REPUBLIC OF COTE D'IVOIRE

Union Discipline Travail

MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

-MINISTRY OF PLAN AND DEVELOPMENT
-MINISTRY OF THE INTERIOR END SECURITY

- MINISTRY OF CITIES

WORLD BANK GROUP

MINISTRY OF ECONOMY AND FINANCE

MINISTRY OF SANITATION AND SALUBRITE

MINISTRY OF WATERS AND FORESTS

AUTONOMOUS DISTRICT OF ABIDJAN



PROJECT TITTLE:

"COCODY GREEN CITY, CARBON SINK OF ABIDJAN, COTE D'IVOIRE AND AFRICA TO ERADICATE GHG EMISSION, POLLUTION, POVERTY AND THE WORLD CLIMATE TEMPERATURE BELOW +1°5 C, BEFORE 2100.

FMDV

eit Climate-KIC

MAVA

BwB

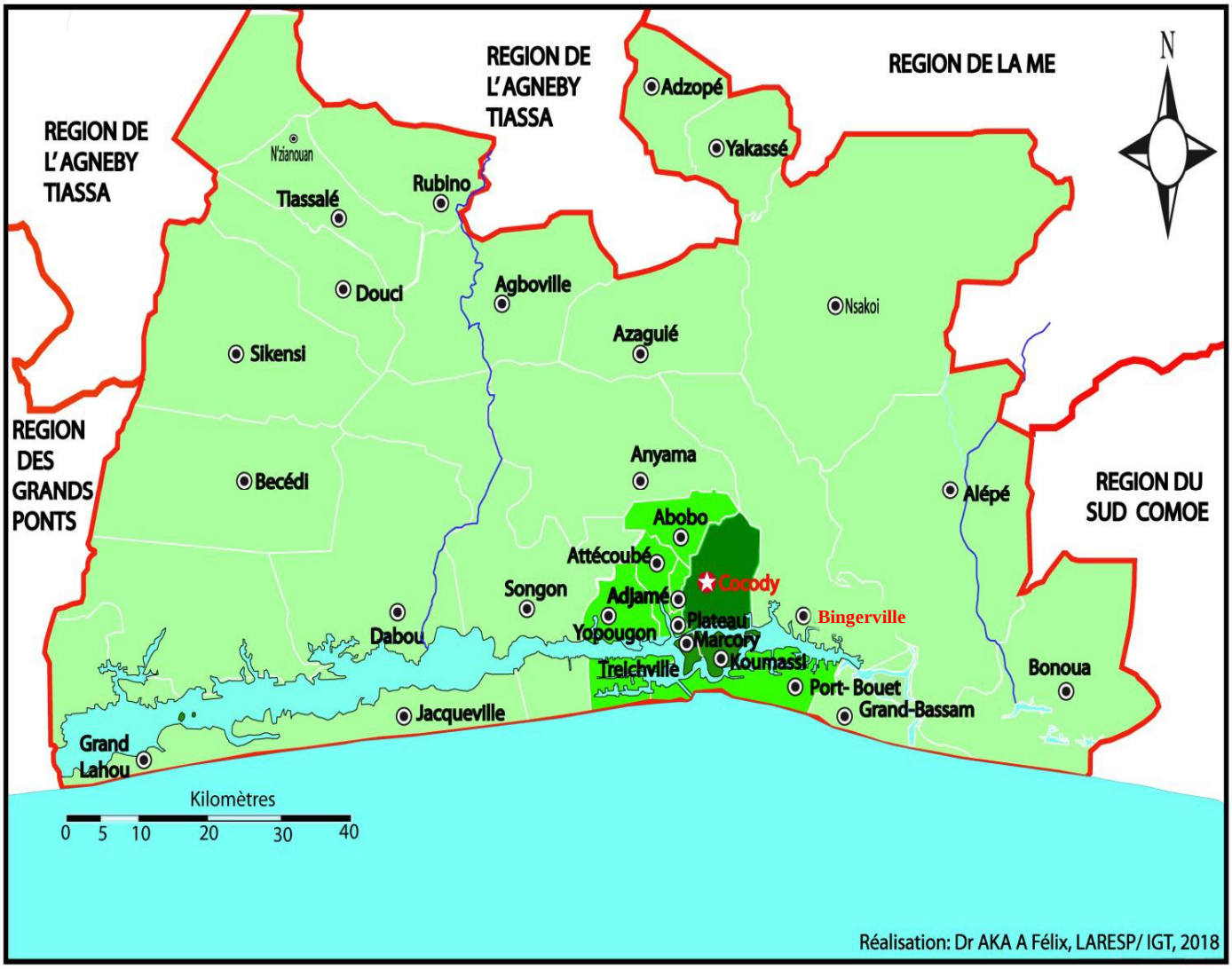
Earth Rights Institute

Ensemble, sauvons la Terre et l'Humanité

SUMMARY

PARTENAIRES

Map n°1 : **Climate project area, Cocody Green city, carbon sink of Abidjan, of Côte d'Ivoire and of Africa**



DES PERSONNALITES D'EXCEPTION

SEM. Alassane OUATTARA
Président de la République de Côte d'Ivoire
Père-fondateur du projet

Pr. Joseph Séka SEKA
Ministre de l'Environnement
et du Développement Durable
Ministre de tutelle du projet

Mme. Anne Désirée OULOTO
Ministre de l'Assainissement et de la Salubrité
Contribution particulière au succès du projet

M. N'GOAN Aka Mathias
Ex-Maire de Cocody
Initiateur du projet auprès
des Communes, Régions et Districts

REPUBLIQUE DE COE D'IVOIRE

Union Discipline Travail

MINISTERE DE L'ENVIRONNEMENT ET DU DEVELOPPEMENT DURABLE

Earth Rights Institute - West Coast Office

CONCEPT NOTE

TITRE DU PROJET: COCODY CITÉ VERTE, PUITS DE CARBONE D'ABIDJAN, DE CÔTE D'IVOIRE ET D'AFRIQUE, POUR ÉRADIQUER LES ÉMISSIONS DES GES, LA POLLUTION, LA PAUVRETÉ ET REDUIRE LA TEMPÉRATURE MONDIALE DU CLIMAT, INFÉRIEURE À 1.5 ° C, AVANT 2100.

CONTEXTE

Pour soutenir l'initiative de l'Accord de Paris (COP21) des Nations Unies sur le changement climatique, la Côte d'Ivoire, en partenariat avec Earth Rights Institute (ERI) des Etats-Unis d'Amérique, s'est engagée à réduire les émissions de carbone de 30% d'ici 2030. Cette initiative est en développement depuis plus de 10 ans. Cocody a déjà réalisé une série d'investissements dans le développement durable et, en coopération avec le gouvernement de la Côte d'Ivoire, continue à obtenir un soutien international. Une délégation officielle de la Côte d'Ivoire et d'ERI ont présenté avec succès, le Plan Climat de Cocody pour l'Abidjan, la Côte d'Ivoire et l'Afrique, à la réunion de la COP23 à Bonn, en Allemagne, en novembre 2017. Depuis lors, le Plan Climat de Cocody pour la Côte d'Ivoire et l'Afrique, a été désigné comme la Principale Initiative Africaine (PIA), pour lutter contre le changement climatique et mobiliser d'autres régions du Continent.

Earth Rights Institute (Etats-Unis, Europe et Afrique), s'est rendue à Cocody en avril 2017, pour officialiser avec le maire de Cocody (M. N'goan Aka Kacou Mathias et le maire de Bingerville M. Beugré Djoman), l'Accord de Partenariat avec leurs mairies respectives, en faveur des 13 communes du District d'Abidjan, les 30 communes proches d'Abidjan et les 40 importantes villes du pays.
Ce modèle franchisé, «Cocody Green City, Puits de Carbone d'Abidjan, de Côte d'Ivoire et d'Afrique», est actuellement engagé sur une base solide de référence à partir de laquelle sont lancées, en Afrique, nombreuses initiatives écologiques. Cela inclut la collaboration avec les city, les experts du développement locaux et internationaux, les ONG, les institutions académiques, les ministères et agences gouvernementales et les leaders communautaires.

Le soutient particulier de Mme la Ministre Anne Désirée OULOTO, alors Ministre de la Salubrité, de l'Environnement et du Développement Durable à ce projet et son Plan Climat pour l'Afrique, a été déterminant à son adoption par le Chef de l'Etat Ivoirien, SEM. Alassane OUATARA, qui en a fait son projet personnel et le projet de référence de son Gouvernement. Ils l'appuient et l'accompagnent auprès de nombreuses institutions, à travers le Ministère de l'Environnement et du Développement Durable. La Banque Mondiale, le GEF, le PNUD, l'UNEP, l'ONU-HABITAT, la BAD, l'UEMOA, la BOAD, Mars, MAVA, FMDV, BwB, l'UNEP-Convention d'Abidjan, le Fonds Vert Climat, United African Congress des Etats-Unis (2 500 000 membres), etc., œuvrent tous, avec le secteur privé, à son succès.

La proposition de projet a été élaborée par ERI, après une large consultation générale avec toutes les parties prenantes, telles que les populations locales, les collectivités locales, les groupes issus de la société civile, les femmes, les jeunes, les chercheurs, universitaires, étudiants, les travailleurs et dirigeants d'entreprises privées
Le projet vise à contribuer à un objectif de développement durable « reconnu » de la ville et du pays.
Il existe au niveau du Gouvernement Ivoirien, à travers le Ministère de l'Environnement et du Développement Durable, tutelle de ce projet, du Ministère du Plan et du Développement, du Ministère de l'Economie et des Finances, un engagement fort et des politiques réglementaires établies, destinées à le soutenir.

Le plan Climat de Cocody pour Abidjan, la Côte d'Ivoire et l'Afrique, est un exemple réaliste de buisines plan climat pour la transition des communautés, vers une plus grande durabilité et va déclencher un mouvement écologique en Côte d'Ivoire et au-delà, sur la façon de faire face au changement climatique. Son modèle conceptuel à 65 actions, a été élaboré par le génie des chercheurs et développeurs d'ERI, sous la direction du Professeur Dramane Touré Nablé, Directeur de recherche d'Earth Rights Institute, après 10 années de recherche/action et de travail assidu (2009-2017). Ref : COP15, Copenhague, 2009.

