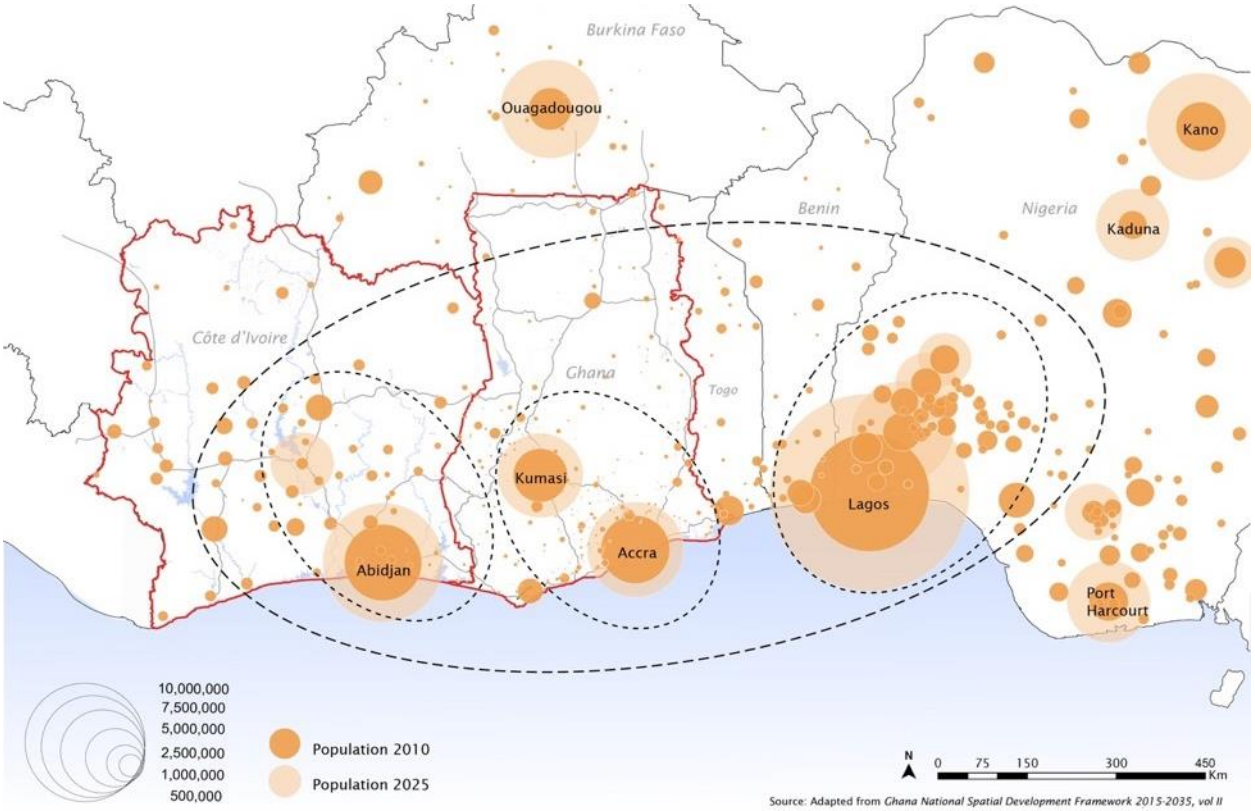
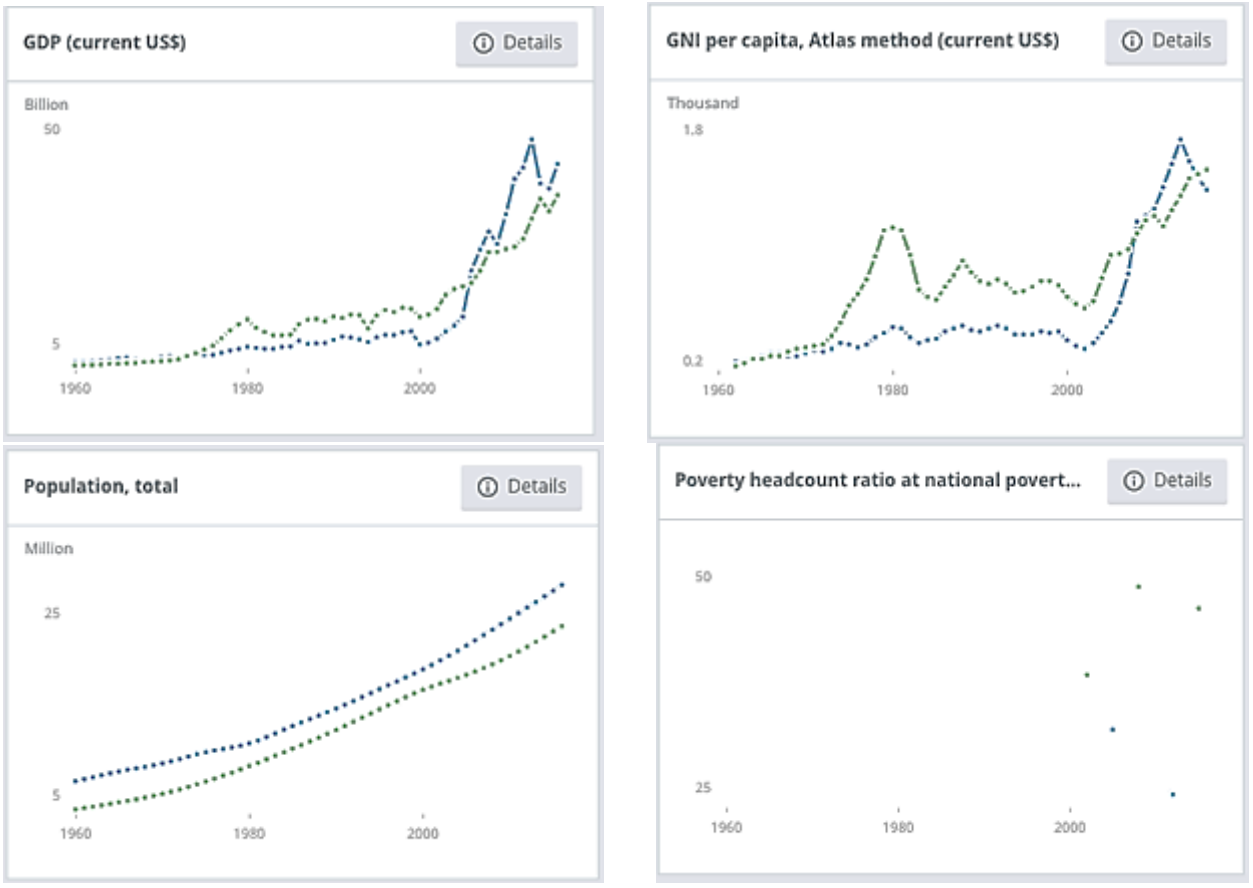



*Fig 6: Abidjan-Lagos corredor mega región.*

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

[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


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-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

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

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*

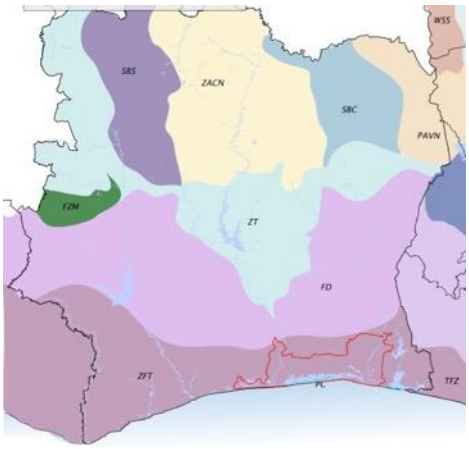



*Figure 9: Cote d'Ivoire ecoregions*

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.

Economic context

'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

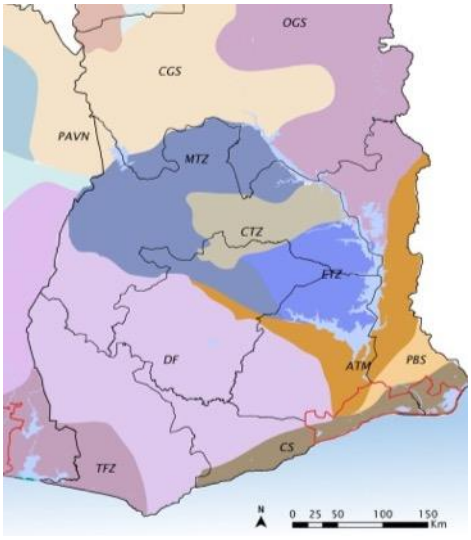

Social context

'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.

*Figure 11: Ghana poverty map*




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.

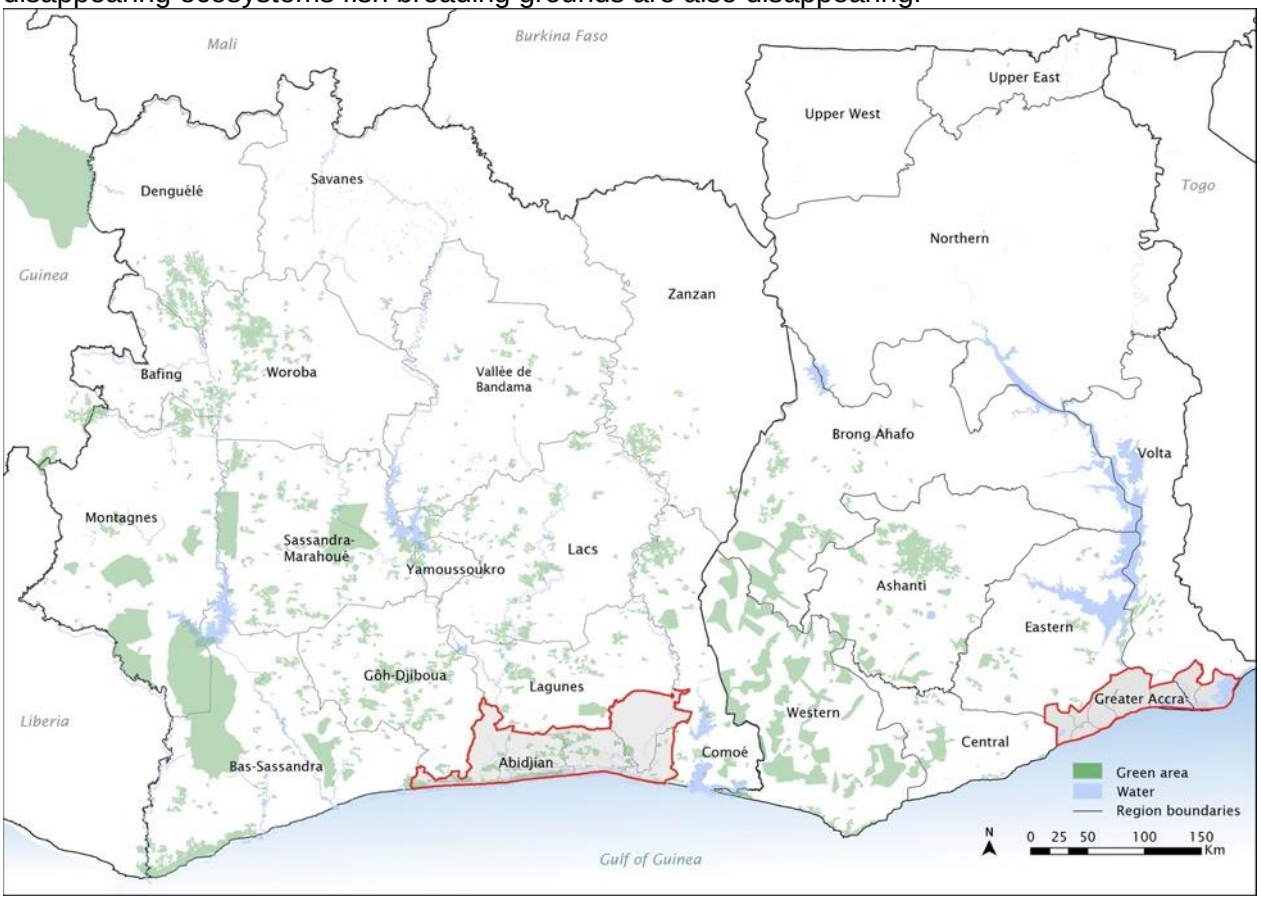



*Fig 13: Targeted regions in Cote d'Ivoire and Ghana.*

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

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

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.

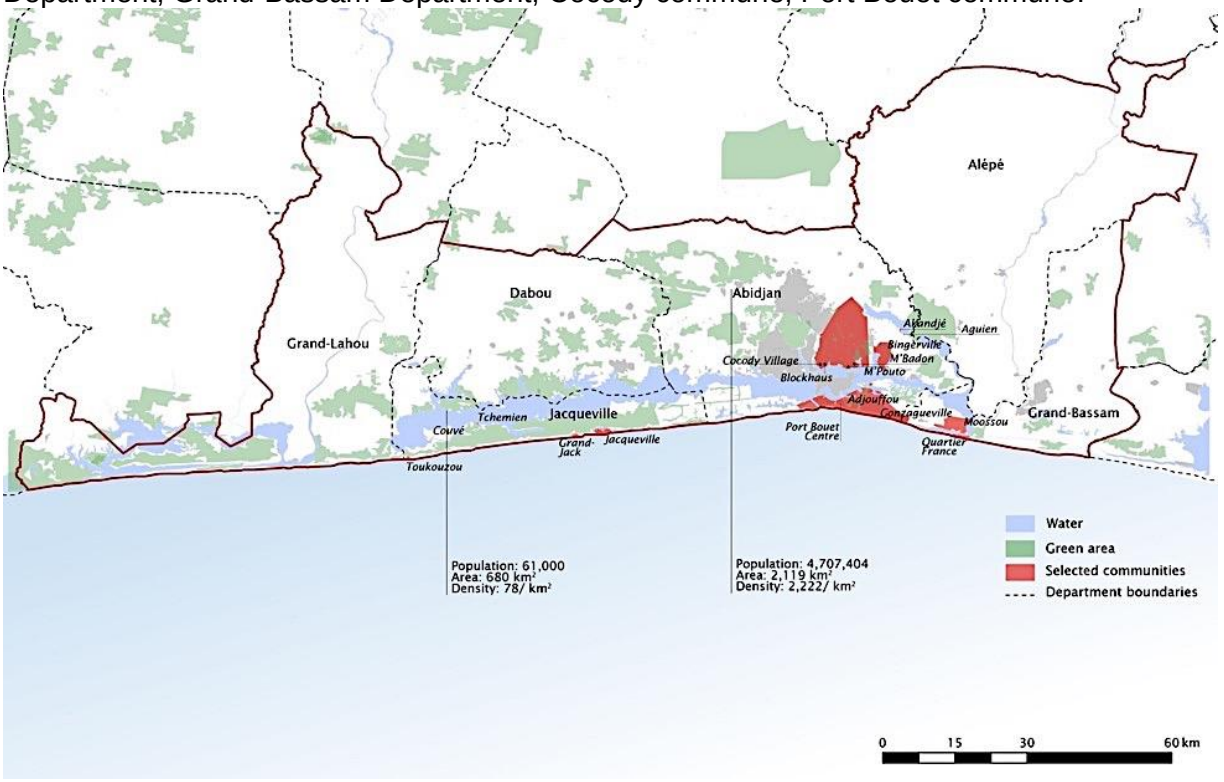



*Fig 14: Target departments, communes and communities in Cote d'Ivoire*

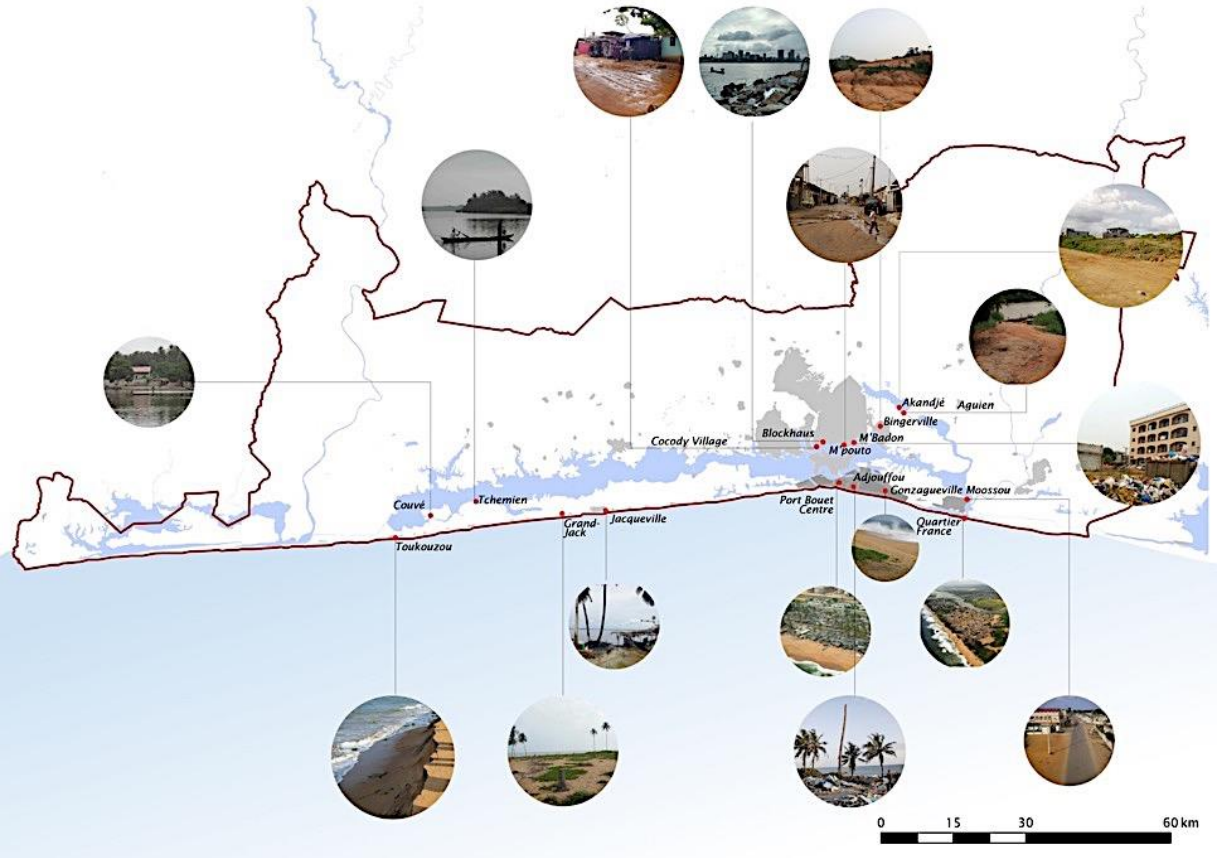



*Fig 15: Target departments, communes and communities in Cote d'Ivoire*

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*

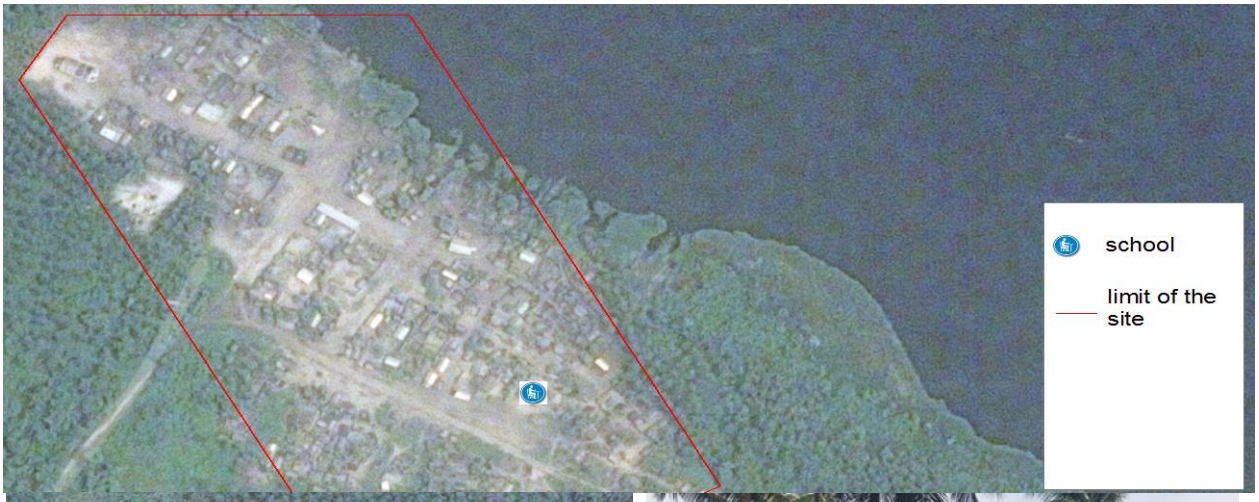
| Component | Districts / communes beneficiaries | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jacqueville Department | | | Cocody Commune | | | | Bingerville Department | | | Port Bouet Commune | | Grand bassam department | |
| **C 1/3** Female | 56.308 27.397 | | | 447.055 240.619 | | | | 91.319 46.997 | | | 419.033 210.583 | | 179.063 90.142 | |
| | Communities beneficiaries | | | | | | | | | | | | | |
| | Grand-Jack | Tchemien | Kouve | Cocody village | 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)**

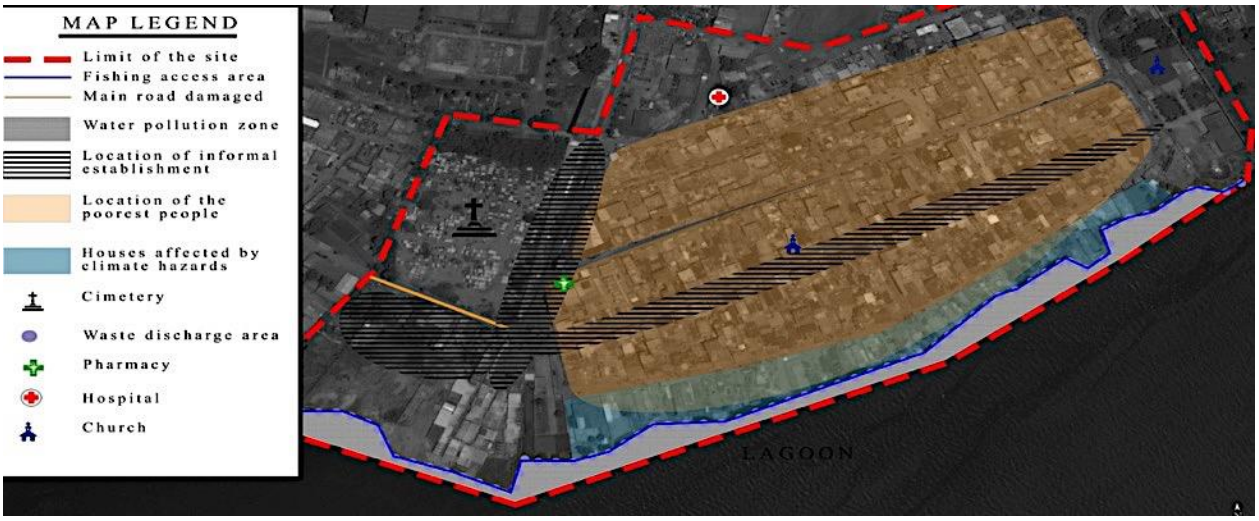





Jacqueville department is located on the west of Abidjan on a strip between the sea and the Ebrie lagoon. Grant-Jack is located next to the sea and is experiencing coastal erosion, sea flooding, flash floods and extreme heat. Fishermen here are mainly Ghanaians and Togolese. The main indigenous and minority 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)**

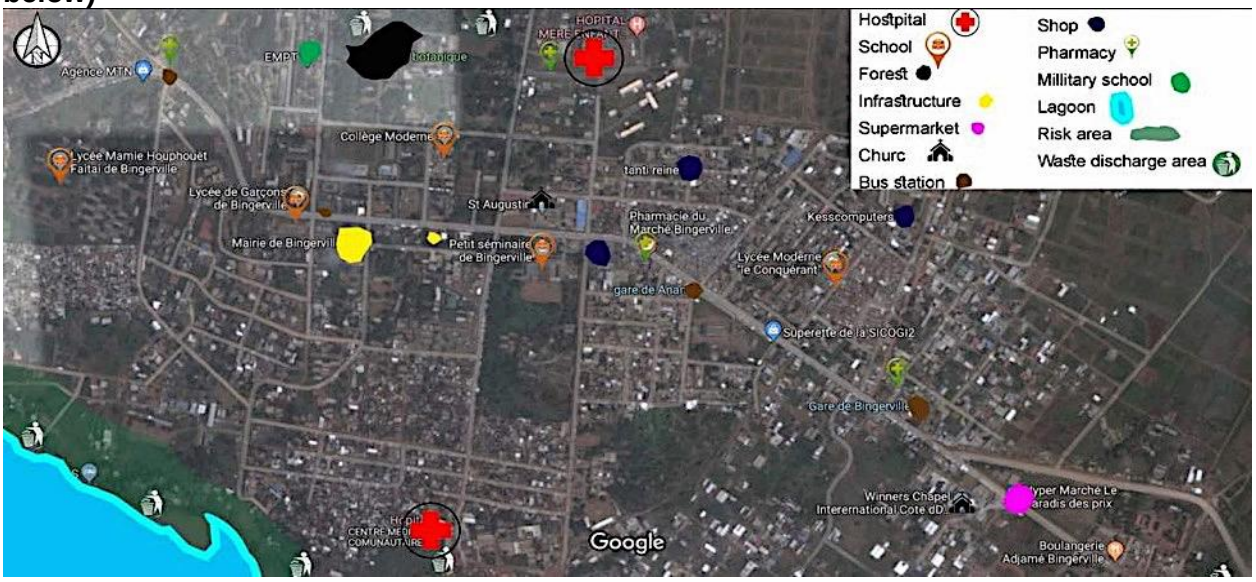





The Cocody commune is located in Abidjan at the north side of the Ebrie lagoon. Although Cocody is a relatively rich commune, the communities along the lagoon are poor and mostly informal (50-70 percent. All four target communities are located next to the lagoon. The lagoons experience lagoon flooding, 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.