OBJJECTIFS DU PROJET ET DU PLAN CLIMAT DE COCODY POUR ABIDJAN ET L'AFRIQUE

Le projet «Cocody Green City», est un projet de ville durable, ville intelligente, repliquable. C'est le projet du GEF/ FEM, de la Banque Mondiale et de l'ONU-Environnement (UNEP). Il servira de prototype sur lequel nous pourrons modéliser d'autres villes et communautés, contribuant à la réduction globale de la production de carbone, à l'augmentation de l'accès à l'énergie verte et à l'implication accrue de la communauté.
D'autres communautés en Côte d'Ivoire et en Afrique atteignent les objectifs énoncés dans l'Accord de Paris.

Grâce à la création de cette Eco-ville, nous espérons atteindre les résultats et les impacts suivants:

1-Le premier Observatoire scientifique climat de la société civile ivoirienne est créé, pour accompagner les populations ivoiriennes à inverser la tendance au réchauffements climatique, les informer, éduquer, alerter, former et les forger à vaincre les catastrophes et désastres climatiques.
2- Une zone humide unique de plus de 20 000 Km2 est créée autour de la ville d'Abidjan, sur 150 Km de rayon, allant de Cocody à Grand-Bassam, Adiaké, San-Pédro, Zianouan, Adzopé, Yakassé-Attobrou, etc.
3- Dix (10) millions de personnes de la région du projet, sont préparées à relever le défi climatique ;
4- La diminution de la production de carbone d'au moins 70% d'ici 2030, aidant ainsi la Côte d'Ivoire dans sa promesse de lutter contre le changement climatique, est effective et partout constatée ;
5- Sept (7) millions de plants de mangroves et 7 millions d'arbres sont plantés pour restaurer les Ecosystèmes, aménager durablement nos baies, berges, côtes lagunaires, embellir par de belles fleurs et des arbres à fleurs permanentes, nos rues, parcs et jardins municipaux, pour séquestrer le carbone, et améliorer la résilience de la ville d'Abidjan, face aux impacts négatifs du changement climatique ;
6- L'amélioration de l'efficacité énergétique des bâtiments et de l'éclairage publique, est portée à 80%. ;
7-Les transports et la mobilité durables sont améliorés de 75 % à Cocody et à 70 % à Abidjan ;
8- Plus de 2 millions d'emplois verts sont créés dont 500 000 nouveaux emplois à Cocody-Bingerville (100 000 emplois verts directs permanents et 400 000 emplois indirects). ;
9-Tous les ménages en transition utilisent désormais une cuisinière énergétique, ainsi que du bioéthanol ;
10- Le gaz carbonique, le méthane et tous ces gaz dangereux, causes principales des EGES, sont capturés, maitrisés et utilisés par les ménagères.
11- L'université Félix Houphouët Boigny de Cocody, est devenue la 1ere université verte d'Afrique ;
12- Partout, l'air est pur. Et partout, la verdure, la salubrité, la sécurité, la paix, la stabilité et le bien-être, existent.
13- L'engagement de la communauté envers l'adoption de la vie durable, est augmenté ;

Toutes les composantes clés sont en place pour mettre en œuvre notre plan d'action global et à multiples facettes, pour le climat de Cocody-Bingerville, Abidjan, la Côte d'Ivoire et l'Afrique.
Cocody et Bingerville sont idéalement bien positionnées en raison de leur accessibilité, leurs ressources naturelles, leurs liens avec d'autres communautés et leurs populations universitaires florissantes (1/3 de la population totale). L'Université Félix Houphouët Bobigny a organisé des actions environnementales dans la promotion des projets de transport alternatif, le nettoyage communautaire, l'éducation et le reboisement.

L'événement montrera comment notre Plan Climat ouvre la voie à l'engagement d'un pays à réduire de 30 à 70% les émissions de carbone d'ici 2030. Ce plan d'action climat utilise une approche à multiples facettes pour mettre en œuvre 65 mesures, pour créer un environnement négatif, stable et durable et installer une mentalité éco-consciente dans les communautés. Il encourage les Dirigeants Africains et les États membres qui se sont engagés à la COP21 de l'Accord de Paris, à mobiliser vigoureusement leurs plans nationaux, pour prendre des mesures, en vue de la mise en œuvre de l'Objectif global 13 des Nations Unies, Action climatique. Il y a un besoin urgent de telles initiatives en Afrique et notre Plan Eco-City, a soigneusement examiné les multiples aspects de la création d'une communauté africaine urbaine durable et prospère.

Notre force principale est notre vaste expérience dans le développement et la mise en œuvre de projets en Afrique et dans le monde. C'est aussi notre solide réseau de partenaires locaux et internationaux et nos liens avec nombreuses organisations à la recherche de solutions similaires.
Nous avons lancé avec succès ce programme et inaugurons une nouvelle méthodologie de partenariats mondiaux travaillant sur le changement climatique en Afrique, par le renforcement des capacités, l'autonomisation des femmes, l'amélioration du bien-être de la population, la sécurité alimentaire et l'intégration de l'Afrique avec l'Afrique.

Puisse l'Afrique, saisir ce mode exceptionnel de coopération avec les États-Unis d'Amérique et les grands pays développés, pour mieux assurer son développement durable? Tel est le sens de ce Concept Note.

LA DIRECTRICE GENERALE

ANNIE De La Bouillerie Goeke

Eco-City West Africa
Climate Change Action

Cocody, Abidjan,Cote d'Ivoire, Afrique

www.earthrightsinstitute.org

Commitment To Reduce Carbon Emissions By 70% By 2030

THE PROJECT REGION: 120 000 Km2, 10 million habitants the 13 municipalities of the district of Abidjan, the 30 communes around Abidjan and the 40 important cities of the country.

CARBON REDUCTION

5 million trees for roadways and parks
1 million solar dehydrators for markets
200,000 energy efficient stoves for cooking

ECOLOGICAL RESTORATION

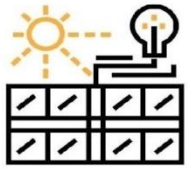
7 million Mangrove Trees planted
2000 Km of lagoon restored and cleaned
500 Km parks and gardens restored and cleaned

TRANSPORTATION

5000 taxis – replaced with lower emission engines
100% – carbon free public buses

ENERGY EFFICIENCY

200 000 solar plants
100 000 solar street lights
200 000 solar traffic lights



PUBLIC ENGAGEMENT

Local Eco Radio Station

Green Events - Bike Day

1 Tree Planted Per Household

2 million

Ecological Education For All

84% Renewable Energy By 2030

- **Abidjan Sustainable City and 40 sustainable cities of the interior, created**
- **200,000 solar street lights**
- **5,000 tri-color solar traffic lights**
- **3 million solar kits**
- **300 solar power plants replace fossil fuels**
- **7 million solar ecological ovens for women**
- **1 climate education, cleanliness at a very young age**
- **Improved air quality in Abidjan - no polluting vehicles**
- **7 million improved stoves for women, avoid EGS**
- **12,000 ton / year of bioethanol for women's cooking**
- **2 million units to capture methane for female Attiéké producers**
- **Félix Houphouët Boigny University, 1st African Ecological University**
- **2 health centers to help the underprivileged**
- **Support for women, the disabled and the elderly**
- **Natural disasters and avoided floods**
- **Sanitation, hygiene and clean air, everywhere restored**
- **Unemployment and poverty eradicated**
- **Life is now more attractive in Cocody**
- **The climate temperature of the planet is effectively at -1.5 ° C**

IMPACTS ET RISQUES DU PROJET
Suivant la méthodologie MAVA, FMDV, BwB ei-Climate-Kic

1-IMPACTS IMMÉDIATS

Le projet induit une réduction des émissions des gaz à effet de serre ;
Le projet induit une réduction des émissions de CO2 ;
Le projet induit une réduction des émissions de NOx ;
Le projet induit une réduction des émissions de SOx ;
Le projet induit une réduction des émissions de PM2,5 ;
Le projet induit un moindre recours aux combustibles fossiles ;
Le projet induit une réduction de la consommation d'énergie des bâtiments, villes, industries et appareils électroménagers ;
Le projet induit le lancement de stratégies de gestion des déchets à faible poids carbone ;
Le projet permet d'augmenter le taux de gestion des déchets, grâce à des stratégies de type recyclage et compostage ;

2-IMPACTS DURABLES

Le projet est transposable dans d'autres secteurs, villes, dans toutes les régions du pays et du Continent ;
Le projet permet au secteur qu'il cherche à couvrir, de bénéficier d'avantages économiques à long terme, en favorisant le développement de nouveaux marchés et d'activités économiques ;
Le projet incite les acteurs du marché à s'orienter vers des solutions durables/à faible poids carbone, en réduisant les coûts/risques et supprimant les obstacles ;
La portée du projet peut être élargie, sans augmenter d'autant les dépenses en capital ;
Le projet est propice à un changement du cadre réglementaire apte à favoriser les investissements dans le développement durable ;
Le projet permet d'éliminer les obstacles qui limitent la capacité de la ville à favoriser le développement durable;
Le projet est propice à l'intégration dans d'autres projets, des leçons qui en seront tirées ;
Le projet ne peut pas se passer de subventions ou d'aides à terme, lors de ses trois premières années ;
Le projet est propice à l'intégration nationale, sous-région ale et continentale.