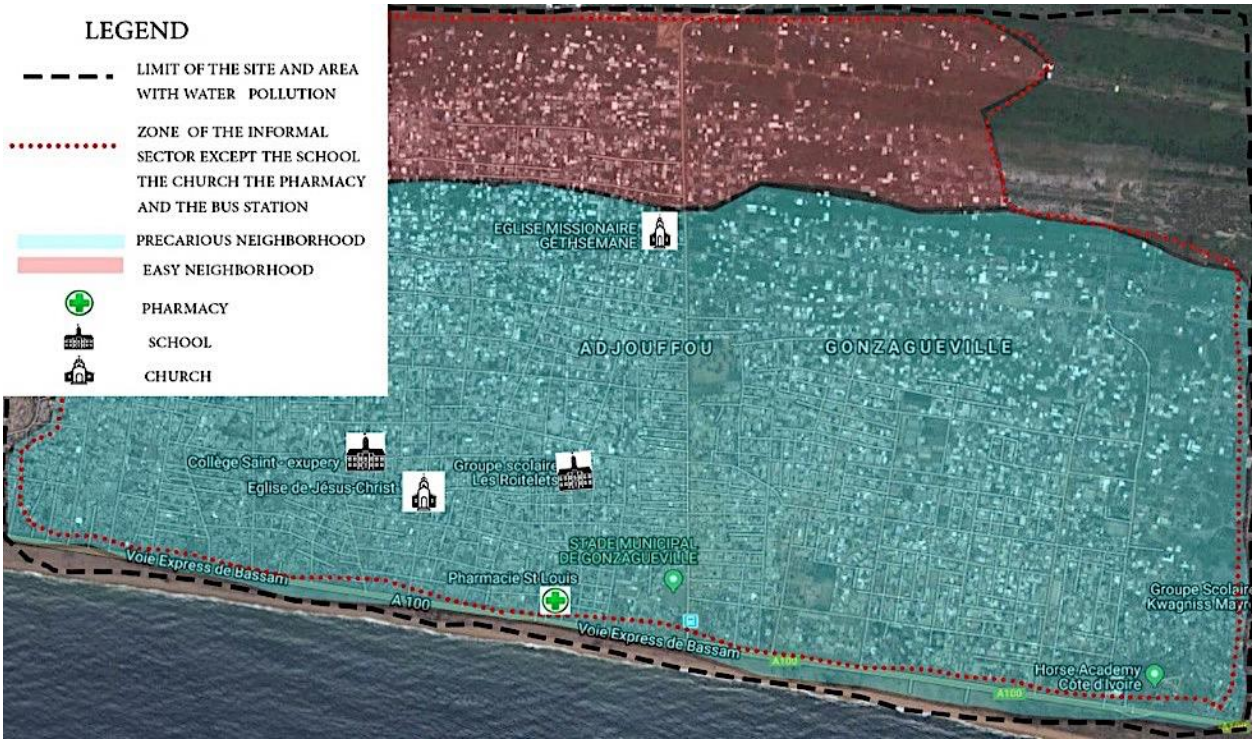
**Department: Bingerville**
**Communities: Bingerville commune (1st below), Aghien (2nd below) and Akandjé (3rd below)**





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).

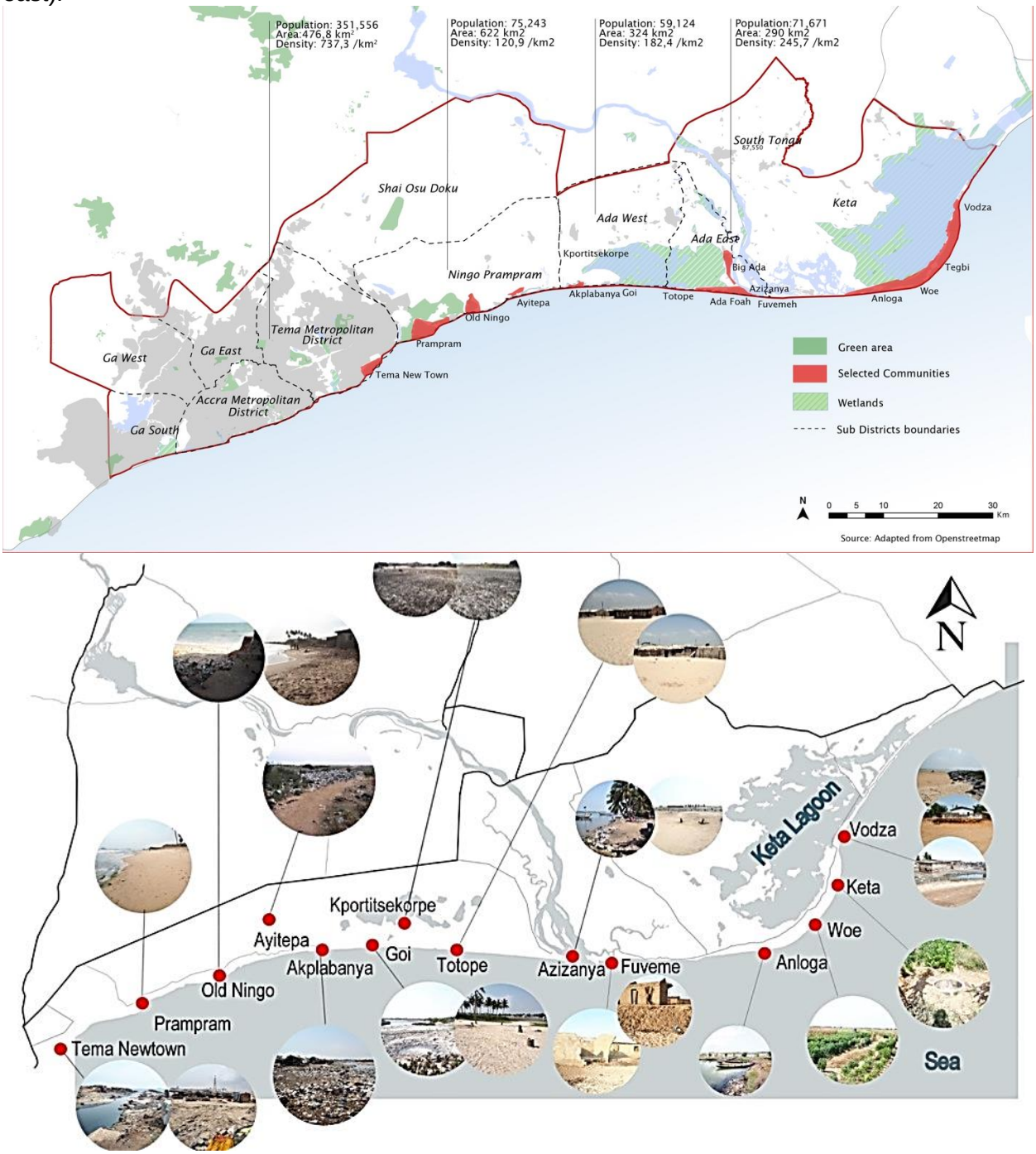



*Fig 16: Target districts and communities in Ghana*

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 | Kportitsejorp | Totope | Azizanya | Big Ada | Fuvemeh | 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

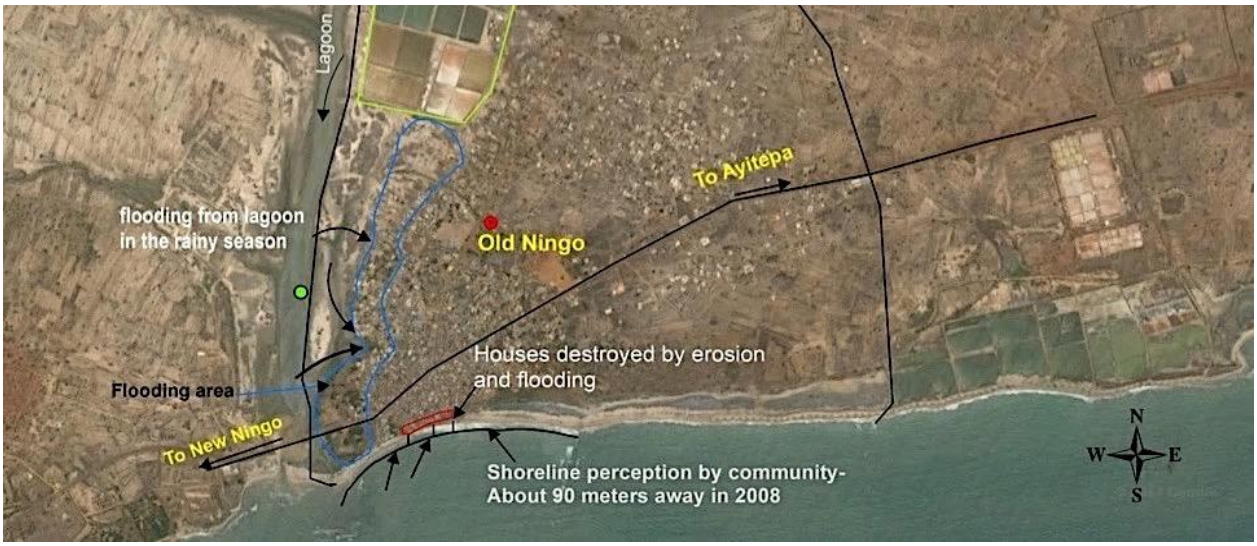
formal contacts or project interventions can be directed. In some communities, there are youths and physically challenged groups exist for similar groups.

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**

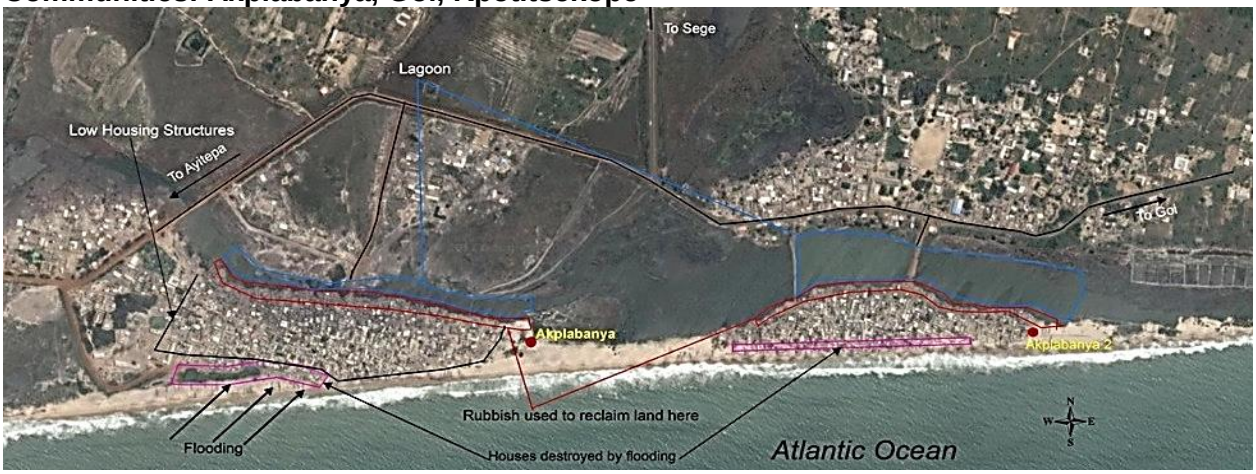

Tema is known as an industrial hub. The combination of sea-level rise, swells and the Tema harbor leads to coastal erosion at the east-side of the harbor, where the Tema Newtown community is located. The Chemu lagoon, a small lagoon west and in front of Newtown, is heavily polluted, mainly due to industrial 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**

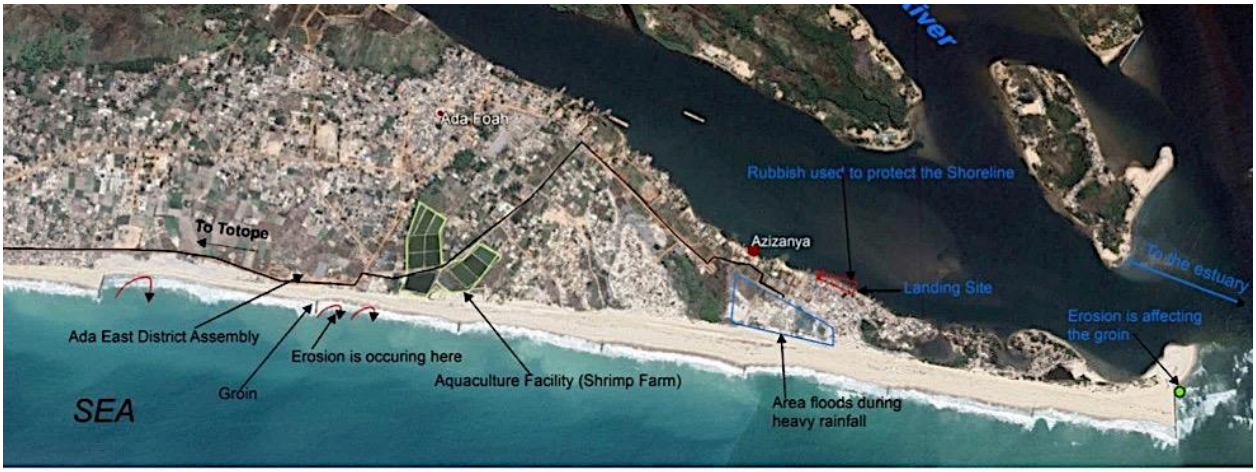




Ada West district is located on the west side of the Songor Lagoon. Akplabanya community is surrounded by the sea in the south and an arm of the Songor Lagoon in the north. The community is experiencing coastal erosion and sea flooding, often forcing community members to move out for several weeks. In 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<br>Selection criteria<br>Goals / targets<br>Monitoring framework and tools | **Reduce exposure to hazards:**<br>• Coastal protection<br>• Coastal nourishment / management<br>• Ecosystem restoration<br>• Groundwater management/ Reduce saltation<br><br>**Adapt to exposure**:<br>• Urban and territorial planning to avoid urbanization in risk areas<br>• Adapt buildings and assets<br>• Relocate communities that can't be protected<br>• Etc.<br><br>**Reduce sensitivity / increase adaptive capacity**<br>• Improve resilience of communities focused on livelihoods and protection:<br>• Develop salt tolerant crops<br>• Enhance ecotourism / fish stock / safe fishing<br>• Improve awareness and management skills<br>• Etc. | • Transformative intervention focused on coastal protection / nourishment / management<br>• Transformative intervention focused on ecosystem restoration and / or saltation management<br>• Catalytic community interventions focused on above but then very localized<br><br>• Urban and territorial planning strategies<br>• Community planning<br>• Catalytic community interventions focused on adapting buildings and assets<br><br>• Catalytic community interventions focused on improving income options<br>• Community planning<br>• Community trainings<br><br>**Implementation tools:**<br>• Urban Labs<br>• 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

- 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)

[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

## 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<br><br>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.<br>❑ 4 districts in Ghana<br>❑ 4 departments in Cote d'Ivoire<br><br>Above includes workshops, trainings and a "learning by doing process" (through the urban lab) of ministry staff and district / department level government staff.<br>Per country:<br>❑ 4 workshops/trainings at ministry level<br>❑ 8 workshops/trainings per district at district/department level<br><br>Above includes UN-Habitat's tested 'Planning for Climate Change' tools and methodologies | Cote d'Ivoire + Ghana<br><br>(With UN-Habitat Cities and Climate Change Initiative and Urban Planning and Design Lab support) | 1.400.000<br><br>(200.000 per department plan in Cote d'Ivoire and 150.000 per district plan in Ghana)<br><br>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<br>❑ 10 communities in Ghana<br>❑ 08 communities in Cote d'Ivoire<br><br>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 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: | Cote d'Ivoire + Ghana<br><br>(Through NGOs with support from the urban lab and UN-Habitat Cities and Climate Change Initiative) | 800.000 (45.000 per community) |

[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/

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| | | ❑ 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<br><br>District / Department scale interventions | 3.1. Increased resilience of coastal ecosystems and built environment at national / district level<br><br>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.<br><br>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.<br><br>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:<br>4. Sand bypassing: Dredging sediment from areas with surplus due to changes in erosion dynamics<br>5. Sand bypassing: Beach nourishment and foreshore nourishment (e.g. sand motor from dredging activities)<br>☐ Green belt coastal buffer zone<br><br>For more detailed info see table 5 and annex 3 | Cote d'Ivoire + Ghana<br><br>(Through local procurement and where possible, community contracting with support from the urban lab / international expert (companies) | 2.000.000<br><br>2.000.000<br><br>Total: 4.000.000 |
| 4. Catalytic concrete interventions at community level taking into account local needs and impacts / livelihood opportunities<br><br>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<br><br>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:<br>7. Introduce crops that are suited for a salty environment<br>8. Introduce aquaculture to adapt to current erosion dynamics (eg. Shrimp farm, clams or the other type of fish)<br>9. Replant and monitor forests and mangroves<br>10. Artifitial barrier inland with natural elements (eg. Dune/barrier nourishment) | Cote d'Ivoire + Ghana<br><br>(Through direct community contracting, where possible with support from the urban lab) | 4.000.000 (average 222.000 per community)<br><br>Total: 4.000.000 |

| | | | | |
|---|---|---|---|---|
| | | 11. Planting of vegetation in existing dunes to prevent erosion<br>12. Set up early warning systems and temporary flood defences, such as sand bags<br><br>For more detailed info see table 5 and annex 3 | | |
| 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<br><br>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.<br><br>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.<br><br>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 will also be explored. This will be done during the full proposal development phase and throughout the project. The execution of all project components and outputs will not depent on possible contribution / support of the private sector (e.g. hotel owners); thus the support from these possible alliances should be seen as independent and 'extra.'<br><br>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.<br><br>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 | Cote d'Ivoire + Ghana<br><br>(through Abidjan Convention, Delta-Alliance (wings) / universities (professors and students), etc.<br><br>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 for the ministerial level meetings<br><br>(through procurement of expert firm or institution such as Delta alliance and Deltares | 800.000<br><br>300.000 |

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| | | 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. | | 377.356<br><br>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 international and 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

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

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 five components of the project are interconnected. Component 1 focuses on developing spatial and land use strategies that concretize at the district/department scale national policies and strategies for coastal climate change and erosion impacts and risks as a tool to plan urban development in suitable areas and environmental preservation. Component 2 goes one scale deeper and details these land use and urban management tools at the community scale. Both components 1 and 2 include a strong component on local capacity development. Components 3 and 4 focus on the concrete implementation of climate change adaptation projects.. While component 3 focuses on the district/department scale, component 4 works directly with project implementation with selected communities. Monitoring, indicators and lessons for replication will be captured and shared through component 5. This last component will also enable enhancing policies for climate change adaptation through the lessons learnt at the different scales of the project.

Although the components are designed as a package, each component results and outputs can be achieved independently. This is especially important for components 3 and 4, which are designed to strengthen each other but are not dependent on each other in term of execution. In other words, interventions at different levels can be executed independently but attention will be paid to providing a framework at the larger scale while fitting smaller scale interventions within this framework. For instance, community-level interventions such as introducing aquaculture or planting mangroves can fit within a wider intervention of beach nourishment, where sand is 'deposited' naturally over a large area.

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 E 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.

Both Ghana and Cote d'Ivoire have developed and approved national planning policies and frameworks that set the priorities of the countries in relation to urban development and climate change adaptation and mitigation. The project takes these documents as a baseline and framework to execute this compoment and designated outputs. Therefore, policy documents at the district / department scale are deducted from these national policies and aligned with their objectives and outcomes.

Local strategies and plans, following their development and implementation, will inform the subsequent drafts of the national policies, to ensure that local challenges and priorities will be incorporated.

The district / departments plans, deducted from the national frameworks, are the tools that localizes and enables the implementation of national policies at the municipal scale. The coordination between the national and district / department scales will be ensured through the planning participatory process for the development of the plans, and through the creation / strengthening of inter-ministerial and inter-distict / department coordination mechanism. The exact design of this mechanism will be defined at the full proposal stage, whern workshops with relevant national stakeholders will be organizsed to discussed management arrangements for the execution of this component and related outputs.

In order to also ensure coordination at the international level, and to facilitate a knowledge sharing and decision-making platform, a coordination mechanism involving the Ministries of Environment, Ministries of Local Government and Ministries of Public Works from both countries will be supported. This will be done through the Abidjan convention and, where possible, through other relevant internatonal bodies. This coordination mechanism will also be the starting point for a larger regional coastal resilience coordination body that would bring neighbouring countries into common action, including e.g. developing a regional coastal management strategy / plan.

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.

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 E 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.

In the same way that national planning feeds into district/department level and vice versa, the district/department planning documents will inform and support decision making at community level planning.

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.

Physical interventions rationale between components 3 and 4

Component 3 and component 4 of the project entail transformative and catalytic projects as the basis for the implementation of coastal resilience at the district/department and community levels. Interventions at both levels are required, not only to address climate change impacts at the different scales (i.e. responding to coastal climate change issues that can only be addressed at a larger scale as well as responding to specific community-level needs) but also to do this in a comprehensive manner, where interventions responding to very localized needs can be stand-alone, but also fit into a larger intervention area. Moreover, one of the project's goal is to provide a comprehensive package of low cost "building with nature" solutions for possible replication.

The transformative interventions are projects that have an impact in larger coastal dynamics as they respond to a district/department scale of planning. These projects have a larger impact in terms of population, require larger funding and take 3 to 4 years to implement. The benefit of developing transformative interventions is that they are able to rebalance coastal geomorphology and its dynamics, which are transboundary and need to be addressed at the larger scale and within a long-term framework. Ultimately, these activities will be supporting income generation not only by mobilizing local resources for implementation but also by protecting and increasing resilience of economic sources- fish and fertile soil.

The catalytic interventions are projects that have an impact at community level, responding to community scale priorities. These projects are smaller, require smaller funding and take 1 to 2 years to implement. The benefit of developing catalytic interventions is that they aim at tackling the most urgent and tangible challenges communities face due to coastal erosion. These projects will provide smaller-scale benefits as well as lessons learnt that can be applied for the longer-term interventions. Ultimately, this component will enhance community participation and ownership by mobilizing job opportunities, protecting existing ones and shifting those which need to adapt to the new conditions of the environment.

Working simultaneously at these two scales enables combining localized impacts at the community level with larger scale district/departments benefits for a larger number of residents. At the same time, it allows to tackle coastal erosion impacts on communities while also addressing larger environmental challenges. Results are also achieved at both short and medium timeframes, with the catalytic projects enabling short term responses to urgent community needs and with transformative projects ensuring a structural and sustainable approach to coastal 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 E 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.

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:

6. Sand bypassing: Dredging sediment from areas with surplus due to changes in erosion dynamics
7. Sand bypassing: Beach nourishment and foreshore nourishment (e.g. sand motor from dredging activities)
8. Green belt coastal buffer zone

For the execution of these interventions the key role will be developed by the Ministry of Work and Housing (Ghana) and Ministry of Construction, Housing, Sanitation and Urban Planning (Cote d'Ivoire) along with the Local Planning Departments. In case the Government has no sufficient capacity, companies will be hired as per section I.

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:

13. Introduce crops that are suited for a salty environment
14. Introduce aquaculture to adapt to current erosion dynamics (eg. Shrimp farm, clams or the other type of fish)
15. Replant and monitor forests and mangroves
16. Artifitial barrier inland with natural elements (eg. Dune/barrier nourishment)
17. Planting of vegetation in existing dunes to prevent erosion
18. Set up early warning systems and temporary flood defenses, such as sand bags

For the execution of these interventions the key role will be developed by the Local Planning Departments along with Local Assemblies. Capacity of the government and the communities will be assessed for community contracting. In case there is need of more capacity support, companies will be hired as per section I.