3-DÉVELOPPEMENT DURABLE A DURABILITE FORTE

Le projet induit une amélioration du niveau de vie certaine, dans la région où il est mis en place ;
Le projet induit une autonomisation économique des femmes et une amélioration certaine et durable de leur niveau de vie, dans la région où il est mis en place ;
Le projet induit une amélioration de la qualité de l'air, dans la région où il est mis en place ;
Le projet induit une amélioration de la qualité des sols, dans la région où il est mis en place ;
Le projet induit des avantages en termes de préservation ;
Le projet induit une amélioration de la biodiversité ;
Le projet induit une amélioration dans la beauté de la commune, de la ville, du quartier et du village ;
Le projet est propice à une amélioration de la santé des pauvres
Le projet est propice à une amélioration de la sécurité dans la cité et dans le pays ;
Le projet favorise la poursuite ou l'accès aux études ;
Le projet induit une amélioration de la règlementation relative au développement durable ;
Le projet induit des avantages en termes de préservation ;
Le projet favorise la création d'emplois ;
Le projet permet d'accroître l'activité économique des industries locales ;
Le projet ouvre des perspectives en termes d'augmentation des apports en capitaux privés ;
Le projet favorise une meilleure productivité industrielle ;
Le projet favorise une meilleure sécurité énergétique ;
Le projet favorise une amélioration de l'approvisionnement en eau ;
Le projet favorise une augmentation de la production agricole

4- RISQUES

Le projet induit une réduction de risques spécifiques liés au climat (tel qu'un IQA bas) ;
Le projet vise à atténuer les risques spécifiques auxquels sont considérés exposés, plus de 25 % des habitants de chaque commune, chaque ville, chaque district et de l'ensemble du pays ;
Le projet évolue avec à chaque étape, des plans, approches et stratégies avérées d'atténuation des risques ;
Le projet s'appuie sur des structures précises visant à atténuer les obstacles au financement ;
Le projet vient en aide aux groupes identifiés comme vulnérables, par des politiques de développement avérées, pour chaque commune, chaque ville, chaque région, chaque district et pour l'ensemble du pays ;
Le projet renforce les capacités institutionnelles et de mise en œuvre ;

5-SUIVI/EVALUATION

Le suivi/évaluation serait assuré par Earth Rights Institte (Equipe Annie-Touré- Leonnelli).
Le projet fonctionne avec en son sein, son propre plan de suivi, de rétroaction et de repli ;
Le projet est un mécanisme de partage des leçons tirées, qui permettent de les intégrer à d'autres projets ;
Le projet induit une évolution quantifiable des indicateurs de durabilité forte;

ETUDES REALISEES ET COMMANDITEES PAR L'UNEP POUR LE FONDS VERTS CLIMAT

1- Projet Preraration Funding Application : Restauration des écosystèmes de mangroves, reboisement et aménagement durables des baies, berges, côtes lagunaires, rues, parcs et jardins municipaux en vue de la séquestration de carbone et de l'amélioration de la résilience de la commune de Cocody face aux impacts du changement climatique
2- Projet Preraration Funding Application : Amélioration de l'efficacité énergétique des bâtiments et de l'éclairage publique de la Commune de Cocody
3- Projet Preraration Funding Application : Transport et mobilité durable dans la commune de Cocody (Abidjan Côte d'ivoire), pour améliorer la résilience des Communautés aux des changements climatiques.
4- Projet Preraration Funding Application : Développement durable et promotion des énergies renouvelables dans Mix de la commune de Cocody
5- Projet Preraration Funding Application : Project ECO-CAMPUS de l'Université Houphouët-Boigny

LA DIRECTRICE GENERALE

ANNIE De La Bouillerie Goeke

PREFACE

Here is the updated version of the autonomous climate project "Cocody Green City, Abidjan Carbon sink, of Côte d'Ivoire and Africa," following the feasibility study of the Panafrican Council of Environmental Doctors (COPADEN) of Canada, sponsored by UN-Environment, Execution Agency of said project

The result of this study, composed of 4 concepts-notes, deals with:

(1)- The promotion of renewable energies in the energy package of Cocody municipality and the other city of Abidjan's District - Bioenergy and energy efficiency;

(2)- The improvement of energy efficiency of public and private buildings and the public lighting;

(3)- The sustainable restoration of mangrove ecosystems, flora and biodiversity;

(4)- The sustainable transport, sustainable mobility and social mix.

The Felix Houphouët-Boigny University of Abidjan-Cocody and Earth Rights Institute from United States, are the scientific partner institution that has been unanimously approved by the Cocody City Council, the Ivorian authorities, the scientific community, the private sector, NGOs, civil society and local communities, to facilitate through research/action, training, awareness and understanding in decision-making regarding scientific, technical and understanding aspects in decision-making concerning the scientific, technical, technical, economic and social aspects of this project.

To complete the excellent work of the Concepts notes made by COPADEN, at the request of the Mayor of Cocody, this project has benefited from the work of experts from the Ministry of Healthiness, Environment and Sustainable Development, especially the Green Climate Fund, the Adaptation Fund, the Platform for Disaster Risk Reduction, the UNCAC mechanism.

At the University of Félix Houphouët-Boigny, the project benefited from feasibility studies and concept notes from the University Center for Research and Application in Remote Sensing (CURAT), on vulnerability, disaster risk reduction and resilience, in the precarious neighborhoods of the Commune of Cocody and the District of Abidjan, victims of climate change. The contributions of professors and researchers from the Laboratory of Atmospheric Physics, the Institute of Tropical Geography (IGT) and the Center for Architectural and Urban Research (CRAU), were decisive on the development, the habitat, the adaptation, waste, water and sanitation, poverty, air quality for the vision of the new Cocody at 2030 and 2050.

Finally, at the referential level, all 65 axes of the Cocody Climate Plan for Africa, built by the Earth Rights Institute of the United States, were adopted to develop this updated version of the Cocody Green city project, for the horizon 2030 and 2050 or even 2100, with particular emphasis on women's empowerment, poverty reduction, youth employment and cleanliness.

Cocody’s Mayor Mr. N'GOAN AKA Kacou Mathias and his City Council express their infinite gratitude to the Head of State, Excellent Alassane OUATTARA, Republic of Côte d'Ivoire President, to Mrs. Anne Désirée OULOTO, Minister of Healthiness, Environment and Sustainable Development, to Mr. Issa DIAKITE, Minister of the Interior, to Mr. Ibrahim THIAW, Deputy Director General of UN-Environment, to Mrs. Annie GOEKE, General Director of Earth Rights Institute, to Mr.. LAPORTE Pierre, Director of Operations of the WORLD BANK for Côte d'Ivoire, for their interests, support and constant support for the success of this innovative project.

These thanks also go to UNDP, UN-ENVIRONMENT-Abidjan Office and UN-ENVIRONMENT-Abidjan Convention, GEF, Green Climate Fund, Adaptation Fund, Technological Mechanism Fund, AfDB, BOAD, C40 and R20, Private Sector, etc.

PROJECT TECHNICAL SHEET

AFRICA REGION: WEST AFRICA **PROJECT N° 01** : 01/MC/ ERI/18
COUNTRY: COTE D'IVOIRE
UPDATE SUBMISSION DATE: JANUARY 2018
DISTRICT OF ABIDJAN: COMMUNE OF COCODY

PROJECT TITTLE : COCODY GREEN CITY, CARBON SINK OF ABIDJAN, COTE D'IVOIRE AND AFRICA TO ERADICATE SUMMERS, POLLUTION, POVERTY AND THE WORLD CLIMATE TEMPERATURE BELOW +1.5° C, BEFORE 2100.

APPLICANT : TOWN HALL OF COCODY
Supervising Ministry : Ministry of healthiness, Environment and sustainable Development,
Ministry of Administrative Supervision of the town hall of Cocody : Interior Ministry

Funding agency : UN-Environment
Beneficiary organization : Town hall of Cocody (Abidjan)
Beneficiary Group : Cocody, 14 commune of Abidjan District, Project Region
And associated Regions linked to the Project, over 10 million people.
Main Coordinator of the Project: M. N'GOAN AKA KACOU Mathias
Office : Mayor of Cocody-Abidjan
Address : 08 BP1060 Abidjan 08
Phone : + 225 22 44 81 67
Email : ngoanakamathias@yahoo.fr
Project assistant : Pr. DRAMANE Touré
Function : Special advisor in climate of the mayor of Cocody
: Guarantor of the interests of the donors within the project
: Special Representative of Earth Rights Institute in the project
Address : 28 BP. 1406 Abidjan 28
Phone : +225 01 19 82 70 or +225 02 88 88 32
Email : eriwestafrica@yahoo.fr

PROJECT NATURE and COVER AREAS:

☒ Smart cities, sustainable Eco-commune, Eco-cities and Eco-villages
☒ Promotion of renewable energies in the energy sector,
Bio-energy and energy efficiency; improving energy efficiency of public and private buildings and public street lighting.
☒ Restoration of forest and mangrove ecosystem. Sustainable management of parks, streets, gardens for carbon sequestration resilience
☒ Sustainable transport, mobility and social mix within cocody and project area to improve the resilience of communities to climate change effects
☒ Risk, vulnerability, resilience
☒ Sustainable urban family farming
☒ Citizen security
☒ Adaptation
☒ Green employment
☒ Accompanying measures, capacity building

Expected starting date : January 2018
Project duration : 36 months (January 2018- December 2020)
Expected funding: : 3 988 895 000 000 FCFA or 747 079 978,33 $US

I- ABSTRACT

The current project entitled "Cocody Green City, Carbon sink of Abidjan and Africa", responds to the political will of President Alassane OUATTARA and his Government, to opting resolutely for clean energy, to reduce to 28% Côte d'Ivoire's greenhouse gas emissions until 2030 and to increase the share of renewable energies in the electricity mix to 16%. It also responds to the same political will of the leaders of the planet, to have concluded, from November 29 to December 12, 2015 in Paris-Le Bourget in France, on the initiative of the French President, François HOLLANDE, "the Memorable Accord on the climate ", to reduce these EGES, in order to bring the planet temperature back to +2° C, even +1.5° C, until 2100

To help the Ivorian Government achieve these objectives, the City Council of Cocody, under the leadership of its Mayor, Mr. N'GOAN Aka Mathias, bearer of this project, decided with Earth Rights Institute, initiator, to build this project, to serve as a model of business plan climate and strong sustainability first for Cocody's municipality then, for all 13 municipalities of the Autonomous District of Abidjan, then for the towns and villages of Côte d'Ivoire and Africa. As such, the objective of this project is to reduce to 90% Cocody's EGES until 2030, in order to help limit the increase in the temperature of the planet below + 1.5° C before 2100, prevent climate disasters, eradicate pollution, combat unemployment, poverty, insecurity and ensure a healthy environment for the long term.