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 E 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 Arcadis 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.<br><br>A spatial planning strategy will be implemented through the green belt buffer zone intervention.<br><br>(This can be considered as a not a concrete intervention but shows the role of land use planning versus concrete interventions) | Social: high<br>Environmental: low<br><br>Most relevant Principles: 1, **2**, **3**, **4, 5, 7, 8,** 13<br><br>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<br><br>e.g. UN-H land use plans in Haiti avoids people moving into high risk areas | Depends on the costs of relocating communities<br><br>Land use plans are a low-cost solution for avoid costs associated with cc risks. | - | yes |
| | | | | Sand bypassing: Beach nourishment and foreshore nourishment (i.e. sand motor)<br><br>Level / type applicable:<br>- Transformative | Social: low<br>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)<br><br>Most relevant Principles: 1, 2, 6, 11, 15 | yes<br><br>Dutch "weak links" projects) | roughly €10, - per m3 sand + labor coast<br><br>(*) 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)<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15**<br><br>Has shown negative downstream impacts in Ghana | many other coasts | groyne (very high)<br><br>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<br><br>A spatial planning strategy will be implemented through the green belt buffer zone intervention.<br>(This can be considered as a not a concrete intervention but shows the role of land use planning versus concrete interventions) | See above | Yes<br><br>(see above) | See above | - | yes |
| | | | | Sand bypassing: Beach nourishment and foreshore nourishment (i.e. sand motor)<br><br>Level / type applicable:<br>- Transformative | See above | Yes<br><br>(see above) | roughly €10, - per m3 sand + labor cost (commercial prize) | 1 year | yes |
| | | | | Dune/ barrier nourishment (to prevent for storm erosion)<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low risk, but needs to be repeated periodically<br><br>Most relevant Principles: 1, 2, 6, 11, 15<br><br>As long as sources sand from areas that won't cause negative impacts, risks are low | Yes<br><br>Dutch "weak links" projects)<br><br>Barrier at Prampram harbor has been successfully | roughly €10, - per m3 sand + labor cost (commercial prize) | 1 year | yes |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | heightened by fishermen | | | |
| | | | | Perched beach: submerged dams combined with beach nourishment. Submerged dams may be possible areas for aquaculture | Social: low<br>Environmental: could be high / depends on local situation (not applicable when also gradients in longshore currents cause erosion<br><br>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<br><br>(*) | < 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<br><br>A spatial planning strategy will be implemented through the green belt buffer zone intervention.<br>(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<br><br>Level / type applicable:<br>- Transformative<br>- | Social: low<br>Environmental: low, but needs to be repeated periodically<br><br>Most relevant Principles: 1, 2, 6, 11, 15 | yes | roughly €10, - per m3 sand (commercial prize)<br><br>(*) | 1 year | yes |
| | | | | Beach nourishment and dune nourishment in combination with groynes | Social: low<br>Environmental: high (translates erosion problem to down drift side)<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15**<br><br>Has shown negative downstream impacts in Ghana | yes | roughly €10, - per m3 sand plus €10000, - per m groyne (very high)<br><br>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<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: unknown (not implemented yet).<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** | No<br><br>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<br><br>Level / type applicable:<br>- Transformative<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** | Yes<br><br>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<br>Environmental: high **(**possibly increases negative effects at downstream side of river mouth).<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, 15<br><br>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)<br><br>E.g. US$ 180 million for 15 groynes in Keta | < 3 years | no |
| | Flooding from sea | Swell wave overwash | flooding | Dune/ barrier nourishment This can include planting of vegetation in existing dunes to prevent erosion.<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low (may need to be repeated periodically in combination with cross shore sediment transport)<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** | Yes<br><br>Dutch “weak links” projects)<br><br>Barrier at Prampram harbor has been | roughly €10, - per m3 sand | 1 year | yes |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | As long as sources sand from areas that won't cause negative impacts, risks are low | successfully heightened by fishermen | | | |
| | | | | Set up early warning systems and temporary flood defences, such as sand bags<br><br>Level / type applicable:<br>- Catalytic (community) | Social: medium<br>Environmental: low<br>(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<br><br>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 planning<br><br>(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<br><br>A spatial planning strategy will be implemented through the green belt buffer zone intervention.<br><br>Level / type applicable: | See above | Yes<br><br>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 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | - Transformative<br>- | | | | | |
| | | | | Same as above, but with construction of groyne upstream of river mouth. Sediment is trapped at the groyne, which makes bypassing easier | See above<br><br>Has shown negative downstream impacts in Ghana | See above | roughly €10000, - per m groyne. (very high)<br><br>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<br><br>Level / type applicable:<br>- Transformative | Social: low<br>Environmental: can be high<br><br>Opening up a river mouth needs to be done very carefuly to control water flow<br><br>Most relevant Principles: 1, 2, 6, **9, 10**, **11**, **15** | Yes<br><br>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)<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>Most relevant Principles: 1, 2, 3, 5, 6, 7, 9, 10<br><br>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<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>Most relevant Principles: 1, 2, 3, 5, 6, 7, 9, 10 | Identify most suitable proven option | low costs, can be done by local communities. | < 2 years | yes |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Main risk is related to identifying the most suitable crop and to operate / maintain these. | | | | |
| | | | Decrease population of fresh/ brackish water fish | Change aquaculture (e.g. shrimp farms or othe type of fish)<br><br>Level / type applicable:<br>- Transformative<br>- Catalytic (community) | Social: low<br>Environmental: medium<br><br>Most relevant Principles: 1, **2**, 3, 5, 6, 7, **9**, **10**, **12**, 15<br><br>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<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>Most relevant Principles: 1, **2**, 3, 5, 6, 7, 9, 10, 12, 15<br><br>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)<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>Most relevant Principles: 1, **2**, 6, 9, 10, | Yes (but not in target area)<br><br>Many technical options | unknown | 3 years | Possibly |
| | | | | | | | | | |
| | Pollution of lagoon | Lack of refreshment from sea since river mouth is blocked by sediment | Lack of fresh drinking water | Provision of fresh / potable water (e.g. through water harvesting) | See above | Yes (but not in target area)<br><br>Many technical options | unknown | 3 years | Possibly |
| | | | Lack of fresh | Open up river arm to lagoon to refresh water | Social: low<br>Environmental: may be high (may results in negative | Yes (but not in target area) | unknown | 1 year but maintena | no |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | water for agriculture | Level / type applicable:<br>- Transformative | environmental effects up and downstream in river and in lagoon if not well managed<br><br>One positive impact would be the reduction of bilharzia parasite due to water salinity increase<br>Most relevant Principles: 1, 2, 6, **9, 10**, 11, 12, 15<br><br>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)<br><br>(This can be considered as a non-concrete intervention to support above)<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>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<br>This may need to be combined with some of the above interventions to ensure sustainability<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>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<br>This may need to be combined with some of the above interventions to ensure sustainability<br><br>Level / type applicable:<br>- Catalytic (community) | Social: low<br>Environmental: low<br><br>Most relevant Principles: 1, 2, 3, 5, 7, 12, 13, | yes | low / medium costs | 1 year | yes |

## 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:

9. Sand bypassing: Dredging sediment from areas with surplus due to changes in erosion dynamics
10. Sand bypassing: Beach nourishment and foreshore nourishment (e.g. sand motor from dredging activities)
11. Green belt coastal buffer zone

  Catalytic interventions (i.e. at community level)

19. Introduce crops that are suited for a salty environment
20. Introduce aquaculture to adapt to current erosion dynamics (eg. Shrimp farm, clams or the other type of fish)
21. Replant and monitor forests and mangroves
22. Artifitial barrier inland with natural elements (eg. Dune/barrier nourishment)
23. Planting of vegetation in existing dunes to prevent erosion
24. Set up early warning systems and temporary flood defenses, such as sand bags

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 will work together with internationally recognised institutions and companies such as 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.

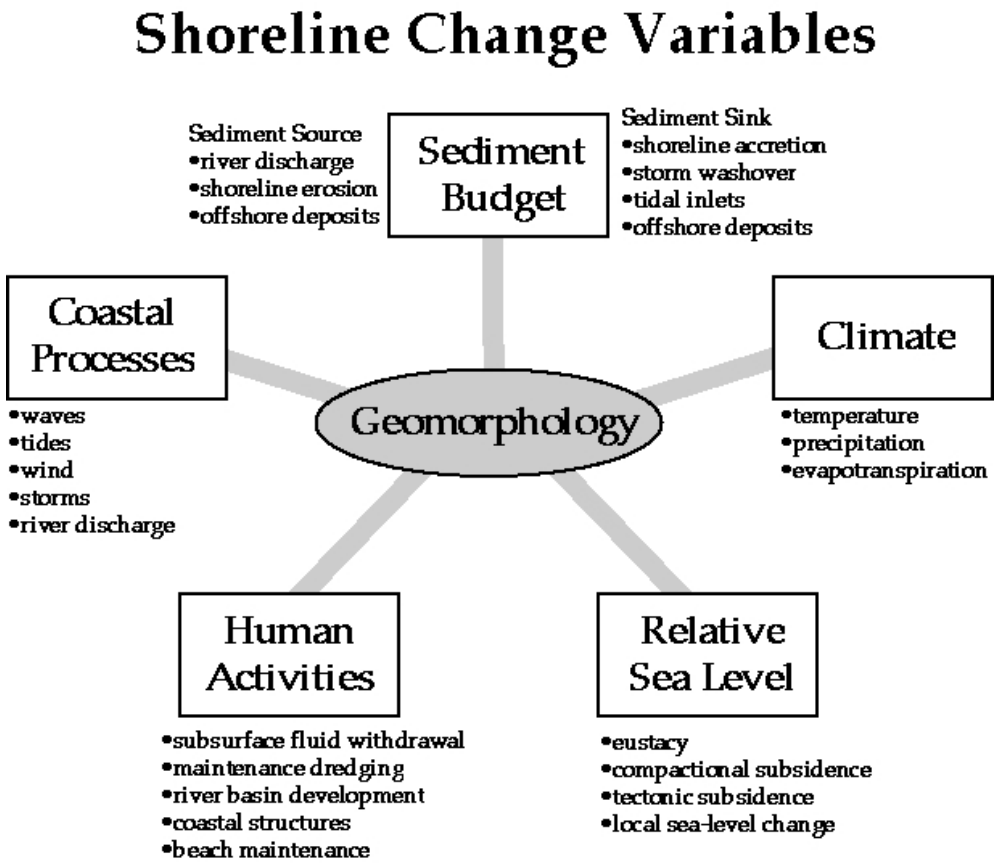


*Figure 18: information needed to develop a erosion and flood impact and risk prediction model*

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

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 explored and where possible, 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 |
|---|---|---|
| Sand bypassing: Beach and foreshore nourishment | Women, children and elderly | Protection of services, livelihoods, infrastructure, housing etc. from coastal erosion and flooding.<br><br>*Reduce risks of poverty, lack of basic services (education and health care), unemployment and deseases.* |
| Make artificial barrier inland with natural elements | Women, children and elderly | |
| Set up system with temporary flood defenses | Women, children and elderly | |
| Sand bypassing. Dredging sediment in river mouth and relocation down stream | Women, children and elderly | Protection of services, livelihoods, infrastructure, housing etc. erosion.<br><br>*Reduce risk of poverty, desease and unemployment.* |
| Change aquaculture (e.g. shrimp farms or other type of fish) | Women, children and elderly | Protection of livelihoods (fishing).<br><br>*Reduce risk of food insecurity and unemployment.* |
| Replant resilient forests/mangroves | Women, children and elderly | Protection of services, livelihoods, infrastructure, housing etc. from lagoon and coastal erosion.<br><br>*Reduce risk of poverty, lack of basic services (education and health care), and unemployment.* |
| Green belt coastal buffer zone | Women, children and elderly | |
| Planting vegetation in existing dunes to prevent erosion | Women, children and elderly | |
| Change crops suited for a salt environment | Women, children and elderly | Protection of livelihoods (agriculture).<br><br>*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**

The 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

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

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.

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;<br>Environment Protection Act, Act 490, 1994;<br>Environmental Assessment Regulation 1999 (LI 1652 amended 2002);<br>Metropolitan, Municipal & District Assembly by Laws<br>Ghana National Spatial Development Framework, 2015 – 2035<br><br>☐ Relocation<br><br>Lands Commission Act 2008 act 767;<br>Ghana National Spatial Development Framework, 2015 – 2035;<br>Metropolitan, Municipal & District Assembly by Laws;<br>National Building Regulations 1996, LI 1630;<br>Local Government Act 1994 Act 462;<br>Environment Protection Act, Act 490, 1994;<br>Environmental Assessment Regulation 1999 (LI 1652 amended 2002);<br>National Museum Act 1969 (NLCD 387) | An authorisation from Town & Country Planning Department, Environmental Protection Agency, Metropolitan, Municipal & District Assembly will be required.<br>Permits, certificates and Environmental Impact Statements are required from project proponents.<br><br>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<br><br>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<br><br>Local planning departments (including BNETD)<br><br>Authorization required from the Ministry of Environment |

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|---|---|---|---|---|
| 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<br><br>• Beach dune/barrier nourishment<br>• San bypassing – dredging of sediment<br>• Sand bypassing – beach and foreshore nourishment | Environment Protection Act, Act 490, 1994;<br>Environmental Assessment Regulation 1999 (LI 1652 amended 2002);<br>Metropolitan, Municipal & District Assembly by Laws<br>Ghana National Spatial Development Framework, 2015 - 2035<br><br>Buffer Zone Policy<br>Water Resources Commission Act, 1996 Act 522;<br>Water Use Regulation 2001; | & Country Planning Department, Environmental Protection Agency, Metropolitan, Municipal & District Assembly will be required.<br>Permits, certificates and Environmental Impact Statements are required from project proponents<br><br>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.<br><br>Law No. 96-766 of 3 October 1996 on the Environment Code; | Ministry of Urban Sanitation, Environment and Sustainable Development.<br><br>Ministry of Construction, Housing, Sanitation and Urban Planning.<br><br>The National Agency of Environment Protection (ANDE) |
| • (Temporary) flood defense and drainage | National Building Regulations 1996, LI 1630;<br>Environment Protection Act, Act 490, 1994;<br>Environmental Assessment Regulation 1999 (LI 1652 amended 2002);<br>Metropolitan, Municipal & District Assembly by Laws<br>Ghana National Spatial Development Framework, 2015 - 2035 | An authorisation from Town & Country Planning Department, Environmental Protection Agency, Metropolitan, Municipal & District Assembly will be required.<br>Permits, certificates and Environmental Impact Statements are required from project proponents | Decree n ° 2012-988 of October 10, 2012 establishing, attributing, organizing and operating the National Platform for Risk Reduction and Disaster Management.<br><br>Law No. 96-766 of 3 October 1996 on the Environment Code; | Ministry of Urban Sanitation, Environment and Sustainable Development.<br><br>Ministry of Construction, Housing, Sanitation and Urban Planning<br><br>The National Agency of Environment Protection (ANDE) |

| | | | | |
|---|---|---|---|---|
| • Replanting fores/mangroves<br>• Green belt buffer zone<br>• Planting vegetation in dunes | Plant and Fertilizer Act, 2010 Act 803;<br>Forestry Commission Act 1999 Act 571<br>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.<br><br>Law No. 96-766 of 3 October 1996 on the Environment Code; | Ministry of Urban Sanitation, Environment and Sustainable Development.<br><br>Ministry of Construction, Housing, Sanitation and Urban Planning<br><br>The National Agency of Environment Protection (ANDE) |
| • Agriculture/ salt / brackish water crops | National Nutrition Policy for Ghana<br>Ghana Irrigation Development Authority Act 1977 (SMCD 85);<br>Plant and Fertilizer Act, 2010 Act 803;<br>Pesticides Control and Management Act 1996 Act 528;<br>Environment Protection Act, Act 490, 1994;<br>Environmental Assessment Regulation 1999 (LI 1652 amended 2002);<br>Metropolitan, Municipal & District Assembly by Laws;<br>Water Resources Commission Act, 1996 Act 522;<br>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<br>Decree n ° 2012-988 of October 10, 2012 establishing, attributing, organizing and operating the National Platform for Risk Reduction and Disaster Management.<br><br>Law No. 96-766 of 3 October 1996 on the Environment Code;<br><br>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.<br><br>Ministry of Urban Sanitation, Environment and Sustainable Development.<br><br>Ministry of Construction, Housing, Sanitation and Urban Planning |

| | | | | |
|---|---|---|---|---|
| • Aquaculture (shrimp, other tipe of fish) | An EIA is required for areas larger than 20 ha<br>Fisheries Commission Act 2002 Act 625 Amended 2014;<br>Plant and Fertilizer Act, 2010 Act 803;<br>Pesticides Control and Management Act 1996 Act 528;<br>Environment Protection Act, Act 490, 1994;<br>Environmental Assessment Regulation 1999 (LI 1652 amended 2002);<br>Metropolitan, Municipal & District Assembly by Laws;<br>Water Resources Commission Act, 1996 Act 522;<br>Water Use Regulation 2001;<br>Energy Commission Act 1997 Act 541;<br>National Board for Small Scale Industries Act 1981 Act 434;<br>Non- Bank Financial Institutions Act 2008 Act 774;<br>Cooperative Credit Unions Regulations 2015 (LI 2225). | Fisheries Commission, Plant Protection and Regulatory Services, Environment Protection Agency and Water Resources Commission have 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. | Law No. 96-766 of 3 October 1996 on the Environment Code;<br><br>Decree No. 2013-440 of 13 June 2013 determining the legal regime for the protection of water resources, hydraulic installations and structures; | The National Agency of Environment Protection (ANDE)<br><br>Ministry of Urban Sanitation, Environment and Sustainable Development.<br><br>The National Agency of Environment Protection (ANDE) |
| 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.<br>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**<br><br>**And non-duplication** |
|---|---|---|
| **West/East Africa** | | |
| West Africa Coastal Areas Management Programme (WACA)[34] - WB<br><br>2015 –<br>US$300 m<br><br>Three pillars<br>☐ Strategic investment planning;<br>☐ Knowledge, information, and capacity building; | ☐ There is strong political support in Cote d'Ivoire<br>☐ Process is slower in Ghana – multi-sector risks assessment still to be finalized | Complementary<br>☐ WACA suggested to cooperate on strengthening the spatial planning component in Grand-Lahou<br>☐ Knowledge sharing on coastal management in West Africa Coastal Areas<br>☐ There is clear will to coordinate and share lessons learned |

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

| | | |
|---|---|---|
| ☐ Country and regional engagement and resource mobilization | | ☐ WACA suggested to consider working together on coordinate on the multi-sector assessment in Ghana<br><br><u>Non-Duplication</u><br>☐ A part from the collaboration on Grand-Lahou, the project focuses on different target areas |
| West Africa biodiversity and climate change (WA-BICC) – USAID<br><br>(2015-2020)<br><br>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) | <u>Complementary</u><br>☐ Lessons learned and collaboration on their programme objective 2<br><br><u>Non-Duplication</u><br>☐ WA-BICC project focuses on Sierra Leone and West coast of Cote d'Ivoire; Not common target areas |
| Mami Wata project[35]<br>- by GRID-Arendal and the Abidjan Convention Secretariat | ☐ Started in 2016 so no lessons learnt reported yet | <u>Complementary</u><br>☐ The project will complement their capacity building initiative on coastal ecosystems protection and conservation<br><br><u>Non-Duplication</u><br>☐ The project will address resilience through a different sector: urban and territorial planning as a tool for climate change adaptation |
| Transboundary projects climate-resilient<br><br>Ministry of Environmental and Sustainable Development 2016<br><br>African climate Change Fund (ACCF) | ☐ No lessons learned yet, ongoing project | <u>Complementary</u><br>☐ The project complement climate resilience in different regions of the Abidjan-Lagos coastal corridors<br>☐ Enhances knowledge and capacity, and facilitating partnerships for climate-proofing African infrastructure projects.<br><br><u>Non-Duplication</u><br>☐ Non geographical overlap regarding infrastructure projects; the ACCF project works in Togo Benin Zambia and Zimbabwe |

[35] https://mamiwataproject.org/

| | | |
|---|---|---|
| Scaling up climate-smart agriculture In East Guinea Bissau<br><br>AF / BOAD | ☐ No lessons learnt yet | Complementary<br>☐ Both projects work on increasing resilience to climate change<br>☐ Lessons learnt and knowledge sharing from interventions on extremely vulnerable groups (women, elderly and children)<br><br>Non-Duplication<br>☐ Non geographical overlap<br>☐ The Guinea project mainly focus on agriculture and farming sector |
| Reducing vulnerability and increasing resilience of coastal communities in the Saloum Islands (Dionewar), Senegal<br><br>AF | ☐ No lessons learnt yet | Complementary<br>☐ Both projects work on coastal erosion management and flooding<br>☐ Knowledge sharing from interventions that aim at tackling same challenges<br><br>Non-Duplication<br>☐ Non geographical overlap |
| Reducing Vulnerability to Climate change in North West Rwanda through Community Based Adaptation<br><br>AF / Ministry of Natural Resources (MINIRENA) | ☐ The project relocated 200 households from high risk zones after being affected by flooding and landslides.<br>☐ Create off-farm jobs and generate income | Complementary<br>☐ The project can incorporate lessons learnt from this project regarding erosion and flood control measures<br><br>Non-Duplication<br>☐ Non geographical overlap |
| Enhancing resilience of communities to climate change through catchment-based integrated management of water and related resources in Uganda<br><br>AF | ☐ No lessons learnt yet | Complementary<br>☐ Knowledge sharing regarding water management and flood control<br><br>Non-Duplication<br>☐ Non geographical overlap |

| | | |
|---|---|---|
| Least Developed Countries Fund project. Liberia.<br><br>UNDP<br><br>GEF funding | ☐ Strengthening Liberia's capacity to provide climate information and services to enhance climate resilient development and adaptation to climate change.<br>☐ The private sector can be involved but other outputs of the project should not depend on it. | Complementary<br>☐ The project will make use of the improved climate database and archives developed by the LDCF project.<br>☐ The project will complement the LDCF capacity building on climate change mainstreaming in other countries in the region.<br><br>Non-Duplication<br>☐ Non geographical overlap; The LDCF project will be implemented in 10 countries: Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sao Tomé and Principe, Sierra Leone, Tanzania, Uganda and Zambia.<br>☐ The project will not focus on generating databases nor implementing early warning systems. |
| Adaptation to Coastal Erosion in Vulnerable areas in Senegal<br><br>AF | ☐ Reduce exposure of vulnerable communities to coastal erosion through physical interventions, policies and regulations. | Complementary<br>☐ The project will apply the lessons learnt from this project regarding involvement of local communities and technical knowledge from interventions that aim at tackling same challenges.<br><br>Non-duplication<br>☐ No geographical overlap |
| **Ghana** | | |
| Ghana-Netherlands Universities Volta Delta Design Project<br><br>Delta Alliance Ghana Wing | ☐ Focus on sustainable management of the Volta Delta including coastal engineering, policy, institutions and livelihoods. | Complementary<br>☐ Delta Alliance will cooperate also on the urban lab<br>☐ Ongoing collaboration: Ghana Delta Wing / The Development Institute / students conducted the community assessments<br>☐ The project will maximize the use of findings from Delta Alliance |

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| | | ☐ Both projects will complement on transboundary strategies<br><br><u>Non-Duplication</u><br>☐ 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<br><br>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<br><br>Both ENDS/MoF Netherlands and the Development Institute | ☐ Find ways to Empower community gender and environmental justices' groups | <u>Complementary</u><br>☐ The project works with the Development Institute to make use of their gender approach<br><br><u>Non-Duplication</u><br>☐ Both projects have different core objectives, GAGGA is focused on women 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<br><br>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 | <u>Complementary</u><br>☐ The project works with the Development Institute to empower women and youth and to promote gender equality<br><br><u>Non-Duplication</u><br>☐ 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<br><br>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. | <u>Complementary</u><br>☐ The project will use findings and work together with the Development Institute to enhance the management of saline soils and water<br><br><u>Non-Duplication</u><br>☐ Both projects have different thematic area of focus |
| Community conservation & pro-poor tourism Project<br><br>Wildlife conservation in Ada and Keta | ☐ Eggs of turtles also affected by erosion; therefore, they try to | <u>Complementary</u><br>☐ The project will identify hotspot areas along with the Development Institute and |

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| Calgary Zoo/ DI and The Development Institute | monitor erosion in Ada and Keta<br>☐ Protection of Turtles and whales, Manette, Sitatunga) through Marine protection area (MPA) concept and livelihood/ tourism | Wildlife conservation and align efforts<br>☐ UN-Habitat will work together with the development institute and Wildlife conservation to monitor coastal erosion and enhance livelihood options<br><br><u>Non-Duplication</u><br>☐ (to be completed further) |
| Sustainable Land and Water Management Project in Ghana[36] - WB<br><br>(2014 -) | ☐ | <u>Complementary</u><br>☐ Lessons learned from improved sustainable land and water management practices will be incorporated into the approach of the project<br><br><u>Non-Duplication</u><br>☐ The project will focus on spatial planning at large scale which is not included in the WB project<br>☐ 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<br><br>Not yet started | ☐ At pre-concept note phase so no lessons learned | <u>Complementary</u><br>☐ Knowledge sharing on long-term Environmental development<br><br><u>Non-Duplication</u><br>☐ The project will not focus on implementing early warning systems<br>☐ 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<br><br>2016 - 2020 | ☐ At start-up phase. Project will monitor lessons learned regarding livelihoods | <u>Complementary</u><br>☐ Knowledge sharing regarding water management in Ghana<br>☐ Both projects will support different regions in Ghana on building climate change resilience |

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

[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

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|---|---|---|
| | | Non-Duplication<br>☐ The project will focus on Southern areas not included in the UNDP/AF proposal<br>☐ 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<br>☐ The project will support inputing coastal erosion and climate change impacts in plan for the coastal area of the Ningo-Prampram District<br>☐ Coordination to align resilient development strategies<br><br>Non-Duplication<br>☐ 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<br>☐ 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<br>☐ 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.<br><br>Non-Duplication<br>☐ 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<br>☐ Map all areas where the government (plans) to intervene and cooperate<br>☐ Consider cash for work approach for certain interventions<br>☐ Lessons learned from enhanced livelihood options of vulnerable groups will be integrated<br><br>Non-Duplication<br>☐ The project will address poverty through a different mechanism, urban and territorial planning<br>☐ |

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| Sustainable fisheries project<br><br>USAID and Hen Mpoano | ☐ Effective stakeholder engagements through one-on-one discussions and focus group discussions promotes high participation.<br>☐ Effective stakeholder engagements through communication (peer to peer discussion, study tour, focus group discussions) enhance behavioural change communication.<br>☐ Ownership is key to project success. | <u>Complementary</u><br>☐ The project will incorporate the lessons learned from the Sustainable fisheries project regarding stakeholder engagements and participation<br>☐ Fishermen are part of the targeted groups<br><br><u>Non-Duplication</u><br>☐ USAID Project focuses on fisheries management through policy and institutional strengthening, which the project does not focus on |
| Sustainable Fisheries Management project<br><br>EU and FoN / Care Int. | ☐ Recently launched so no lessons learned | <u>Complementary</u><br>☐ Fishermen are part of the targeted groups<br><br><u>Non-Duplication</u><br>☐ 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<br><br>Concluded in 2015<br>US$ 183 m<br><br>15 Groynes over 14.7 km stretch<br><br>Keta coastal protection works<br><br>Concluded 2002 / 2003<br>US$ 52 million<br><br>6 Groynes over 6,5 km stretch | ☐ It is working at the beginning and the end of the stretch<br>☐ It is very expensive; thus, the UN-Habitat project should propose affordable interventions with results that come close | <u>Complementary</u><br>☐ Lessons learned from these interventions should be integrated in the project approach<br><br><u>Non-Duplication</u><br>☐ UN-Habitat could focus on livelihood enhancement /protection affords at the lagoon site |
| Integrated climate risk management for adaptation to climate change 2015-2018<br><br>GIZ | ☐ Ensure vulnerable population groups, private businesses and governments against financial risks from extreme weather events. | <u>Complementarity</u><br>☐ Both projects work on increasing resilience to climate change in Ghana. They complement each other by working on different sectors.<br><br><u>Non-duplication</u><br>☐ <u>The GIZ project works on risk management through</u> |

[39] https://www.deme-group.com/references/ada-coastal-protection-works
http://www.franki.co.za/ada-coastal-protection-works-phase-2/

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| | | insurance solution and other financial mechanisms, |
| Ghana Community Resilience Through Early Warning Systems 2013-2018<br><br>UNDP | ☐ Build capacities within the country to reduce disaster risk. | Complementarities<br><br>☐ Both projects work on building resilience in the country and the project can get input from their hazard mapping and vulnerability assessments<br><br>Non-duplication<br><br>☐ The UNDP project focuses on providing resilience through early warning systems for natural disasters. |
| Adaptation of agro-ecosystems to climate change 2012-2017<br><br>GIZ | ☐ Define agricultural sector policy and national support measures for the adaptation of land use systems to climate change. | Complementarities<br><br>☐ Both projects work on ensuring food security under climate change in different areas of the country.<br>☐ Both projects work on capacity building to climate change adaptation.<br><br>Non-duplication<br><br>☐ No geographical overlap. GIZ project works on savannah and transitional region.<br>☐ The GIZ project is focused on farming. |
| **Cote d'Ivoire** | | |
| Grand-Bassam opening of river mouth project – Cote d'Ivoire government and Morocco<br><br>No funding yet | ☐ Not started yet but Deltares study is useful to understand dynamics | Complementary<br>☐ Sand could be used to create a sand motor<br>☐ Opportunities to integrate Deltares studies into the approach of the project<br><br>Non-Duplication<br>☐ The project will not focus on Grand-Bassam river mouth |
| Climate finance readiness in Côte d'Ivoire<br><br>Ministry of Environmental and Sustainable Development 2016 | ☐ Advanced climate finance readiness at national level. | Complementary<br>☐ Both project could collaborate on capacity building on climate change at national level |

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| 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<br><br><u>Non-Duplication</u><br>☐ ACCF project only focuses on climate finance |
| Emergency Infrastructure Renewal Project<br><br>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.<br>☐ The project aimed at supporting economic and social development of the municipality. | <u>Complementary</u><br>☐ The project will incorporate and complement interventions from World Bank on basic infrastructure improvement: urban transport, water supply, sanitation and waste management.<br><br><u>Non-Duplication</u><br>☐ No geographical overlap |
| Cocody Bay rehabilitation<br><br>Marchica Med Company. 2014-ongoing | ☐ Ecological review of the lagoon Ébrié and the Bay of Cocody.<br>☐ Cocody Bay Master Plan | <u>Complementary</u><br>☐ The project will integrate strategies and plans from the Cocody Bay master plan<br><br><u>Non-Duplication</u><br>☐ The project doesn't target Cocody bay |
| Abidjan integrated sustainable urban planning and management[40]<br><br>Ministry of Environment and Sustainable Development, Autonomous District of Abidjan. 2015 - ongoing | ☐ Recently started not lessons learnt reported yet. | <u>Complementary</u><br>☐ Coordinate on working on establishing an urban observatory with an urban planning data base.<br>☐ Coordinate on working on a city-wide drainage and climate change adaptation strategy for the Greater Abidjan area<br><br><u>Non-Duplication</u><br>☐ The project will focus on improving urban planning and management in other departments |
| Strengthened Environmental management System for Coastal Development to meet Rio Convention Objective | ☐ Environmental Management Information System (EMIS) for decision making on | <u>Complementary</u><br>☐ The project will incorporate the GEF project lessons learned and database for the |

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

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| Ministry of Environment<br>MINESUDD.<br>2013 – ongoing<br>GEF | coastal zone development.<br>☐ Piloting the use of improved environmental information systems for better decision making related to coastal zone management | analysis and decision making on coastal resilience<br><br>Non-Duplication<br>☐ The GEF project only focuses at policy and governance level |
| Protection of mangroves through the creation of firewood plantation[41]<br><br>UNDP. 2008-2009 | ☐ Deforestation linked to firewood supply for urban areas is becoming an increasingly significant problem in Côte d'Ivoire.<br>☐ 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<br>☐ The project will contribute to the protection and restoration of mangroves ecosystems.<br>☐ Gender mainstreaming as part of the GEF project will enhance effectiveness of gender inclusive activities as part of this project<br><br>Non-Duplication<br>☐ In Anan village (Bingerville). No geographical overlap.<br>☐ To address environmental protection, this project will focus on spatial planning |
| Adaptating to climate change and increasing the resilience of the population in south-west Cote d'Ivoire 2012-2016<br><br>GIZ | ☐ Increase resilience to climate-related risks and stabilise livelihoods. | Complementarity<br>☐ The project also aims at protecting and adapting income sources. The project will leant from their practice especially on agriculture cultivation.<br>Non-duplication<br>☐ No geographical overlap. GIZ projects works in the south-west of the country.<br>☐ The GIZ project focuses on food security and food supply.<br>☐ The GIZ project does not focus on coastal erosion impacts. |

## H. Learning and knowledge management

Component 5 is dedicated to achieving long-term sustainability of the project. This will be

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

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 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 promote 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. To ensure no project component is compromised by (i.e. dependent on) the success of this alliance, the project will consider this collaboration as an independent bonus, meaning no other outputs reply on this and no budget is required. However, the project manager will explore the possible support from the private sector as it will facilitate the alignment and efficiency of all efforts put into coastal resilience in the area. The involvement of hotel owners will be done during the full proposal development phase and throughout the project through a platform/association that will ease networking. 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<br><br>(i): number of government staff trained trainings and number of plans | 8 land use plans<br><br>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<br><br>(i): number of community members trained and number of plans | 18 community plans<br><br>Documentation of action planning processes and training modules |
| 3.1.1. 1-2 concrete interventions focused on coastal protection / nourishment / management<br>3.1.2. 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<br><br>(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<br><br>(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. Set up and running of West African Climate Change Resilience Building 'Urban Lab' | (lo): Understand coastal dynamics and impacts of interventions comprehensively by linking data sources, knowledge and | Reports, plans and models developed to fill existing gaps and trainings modules developed |

| | | |
|---|---|---|
| 5.1.2. Establish initial monitoring sensor-system for coastal erosion and urban development<br><br>5.1.3. Training of national and district staff | capacities from experts, decision makers, companies and communities<br><br>(i): number of knowledge products, plans and models developed to fill existing gaps and trainings conducted | |

# 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 5.

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 5.

*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<br><br>at World Urban Forum | Leading ministries from Ghana and Cote d'Ivoire | - Bring together leading ministries from Ghana and Cote d'Ivoire to:<br>o Agree on regional approach and coordination mechanisms<br>o Agree on / confirm list of priority interventions and target areas (especially related to larger interventions with potential international impacts) |
| May 2018 | Leading ministries | - Bring together leading ministries and target district / |

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| In Ghana and Cote d'ivoire | and target districts in Ghana and Cote d'Ivoire | department governments in both Ghana and Cote d'Ivoire to:<br>o Agree on implementation and coordination modalities<br>o Agree on / confirm list of priority interventions and target communities (especially related to spatial / land use planning and larger interventions) |
| July 2018<br><br>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 |
| July – November 2018 | Institutions to develop required models and conduct assessments | - Develop models / collect data required to understand impact of proposed interventions<br>- Conduct detailed vulnerability / risk mapping<br>- 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:<br>o Benefits to communities / groups<br>o Cost-effectiveness<br>o Sustainability / maintenance arrangements<br>o Environmental and social risks<br>- Confirm / identify design needs per vulnerable groups of proposed intreventions |

Regarding how the selection of firms and consultants will be carried out, it is important to highlight that the process will be according to Adaptation Fund and Habitat's policies. During this preparation stage Arcadis has been the main collaborator due to the existing pro-bono agreement between UN-Habitat and Arcadis Shelter Programme by which the later is to provide technical expertise on relevant topics. This support is only during the formulation face as there is no agreement on Arcadis being executing agency. For executing purposes at district/department and community scale, a competitive process will be carried out based on the elaboration of concrete Terms of Reference and interviews. Candidates will be selected through an international roster and through the on-going identification of relevant executing partners.

# 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.<br><br>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<br><br>Areas currently at risk identified and plans to avoid future development in risk areas developed | 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.<br><br>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 high quality |
| Outcome 2.1.<br><br>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.<br><br>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.<br><br>Increased resilience of coastal ecosystems and built environment at national / district level<br><br>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. |

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| Outcome 4.1.<br><br>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.<br><br>Improved (inter-) national institutional and legal framework's and knowledge management mechanisms that promote coastal resilience measures<br><br>Identification of bottlenecks leading to proposals for modification of policies, rules and regulations based on lessons from project execution | 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 and possible concrete interventions | 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 interventions and capacities to implemente these, also adjust institutional and legal frameworks where needed | Without activities related to this outcome, there is a risk that interventions won't be replicated and sustained.<br><br>Alternatively no 'urban lab' will be set-up, but this will redcue local knowledge production and capacity development, which will also 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<br><br>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.<br><br>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<br><br>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<br>4. Catalytic concrete interventions at community level taking into account local needs and impacts / livelihood opportunities | Possible concrete interventions under component 3 and 4<br><br>1. Sand bypassing: Dredging sediment from areas with surplus due to changes in erosion dynamics<br>2. Sand bypassing: Beach nourishment and foreshore nourishment<br>3. Green belt coastal buffer zone<br>4. Introduce crops that are suited for a salty environment<br>5. Introduce aquaculture to adapt to current erosion dynamics<br>6. Replant and monitor forests and mangroves<br>7. Artificial barrier inland with natural elements (e.g. Dune/barrier nourishment)<br>8. Planting vegetation in existing dunes to prevent erosion<br>9. Set up early warning systems and temporary flood defences | 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.<br><br>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.<br><br>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.<br><br>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.<br><br>For resilient infrastructure and services related possible inyerventions (8 and 9), equall access is also of crucial importance.<br><br>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'<br>5.1.2 Establish initial monitoring sensor-system for coastal erosion and urban development<br>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.<br><br>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]

[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.

| | |
|---|---|
| *Jean Douglas Anaman*<br><br>*DA Adaptation Fund and head of Adaptation Unit at National Climate Change Programme,*<br><br>*Ministry of urban sanitation, environment and sustainable development* | Date*: April, 9, 2018* |
| *Fredua Agyeman*<br><br>*DA Adaptation Fund and director for environment*<br><br>*Ministry of environment, science, technology and innovation* | Date*: April, 4, 2018* |

**MINISTRY OF URBAN SANITATION, ENVIRONMENT AND SUBSTAINAIBLE DEVELOPMENT**

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**NATIONAL CLIMATE CHANGE PROGRAMME**

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**REPUBLIQUE DE COTE D'IVOIRE**

*Union – Discipline – Travail*

N° 00 0036 /MINSEDD/CAB1 /PNCC/jda

**Abidjan, le** 09 AVR. 2017

# 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

# MINISTRY OF ENVIRONMENT, SCIENCE, TECHNOLOGY & INNOVATION

Our Ref: MESTI/A/026/02

Tel: 0302 - 665781
Fax: 0302 – 688 913/ 665785

E-mail: info@mest.gov.gh
Website: www.mest.gov.gh

Republic of Ghana

Post Office Box M232
Ministries Post Office
Accra. Ghana.

Private Mail Bag
Ministries Post Office
Accra, Ghana.

**4TH APRIL, 2018**

**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 Ghana, I confirm that the above regional programme 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 programme 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.

Sincerely,

**Fredua Agyeman**
Adaptation Fund National Designated Authority
Director, 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 Côte d'Ivoire, the proposal will help to achieve the goals of the Cote d'Ivoire's Intended Nationally Determined Contribution (INDC) based on the National Adaptation Planning (NAP) process, the National Environment Action Plan, the Plan National du Développement 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 Développement 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: *April 12, 2018* | Tel and email:<br>+254-20-762-3726<br>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

### 1. COASTAL PROCESSES (WITH GHANA TARGET AREA EXAMPLE)

2.

3. 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.

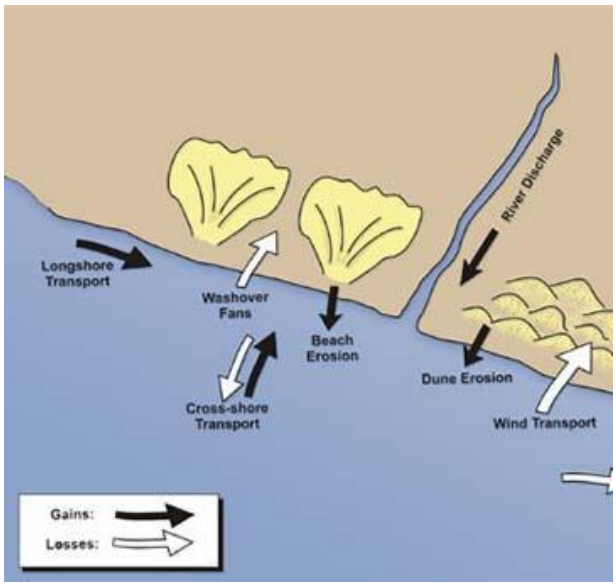



*Figure 20: coastal erosion scheme*

***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.

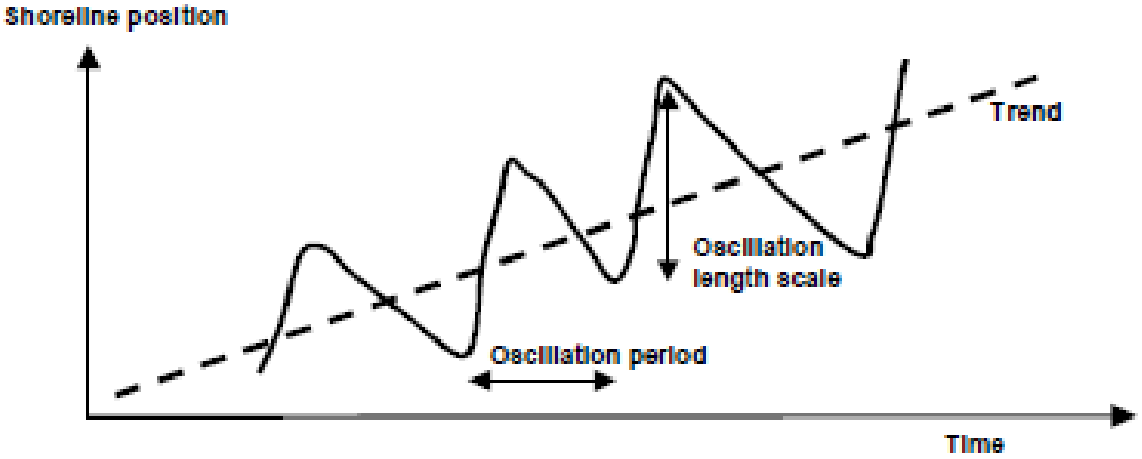



*Figure 21: Difference between net trend and coastal variability*

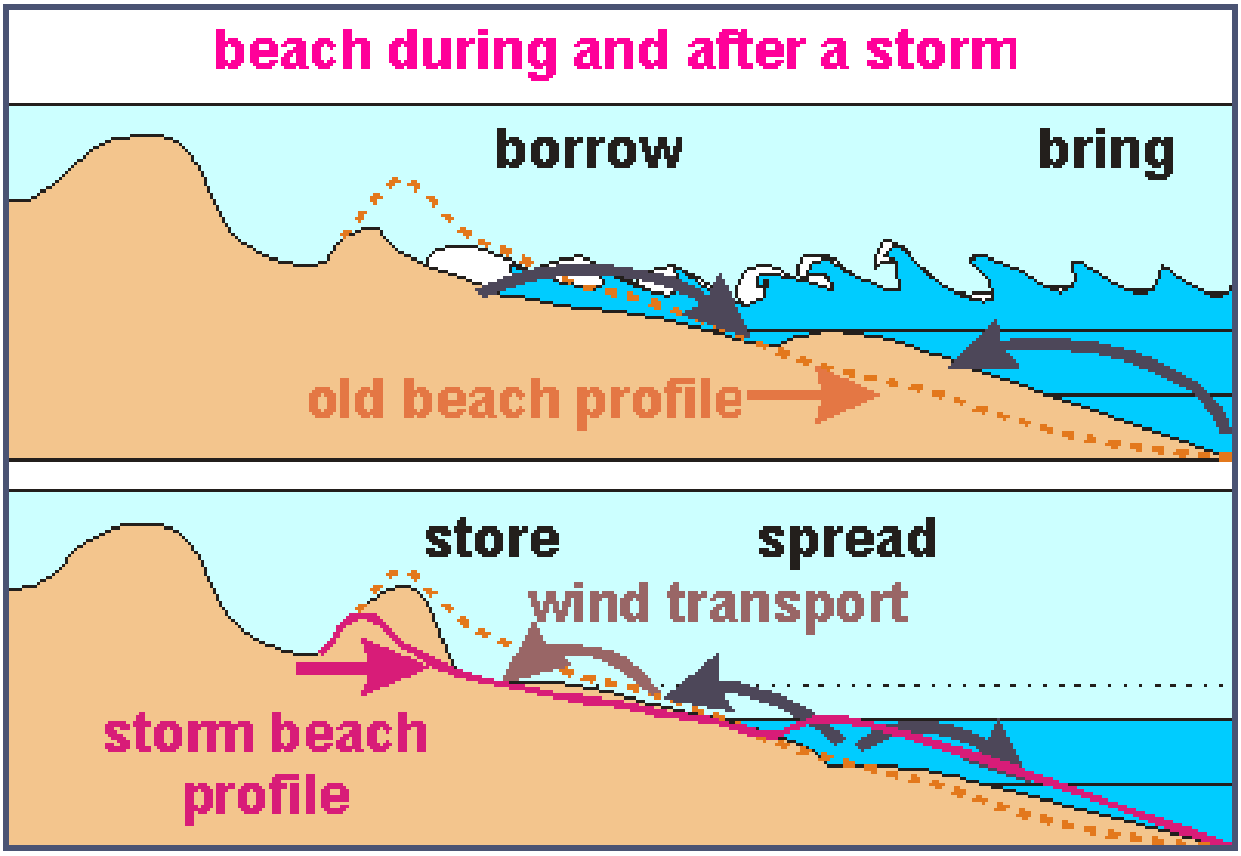



*Figure 22: Process that cause coastal variability*

***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.

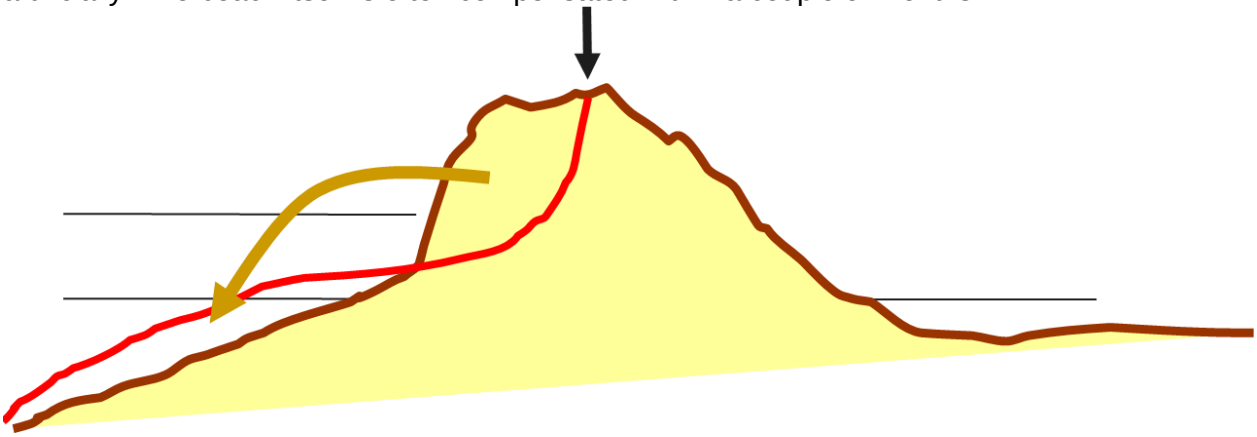
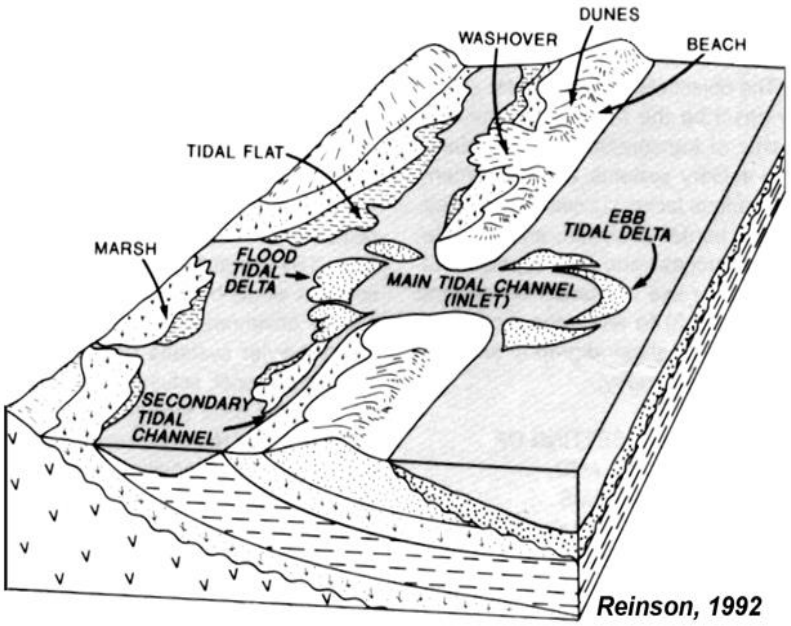