Indeed, the access of all Cocody's inhabitants to renewable energies and sustainable transport, to reverse and break before 2030 with the current fossil electricity, is possible.
Also, the transformation through the reforestation, of all the commune of Cocody and its lagoon shores of Cocody in San-Pedro, Grand-Lahou, Zianoua, in immense sinks of green and blue carbons, by millions of trees flowers, planted along the streets and mangroves on all banks, to sequester the carbon emitted by vehicles, industries and households, purify the air and eradicate pollution, is possible to reduce these emissions to 90% before 2030.
The capture and recovery of methane produced during the cooking of Attiéké and other highly polluting residues with very high global warming potential, to transform it into electricity and clean gas, can also lower this temperature to + 1°C, before 2100.
Extension to households in the municipality, thousands of improved homes of the latest generation, will reduce more than 90% EGES and prevent their spread into the atmosphere.
The access of thousands of households in the commune to bioethanol produced from the cane molasses of the sugar complexes of the country, or from the public dump of Cocody-Akouédo, to replace fossil butane gas, firewood or charcoal is possible to reduce to 90% the pollution caused by the spread of these emissions into the atmosphere.
Finally, the installation in Cocody of an ecological radio of national awareness, with 1000 local committees of citizen mobilization created against terrorism, insecurity, pollution, insalubrity, could contribute to save the climate, life on earth and to ensure lasting stability.

The project will benefit 10 million people, including first the 800,000 in Cocody. To ensure its chances of success at more than 95%, it was first developed in a certain future then uncertain and low assumption with risk, by Earth Rights Institute of the United States. It will create 100,000 direct permanent green jobs and 400,000 indirect. It will improve the academic results of thousands of students and the health of millions of Abidjan's inhabitants. It will avoid 92 160 000 000 teqCO2 / year and will have a sequestration potential of 120 445.7 teqCO2 / year.
The project has already started by the Mayor and the people of Cocody since October 2016. The requested financing is: 3 988 895 000 000 FCFA or US $ 747 079 978, 33. Its duration is 36 months. The contribution of the City Council of Cocody, is in nature and various works.

II. DESCRIPTION OF THE PROJECT GOALS.

The project "Cocody Green City, carbon sink of Abidjan, Côte d'Ivoire and Africa", is an integral part of the strategic plans and priority objectives of the Ivorian Government, the African Union, the African Initiative, the ECOWAS, UEMOA and SILS, in their programs of sustainable cities in Africa, through the project of the "Africa's Great Green Wall ". It is also an integral part of the priority objectives of UNDP, UNEP, UNIDO, ADB, BOAD, EU, IBRD, etc., in the fight against global warming.

2.1-GENERAL OBJECTIVE

The main objective of this project is to achieve by another innovative and adapted approach, to reverse the trend before 2030, by a drastic reduction of greenhouse gas emissions in major African cities in general and Côte d'Ivoire, in particular, to obtain smart cities, Eco-cities, Eco-cities, Eco-towns, Eco-villages and Eco-neighborhoods. It will be through renewable energies, sustainable transport, improving the energy efficiency of buildings and public lighting, the prevention of risks and disasters, helping to limit the temperature of the planet below + 1° C before 2100 and turn the entire south of Côte d'Ivoire into a huge wetland, green lung and carbon sinks of the continent.

For the Mayor of Cocody Mr. N'GOAN AKA Mathias, his City Council and all the people of his commune, all commit themselves to reduce these emissions from 70 to 80% before 2030. This reduction could even sometimes reach 90% in case of external financial support. To achieve this, the Mayor N'GOAN, its City Council and its inhabitants, ensure reverse the trend before 2030, to end the fossil fuels throughout the municipality, bringing the share of renewable energy in the mix electricity of the commune to 95%.

It is about to start a real energy transition without oil or fossil carbon through this project, to implement the directives of the Head of State President Alassane OUATTARA, to maintain a healthy environment with the strong resolve to transmit to future generations, a preserved natural heritage that can ensure the maintenance of biological diversity. This approach, which is quite possible, will have no negative impact on the economy, the State and the populations.

2.2- OPERATIONAL OBJECTIVES

The Cocody Initiative is a Transformation and Action Program, a model for the future, with a low risk assumption, to integrate and support collaboration between all stakeholders (Government, local and administrative political authorities, scientific teams, civil society enterprises, women's and youth organizations, farmers, leaders, local people, the international community), to develop in synergy innovative solutions and ideas.

This is the first time that such a project has been approved by all parties: United Nations agencies, donors, academic and scientific research institutions, foundations, NGOs, civil society, etc. This remains very encouraging. The project has already started to have positive impacts on local people and is based on their commitment as key elements in the fight against climate change and poverty.

2.3- SPECIFIC OBJECTIVES

It is the first smart city or sustainable eco-city project in Africa, with a particular focus on the new green economy, renewable energy, energy efficiency, sustainable transport, sustainable agriculture, sustainable food, sustainable health, the eradication of EGES, pollution, insalubrity, toxic waste (Probo Koala), etc.

Are also taken into account, the quality of air and water, safety, blue and green carbons, aesthetics and beauty of Cocody and our cities, hygiene, roads and cleanliness of the commune, the creation of thousands of green jobs to fight against unemployment and poverty, the creation of the country's first ecological radio, citizen training for climate watch and security, the restoration of carbon sequestration potential by Cocody Forest Relics, Abidjan Zoo, Banco Forest, Dalhia Flower, Bingerville Botanical Garden, Bagba, Quarry, Annan, etc. The maintenance of more than 20,000 Km^2 of the entire southern wetland, from Cocody to San Pedro, Tabou, Jacqueville, Tiapoun and Cocody to Zianouan, Adzopé, Soubré. Are also concerned all towns and villages in the country and their wetlands. This will create from Côte d'Ivoire, the world's largest carbon sink to save the planet Earth and humanity

The 65 measures and associated actions are grouped into the following 13 categories:

2.3.1- The Cocody Climate Plan Mission

Axis 1- **The first mission of the Cocody Climate Plan for Abidjan, Côte d'Ivoire and Africa is to improve the daily lives of all Ivorians and Africans**.

Climate change concerns all humanity, especially all IVOIRIANS and AFRICANS. It must be combated effectively, to reduce global greenhouse gas emissions and at the same time, continue to improve the lives of all Ivorians and Africans, create millions of businesses and green jobs, to give permanent and well-paid work to all, to lower the cost of living, to break with poverty and insecurity, so that they can effectively save and perceive, their improved quality of life.

2.3.2- Use and generation of clean energies, bioenergy and energy efficiency

Axis 2- ensuring the Promotion of Renewable Energies in the Energy Bouquet- Bioenergy and Energy Efficiency -Improvement of the energy efficiency of public and private buildings, public lighting.

Axis 3- Installation of 30,000 solar street lights, including 5,000 in Cocody, as well as 2,000 solar traffic lights at the 500 most important crossroads of the municipality.

Axis 4- Supply of 3 million solar kits to the set of which 200,000 to the women of Cocody.

Axis 5- Installation of 300 photovoltaic solar power plants including 30 for the populations of Cocody and Bingerville

Axis 6- Solar energy supply, of all public and private buildings of the municipality including the Félix Houphouët Boigny Ecological University (UFHB), the Observatory-climate of the civil society, the Teaching Hospital, the high schools, the municipal centers of free care for the underprivileged of Cocody (Dr. Yobouet Department and that of Dr. Issiaka for fractures and osteoarthritis), etc.

Axis 7- Production and donation to women of 1,000,000 solar stoves and bioethanol stoves, including 300,000 for women in Cocody, to help them cook their food without carbon.

Axis 8- Production of 1,000,000 photovoltaic solar dryers, including 300,000 for Cocody women, to assist them in the fast drying of their food products and to reduce drying time by 70%, to eliminate mold and mildew. Avoid adding more GHG emission to the atmosphere.

Axis 9- Production, promotion of 1 million ecological ovens for household use and operating with solar or bioethanol, for the women of Abidjan's District and the project area of which 300,000 to the women of Cocody.

Axis 10- Production and distribution of 1,000,000 solar water heaters of which 300,000 to the populations of Cocody, in the building sector, to improve the thermal performance of the structural envelope of buildings.

Axis 11- Installation of 100 new generation wind turbines for Cocody, the project region and the regions attached to the project, including 20 wind turbines for the 4 coastal Ebrie villages of Cocody (Blockhauss, Cocody, M'Badon and M'Pouto), 'climate observatory, the Eco-Campus University FHB, the coastal villages of Bingerville. The other 85 being for the District and the areas attached to the project.

Axis 12- Construction of a bioethanol production unit from the cane molasses of the country's four sugar complexes, to replace current electricity, butane gas and firewood. These will each produce 12,000 tons of bioethanol per year and 800 tons of organic carbon. This will reduce more than 75% of CO2 emissions in the atmosphere and break with the fossil.

Axis 13 - Taking into account 100 km radius, all municipalities, cities and all villages located in the project area, to make Eco-towns, Eco-cities, Eco-cities, Eco-villages, related to the Climate Observatory.

Axis 14- Connection of Cocody to the towns and cities of: Abengourou, Issia, Daoukro, Sinfra Yamoussoukro, Toumodi, Bouake, San Pedro, Korhogo, Bouna, Bondoukou, Katiola, Dabakala, Touba Odiénné, Tengrela, Boundiali, Tafiré, Daloa, Gagnoa , Divo, Hiré-gogobro Man, Toulepleu, Duékoué, Bangolo, Soubré, Fengolo, Ferké, Ouangolo, Toumodi, Simpurgo, Sified, Bouaflé, Komboro, Tafiiré, Komboro, Seguelon, Worofla, Yeleu / Zouan-Hounien, Komboro, Taboo, Kong, Guélében , Mankono.