*Figure 23: Beach / dune erosion*

***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.

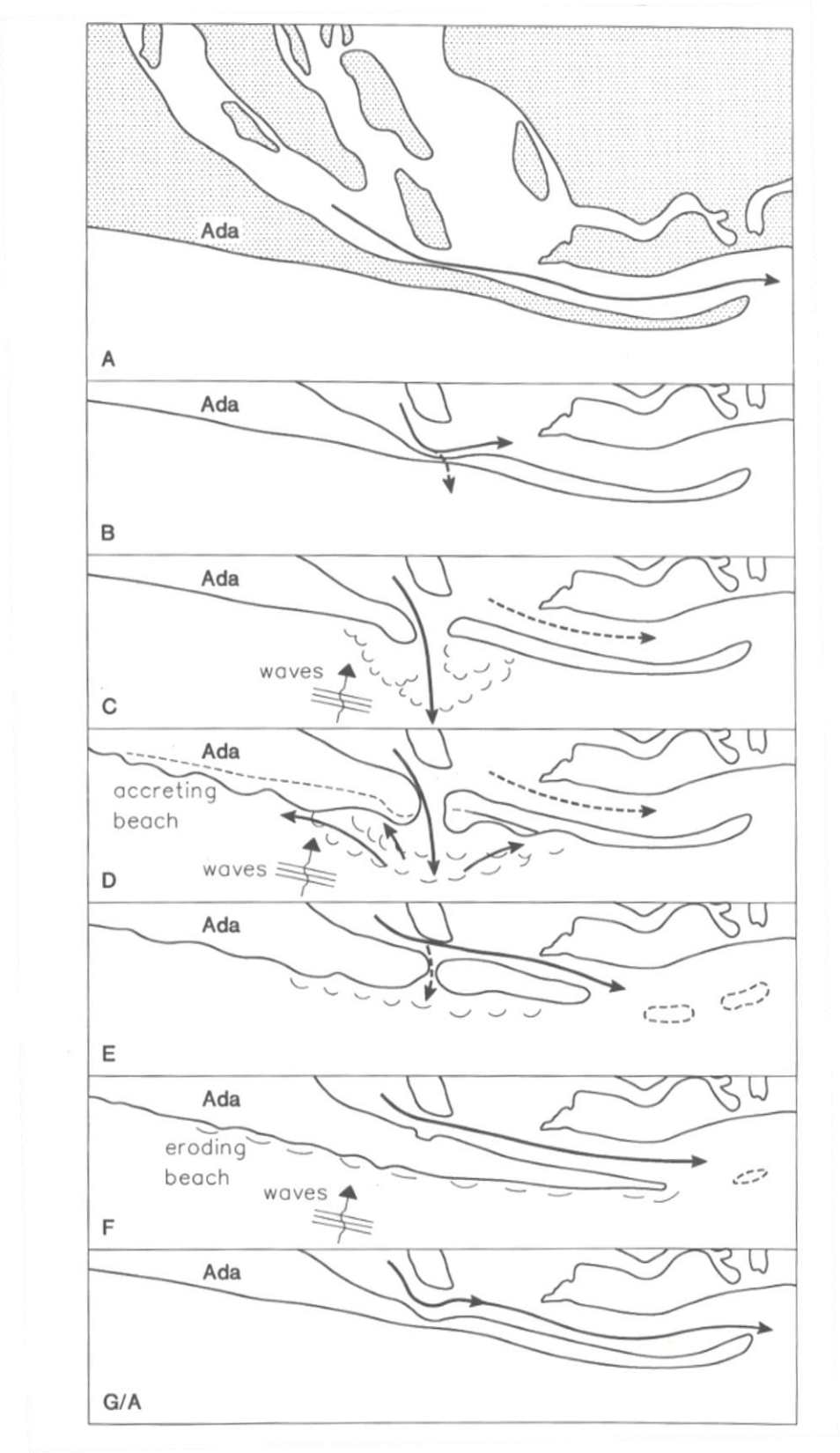



*Figure 25: Schematic overview of the natural morphological cycle of the Ada coast*

**Cote d'Ivoire overview of vulnerability and developments**

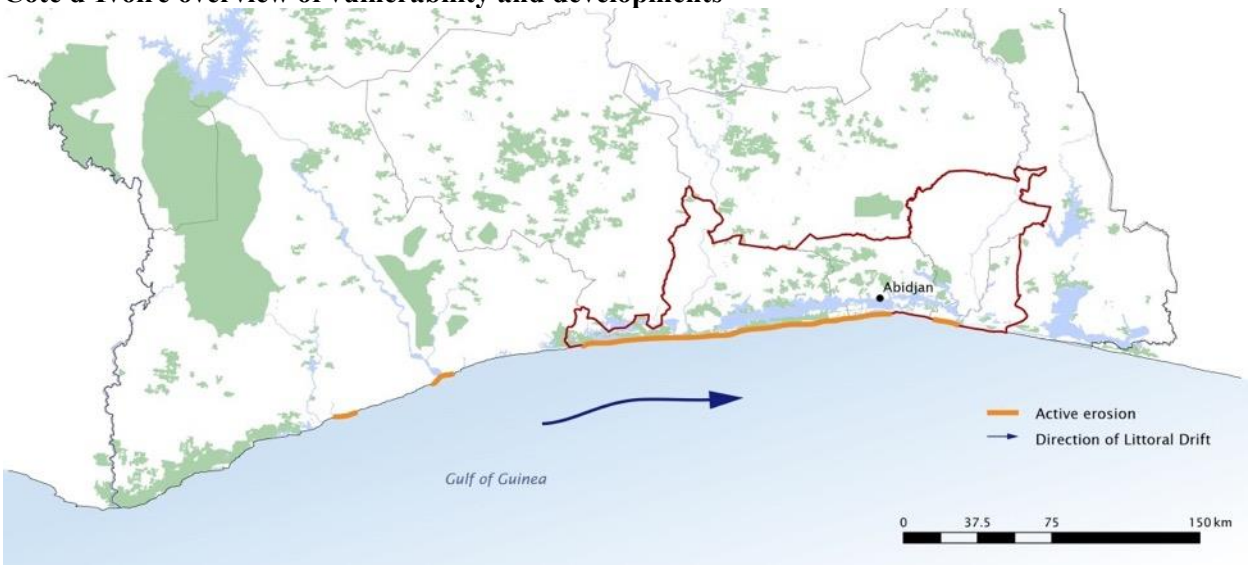



*Fig 26: Active erosion in Cote d'Ivoire Coast*

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.

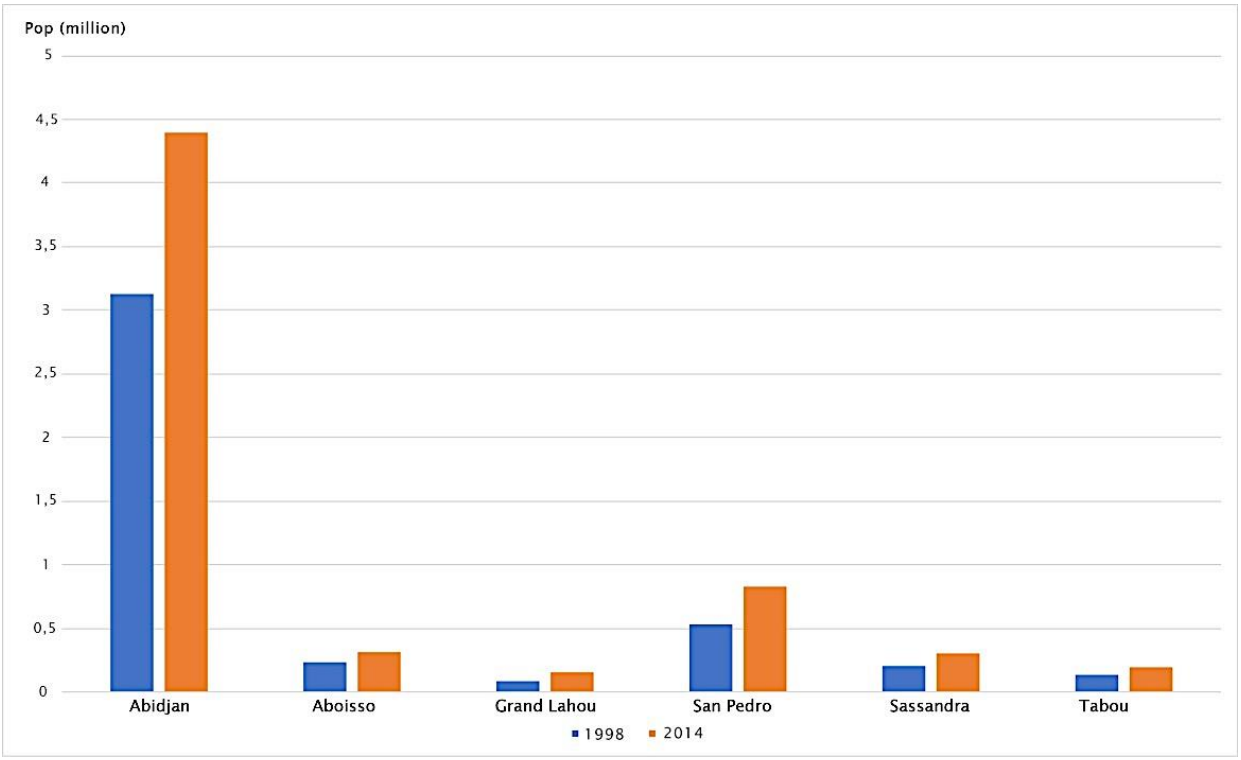



*Fig 27: Population growth in coastal areas*

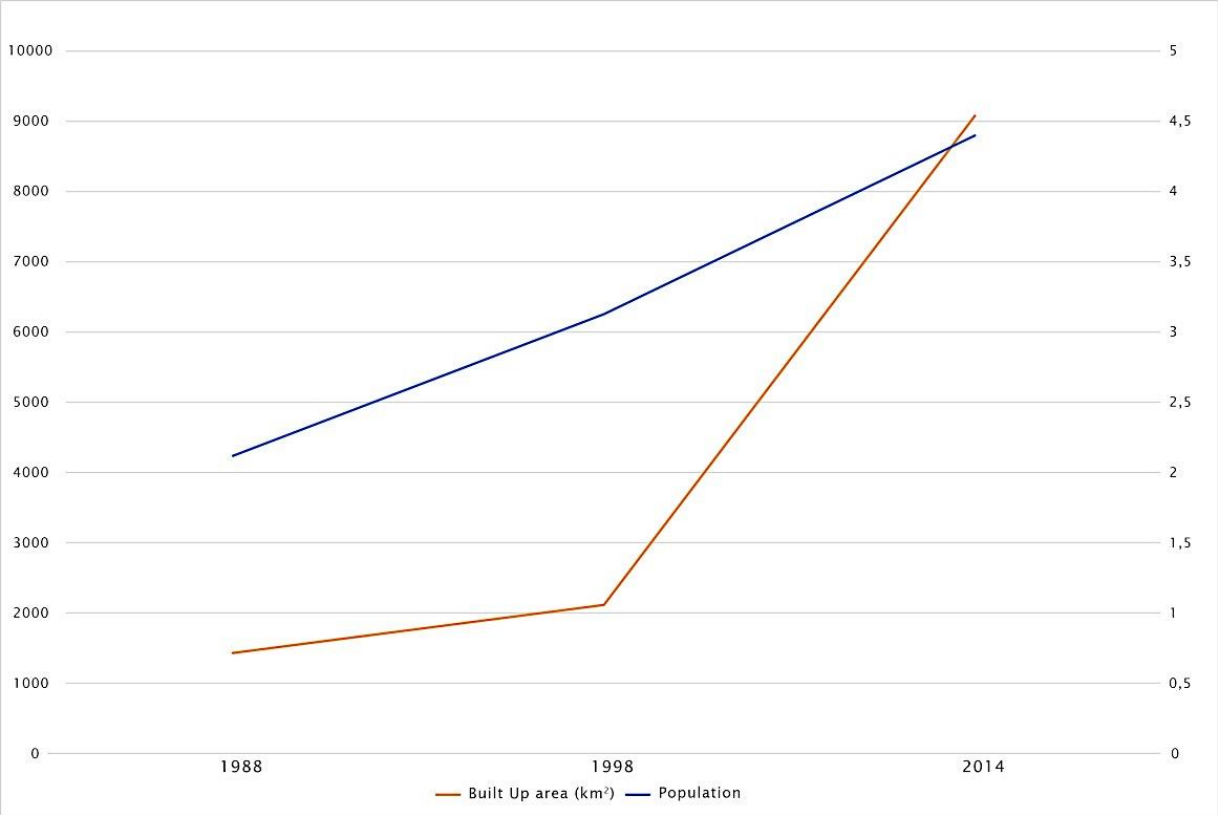


*Fig 28: Urban growth pattern in Abidjan region.*

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.

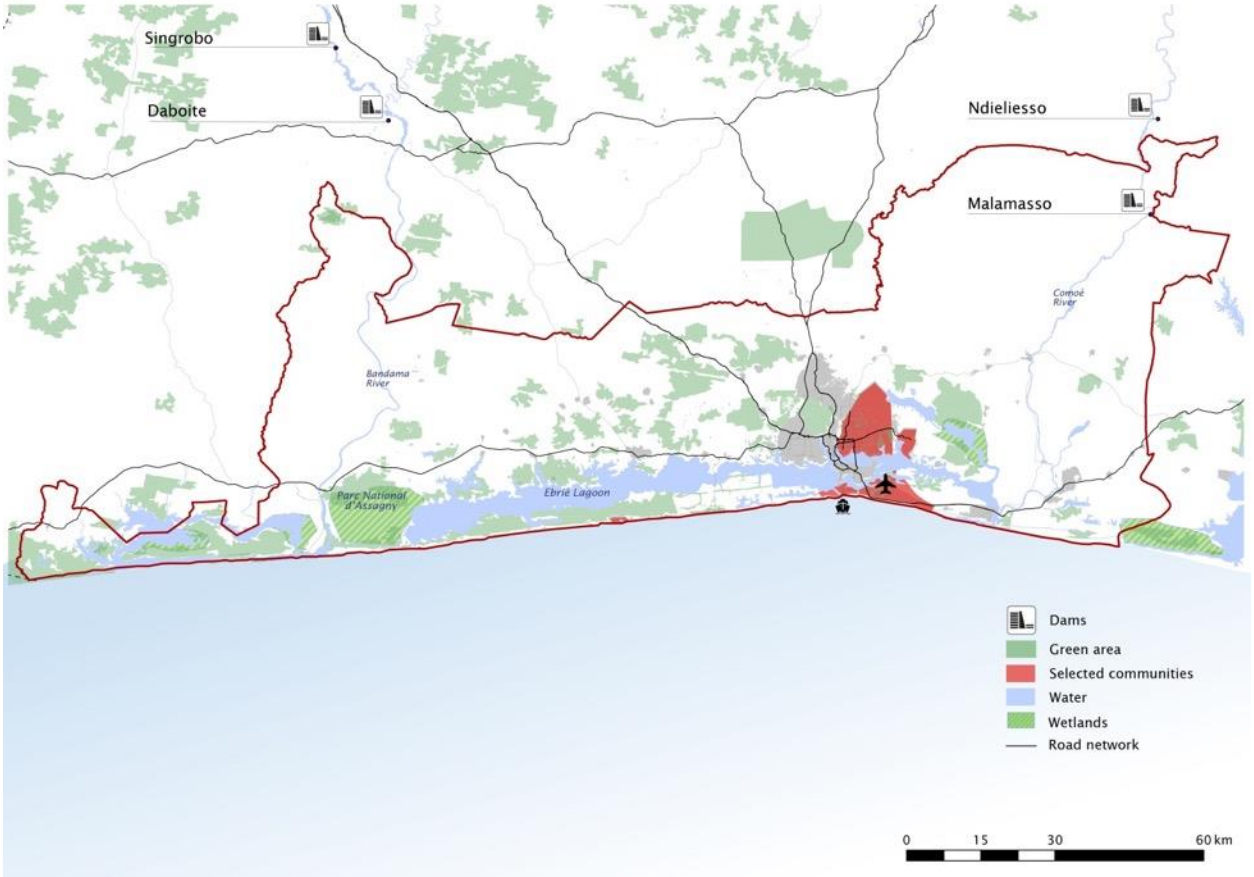



*Fig 29: Infrastructure in coastal area*

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.

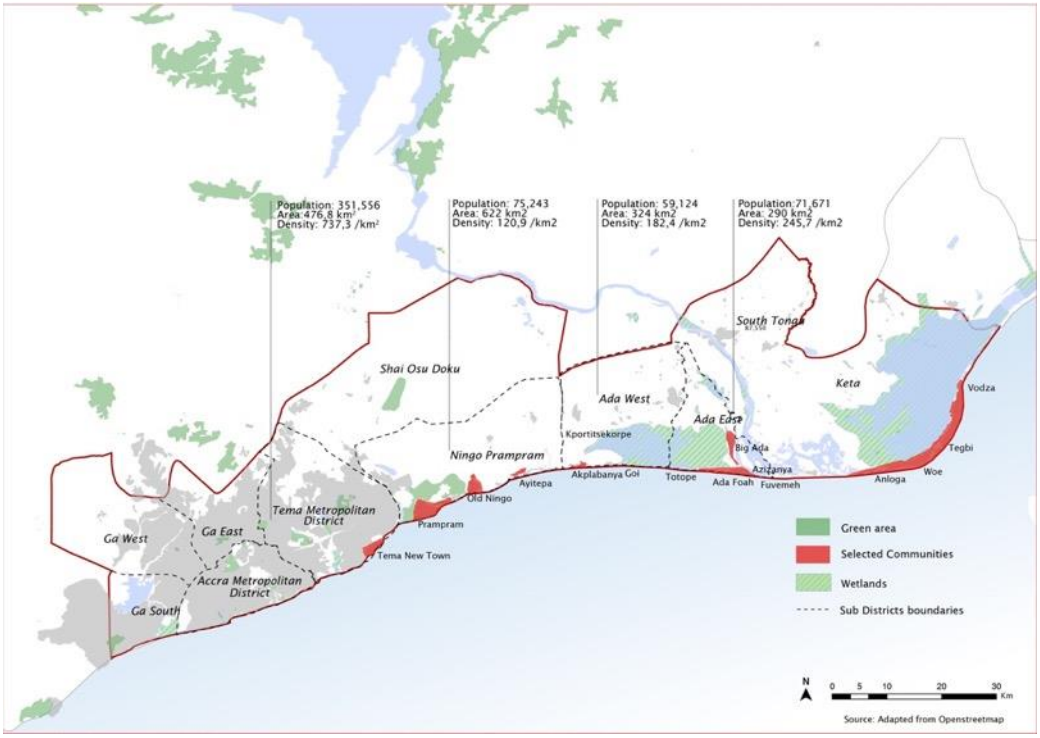



*Fig 31: Target districts and communities in Ghana*

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.

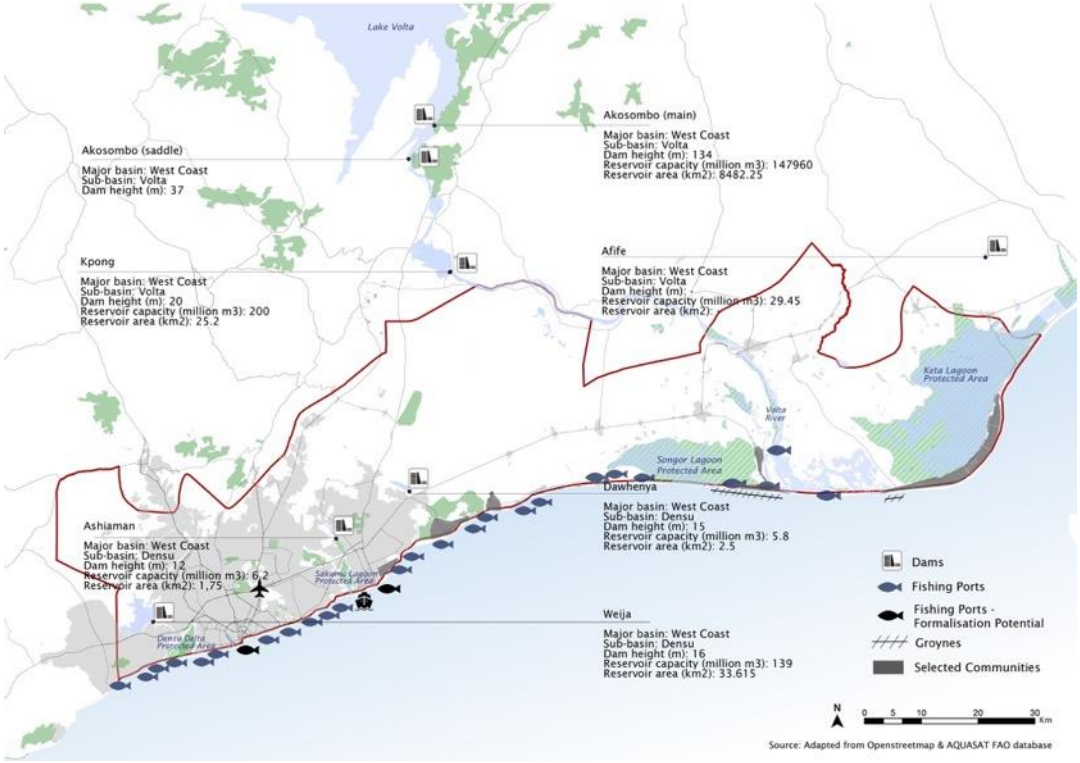
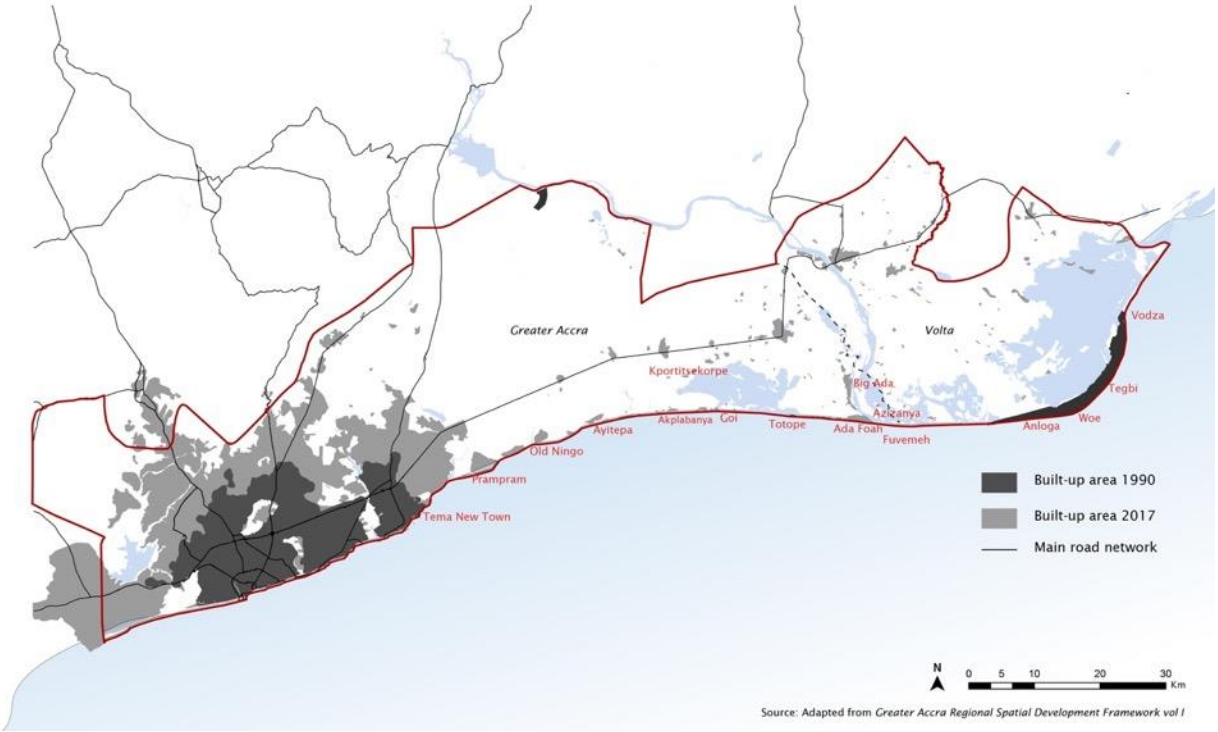


*Fig 32: Coastal areas infrastructure*

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]

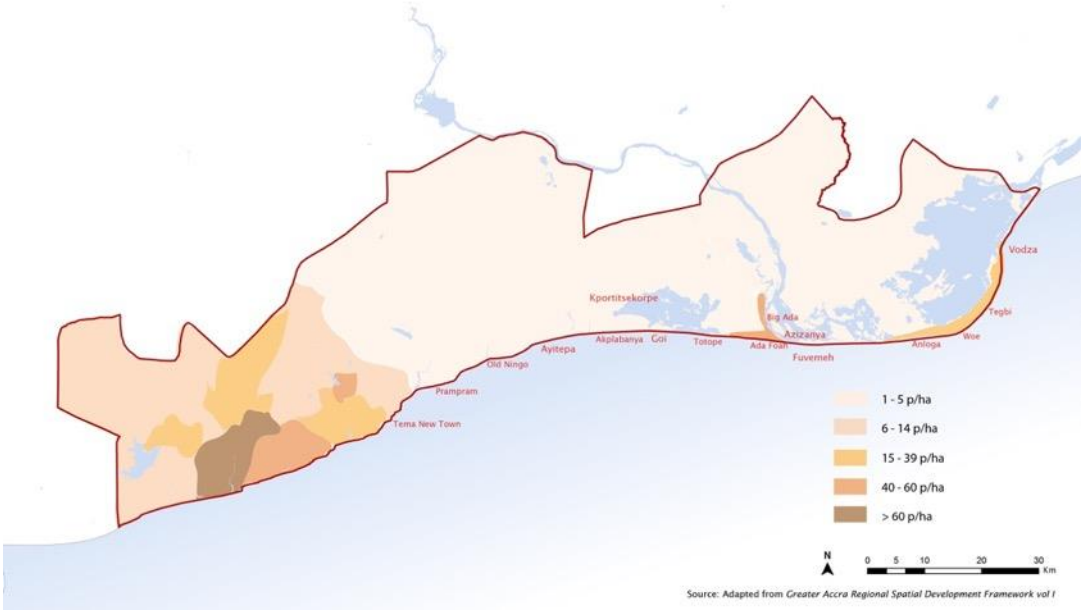
This challenging context is exacerbated by the uncontrolled development of this coastal area.




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

*Fig 33: Greater Accra and Volta region population densities*



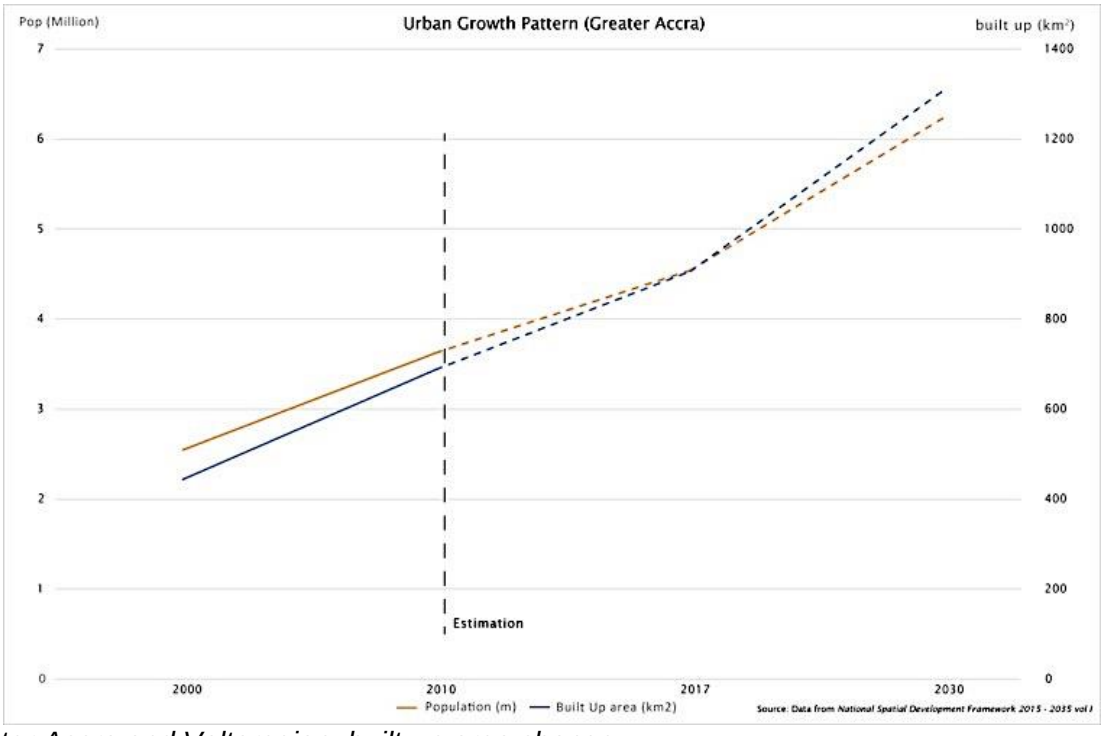




*Fig 34: Greater Accra and Voltaregion built-up area change*

*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.

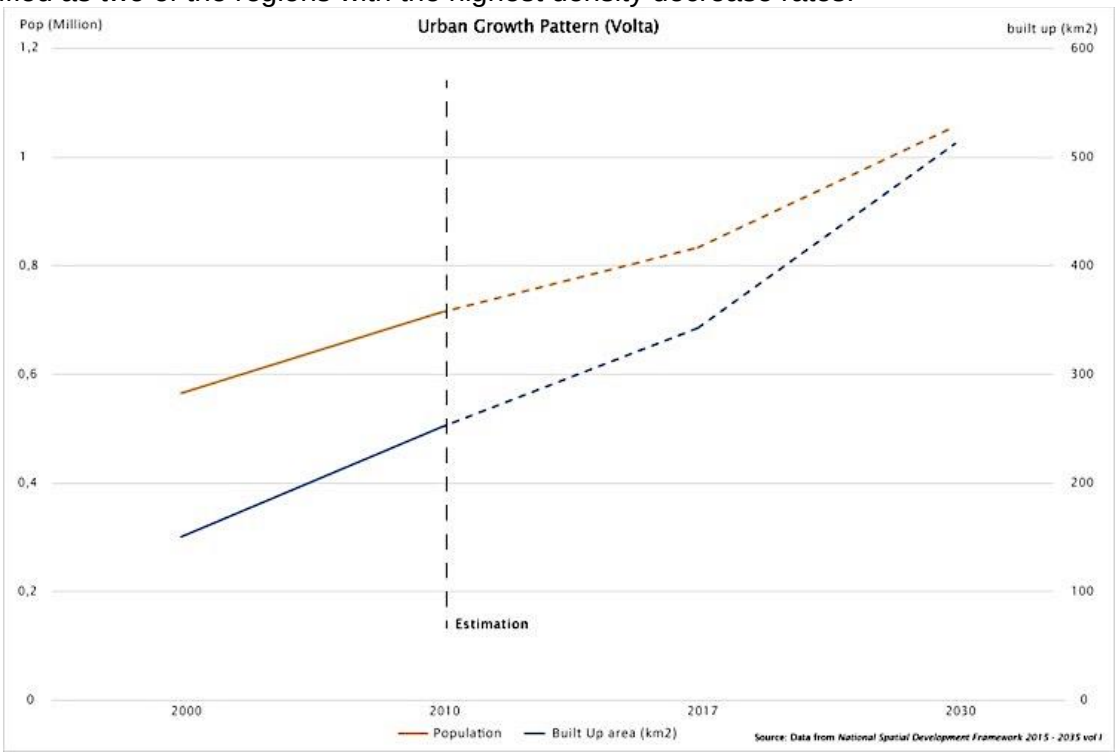



*Fig 36: Urban growth pattern in Volta region*

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.

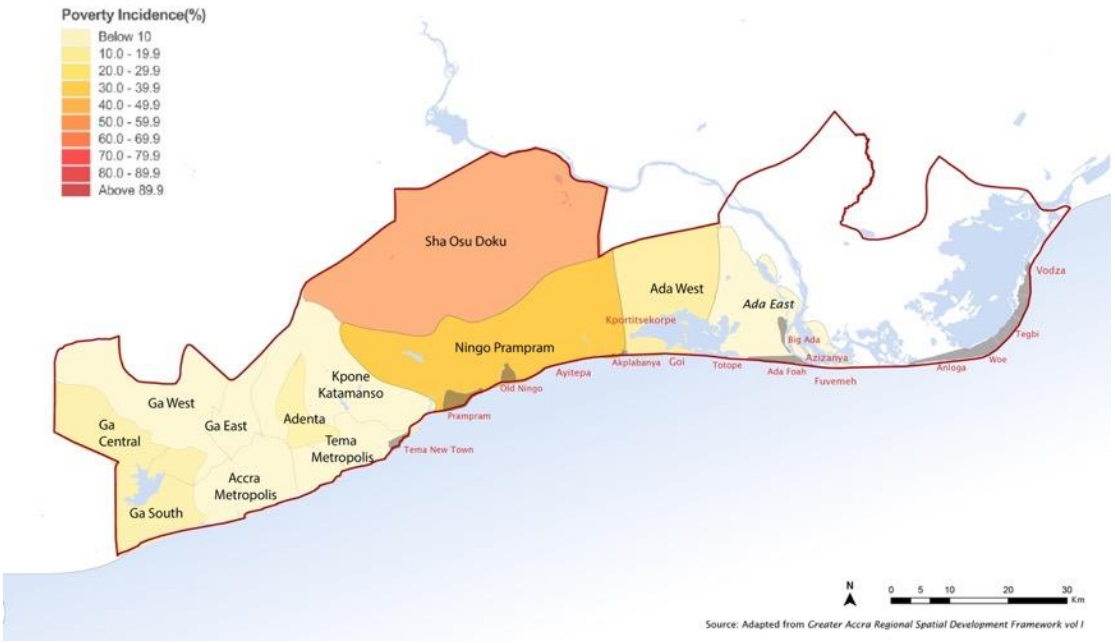



*Fig 37: Poverty incidence in Greater Accra region*

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.

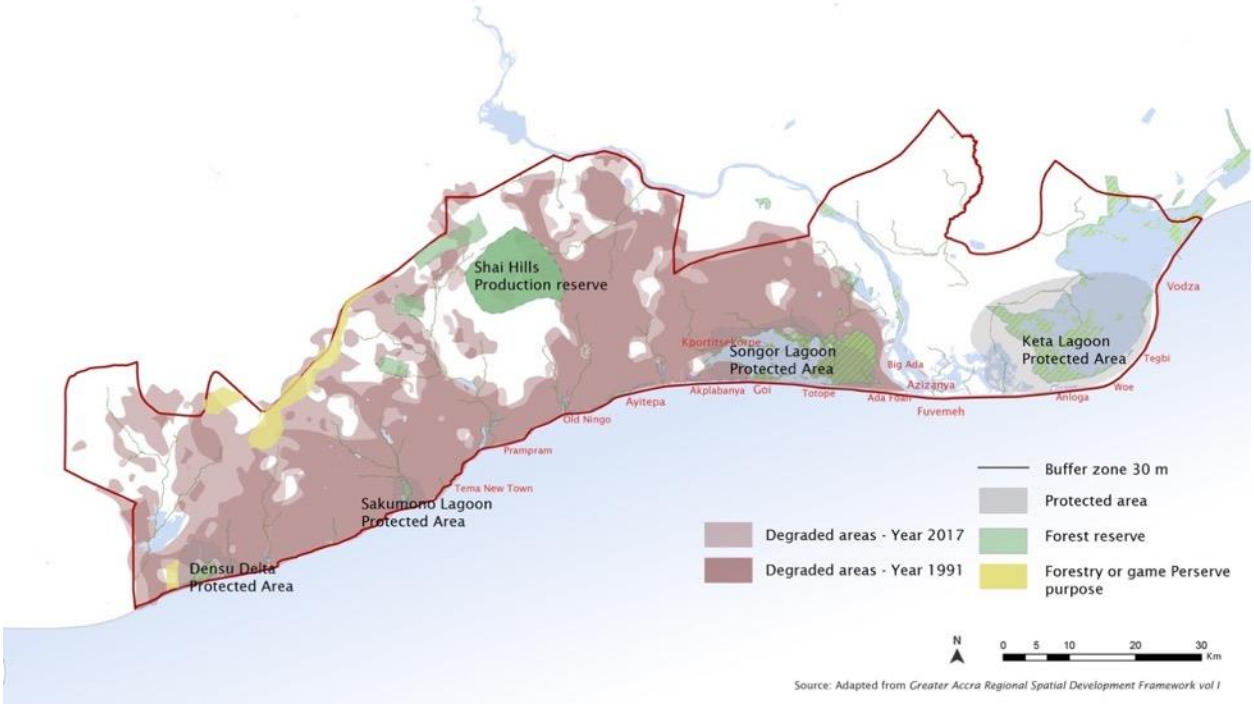



*Fig 38: Degraded and protected areas.*

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.

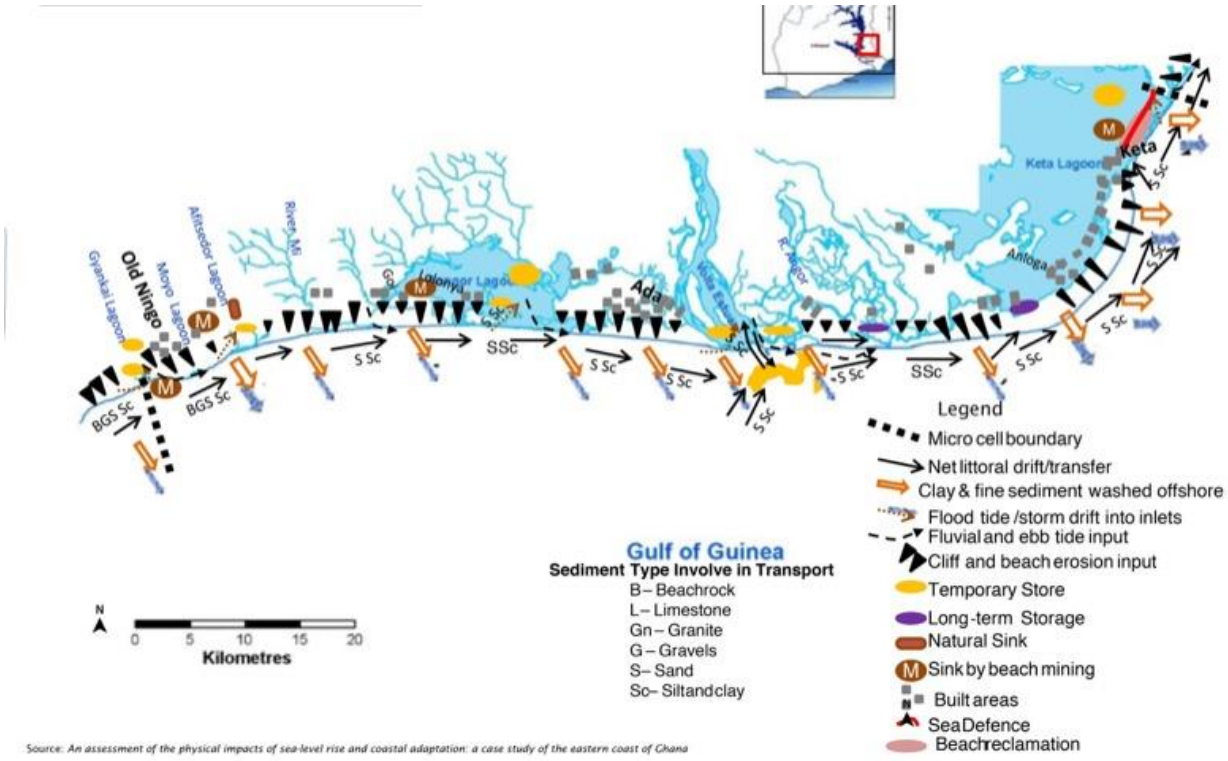



*Fig 39: Area of study sedimentary transport*

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.