2.3.3-Sustainable Transport, Sustainable Mobility and Social Mixedness in the Commune of Cocody, the Autonomous District of Abidjan, the Project Region and in the Regions connected to the Project, to improve the resilience of communities to the impacts of climate change.

Axis 15- Development and implementation of a sustainable transport and mobility plan including:

Axis 16- An integrated, inclusive, dynamic, efficient, more active and reliable land use planning system that supports more equitable and accessible living options for people, goods and services.

Axis 17- A Well-maintained and low-carbon sustainable transportation infrastructure.

Axis 18 - A financially sustainable and autonomous transport system.

Axis 19- A major option for green transport, electric vehicles, mixed vehicles, non-polluting vehicles, bicycles, clean fuel, fluidity on all roads and at all intersections in the municipality of Cocody and the District Abidjan

Axis 20- A withdrawal program in the Project Region of 100,000 second-hand vehicles in very bad condition and constantly polluting the air, including 5,000 in the Commune of Cocody, supported by their replacement by non-polluting vehicles and by the promotion of solar, hybrid, electric vehicles.

Axis 21- Prohibition to introduce in the Commune of Cocody, imported vehicles over 4 years old and vehicles that pollute the atmosphere.

Axis 22- Priority to the use of clean unleaded fuels, non-fossil fuels, as well as to biofuels, training and upgrading of mechanics of the commune, the District and other cities of the country, in vehicle repair techniques and installation techniques for 1,000,000 catalytic exhaust pipes, including 100,000 pots for Cocody.

Axis 23- Introduction and use of new taxis and non-polluting buses, compatible with climate change.

Axis 24- Assistance to transporters and unions in the municipality of Cocody, to acquire public transport vehicles in good condition, non-polluting.

All these initiatives will contribute to the reduction of more than 50 million tons of CO2 emissions per year and to the improvement of air quality in the Commune of Cocody, the District of Abidjan and others.

2.3.4- Sustainable restoration of mangrove ecosystems, flora and biodiversity of Cocody, the Autonomous District of Abidjan, the Project Region and the cities connected to Cocody, with afforestation, planting, sustainable management of the lagoon shores, bays, riverbanks, for the resilience of sequestration of the carbon.

Axis 25- Sustainable restoration of the Cocody Mangrove Ecosystems, the District, the Project Region and the cities attached to the project, afforestation, planting, streets, parks and gardens, lagoon shores, bays, riverbanks, for the resilience of carbon sequestration

Axis 26- Sustainable Development of Lagoon Shores, Bays, Cocody Streams, District, Project Region and Project Cities, for Resiliency in Carbon Sequestration

Axis 27- Sustainable restoration of the forest biodiversity ecosystems of Cocody, the District, the Project Region and the cities attached to the project, afforestation, planting of trees and safeguarding of active medicinal plants, wild food and aromatic plants, in view safeguarding and resilience in carbon sequestration

Axis 28-Sustainable development of streets, parks and gardens, lagoon shorelines, bays, streams, Cocody, District, Project Region and project cities, for resilience to carbon sequestration

Axis 29- Creation of the 1st Climate Observatory of the civil society. The creation in the bay of Bagba, between Cocody and Bingerville, the 1st Climate Observatory of the civil society, to train,

educate and educate the populations of Côte d'Ivoire on climate issues, to ensure a permanent monitoring of climatic issues of Abidjan and the country. In addition, the Observatory will serve as a venue for international meetings, seminars, fairs, exhibitions of research results, discoveries, adaptation of implementation of technologies and risk prevention etc.

2.3.5- Spatial Planning and Housing Restoration

2.3.5.1 – Spatial planning

Axis 30- Sustainable protection, conservation and enhancement of all the lagoon, river and sea coasts of Cocody, Abidjan District, the Project Region (Cocody-Bingerville, Marcory, Koumassi, Treichville, Port-Bouet, Plateau, Yopougon, Adjamé, Attécoubé, Songon, Grand-Bassam, Jacqueville, Dabou, Grand-Lahou, Assinie, San Pedro, Tabou, etc.

Axis 31- Lagoon shoreline transformation into recreational beaches, socio-cultural and gastronomic meeting places, villages in the commune of Cocody (Cocody, Blaukhauss, M'Pouto, M'Badon, Djrogobité), Bingerville, the Observatory, Bagba, ESIE, Abata, Akandié, etc.).

Axis 32- Equip fishing village communities with modern fishing equipment to improve their income and help them better protect the pollution lagoon.

Axis 33- Coast landscaping, plot of food crops and market gardening, short-cycle organic breeding farms to help local communities, especially women, to improve their income, better protect and enhance these sites.

Axis 34 – Cocody's parks and gardens creation, development and sanitation, Abidjan District and the Project Region, by the development of 3000 parks, gardens and green spaces in the project area including 150 parks and gardens already geo-referenced in Cocody.

Axis 35- Sanitation and repairing of all precarious quarters and house at risk in Cocody, Bingerville (Bagba) and in the 14 municipalities of Abidjan District, in the Project Region and in the cities connected to the project.

Axis 36- Sanitation and cleaning of Felix Houphouet Boigny University, the Climate Observatory of civil society.

Axis 37- Planning and sanitation of precarious settlements in the project region and project regions.

Axis 38- Construction of 1,000,000 social housing units in the Project Region with 200,000 out of that in Cocody, to effectively improve Ivorian's daily.

Axis 39 - household and industrial waste treatment from Akouedo landfill and landfills in the main cities of the country.

2.3.5.2- Restoration of habitats, biodiversity of flora and mangroves

Axis 40- Planting on 20,000 km^2 20 million flowering trees in the Project Region with 7 million in the 13 municipalities of Abidjan District and 2 million in Cocody.
Sites of these settlements are: parks and roadsides to create huge renewable carbon sinks and reservoirs, trapping carbon emissions from vehicles and households, etc.

Figure n°1: ERI program of mangrove in Bingerville-Bagba, for habitat and sanctuary for endemic species and to fight against EGES and pollution

Axis 41- Restoration and planting of 7 million mangroves on more than 70 km of the lagoon coast from Cocody to Bingerville, Grand Bassam, Assinie, Marcory, Koumassi, Songon, Port-Bouet, Jacqueville, Dabou, San Pedro, of which 2 million to Cocody.
These mangroves will provide safe habitats for endangered aquatic and endemic species, while preserving biodiversity.

2.3.6- Sustainable Protection of Water Resources

Axis 42 - Planting and restoration of mangrove biodiversity, to improve water filtration and desalination, air quality and to combat erosion and damage caused by floods.

Axis 43- Rainwater recovery and valorizations, filtering it to water trees and flowers in order to avoid water waste in everyday consumption.

Axis 44- Stream Dredging

Dredging and sanitizing by local people, all our lakes and rivers, made impassable by silting, pollution, deforestation, floating plants, etc.

2.3.7- Training, capacity building, awareness, education for a change

Axis 45 - Felix Houphouet Boigny University, 1st Green University,

Côte d'Ivoire's Eco-Campus, will serve as reconversion and transformation model to all the country's universities and Africa by promoting innovative and ambitious initiatives to save the climate.

Axis 46 - Earth Rights Institute (ERI) and the Civil Society Climate Observatory will train students, teachers in preschool, primary, secondary, technical and private higher education. ERI will train workers in our companies, community leaders and leaders, NGOs and civil society, in the fight against climate change, in structuring projects that can be financed by climate finance. ERI will help women victims and women's organizations access climate finance.

2.3.8- General health, individual and collective hygiene

Axis 47- General Development of Healthiness

Public health restoration, personal and collective hygiene, sanitation and beautification of our cities, will be priorities in the change of attitude.

Axis 48- For a municipality cleared of Probo Kuala toxic waste.

Cleared Cocody's municipality of all toxic waste, including the remaining from the ship Probo Kuala.

Axis 49- For a pollution-free Africa

Prohibit toxic waste importation to Abidjan, Côte d'Ivoire and Africa.

2.3.9- International cooperation

Axis 50 - Cocody, 1st City of Green Economy and pole of the climate finance

Cocody will be the green finance capital and the pole of African climate finance, renewable energies, attractiveness, research, innovation and green technologies. As such, many seminars, symposia, exhibitions and fairs will be held each year in Cocody. Note that the deployment of green sectors useful in the fight against climate change (ecological engineering, biomimicry…), will create millions of green jobs.

Cocody will encourage the issuance of green bonds by 2020, support the creation of reference labels (Label Transition Energetic and Ecological for Climate (LTEEC), and crowdfunding for green growth…).

Axis 51- Strengthening Information and Communication

Cocody created and implemented the first climate radio in Côte d'Ivoire and the first digital TV channel for sustainable development to raise awareness, train and educate people. Support for strengthening their respective capacities is essential to achieve the project objectives. It will be the same with the national public television installed in Cocody.

Axis 52 - Strengthening cooperation with businesses

Companies located in the project area are not sufficiently well informed or well prepared for ecological transition, while they constitute the main energy consumption source (from fossil origin). In addition, they do not have adequate means to act against climate change, nor the time needed to optimize their consumption.

The commitment logic for a green growth will be continued with them. In addition, a regulatory framework will be instituted among different parties for greater involvement.

Axis 53- Strengthening of cooperation with private sector companies

2.3.10- Climate Risks and Security

2.3.10.1 – Natural climatic and disaster risks

Axis 54- Risks of populations in precarious neighborhoods facing pollution

Quantitative assessment of natural risks and disaster risk reduction in municipality of cocody and implementation of the territorial reference system

2.3.10.2 – Climate security, vulnerability, adaptation, mitigation and improvement of resilience

Axis 55- Climate and citizen security

Axis 56- Poverty, women's vulnerability, resilience

Poverty and vulnerability of populations at risk, climate change victims

Axis 57- Vulnerability, adaptation and resilience improvement of Cocody's women and Abidjan District to climate change effects.