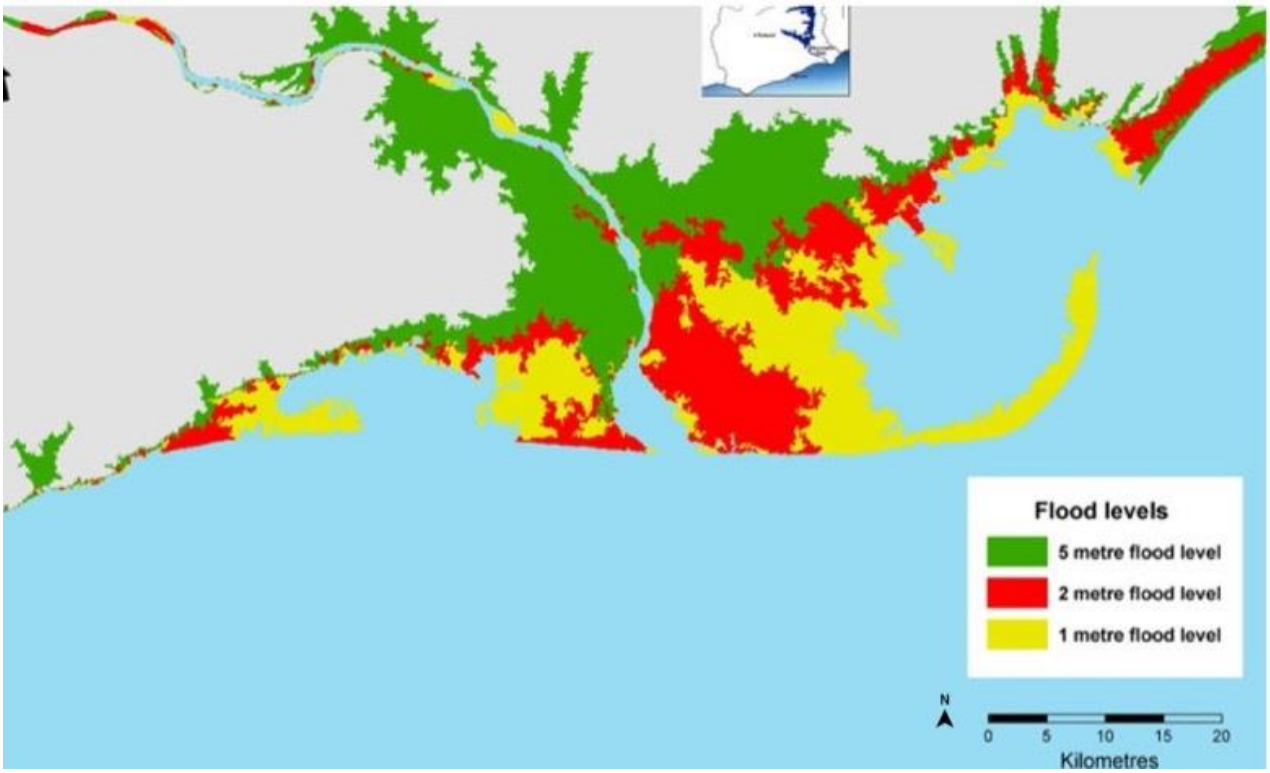



*Fig 40: Sea level rise in area of study.*

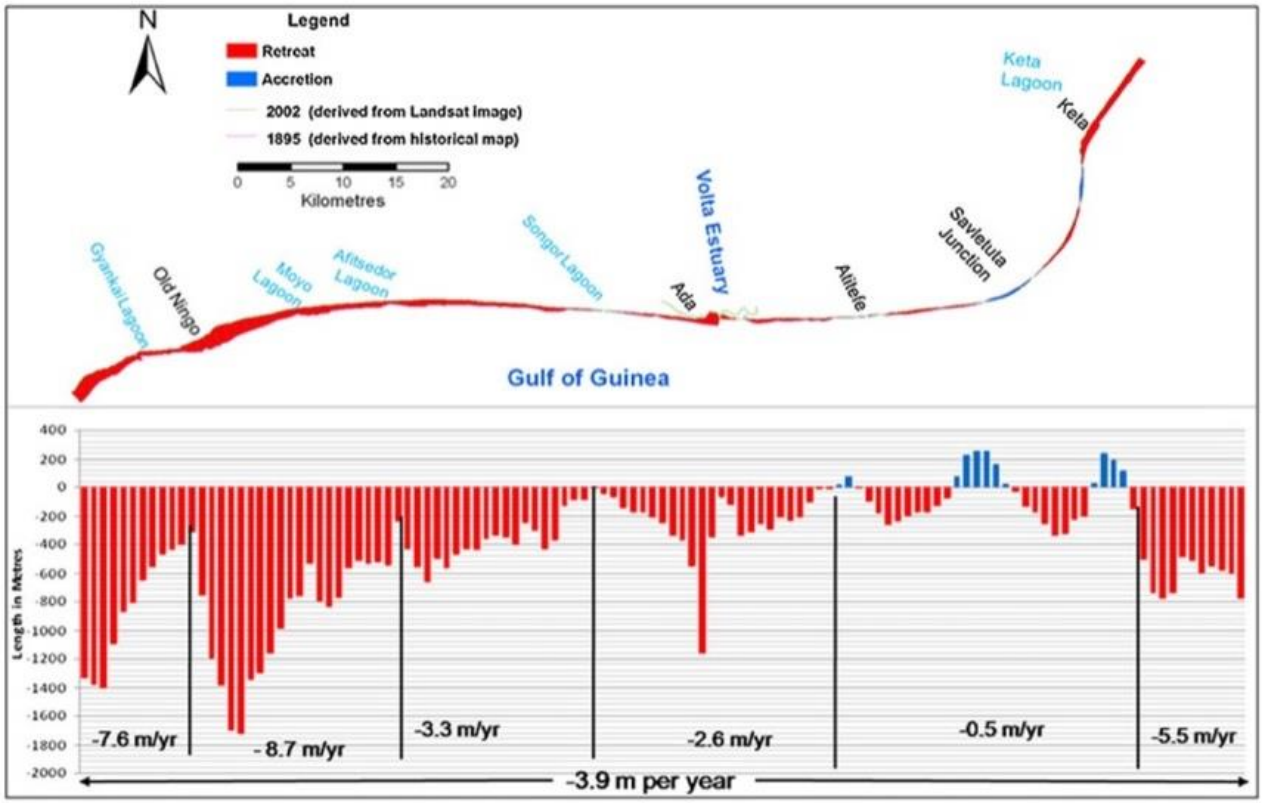



*Fig 41: Sea level rise in area of study.*

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

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

| | | | | | | |
|---|---|---|---|---|---|---|
| | Disabled: 0,6 % | | | | | |
| PORT BOUET | Total population: 419.033<br>Females: 210.583 | | | | | |
| Centre | Total: 10.000<br><br>Disaggregated data to be defined during next phase | Coastal erosion<br>Flash floods/rain<br>Extreme heat<br>River flooding | • Damaged houses<br>• Fish reduction | • Informality<br>• Low quality of housing<br>• Low quality drainage<br>• Sanitation problems<br>• High density of population | • Uncontrolled urbanization/construction<br>• Pollution (dirty air, dirty water, dirty soil)<br>• Rubbish (waste management issues)<br>• Lack money/ income<br>• No government help<br>• Waste in the drainage | • Capacity building<br>• Flood preparedness and forecasting<br>• Prevention: lagoon protection<br>• Land use control and urban planning |
| Adjoufou-Gonzaguevill e | Total: 20.000<br><br>Disaggregated data to be defined during next phase | Flash floods/rain<br>Extreme heat<br>River flooding<br>Erosion<br>Coastal flood | • Damaged houses<br>• Fish reduction<br>• Malaria | | | |
| GRAND-BASSAM | Total population: 179.063<br>Females: 90.142 | | | | | |
| Moossou | Total: 2.000<br><br>Disaggregated data to be defined during next phase | Flash floods/rain<br>Erosion<br>Coastal flood | • Damaged houses<br>• Fish reduction<br>• Destruction of agriculture | • Informality<br>• Low quality of housing<br>• Low quality drainage<br>• Sanitation problems<br>• High density of population | • Uncontrolled urbanization/construction<br>• Pollution (dirty air, dirty water, dirty soil)<br>• Rubbish (waste management issues)<br>• Lack money/ income<br>• No government help<br>• Waste in the drainage | • Capacity building<br>• Flood preparedness and forecasting<br>• Prevention: lagoon protection<br>• Land use control and urban planning |
| Quartier France | Total: 4.000<br><br>Disaggregated data to be defined during next phase | Flashfloods<br>River flooding<br>Diseases<br>Coasta floods<br>Erosion | • Destruction of road<br>• Damaged house<br>• Poverty<br>• 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<br>Females: 52.2%<br>Youth: 34.5%<br>Disabled: 2.5% | | | | | |
| Tema (Newtown) | Total: 71,711<br>Female: 51.69%<br>Youth: 40.03%<br>Children: 34.02%<br>Elderly: 6.28% | Coastal erosion; Severe heat. | • Diseases outbreaks especially Malaria, Diarrhea.<br>• No farming activities.<br>• Fish catch has also dwindled. | • Poverty<br>• Pollution / sanitation issues<br>• Dependency on specific income (fishing).<br>• No job opportunities especially for the youth.<br>• Drainage problems (contributing to flash flood when it rains),<br>• No rubbish bins or appropriate site for dumping refuse.<br>• Air pollution. | • Inadequate access/funding for collecting the waste, which is then disposed into the lagoon, gullies, drains, open spaces, pits or burnt.<br>• There has also been little help from government.<br>• Inadequate knowledge/technical know-how among community members on how to solve problems in the community.<br>• Uncontrolled development in communities contributing to no land for farming.<br>• Low awareness and community enforcement of sanitation and hygiene/ low public health standards. | • Reduce health impacts of related disease outbreaks (cholera, malaria)<br>• Ensure vulnerable people are safe.<br>• Spatial planning to protect vulnerable areas from human development.<br><br>Specific:<br>• Dredging of their lagoon<br>• Creation of jobs<br>• Constructing drainage ways<br>• Establishing aquaculture. |
| NINGO-PRAMPRAM DISTRICT | Total population: 70.923<br>Females: 52.7%<br>Youth: 38.2%<br>Disabled: 2.1% | | | | | |
| Prampram Informal Harbor | Total: 14,897<br><br>Female: 53.61%<br>Youth: 36.01% | • Coastal erosion and flooding; Shorelines in this area are said to have | • Fish reduction.<br>• Going out for fishing has become dangerous, leading to multiple casualties per yesr. | • Poverty<br>• Dependency on specific income such as fishing and farming. | • Little help from government.<br>• Inadequate funds especially for resettlement | • Reduce flood impacts on people, assets and livelihoods |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Children: 37.55%<br>Elderly: 8.96% | shifted or moved 500m to its present state within the last forty years | • Disease outbreaks especially malaria and Cholera. | • Lack of skills especially among the youth and elderly<br>• Drainage problems (contributing to flash flood when it rains)<br>• Inadequate toilet facilities<br>• Inconsistent access to potable drinking water (taps are opened once a week). | • Inadequate knowledge / technical know-how among community members on how to solve problems in the community.<br>• Continuous need of wood for cooking leading to deforestation and soil erosion / land degradation<br>• Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways.<br>• Inadequate information and communication about hazards (e.g. floods)<br>• Low awareness and community enforcement of sanitation and hygiene/ low public health standards<br>• Inadequate access / funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt. | • Reduce the need for use of firewood<br>• Reduce health impacts of floods and related disease outbreaks (cholera, malaria)<br>• Reduce impacts of strong winds on people, assets and livelihoods<br>• Ensure vulnerable people are safe with regard to floods and strong winds<br>• Spatial planning to protect vulnerable areas from human development. |
| Old Ningo | Total: 9,078<br>Female: 55.80%<br>Youth: 33.93%<br>Children: 38.53%<br>Elderly: 11.13% | • Coastal erosion and flooding;<br>• Flash flooding;<br>• Drought. | • Damaged houses and farms as a result of flash flooding.<br>• Mangrove farms have also been destroyed by the sea erosion.<br>• Reduction in fish harvest<br>• Disease outbreaks especially malaria. | | | |
| Ayitepa | Total: 1,375<br>Female: 54.76%<br>Youth: 35.56%<br>Children: 43.64%<br>Elderly: 7.85% | • Coastal flooding and erosion;<br>• Severe drought. | • Farming activities have been adversely affected due to drought, less access to water for irrigation purposes.<br>• Fish catch has also dwindled.<br>• Diseases especially malaria and waist pains are dominant in this community. | | | |
| ADA WEST DISTRICT | Total population: 59.124<br>Females: 50.99%<br>Youth: 42.8%<br>Disabled: 2.2 % | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Akplabanya | Total: 5,101<br>Female: 50.99%<br>Youth: 35.34%<br>Children: 42.82%<br>Elderly: 6.86% | • Coastal erosion and flooding, mostly during Easter (April) and August;<br>• Severe storms especially on sea. | • Reduction in fish harvest.<br>• Destruction of boats burked on the sea. | • Poverty<br>• Dependency on specific income that is salt mining and fishing.<br>• Lack of skills especially among the youth<br>• Poor access to potable drinking water, only two stand pipes serve the entire community (especially in Kpotitsekorpe), Goi has eight water tanks.<br>• Low quality drainage. No drainage ways to dispose of liquid waste.<br>• No toilet facilities<br>• No rubbish bins or appropriate site for dumping refuse.<br>• Heavy pollution of the Akplabanya Lagoon. | • Inadequate funds especially for resettlement.<br>• There has also been little help from government.<br>• Lack of knowledge/technical know-how among community members on how to solve problems in the community.<br>• Continuous need of wood for cooking leading to deforestation and soil erosion/land degradation<br>• Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways.<br>• Inadequate information and communication about hazards (e.g. floods)<br>• Low awareness and community enforcement of sanitation and hygiene/ low public health standards<br>• Inadequate access/funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt. | • Reduce flood impacts on people, assets and livelihoods<br>• Reduce the need for use of firewood<br>• Reduce health impacts of floods and related disease outbreaks (cholera, malaria)<br>• Reduce impacts of strong winds on people, assets and livelihoods<br>• Ensure vulnerable people are safe with regard to floods and strong winds<br>• Spatial planning to protect vulnerable areas from human development. |
| Goi | Total: 3,657<br><br>Female: 53.32%<br>Youth: 33.90%<br>Children: 35.96%<br>Elderly: 12.31% | • Coastal erosion and flooding;<br>• 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.<br>• Diseases such as malaria, fever and skin rashes are predominant in this community. | | | |
| Kpotitsekope | Total: 1890<br>Female: 52.6%<br>Youth: 33.77%<br>Children: 35.80%<br>Elderly: 12.62% | • Coastal flooding and erosion;<br>• Flash flooding;<br>• Severe storms. | 1. Damaged houses and properties due to storm and flooding.<br>2. No crop farming due to salinity of soil.<br>3. Less fish catch during fishing.<br>4. Low prices for salt during sale.<br>5. Diseases outbreaks especially diarrhea and malaria. | | | |
| ADA EAST DISTRICT | Total population: 71,671<br>Females: 52.5%<br>Youth: 54% | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Disabled: 4.3% | | | | | |
| Big Ada | Total: 6864<br>Female: 56.4%<br>Youth: 32.43%<br>Children: 37.46%<br>Elderly: 13.01% | • River and flash flooding. | • Reduction in fish catch especially tilapia.<br>• Diseases outbreaks such as Malaria. | • Poverty<br>• Dependency on specific income (fishing and fish mongering)<br>• lack of skills among the youth<br>• Poor infrastructure such as roads, community clinics<br>• No toilet facilities<br>• No drainage ways/channels contributing to flooding.<br>• No appropriate site for dumping refuse as well as rubbish bins<br>• Low quality housing. Inadequate access to potable drinking water.<br>• Heavy pollution of the Songor Lagoon. | • Inadequate funds especially for resettlement.<br>• There has also been little help from government.<br>• Inadequate knowledge/technical know-how among community members on how to solve problems in the community.<br>• Continuous need of wood for cooking leading to deforestation and soil erosion/land degradation<br>• Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways.<br>• Inadequate information and communication about hazards (e.g. floods)<br>• Low awareness and community enforcement of sanitation and hygiene/ low public health standards<br>• Inadequate access/funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt. | • Reduce the need for use of firewood<br>• Reduce flood impacts on people, assets and livelihoods<br>• Reduce health impacts of floods and related disease outbreaks (cholera, malaria)<br>• Reduce impacts of strong winds on people, assets and livelihoods<br>• Ensure vulnerable people are safe with regard to floods and strong winds<br>• Spatial planning to protect vulnerable areas from human development. |
| Azizanya | Total: 2,830<br>Female: 50.03%<br>Youth: 34.6<br>Children: 41.84%<br>Elderly: 7.42% | • Coastal erosion and flooding;<br>• River and flash flooding pose serious threats to the lives of community members. | • Damaged houses due to flooding.<br>• Dwindling fish catch as compared to previous harvest due to light fishing by other communities such as elavanyo, Totope and Pute.<br>• Diseases outbreaks such as Malaria. | | | |
| Totope | Total: 902<br>Female: 47.89%<br>Youth: 30.71%<br>Children: 44.68%<br>Elderly: 10.31% | • Coastal erosion and flooding occurs once a year;<br>• Flash flooding lasting 3-4 months in a year. | • Disease outbreaks especially Malaria and Cholera.<br>• Damaged houses.<br>• Less fish catches during fishing.<br>• No crop farming due salinity of soil. | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| KETA DISTRICT | Total population: 147,168<br>Females: 53.3%<br>Youth: 34.6%<br>Disabled: 7.2% | | | | | |
| Fuvemeh | Total: 813<br>Femal: 52.15% | • Coastal erosion and flooding;<br>• Storms/Strong winds;<br>• Heat waves | • Less fish catches during fishing;<br>• Damaged houses and, properties such as schools;<br>• Coastal erosion has caused deforestation;<br>• Haphazard building;<br>• No land for farming;<br>• No health facility;<br>• No electricity;<br>• Disease outbreaks especially malaria. | • Poverty;<br>• Lack of skills among the youth;<br>• Dependency on specific income (fishing, fish mongering, petty trading);<br>• Land scarcity;<br>• No drainage ways;<br>• No toilet facilities;<br>• No rubbish bins;<br>• Low quality housing. | • Inadequate funds especially for resettlement.<br>• There has also been little help from government.<br>• Inadequate knowledge/technical know-how among community members on how solve problems temporarily or permanently.<br>• Continuous need of wood for cooking leading to deforestation and soil erosion/land degradation<br>• Uncontrolled development in communities contributing to deforestation and erosion in flood prone areas, including river banks and drainage ways.<br>• Inadequate information and communication about hazards (e.g. floods)<br>• Low awareness and community enforcement of sanitation and hygiene/ low public health standards | • Reduce the need for use of firewood<br>• Reduce flood impacts on people, assets and livelihoods<br>• Reduce health impacts of floods and related disease outbreaks (cholera, malaria)<br>• Reduce impacts of strong winds on people, assets and livelihoods<br>• Ensure vulnerable people are safe with regard to floods and strong winds<br>• Spatial planning to protect vulnerable areas from human development. |
| Anloga | Total: 22,722<br>Female: 53.12%<br>Youth: 33.00%<br>Children: 32.70%<br>Elderly: 14.98% | • Flash flooding;<br>• Severe drought. | • Damaged houses.<br>• Less fish catches during fishing.<br>• Inadequate water for irrigating most farms especially during dry seasons;<br>• Disease outbreaks especially malaria. | | | |
| Woe | Total: 12,164<br>Female: 52.25%<br>Youth: 28.72%<br>Children: 36.64%<br>Elderly: 12.76% | • Heavy flash flooding;<br>• Extreme heat;<br>• Drought. | • Less fish catches during fishing. | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Vodza | Total: 3,369<br>Female: 54.52%<br>Youth: 30.99%<br>Children: 35.17%<br>Elderly: 13.68% | • Coastal erosion and flooding especially in September;<br>• Flash flooding;<br>• Storms/Strong Winds. | • Haphazard building;<br>• Indiscriminate sharing of state sponsored houses meant for resettlement;<br>• land conflicts;<br>• Less fish catches during fishing.<br>• Poor crop yield due to saline soil;<br>• Dilapidated houses | | • Inadequate access/funding for collecting the waste, which is then disposed in rivers, gullies, drains, open spaces, pits or burnt. | |

## 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 dynamics and its related hazards
- ☐ Interventions to alleviate the impacts of coastal erosion / flooding and its 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/flooding dynamics and its related hazards*

These measures can be subdivided according to their operating principles into 2 groups:

1. <u>Measures to re-balance sediment flows - sand bypassing:</u>

Given the shift in coastal dynamics, sediments flow is currently inbalanced. This is leading to over accumulation in some areas, like the estuaries, and lack of sediment in other areas resulting in erosion. Whereas hard measures like groynes, sea walls or artifitial barriers construction have proven to have negative secondary impacts in addressing erosion, sand bypassing is proven to be more targeted and flexible.

Sand bypassing systems consist on dredging sand from areas where extra accumulation is happening, and transporting it for discharge where necessary. Sand bypassing may operate either continuously or on a periodic basis, and its design can involve the development of a progressive solution. Such an approach often allows for a phased construction, along with a scheduled investment, and the progressive solution of the site's identified problems.

For this project a detailed study of the coastal and sediment dynamics will be developed in order to extract sediment from areas with surplus and efficiently discharge it for beach, dune, barrier and foreshore nourishment. This analysis will also support the selection of the most adequate sand bypassing system. Below some more information is provided on the different options for nourishment.

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.

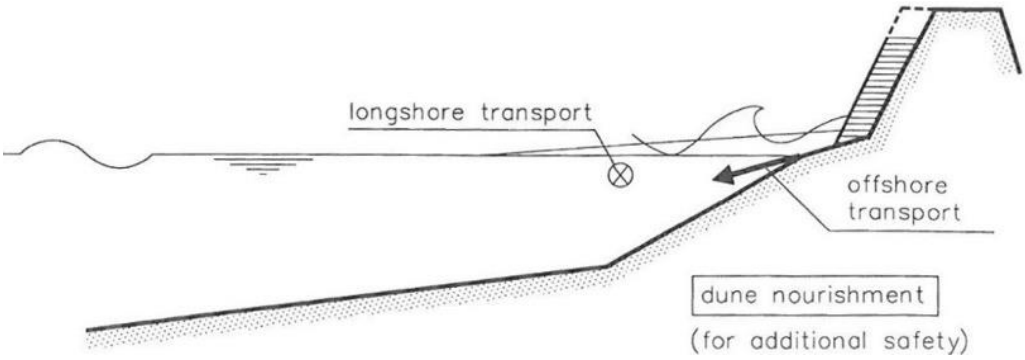



*Figure 42. Dune/ barrier nourishment*

*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.

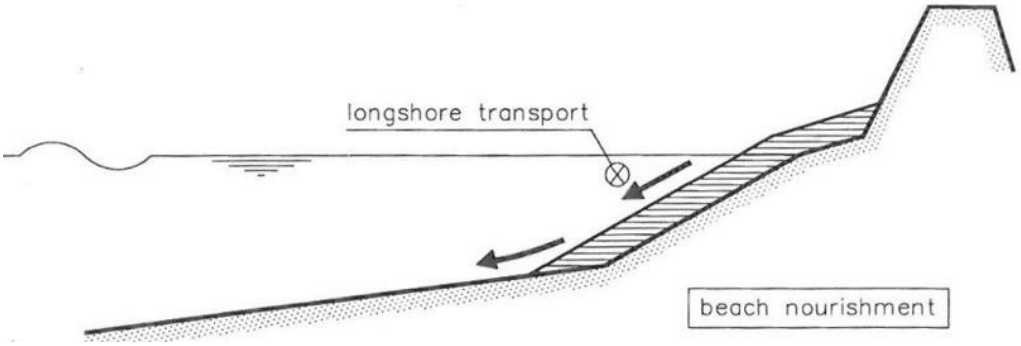



*Figure 43. Beach nourishment*

*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 alleviate the impacts of erosion/flooding and its related hazards***

1. <u>Introduction of agriculture and aquaculture to adapt to new environment</u>

*Agriculture:*
Increasing scarcity of good quality water is a major problem for agriculture, and with salinity rising in the coastaline, the most obvious solution is to grow more salt-tolerant crops. Salt-tolerant crops can tolerate a certain amount of salt without compromising production or quality. As the risk of salinity increases, the strategy of transitioning from conventional crops

to salt-tolerant crops will lead the agriculture production to adapt and work with the current natural processes.

*Aquaculture:*
Given the changes in climate and sediment dynamics, the traditional fishing that characterizes the coast in both countries is under risk. On the one hand, erosion is chaging beaches' shape making it more difficult for boats to reach the water in a secure way. On the other hand, all related activies such as markets and workshops are along these beaches which are decreasing so the space and infrastructure that these services need is also under increasing constraints. Ultimately, stronger storms are more frequent so for several months in the year fishing in the open sea is not safe and therefore, stops. This is badly affecting local economy.

Further aquaculture practice among small scale farmers is proposed in order to increase social and economic resilience through providing food, nutrition and economic opportunity for those that need it the most.

2. Coastal revegetation:
Three interventions are proposed regarding revegetation projects

*Green belt coastal buffer at district scale and replant and monitoring of forest and mangroves at community scale:*
Coastal vegetation of certain density can reduce wave height considerably and protect the coast from erosion, as well as effectively prevent coastal sand dunes movement during strong winds. Healthy coastal forests such as mangroves and saltmarshes can serve as a coastal defence system where they grow in equilibrium with erosion and accretion processes generated by waves, winds and other natural actions. Based on studies and scientific results, the presence of vegetation in coastal areas improves slope stability, consolidates sediment and reduces wave energy moving onshore; therefore, it protects the shoreline from erosion. It is important to do a study on the indigenous vegetation as this will be he only one to have the expected outcome. Apart from the coastal protection benefits from reforestation and afforestation could also be related to productivity.

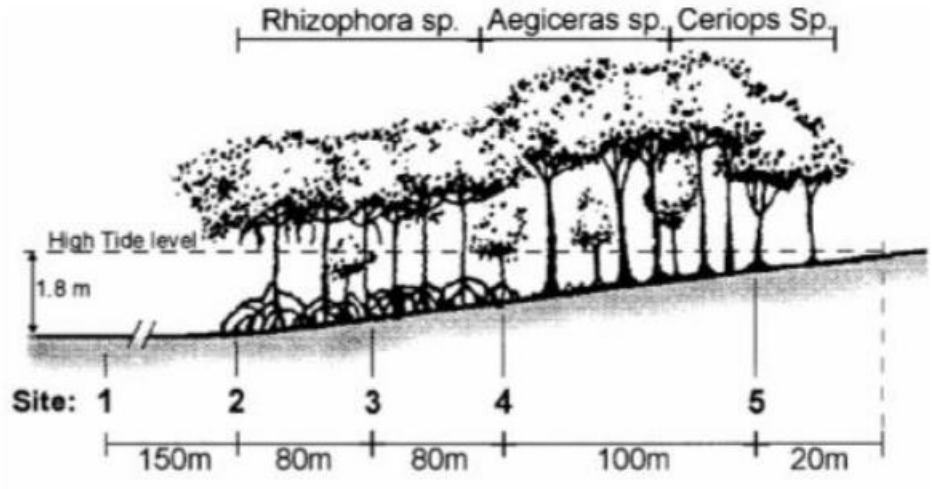


*Figure 45. Coastal green belt*

*Plant vegetation on sand dunes:*
Vegetation encourages dune growth by trapping and stabilising blown sand. These natural dune grasses act to reduce wind speeds across the surface, thereby trapping and holding sand. They grow both vertically and horizontally as the sand accumulates. Transplanting vegetation will not prevent erosion, but it will accelerate natural recovery after storm damage creating a reservoir of sand within the foredunes that will make the dunes better able to withstand erosion.

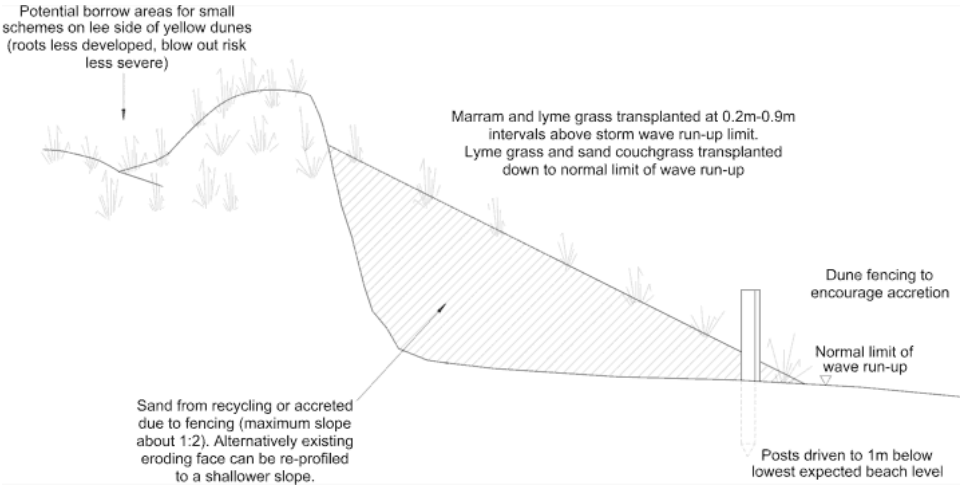



*Figure 46. Scheme of dunes vegetation*

3. Set up early warning systems and temporary flood defences, such as sand bags

Early warning systems aim at issuing warnings when flood is imminent or already occuring by providing a prediction of the scale, timing, location and damages of the flood. The early warning system combines four inter-related elements which are assessments and knowledge of risks in the area, local hazard monitoring and warning service, risk dessimination and communication service and community response capabilities. Flood early warning system can minimize and prevent flood induced hazards**.** By using data from sensors, the system can measure water levels at strategic point in local water basins or flood defences to forecast a flood event and reach the people at risks.


*Figure 47. Key element of Early Warning Systems*

*Temporary flood defences such as sandbags*

Temporary flood defences (which might include metal or plastic barriers, water or sand filled containers, pumps and sandbags) are systems that are brought to a site to provide a flood defence for a limited period. They are then removed until required again at the same or a different location. They have no fixed foundation other than the ground on which they are based with perhaps minor pre-prepared modifications to ensure proper stability or performance of the equipment. This flexibility will allow the most vulnerable communities to take ownership of their response to flooding events in a quick manner, enabling them to gain social resilience that can adapt to different sites and conditions.

An example of this could be sandbags that are an effective and inexpensive way to stop flooding water. By acting as a barrier, sandbags will divert moving water around or away from buildings. Also used to build levees, barricades, dikes and berms, they can limit erosion from flooding.

## 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<br>**P2.** Development and promotion of climate-resilient cropping systems<br>**P3.** Adaptation of livestock production systems<br>**P4.** Support to adaptation in the fisheries sub-sector<br>**P5.** Support to water conservation and irrigation systems<br>**P6.** Risk transfer and alternative livelihood systems<br>**P7.** Improved post-harvest management<br>**P8.** Improved marketing policies | ☐ Improve and harmonize research activities in climate-smart agriculture<br>☐ Build and strengthen the capacity of extension officers in climate smart-agriculture to enhance support to farmers and fishermen<br>☐ Promote capacity-building for farmers and fisherfolk and build awareness on climate change issues<br>☐ Build capacity for community-level weather data collection, analysis and dissemination for agricultural planning<br>☐ Document and promote appropriate indigenous knowledge and best practices<br>☐ Develop climate-resilient cropping and livestock systems as well as crop varieties and livestock breeds tolerant to flooding, drought and salinity<br>☐ Promote diversified land use practices, including agro-forestry, dry-land farming, urban/backyard vegetable production, to reduce risk and increase the capacity of farmers to cope with droughts and floods<br>☐ Prepare and enforce spatial plans to address conflicts between peri-urban agriculture and human settlements<br>☐ Improve productivity through improved farming technologies and practices, such as the integration of trees into farming systems, integrated nutrient management under various crops, green/organic farming, etc.<br>☐ Promote and support agricultural diversification (livestock – crop integration as well as management practices) as a coping strategy and for income generation<br>☐ Design and implement programmes on fisheries management and disease control, which integrate climatic and hydrological parameters<br>☐ Provide sustained support in the use of simple agronomic soil and water conservation measures (e.g., agro-forestry, crop rotation, tied ridging, mulching, |

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| | | contour earth mounds, vegetative barriers and improved fallow)<br>☐ Promote appropriate technologies for small-scale irrigation, water re-use and water harvesting (e.g., waste/water recycling), rainwater harvesting, etc.<br>☐ Improve efficiency of farming practices through secure land tenure, effective pricing policies and access to credit<br>☐ Institute risk transfer schemes (e.g., insurance) against local supply changes, harvest failure or weather risk<br>☐ Promote alternative livelihood systems to diversify incomes, such as beekeeping, poultry production, piggery, snail rearing, mushroom cultivation, sustainable aquaculture, etc.<br>☐ Improve post-harvest capacity, e.g., storage and processing facilities and infrastructure<br>☐ Build capacity for recycling and conversion of agricultural waste<br>☐ Improve marketing policies that increase competitiveness for the doMESTIic and international market. |
| **Disaster preparedness and response** | | |
| ☐ Build cliamte resilient infrastructure | **P1.** Building capacity to design climate-resilient infrastructure<br>**P2.** Knowledge management and coordination<br>**P3.** Climate-resilient sectoral and local development planning<br>**P4.** Ensuring that existing key infrastructure is climate proof<br>**P5.** Flood prevention activities<br>**P6.** Development of climate-resilient infrastructure for key services<br>**P7.** Protection of coastal resources and communities | ☐ Improve technical and institutional capacity through research support and training<br>☐ Conduct research on appropriate infrastructure design standards that meet higher requirements against extreme weather-related natural hazard events<br>☐ Improve hydro-meteorological observation networks to provide better climate data and information, and communicate early warning of natural hazards<br>☐ Collect relevant data on coastal zone geomorphology, surface water flows and groundwater for modelling coastal flooding<br>☐ Provide enabling policy environment to ensure climate resilience in urban planning, construction codes and management<br>☐ Revise design standards, building codes and spatial planning to include climate change parameters<br>☐ Climate-proof important infrastructure that provide key services so that communities are less exposed and vulnerable during extreme events<br>☐ Construct proper storm drainage systems, riverbank protection, buffer zones, and undertake afforestation along embankments and other measures to reduce flooding<br>☐ Construct channels, water collecting reservoirs and dams to contain floods and store water for the dry season<br>☐ Encourage relocation of settlements and economic activities from climate-related disaster-prone areas<br>☐ Use information and communication technologies (ICT) in monitoring climate events and providing an early warning system |

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| | | ☐ Develop and implement strategies to change systems and make people adapted to climate change, e.g., harvesting rainwater and storage of grains can aid communities in adapting<br>☐ Ensure that rural communities have reliable access to markets, key services and lifeline facilities<br>☐ Develop climate-resilient standards for key coastal infrastructure and protection of coastal communities from storm surges, coastal flooding and sea-level rise. |
| ☐ Increase resilience of vulnerable communities to climate related risks | **P1.** Early warning mechanism<br>**P2.** Public education and adaptation skills<br>**P3.** Rapid response and disaster management<br>**P4.** Improved key public social services<br>**P5.** Financial support and insurance schemes<br>**P6.** Social support systems | ☐ Document and improve community-based early warning systems for natural disasters and effective dissemination, especially at the local level in local languages<br>☐ Promote timely use of strategic information to targeted areas<br>☐ Promote development of modern information management systems<br>☐ Enhance access to public information<br>☐ Create an enabling environment for media<br>☐ Improve awareness and provide skills training to ensure preparedness on climate change and adaptation strategies<br>☐ Avoid mal-adaptation by reversing trends that increase vulnerability<br>☐ Rationalize a system of incentives, deterrents and alternatives for behavioural change<br>☐ Strengthen the institutional framework for disaster risk response and management<br>☐ Enhance institutional capacity of agencies in disaster risk management, especially the National Disaster Management Organization (NADMO)<br>☐ Improve technical capacity and facilities for, as well as accessibility to communities of, rapid response to disasters and disaster management<br>☐ Facilitate regular interaction between community members and the State and NGOs on emerging problems and best practices<br>☐ Reinforce partnership among government and humanitarian agencies and strengthen their capacity to respond in emergencies, including through community networks<br>☐ Improve public adaptation strategies, including provision of wells, boreholes and road infrastructure, land tenure administration reform, education, etc.<br>☐ Support livelihood activities in rural and urban areas in order to improve output and income of vulnerable communities<br>☐ Enhance awareness of financial instruments to protect investments and assets<br>☐ Provide supportive social safety nets for communities<br>☐ Increase investment in social services and infrastructure, which can also be supported by public-private partnership in service provision |

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| | | ☐ Strengthen traditional social support systems<br>☐ Include a focus on the vulnerability of migrants in urban strategic planning<br>☐ Promote conflict resolution mechanisms. |
| **Natural resource management** | | |
| ☐ Increase Carbon Sinks | **P1.** Improved governance, capacity and regulatory structures<br>**P2.** Secure integrity of forest and other natural ecosystems<br>**P3.** Sustainable wood fuel production and development of alternative biofuel sources for domestic energy supply<br>**P4**. Plantation development (afforestation, reforestation and forest restoration)<br>**P5**. Conservation of trees through sustainable forestry and on-farm practices | ☐ Strengthen institutional and technical capacity in natural resource management<br>☐ Improve legislation to effectively address land use rights and land tenure systems<br>☐ Improve regulatory mechanisms to reduce illegal logging and chainsaw lumbering<br>☐ Reduce the pressure on forests and mangroves for wood fuels by improving the efficiency of production, harvesting, conversion and use of wood fuels, e.g., improved efficiency in cook stoves, community/family woodlot programmes, charcoal producer associations, community land use and natural resource planning<br>☐ Promote alternative sources of fuel for domestic use, especially in rural areas, e.g., LPG as an alternative to wood fuel, etc.<br>☐ Promote, through increased funding and opportunities, plantation development and management in off-reserve areas for private and public-private partnerships<br>☐ Rehabilitate degraded natural ecosystems through enrichment planting in degraded forest reserves and off-reserve areas<br>☐ Support initiatives for the enhancement of carbon sinks through afforestation/reforestation measures, including Forest Law Enforcement, Governance and Trade (FLEGT), the Non Legally Binding Instrument on All Types of Forests (NLBI), REDD+ and the Clean Development Mechanism (CDM)<br>☐ Support agro-forestry programmes initiated to conserve trees in association with crops<br>☐ Promote the establishment and consolidation of bio-reserves and buffers of forest<br>☐ Reinforce local community involvement in resource management<br>Encourage diversification from natural-resource-based activities into non-farm activities such as trading |
| ☐ Improve management and resilience of terrestrial and aquatic ecosytems | **P1.** Improved governance and natural resource management<br>**P2.** Community-based natural resource management<br>**P3.** Economic incentive measures<br>**P4**. Ecosystem-based adaptation | ☐ Improve the management of important ecosystems and hotspots<br>☐ Promote effective spatial planning and land zoning, mapping and production of land resource management plans at all levels<br>☐ Support local, national and international policies that encourage management of terrestrial, aquatic and marine ecosystems<br>☐ Improve mechanisms for fair and equitable sharing of natural resource benefits, including defining tenure rights, minimizing the encroachment on forest reserves and reducing conflict over permitted farms and communities,<br>☐ Support scientific research, including traditional and indigenous knowledge, monitoring, and collaboration with national and international institutions |

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| | | ☐ Improve knowledge capacity for effective management of natural resources, for example through sustained extension activities in soil and water conservation<br>☐ Apply technologies to provide information for detection and early warning systems for weather-related hazards<br>☐ Support awareness creation and dissemination programmes<br>☐ Encourage and promote community-based activities to improve land and water quality<br>☐ Establish ecological networks or biological corridors to link fragmented forests, e.g., the establishment of Community Resources Management Areas (CREMAs) or linking up with existing CREMAs for synergy<br>☐ Promote afforestation to enhance dry season flows in basins<br>☐ Encourage the protection of river courses, and de-sedimentation of reservoirs<br>☐ Promote the use of biodiversity and ecosystem services as part of the adaptation strategy to climate change<br>☐ Promote economic and social incentive measures for successful natural resource management. |
| **Equitibe social development** | | |
| ☐ Adressing impacts of climate issues on human health | P1. Capacity-building of health care providers and groups<br>P2. Research and improved data management and storage<br>P3. Strengthened disease surveillance and response systems<br>P3. Improved public health measures (immunization, improved drainage, sanitation and hygiene) especially in vulnerable communities<br>P4. Emergency health preparedness, e.g., provision of ambulances in vulnerable areas<br>P5. Collaboration and partnerships for improved nutrition, water and sanitation<br>P6. Social protection and improved access to health care | ☐ Establish community health groups and development of capacity to identify health risks and facilitate access to services and decision makers<br>☐ Strengthen technical capacity to manage climate-change-related health risks<br>☐ Strengthen disease surveillance systems through early warning<br>☐ Improve data sharing and develop health information management systems for diseases including climate-sensitive diseases at all levels of the health delivery system<br>☐ Improve partnerships between relevant ministries and other stakeholders to improve access to potable water, instead of direct dependence on natural water bodies, and environmental sanitation<br>☐ Map disease incidence and identification of vulnerable groups for climate-sensitive diseases<br>☐ Strengthen existing units within the health delivery system to manage climate-related epidemics<br>☐ Collaborate with relevant stakeholders to improve nutrition through increased food processing capacity, food banks, nutrition education, and food storage and quality control<br>☐ Improve surveillance systems for existing and new disease risks and ensure health care systems are geared up to meet future demands<br>☐ Mainstream climate change health risks into decision-making at local and national health policy levels |

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| | | ☐ Identify, document and incorporate climate-relevant traditional knowledge into health delivery systems and practices<br>☐ Develop structures to effectively manage and disseminate information on climate change health risks. |
| ☐ Minimize impacts of climate change on access to water and sanitation | P1. Environmental sanitation education and hygiene education<br>P2. Improved access to safe drinking water<br>P3. Research<br>P4. Construction of water storage systems<br>P5. Improved drainage in urban areas<br>P6. Recycling<br>P7. Waste re-use and reduction e.g., composting, biogas<br>P8. Improved access to sanitation facilities<br>P9. Water and land management | ☐ Develop rainwater harvesting and increased use of shallow wells, dugout ponds and dams for water use<br>☐ Make water accessible for domestic, agricultural, industrial, and commercial use and energy production<br>☐ Recycle water for domestic and industrial purposes<br>☐ Develop efficient irrigation drainage systems to increase return flows<br>☐ Build capacity in water resources management in relevant sectors<br>☐ Promote water supply and sanitation delivery practices that build resilience to climate change<br>☐ Develop and introduce flood and drought monitoring and control systems<br>☐ Develop and implement environmental sanitation strategies to adapt to climate change<br>☐ Strengthen District Assemblies to assume a central role in supporting community management of water and sanitation facilities<br>☐ Reduce methane from landfills through waste reduction and recycling<br>☐ Improve construction of hydropower schemes, irrigation systems and water supply infrastructure to improve efficiency<br>☐ Implement drinking water and sanitation programmes in areas at risk from climate change (e.g., coastal areas, flood- and drought-prone areas)<br>☐ Provide economic incentives to manage water resources including watersheds to furnish a sustainable and clean supply of water in addition to other ecosystem services and climate benefits<br>☐ Improve the status of environmental sanitation through strengthening of institutions and enforcement of laws |
| ☐ Addressing gender issues in climate change | P1. Gender-responsive climate change research<br>P2. Livelihood protection and alternative livelihoods and poverty reduction<br>P3. Budget allocation on gender issues and climate change<br>P4. Gender-responsive disaster risk reduction and management (GRDRRM) | ☐ Ensure the integration of gender equality principles in all social policies such as education, health, water and sanitation<br>☐ Generate gender-specific information including sex-disaggregated data for determining the gender impacts of climate change<br>☐ Develop effective gender and climate change goals and gender-sensitive indicators<br>☐ Collaborate with CSOs, especially women's rights organisations and coalitions, in climate change discussions and processes<br>☐ Build the capacity of the relevant institutions to mainstream gender issues into |

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| | | climate change policy formulation, planning, monitoring and evaluation<br>☐ Prepare and implement gender and climate change mainstreaming strategic plans by institutions, which would provide a sound basis for evaluating the extent of gender mainstreaming<br>☐ Identify and analyse gender-specific needs, impacts, protection and support measures related to climate change and variability such as floods, droughts and diseases<br>☐ Promote gender equitable financing as a means of responding to the differential impacts of climate change by gender. This will require establishing clear mechanisms for integrating a gender dimension into the design, implementation and monitoring of all climate funds<br>☐ Increase the resilience of vulnerable groups, including women and children, through the development of community-led adaptation, livelihood diversification, better access to basic services and social protection (safety nets, insurance)<br>☐ Integrated biomass strategies for food, fuel, fodder, and other basic needs including income generation<br>☐ Promote effective and equal participation of men and women in climate change policy and decision-making processes<br>☐ Strengthen the implementation of gender responsiveness in disaster risk management |
| ☐ Addressing climate change and migration | P1. Alternative livelihoods<br>P2. Social protection for migrant poor<br>P3. Structures for dialogue between migrants and hosts communities to prevent conflicts<br>P4. Improve access to health and education<br>P5. Measures to enhance existing livelihoods<br>P6. Measures to enhance remittance flows | ☐ Promote vocational training, especially for youth, in places with high likelihood of receiving in-migration<br>☐ Invest in agriculture in vulnerable areas, such as developing crops and livestock that are pest and drought resistant, early yielding and culturally acceptable, and promoting irrigation, to help curb rural-urban migration<br>☐ Facilitate movement between source and destination areas through improved transport systems<br>☐ Facilitate flows of remittances and goods and services between source and destination areas<br>☐ Target social transfers and safety nets; include migrants in the social safety nets<br>☐ Improve access to microcredit among migrants<br>☐ Promote alternative livelihood programmes to develop skills among rural dwellers<br>☐ Facilitate the proper utilization of rural and peri-urban lands by improving land use and land management schemes (move to natural resources)<br>☐ Provide social protection for immigrants<br>☐ Increase accessibility to quality health care for immigrants<br>☐ Mainstream migration into national development frameworks |

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| | | ☐ Establish a national institution for the management of migration for development<br>☐ Enforce rules and regulations of housing and sanitation |
| **Energy, industrial and infrastructure development** | | |
| ☐ Minimize Greenhouse Gas Emissions | P1. National institutional framework for greenhouse gas inventory<br>P2. Improved capacity of relevant sectors (public and private) for national GHG emissions reduction<br>P3. Low emission and clean technology research, development, diffusion, deployment and transfer<br>P4. Improve energy efficiency in production and consumption of energy<br>P5. Renewable energy development<br>P6. Comprehensive wastes (solid, liquid and human) management<br>P7. Minimize gas flaring | - Improve technical capacities, data collection and documentation systems for GHG emissions, inventories and reporting<br>- Improve institutional arrangements and existing national GHG system for data collection, data sharing and archiving in appropriate quality and format<br>- Support research, development and transfer of low emission technology such as natural gas combined cycle, natural gas distribution system, and mini and small hydroelectricity projects<br>- Promote energy efficiency and management activities that include new and innovative energy efficiency methodologies and techniques in various sectors, especially power generation, oil and gas, transport, biomass, industry, and waste<br>- Promote the use of cleaner and more efficient energy sources and production methods that minimize resulting emissions and pollution<br>- Create an enabling environment, including incentives and financing mechanisms, to encourage and support the use of renewable sources of energy<br>- Establish effective mechanisms for reducing the volume of wastes, and for controlled and safe disposal of unavoidable wastes<br>- Establish sustainable recycling and waste management technologies that generate energy (e.g., biomass energy, biogas, methane, etc.) and reduce emissions from solid and liquid wastes, especially in urban areas<br>- Support public awareness of efficient use of energy and of renewable energy sources<br>- Establish efficient infrastructures and mechanisms for processing and use of by-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-benefits |
|---|---|---|
| **INDC – Forests and land use** | | |
| Fight against deforestation and degradation of lands | Reducing Vulnerability and Increasing Resilience<br>☐ Simplify species, promote agroforestry, restore degraded lands<br>☐ Promote the sustainable management of land by techniques for improving the conservation of water and soil (CES).<br>☐ Developing the approach for sustainable management of land and the conservation of soils. | ☐ Fight against poverty (exploitation of products non-timber forest management, agricultural yields, use of the pharmacopoeia Traditional).<br>☐ Preservation of diversity fauna and floristics earthly.<br>☐ Sustainability of quality soil |
| **INDC - Hydrometeorological Disaster Management** | | |
| Building resilience, especially against coastal erosion | Reducing vulnerability and increasing resilience, especially for the Sassandra - Vridi - Port-Bouët<br>☐ Evaluate hydrometeorological risks and implementation of mitigation measures<br>☐ Set up a multi-hazard alert system<br>☐ Establish a contingency plan and plans Response Systems<br>☐ Informing, educating and communicating about risks hydrometeorological<br>☐ Strengthen the capacity of actors in Disaster Risk Reduction (DRR) and disaster management<br>☐ Systematically assess the losses and damage and ensure the rehabilitation and construction post-disaster<br>☐ Develop coastline observation and identify territories at risk of erosion (monitoring of coastal erosion).<br>☐ 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).<br>☐ Establish an experimental micro-projects fund for protection against erosion | ☐ Preservation of agriculture (area of plantations of palm trees oil, pineapple, banana, hevea and coconut).<br>☐ Preservation of diversity biological lagoon and Coastal.<br>☐ Preservation of habitat<br>☐ Preservation of areas vulnerable coastlines |

## Annex 5: Overview of consultations, incldiung objectives, outcomes and conclusions

*Table 18: Cote d'Ivoire*

| Date | Stakeholder, | Consultation objective | Outcome | Conclusion |
|---|---|---|---|---|
| 13 nov 2017<br><br>Bonn / COP 23 | Ministry of Urban Sanitation, Environment and Sustainable Development | - Agree on AF proposal priorities and target areas (districts level)<br>- Understand national priorities<br>- 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<br>- Organise National – district workshop to agree on national – local implementation modality and interventions after the WUF |
| Through above ministry | Ministry of Construction, Housing, Sanitation and Urban Planning | | | |
| 16 nov 2017 | Cocody Department | - Agree on AF target areas (community level)<br>- Identify focal point<br>- Understand local issues and needs<br>- Identify relevant projects and lessons, concerns and complementary potential | - Priority community: Cocody village, Blockhaus, M'pouto, M'Badon<br>- Focal point: Mayor: N'goan Aka Mathias<br>- M'Pouto: Ceke Nangai<br>- M'Badon: Djoman Bogue | - Target communities identified<br>- Mayor is a driver of eco-city concept and empahises the need to adapt to climate change – thus he could support political mobilization |
| 16 nov 2017 | Bingerville Department | | - Priority community: Bingerville, Aghien, Akanje<br>- Focal point: Mayor: Beugre Djoman<br>- Aghien: Alle allee Jean Pierre<br>- Bingerville: Bagodou Augustin<br>- Akanje: Mobio | - Target communities identified<br>- Use good practice of mangrove planting |

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| 17 nov 2017 | Jacqueville Department | | - Priority community: Gand-jacq, Techmien, Kouve;<br>- Focal point: Aka Auguste (mayor_<br>- Grand-Jack: M Soppy Tiakpa Justin<br>- Techmien: N'Geussan Francois | - Possibly utilise coping mechnanism of moving away from the shore in spatial planning approach<br>- Location to understand possible impacts of WACA project in Grand-Lahou |
| 17 nov 2017 | Grand-Bassam Departments | | - Priority community: Moossou and Quartier France<br>- Focal point: Georges Ezalé, Mayor of Grand-Basam<br>- Brindoumi, Chief Technical officer of the town hal<br>- Aketchi Anselme, the youth leader | - Focus on possible involvement of hotels (i.e. private sector) in addressing erosion, possibly together with Assinie and Assouinde (which are tourism hotspots) |
| 17 nov 2017 | Port Bouet Department | | - Priority community: centre and Adjoufou / Gonzagueville<br>- Focal point: Tanoh (technical service of the Town hall) | - Coastal erosion main issue. Possibly involve tourism sector |
| 13 nov 2017 | World Bank | - Agree on cooperation modality for potential coastal interventions in target areas<br>- Understand main issues, concerns and needs in target areas / communities;<br>- Understand relevant projects and lessons, concerns and complementary potential, esp WACA project | - Multi sector risk assessment has been done but not in Ghana<br>- 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<br>- They lack complementary spatial planning intervention and are very open to coordinate<br>- Spatial planning important for ministry of Interior<br>- There will be a regional climate change observatory | - Potentially complement WACA project with spatial planning element in Grand-Lahou<br>- Involve ministry of Interior in project design |
| 13 nov 2017 | AfDB | - Understand main issues, concerns and needs in target areas / communities;<br>- 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<br>- No overlap with AF proposal and AfdB process is new and therefore not fast | - Monitor process of AF project development and potential link with forest livelihoods |

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| 14 nov 2017 | Abidjan Convention / UNEP | - Agree on cooperation modality for knowledge management<br>- Understand main issues, concerns and needs in target areas / communities;<br>- 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<br>- They have great knowledge of regional and national initiatives, projects and relevant documents which they will share<br>- They suggested to use scenario's for interventions and emphasize using a blue economy (spatial planning) approach (tunring bad situations in opportunities) | - Use the regional resource center as the main platform for KM / lessons from this project<br>- Identify potential other areas for cooperation<br>- Consider using scenario's for proposed interventions and blue economy (spatial planning) approach |
| 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;<br>- Understand relevant projects and lessons, concerns and complementary potential, esp government and NGO related projects<br>- Discuss cooperation options for community assessments | - CURAT does modeling of coastal morphology and hydrology in target areas and can do impact assessments<br>- Recent study: ocean current goes west – east except in Grand-Lahou and Grand-Bassam<br>- They work with WACA project<br>- There are 5 climate change / erosion hotspot areas in Cote d'Ivoire: Fresco, Grand-Lahou, Abidjan, Grand-Bassam and Assinie | - Focus on hotspot areas around Abidjan and Grand-Bassam (since WACA works in Grand-Lahou and USAID in Fresco<br>- Cooperate to conduct community level surveys and focus group discussions<br>- Consider working with CURAT to conduct EIA |
| 17 nov 2017 | Oceanographic Research Centre | | - They have experience with conducting vulnerability assessments for the WB and USAID | - They are too expensive to conduct the vulnerability assessments at this stage |
| 14 nov 2017 | École d'architecture D'Abidjan | | - Cocody has a good 'eco-city' plan with climate change being central<br>- There is a need to better coordinate between the minstry of environment, departments and local planning<br>- Director has experience with developing GEF project proposals | - Include Cocody most vulnerbale communities in project<br>- Focus on integrating environmental / climate change risks in department and local spatial plans in target areas<br>- Cooperate to conduct community level surveys and focus group discussions |
| 13, 15 | Earth Right | - Understand main issues, concerns and | - Showed us relevant departments | - Involve ERI for conducting |

| | | | | |
|---|---|---|---|---|
| and 16 nov 2017 | Institute | needs in target areas / communities;<br>- Understand relevant projects and lessons, concerns and complementary potential, esp. government and NGO related projects<br>- Discuss cooperation options for implementing (part) of the climate change plan for Cocody. | and introduce dus to mayors<br>- Option to involve ERI for conducting rapid community surveys with Oceanic research center | rapid community surveys |

*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 |

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

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|---|---|---|---|---|---|
| Community: Aguien<br>District;<br>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:<br>Bingerville commune<br>District;<br>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 |

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

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|---|---|---|---|---|---|
| Community: Adjouffou/Gonzagueville<br>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<br>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 | |

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|---|---|---|---|---|---|
| Community: Tchemien | 10/12/17 | N'GUESSAN François | Male | Chief of the village | 59 35 63 48 |

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|---|---|---|---|---|---|
| District: JACQUEVILLE DEPARTMENT | | 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 |

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|---|---|---|---|---|---|
| Community: Grand-Jack<br>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<br><br>Bonn | Ministry of Environment, Science, Technology and Innovation | - Agree on AF proposal priorities and target areas (districts level)<br>- Understand national priorities<br>- 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<br>- 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<br>- Identify relevant projects and lessons, concerns and complementary potential | - Agreement on AF proposal priorities and decentralized implementation modality, including for spatial planning<br>- Need to complement WB project for Resilient Greater Accra Metropolitan Area (GAMA) where ministry takes a coordinating role | |
| Decembe r 2017 | Tema metropolis | - Agree on AF target areas (community level)<br>- Identify focal point<br>- Understand local issues and needs<br>- Identify relevant projects and lessons, concerns and complementary potential | - Priority community: newtown informal settlement<br>- Focal point: Ofori Joseph (assembly representative) | - District and community focal points have been identified<br>- District agreement on target areas<br>- Communities don't always trust government involvement<br>- Overlap with other projects has been checked |
| Decembe r 2017 | Ningo Prampram district | | - Priority communities: Prampram informal harbour area, old ningo and Ayitepa<br>- Focal point: Aboagye Aaron (Physical Planning Officer) | |

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|---|---|---|---|---|
| | | | - Old Ningo: Dzamaku Enoch<br>- Prampram: Solomon Tangman<br>- Ayitepa: Sampson Adjaklo | |
| December 2017 | Ada West district | | - Priority communities: Akplabanya, Goi and Kportitsekorpe<br>- Focal point: Agbeve S. S. (Planning Officer)<br>- Akplabanya: Amos Kwao<br>- Goi: John Tsiri<br>- Kportitsekorpe: Joseph Ahuakese | |
| December 2017 | Ada East district | | - Priority communities: Totope, Azizanya and big Ada<br>- Focal point: Gyamfi Kwadwo (assistant director)<br>- Big Ada: Awal Iddrisu | |
| December 2017 | Keta district | | - Priority communities: Fuvemeh, Woe, Anloga, Vodza<br>- Focal points:<br>- Fuvemeh: Oswald Etse<br>- Woe: Victor Amekudzi<br>- 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;<br>- 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<br>- Northern project not relevant | |
| 10 nov 2017 | UNCDF | - Understand main issues, concerns and needs in target areas / communities;<br>- 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 | - Understand main issues, concerns and needs in target areas / communities; | - Basic assessments already conducted with Delta alliance in | - Cooperate to conduct community level surveys and |

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|---|---|---|---|---|
| | Delta alliance Wing | - Understand relevant projects and lessons, concerns and complementary potential, esp. government and NGO related projects<br>- Discuss cooperation options for community assessments | Keta<br>- Good understanding of local issues and good network<br>- DECCMA project leader is part of Delta Wing board. | focus group discussions<br>- Use DECCMA assessments already done |
| 7 and 10 nov 2017 | Hen Mpoano NGO | - Understand main issues, concerns and needs in target areas / communities;<br>- Understand relevant projects and lessons, concerns and complementary potential, esp spatial mapping, fishing and community level related work<br>- 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<br>- Partner for community level work during project |
| 7 nov 2017 | USAID / Ghana CRC/URI<br>PACT<br>Tetra tech | - Understand main issues, concerns and needs in target areas / communities;<br>- 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<br>- 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;<br>- 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<br>- 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<br>- Government did not prioritze the development of spatial plans in target areas because of lack of oil and economic need<br>- 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<br>District; Prampram District,<br>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<br>District; Prampram District<br>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<br>District: Prampram District<br>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 |

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|---|---|---|---|---|---|
| | | 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<br>District: Ada West<br>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<br>District: Ada West<br>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<br>District: Ada West<br>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<br>District: Ada East<br>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 | 30/11/17 | George Numo | 27 | Male | Fishing |

| | | | | | |
|---|---|---|---|---|---|
| District: Ada East<br>Country: Ghana | | 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<br>District: Ada East<br>Country: Ghana | 30/11/17 | Felicia Ametepey | 80 | Female | Oyster Trading |
| | | 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<br>District: Keta Municipal (Volta Region)<br>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 |

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|---|---|---|---|---|
| | | Emmanuel Amekuedi | Male | Pensioner |
| Community: Woe<br>District: Keta Municipal (Volta Region)<br>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<br>District: Keta Municipal (Volta Region)<br>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 + | Arcadis | - Discuss cooperation options<br>- Identify technical intervention options and feasibility responding to local | - Arcadis joined the mission to Ghana<br>- They did an assessment in greater Abidjan area with UN-Habitat before | - Conduct assessment together durig project development phase |

| | | | | |
|---|---|---|---|---|
| 6 -10 nov 2017 | | needs | - Arcadis proposed possible technical interventions responding to local needs | - Use proposed technical interventions that are relatively low-cost and focus on livelihood enhancement or protection |
| Many skype calls | Delateres | - Discuss cooperation options:<br>- 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 | - They did some of the larger studies in Cote d'Ivoire on sedimentation, including for opening river mouth in Grand Bassam (to be done by Marocco but no funding)<br>- They are interested in working together | - Possibly involve them when coastal morphology study is needed |
| Many skype calls | Delta Alliance / Dimi group / Delft university | - Discuss cooperation options<br>- Identify main issues and needs in target areas and parallel academic programme | - Cooperate with Ghana Delta Wing<br>- Consider cooperating on creating 'urban lab' in both countries | - Cooperation with Delta Wing in Ghana<br>- 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<br>- Discuss complementary potential UNDP / Royal Haskoning project community resilient for early warning in Ghana | - Great accra plan focuses on river in Accra<br>- HKV developed risk / hot spot maps for greater Accra region<br>- HKV will be 'Kernadviseur' from Dutch water sector | - They will share risk maps and relevant docs<br>- Explore option to work together / build on their work for full proposal |