Adaptation and mitigation of climate change impact in the female environment of risk areas.

2.3.11- Humanitarian assistance

Axis 58 - ERI's humanitarian assistance to climate change victims

ERI's prevention service reinforcement to help women and global warming victims.

Axis 59 - Medical humanitarian assistance for the municipality's elder and poor

Strengthening of free prevention and care service on arterial hypertension, diabetes and malaria, at the Cocody dispensary (Dr Yobouet service) and the rheumatism and fractures clinics (Dr. Kouriba from Adjamé department).

Axis 60- To bring climate finance to the rescue of Cocody women from vulnerable and risky areas of the project victims of climate change.

In Cocody, according to numerous sources of concordant studies, 70% of the township population (800,000 inhabitants), and lives in a precarious state. When we talk about climate change in this area of the project, we must first think about victims with 80% of women, then the precarious quarters they live in and the small commercial survival activities they practice daily, just to have to eat, dress and pay the rent. Many of them do not have access to drinking water and electricity. 80% of their low income is used for high water and electricity bills cost. Thus, their commitments to overcoming poverty and climate change impact to also hope for life, expose them to many risks and insecurities. Unfortunately, according to a UN report: 'Women are 14 times more likely to die from this type of event because they often have not been trained to survive.' Hence the much-needed support from Cocody Mayor,

Mr. N'GOAN AKA Mathias to these women, to help them overcome poverty, to educate their children and especially, to adapt and then to ensure their empowerment. Hence, the contribution of the project and this Climate Plan, to enable them to access climate finance to overcome climate change.

2.3.12- Prepare Ivorians and Africans to overcome global warming and its disasters

Axis 61 - Adapting to climate change and disasters

Climate change is accelerating and its impacts which are increasing everywhere, pose a threat to peace, security and prosperity and will be even more important in the coming years with climatic extremes. Victims will also be more numerous unfortunately in Africa. We must quickly end the fossil fuels and move towards carbon neutrality. We must also quickly protect Ivorian's, economy, sectors and regions most exposed such as agriculture, forest, coastal areas, wetlands, savannah and mountain areas. Our people and our economies must be brought in right now to adapt, and also to build resilience its main economic sectors (agriculture, industry, tourism, etc.).

Axis 62- Strengthen the international mobilization around Cocody green city.

Cocody will be Côte d'Ivoire's laboratory and will lead Abidjan to be the most ecological and cleanest city in Africa. Cocody will fight against trafficking and forced child labor and will protect everywhere mothers and children from Côte d'Ivoire and Africa.

Cocody will focus on research and innovation, to find solutions for tomorrow and the future. Cocody will teach and institute sustainable peace and stability, transparency and good governance everywhere.

As such, it will be the model of exemplary international co-operation, welcoming Cocody, scientists from around the world, renowned academics and international experts on the same site, to tackle in synergy with the local populations and communities global warming issues in order to reverse the current trend in less than a decade. In addition, it will be with all national and international initiatives, which contribute to the fight global warming.

2.3.13- Cocody's legacy to humanity, present and future generations.

Axis 63 - Cocody will help the State and the Government to fight poverty and eradicate ransacking and looting of the country's natural resources and assets, which must be passed on to future generations.

Mobilization around Cocody will be total, with the firm ambition to become the champion of fight for climate and transition to a green economy without fossil fuels.

Axis 64- Promote and carry ambitious innovative initiatives to save planet earth and humanity.

Cocody will strengthen fight against land degradation, wetlands, water and drought, to help maintain biodiversity, food security and soil carbon storage. As such, Cocody will engage with Ivorian authorities to transform our agricultural systems, major emitters of greenhouse gases through implementing a system that reduce carbon emissions and improve its capture in soils.

Axis 65- Promoting citizen mobilization for climate monitoring, security and peace.

Install throughout the Region of the project and under competent authorities' supervision, 10,000 local citizen mobilization committees of 100,000 members, for a sustainable management of environment, fight against insecurity, terrorism, community conflicts and for peace, the country sustainable stability and sustainable living together.

III- EXPECTED RESULTS

At the end of the project, the following results will be achieve:

3.1- At the level of Cocody Climate Plan Mission for Africa

The mission of the Cocody Climate Plan for Africa is accomplished, effectively

Axis 1- Daily life of all Ivorian's and Africans is actually improved.

3.2- At the level of renewable energies, use and generation of energy

Axis 1- 30,000 solar street lights, including 5,000 in Cocody, as well as 2,000 solar traffic lights are installed at the 500 most important crossroads in Cocody;

Axis 2- 3 million solar kits, of which 200,000 are provided to Cocody women, effectively;

Axis 3- 300 photovoltaic solar packages, 30 of which are installed for the benefit of Cocody, Bingerville, all Abidjan District and surrounding Project Region populations.

Figure n°2: **Morocco new generation solar street lights Model**

Axis 4- All public and private buildings of Cocody including Félix Houphouët Boigny Ecological University (UFHB), Observatory-climate of the civil society, public hospital, Senior high school, humanitarian health center for poor population of Cocody (Department of Dr. Yobouet) and that fractures (Department of Dr. Issiaka Adjamé) are powered by solar energy;

Axis 5- Installation of 300 photovoltaic solar power plants, including 30 for Cocody and Bingerville populations.

Axis 6- 1000 000 photovoltaic solar dryers provided to women in Abidjan District and the project area including 300 000 women in Cocody to help them to dry quickly their food, to reduce by 70% their drying time, to eliminate mold and avoid more GHG emission to the atmosphere, work efficiently.

Axis 7- 1 million ecological ovens for household use and operating with solar or bioethanol, are offered to women in Abidjan District, the region and project areas, including 300,000 women in Cocody.

Axis 8- 3 million solar water heaters, provided to population in the building sector, including 500,000 to Cocody populations, to improve thermal performance of the structural envelope of buildings, work effectively.

Axis 9- 100 latest generation wind turbines including 20 for the four coastal Ebrie villages of Cocody (Blockhauss, Cocody, M'Badon and M'Pouto), the climate observatory, the Eco-campus FHB University, the coastal villages in Bingerville and others 85 within the District and the project areas are installed and operational effectively.

Axis 10- 1 bioethanol unit production operating based on cane molasses from 4 sugar industries of the country, is built and actually works.

Figure n°3: Bioethanol product resulting from molasses cane of sugar

Axis 11- All municipalities and cities located in the project area, are taken into account by the project, to make them smart cities, Eco-municipality, Eco-towns, Eco-cities effectively.

Axis 12- All municipalities and cities of the country,linked to the project effectively including Abengourou, Issia, Daoukro, Sinfra Yamoussokro, Toumodi, Bangolo, San Pedro, Bouaké, Korhogo, Buna, Bondoukou, Katiola, Dabakala, Odiénné, Tengrela, Boundiali, Tafire, Daloa, Gagnoa, Divo, Touba, Man, Soubré, Zouan-Hounien, Ferke, Ouangolo, Toumodi, Fengolo, Bouafle, Komboro, Tafiire, Seguelon, Sify, Worofla, Senpurgo,

3.3- Sustainable transport

Axis 13- Sustainable transport and mobility plan is developed and implemented effectively

Axis 14- An integrated transport system, inclusive, dynamic, efficient, more active and reliable territorial management, more equitable and accessible livelihood, goods and services supports options for people, effectively.

Axis 15- **Sustainable transport infrastructure** well-maintained and low-carbon content is realized, effectively.

Axis 16- A financially sustainable and autonomous transport system is established and effectively operational.

Axis 17- A major option for green transport is effective.

Axis 18- Withdrawal program in the Project Region of 100,000 used vehicles in very bad condition is effective.

Axis 19- Imported vehicles older than 5 years of age, are prohibited in Cocody municipality, effectively.

Axis 20- Use of clean unleaded fuels, biofuels, electric vehicles, and mechanics' recycling is effective

Axis 21- New and non-polluting taxis and buses mitigating climate change are everywhere in Cocody

Axis 22- Assistance to drivers and their association of Cocody municipality, to acquire common transport vehicles in good condition, non-polluting, is actual.

3.4- Sustainable restoration of Cocody Mangrove Ecosystems, District, Project Region, cities attached to the project, reforestation, planting, sustainable planning of streets, parks and gardens, lagoon shores, bays, river banks water, for the resilience of carbon sequestration.

Axis 23- Mangrove ecosystems of Cocody, the District, Project Region and cities linked to the project, are restored permanently.
Axis 24- Coastal lagoon, bays, streams of Cocody, District, Project Region and cities link to the project, are developed effectively for the resilience of carbon sequestration.

Axis 25- Forest biodiversity ecosystems of Cocody, the District, Project Region and cities related to the project, afforestation, planting, streets, parks and gardens, lagoon shores, bays, streams, are sustainably restored, in view of the resilience of carbon sequestration.

Axis 26- Streets, parks and gardens, lagoon shores, bays, streams, Cocody, District, Project Region and project towns are restored for carbon sequestration resilience.

Axis 27- Creation of the 1st Observatory Climate of civil society
The 1st Climate Observatory of civil society, is created in Bingerville and works effectively.

3.5- Sustainable Management of Territory and Residence Restoration
3.5.1- Sustainable development of the territory

Axis 28- All lagoon, river and maritime coasts of the Project Region, (Cocody-Bingerville, Marcory, Koumassi, Treichville, Port-Bouet, Plateau, Yopougon, Adjamé, Attécoubé, Songon, Grand-Bassam, Jacqueville, Dabou, Grand-Lahou, Assinie, Bonoua), are actually restored.

Figure n°4: Official ceremony by the mayor M.N'GOAN Aka Mathias of Cocody green city and carbon sink campaign with Russia and Korea ambassadors.

Axis 29- All lagoon banks of the villages within Cocody municipality (Cocody, Blaukhauss, M'Pouto, M'Badon, Djrogobité, Bingerville, Observatory, Bagba, ESIE, Abata, Akandié), are transformed into beaches of pleasure, sociocultural and gastronomic meeting places.

Axis 30- All village fishermen are furnished with new fishing equipment, to enable them to improve their income and effectively, guarantee the protection of the lagoon.

Axis 31- Agriculture and biological livestock are truly developed into the project villages.

Axis 32- Creation, development and sanitation of the parks and gardens of Cocody, Abidjan District and the Project Region are effective.

Axis 33- Sanitation and repairing of all precarious quarters and homes at risk of Cocody. Bingerville (Bagba) within the 14 municipalities of Abidjan District are effective.

Axis 34- Sanitation and cleaning of Felix Houphouet Boigny University and Climate Observatory of Civil Society, are real.

Axis 35- Planning and sanitation of precarious settlements in the Project Region are effective.

Axis 36- Construction of 1,000,000 social housing units in the Project Region, which 200,000 in Cocody, to improve the population daily lives is effective.

Area 37- **Treatment of household and industrial waste**. All household waste and all industrial waste from Akouedo landfill and the main cities of the country are now treated, definitely.

3.5.2- Sustainable restoration of residences, biodiversity, flora and mangroves

Axis 38- Planting of 20 million flowering trees in the project area and over 20,000 square kilometers of which 7 million within 13 Communes of Abidjan District and 2 million in the Commune of Cocody, is effective.

Axis 39- Planting of 7 million mangroves on more than 70 km of lagoon coast from Cocody to Bingerville, Grand Bassam, Assinie, Marcory, Koumassi, Songon, Port-Bouet, Jacqueville, Dabou, San Pedro, including 2 million in Cocody is effective.

3.6- Protection of Water Resources

Axis 40- Planting and restoration of mangrove biodiversity, to improve water filtration and desalination, air quality and fight against erosion and damage caused by floods are effective.

Axis 41- **Rainwater** is now recovered and filtered to water trees and flowers, thus avoiding the waste of water for everyday consumption.

Axis 42- Remove sand of all our water streams

All our rivers, lakes and rivers are useful, actually.

3.7- Training, information, sensibilization, education

Axis 43- FHB University, first green University, Eco-Campus of Côte d'Ivoire serve as a model of reconversion and transformation for all university of the country and in Africa and assure promotion of innovative and ambitious initiatives to really save climate.

Axis 44- Earth Rights Institute (ERI) trains all pupils and students, all preschool, primary, secondary, technical and private higher education teachers. ERI will train all workers in our companies, community Chiefs and leaders, NGOs and civil society, in the fight against climate change, in structuring projects that can be financed by climate finance and will also help women victims and women's organizations to access climate finance, effectively.

3.8-General wholesomeness

Axis 45- Development of general wholesomeness

Restoration of public wholesomeness individual and collective cleanliness, sanitation and beautification of our cities are effective in the change of behavior.

Axis 46- Municipality cleared of the toxic waste Probo Kuala.

Cocody municipality is cleared all toxic wastes mainly the remain toxic wastes from Probo Kuala boat

Axis 47- For Africa without pollution

Importation of toxic wastes in Abidjan, Ivorian and African land is prohibited.

3.9- Development of international cooperation

Axis 48- Cocody, first economic city and climatic business place

Cocody is a capital of green finance and Africa climatic business place, effectively.

Axis 49-Strengthening of information and Communication

Information and Communication will be strengthening in Cocody effectively.

Axis 50- Strengthening Cooperation with companies

Companies existing with the project zone will be enough inform and well prepare to ecological, and equipped with adequate resources to act against climate change and optimize consumption, effectively.

3.10- Climatic risk and security

3.10.1- Risks

Axis 51- Risk of precarious quarter's populations and those living near or around Ebrié lagoon are informed about the risk effectively.

3.10.2- Security

Axis 52- Climatic security, environmental and citizen

Environmental and food security of vulnerable group;

Peace, stability, security of peoples and goods

Axis 53- Poverty, vulnerability, resilience

Poverty and vulnerability of populations at risk, victims of climate change

Axis 54- Mitigation of vulnerable women suffering face to climate change.

3.11- Humanitarian assistance

Axis 55- ERI humanitarian assistance to climate change victims is effective

Axis 56- Medical humanitarian assistance to elders and poor is effective.

Axis 57- Climatic financial support for helping women is effective.

3.12- Prepare Ivorian's and Africans to fight global warming

Axis 58- Prepare Ivorian's and Africans to adapt and fight global warming is effective.

Axis 59- Strengthen international mobilization around Cocody green city

Strengthen international mobilization around Cocody green city is actual.

3.13- Legacy of Cocody to the present and futures generation.

Axis 60- legacy of Cocody to the present and futures generations is effective and mobilization around Cocody also.

Figure n°5: Transformation of Cocody, green city and flowering, started

Axis 61- Promotion of innovative and ambitious initiative to save climate, earth planet and humanity is effective.

Axis 62-citizen mobilization, climate monitoring, security and peace is actual.

-20 000 local committees for citizen mobilization, which1000 for Cocody contribute with Ivorian authorities to citizen climate protection and assure sustainable stability.

IV- RESOURCES TO IMPLEMENT

4.1- Human resources

These are the needs of Cocody, District, and the project region:

- 30 experts in Eco-city for the implementation of Cocody climate plan for Côte d'Ivoire;
- 20 experts in renewable energies, use and generation of energy;
- 20 experts in solar energy, wind energy;
- 20 experts in bioenergy, bioethanol, biogas, biomass;

- 20 experts in energy efficiency, home improve;
- 20 experts in transport plan and system and sustainable mobility, sustainable financially;
- 20 experts in integrated, inclusive, dynamic, efficiency transport system;
- 20 experts in sustainable and good transport infrastructure with low carbon;
- 20 experts in charge to remove in the project region 100,000 used vehicles;
- 20 experts in prohibiting vehicles older than five years of age importation;
- 20 experts in clean unleaded fuels, biofuels, electric vehicles
- 20 experts in mechanics' training and recycling on electric vehicles and biodiesel;
- 20 experts in new and non-polluting taxis and buses mitigating climate change
- 20 experts in sustainable restoration of mangrove ecosystem;
- 20 experts in restoration of sites, degraded land and planting;
- 20 experts in territory management and residence restoration;
- 20 experts in territory management;
- 20 experts in bay of Bagba management for Observatory Climate of civil society
- 20 experts in bay of Bagba management for bioethanol units
- 20 experts in management of bays in Cocody, Blaukhauss, M'Pouto, M'Badon, Bagba;
- 20 experts in management of 20 villages of the project lagoon coasts;
- 20 experts in management of villages' maritime coasts from Tabou to Jacqueville;
- 20 experts in management of parks and gardens of Cocody, Abidjan District and Bingerville ;
- 20 experts in management, protection and valorization of Cocody islands, Bagba, District;
- 20 experts in sanitation of village lagoon coast in Cocody, Bagba, and Abidjan District;
- 20 experts in sanitation of precarious quarter's village in Cocody, Bagba, District, project;
- 20 experts in restoration of houses biodiversity;
- 20 experts in restoration of town and villages esthetic and beauty;
- 20 experts in building of 25,000 social houses which 20 000 in Cocody and 5000 in Bagba;
- 20 experts in restoration of residences, threatened endemic species;
- 20 experts in sustainable protection of water resources;
- 20 experts in training, information, sensitization, education;
- 20 experts in general wholesomeness;
- 20 experts in development of international cooperation;
- 20 experts in climatic risk and security;
- 20 experts in risk;
- 20 experts in security;
- 20 experts in biosecurity;
- 20 experts in climatic security, environment and citizen;
- 20 experts in fight against poverty and humanitarian assistance;
- 20 experts in adaptation of Ivorian's and Africans to overcome global warming;
- 20 experts in monitoring/evaluation and legacy of Cocody to the future generations.

4.2- Materials resources

Needs of Cocody, District, and the project region are:

1- Supply of materials and equipment for Cocody Climate Plan for Africa;

2- Supply of materials and equipment for renewable energies, using and energy generation;

3- Supply of materials and equipment for sustainable transports;

4- Supply of materials and equipment for sustainable restoration of mangroves;

5- Supply of materials and equipment for trees planting;

6- Supply of materials and equipment for sustainable territory and houses restoration;

7- Supply of materials and equipment for water resources protection;

8- Supply of materials and equipment for information, sensitization and education;

9- Supply of materials and equipment for general wholesomeness;

10- Supply of materials and equipment for development of international cooperation;

11- Supply of materials and equipment for climatic risk and security;

12- Supply of materials and equipment for humanitarian assistance;

13- Supply of materials and equipment for preparing Ivorian's and Africans to overcome global warming;

14- Supply of materials and equipment for legacy of Cocody to future generations.

15- Supply of materials and equipment for accompanying measures.

17.1- Accompanying measures level

17.2- Capacity buildings:

It concerns:

- Ministry of technic, Ministry of healthiness, Environment and sustainable development
- Ministry of Interior, in charge of Côte d'Ivoire municipalities including Cocody.
- Town hall of Cocody, project general direction, climate Observatory, focal Point
- International (ERI), NGOs, village communities, civil society,

17.3- Institutional assistance

- Ensure support of school fees, missions, training, and salary;
- Ensure support of monitoring/evaluation, supervision, staff, experts, project materials and equipments, vehicles, fuel and maintenance.
- Ensure support of general direction, Observatory, international (ERI) focal point, NGOs, village communities, civil society

4.3- Financial resources

Needs of Cocody, District, and the project region are:

- Establishing a support guarantee and credit fund to help women and youth undertake more regular income-generating activities.

Table n°1 : Table of expecting funding in Francs CFA

TITLE	AMOUNT in FCFA
Expecting Funding	
1-Mission for Cocody Climate Plan for Africa,	500 000 000
2- Renewable energies, using and energy generation	199 000 000 000
3-Bioenergy and energy efficiency	218 000 000 000
4- improvement of building energy efficiency	303 000 000 000
5 improvement of lighting energy efficiency	304 500 000 000
6- Sustainable transports	315 500 000 000
7- Sustainable restoration of mangroves ecosystem	323 000 000 000
8- Sustainable improvement of coastal lagoon, bays	257 000 000 000
9- Sustainable restoration of degraded land, garden and planting	312 500 000 000
10- Sustainable improvement of Territory and house restoration	298 000 000 000
11- Protection of water resources	90 000 000 000
12- improvement Ivorian's daily life	214 000 000 000
13- improvement of women resilience – climatic finance	319 700 000 000
14- Risks	25 000 000 000
15- Community adaptation	150 000 000 000
16- Study and Research	36 500 000 000
17-Information, sensitization,	148 000 000 000
18-Training, education	112 950 000 000
19- Citizen Mobilization c	89 000 000 000
20- Mobilization of agricultural potential against climate change	37 000 000 000
21- General wholesomeness	115 500 000 000
22- Humanitarian assistance	55 000 000 000
23- International cooperation	2 000 000 000
24- Giving Cocody to future generations and Africa	2 000 000 000
25- Accompanying measures	86 020 000 000
Total	**3 988 895 000 000 FCFA 747 079 978,33 $ US**

V. PROJECT CONTEXT

5.1- LOCATION CONTEXT

5.1.1 - Physical situation

5.1.1.1- Brief presentation of the Autonomous Abidjan District

Cocody municipality is one of the thirteen communes that constitute the Autonomous Abidjan District. This district is located in the south of Côte d'Ivoire, on the Gulf of Guinea and consists of two zones ("North Zone" and "South Zone") located on both sides of Ébrié lagoon. Originally, it consisted of ten municipalities with unequal areas: Cocody, Yopougon, Abobo, Plateau, Adjamé, Attecoubé, Treichville, Marcory, Koumassi, Port-Bouet.

But its extension to the three peripheral municipalities that are Bingerville, Anyama and Grand Bassam, led the legislator to add them to the city of Abidjan, to create the great bidjan. As a result, today Abidjan is constituted by thirteen municipalities including Cocody, and covers an area of 2,119 km^2 with a population estimated at more than 10,000,000 inhabitants.

Abidjan covers an area of 422 km^2 with an estimated population of 7,000,000 million inhabitants, or 17% of Côte d'Ivoire's population (24,000,000 million inhabitants).

Figure n°6: Ten municipalities composing the two zones of Abidjan

5.1.1.2 – General presentation of Cocody municipality

Commune of Cocody, the municipality of project start, was created in January 1978. It is located on the north of Abidjan and covers an area of 132 km^2. It supports an urban neighborhoods and thirteen rural villages, very populated, often little or no developed.

Cocody is a residential municipality where live the President of the Republic, almost all diplomatic missions, businessmen, high personalities of the country and international institutions, however, with also a large section of populations in a precarious situation. All these social components cohabit in a harmonious framework.

5.1.1.3 – Presentation of the Project Region

The project area covers 20,000 square kilometers per 10 inhabitants. It concerns in priority Cocody Municipality, then all the 14 municipalities of the Autonomous Abidjan District, Tiassalé, Agboville, Adzope, Jacqueville, Grand-Lahou, Grand-Bassam and Dabou Departments.

Figure n°7: Town hall of Cocody

5.1.2 – Human situation

Cocody is managed by a Municipal Council of 50 elected advisors. It has estimated population of 800,000 inhabitants, 54% of whom are women. Ebrie is the indigenous peoples and landowners of Cocody, the largest educational and cultural center in Côte d'Ivoire, with a majority of young people (56%), 50.40% of whom are students. This municipality counts on its territory, fifty urban zones or districts, eleven villages of Ebrié and fifteen precarious districts commonly called social districts. It totals over 1000 km of shady roads to sequester emitted carbon by vehicles and households using wood or coal. It is the same for the 60 parks and communal gardens of about 90 hectares.

5.1.3- Economic Situation.

At the economic level, Cocody is the complete symbol of the entire economic situation of Côte d'Ivoire where both wealthy and poor, working and unemployed, students and coexist live side by side. Excluding port and airport activities, all activities and facilities from private, public, industrial, commercial and banking sectors, are present on Cocody Territory.

Note that Cocody has a high degree of precariousness as shown in the table below:

- People living below the SMIG of 60,000 FCFA, or €91.46/month is estimated at 36% compared to the population of the Autonomous Abidjan District,
- Middle class from 61,000 to 299,000 CFA, or 93 to €456/month: 22%,

- Easy class of 300,000 CFA and more, or €457/month: 39%
- Other variable income classes: 3%

From economical and industrial potentialities point of view, Cocody is the most accessible of all the municipalities of in Abidjan District. It is located 15 minutes from Abidjan airport, by the Henri Konan BEDIE Bridge and ten minutes from the Abidjan port area. It has in its northern part, vast grounds favorable to park creation, gardens, companies and industrial units which wish relocation from Plateau, district of the businesses where access is difficult because of traffic jams.

The bridge construction and commissioning on the lagoon arm between Plateau and Cocody municipalities will contribute to a smoother flow by saving time and increasing economic interest for many companies and industries to set up on Cocody's territory.

5.1.4- Administrative situation

The proximity to Plateau municipality (ten minutes), Côte d'Ivoire's center of business and central administration, all administrative services are not represented. However, there are some regional directorates and decentralized state services such as first minister office, Health and Public Hygiene, National Education, Employment, Construction and Urban Planning, Housing and Housing, Taxes, the Public Treasury, Economic Infrastructures, Waters and Forests, all the Great Commandments of the State, etc.

5.2- Context of project delivery

The project is carried out in a favorable context, given specialists expertise, NGOs and companies working in the renewable-energy fields, especially solar, biomass, wind, bioethanol, for successfully completing many programs in the aforementioned fields. In view of the availability of target and beneficiary groups, the level of training of the maintenance teams, etc. Finally, beneficiaries are willing to train to adapt to climate change.

VI. TARGET AND BENEFICIARY GROUPS

6.1. Direct beneficiaries

- it primarily concerns all women in Cocody, Abidjan district, and women from the project region and finally, towns and villages of Côte d'Ivoire, living in precarious situations or victims of the disastrous effects of climate change;
- it is concerning all the populations of the commune of Cocody, that is 800 000 inhabitants, then those of the 14 communes of Abidjan and suburbs, e.g. 7 000 000 inhabitants and finally those of the Region of the Project, that is 10 000 000 inhabitants with 60% of women, that is 6,000,000 women. It addresses to young people by taking into account all the elderly people in difficult situation.

6.2 – Beneficiary target groups problems

Cocody is facing pollution problems, precarious neighborhoods, floods, energy saving, food insecurity, unemployment and poverty.

Cocody is facing the problems of EGES, pollution, precarious neighborhoods, floods, energy saving, food insecurity, unemployment and poverty. Women, the biggest victims, are confronted to the problems of empowerment.

6.2.1 – Insecurity and religious fundamentalism

They are constant, coming from northern Mali following the destruction of Libya, it is sufficiently established in the main cities of Côte d'Ivoire, Niger, Burkina Faso and Mali.

Numerous deadly attacks of these terrorists in these four neighboring countries, including those in Grand Bassam (Abidjan), all claimed by the jihadists of AQIM, are perpetual threats to the security, stability and sustainable development of the 13 municipalities in Abidjan District including Cocody, project and country's flagship municipality.

6.2.2 – Illegal immigration and rural exodus

There is a massive exodus of able-bodied migrating from towns and villages in Côte d'Ivoire and especially Cocody's neighboring. It concerns young people who have dropped out of classical schools as well as Koranic schools, apprentices, artisans, both boys and girls.

The case of Cocody and many municipalities in Abidjan, the disadvantages are family breakups, abandonment by the State and the wealthy people, many degraded and unhealthy sites followed at the same time, their occupation by vulnerable and underprivileged groups, which immediately transforms them into precarious neighborhoods devoid of water, electricity, latrines and others. They are the first victims of climate change.

In this social category, the work of poor women is three times that of men, because they are the ones who take care of water, pounding, transport, cooking, children's education, market gardening, small street trade, etc.

This system, which, while ensuring family group subsistence, provides a progressive access to economic autonomy for its members, is dynamic. The evolution of consumer society underway in major African cities, having considerably accelerated individualism process, it is no longer exceptional to meet today, in the project region, Cocody's young men and women get away from home to start their own households, to also take care of themselves.

Consequences of such a change are that they lead to profound internal changes, the most significant and most apparent is the significant declining of overall control of the labor force by families' head who have become old and without a pension to withstand the city shock. The compensation is sometimes done with the money that the child sends to his parents. So, in these societies, women constitute upstream and downstream a very precious whole.

Figure n°8: Biological urban family farming ERI program in Cocody: Production and marketing of vegetables products by women

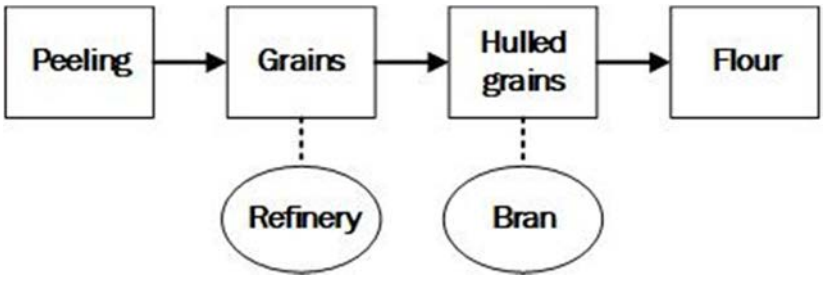
6.3- Adaptation to climate by integration and alleviation of arduous tasks

Faced enthusiasm shown by millions of women, young, old, working as unemployed and students, to be able to participate through this project, alongside the Ivorian authorities, in a climate defense and be also trained in green jobs to fight against greenhouse gases, pollution and climate disruption, to access the light thanks to solar electricity, to see their city transformed into a huge carbon sink, the project proposes to introduce certain simple, inexpensive, easy-to-use technologies to carry out the most difficult work of transformation and to adapt target groups to climate change. In this capacity, Mayor N'GOAN insists as much on a man as a tree, as on green jobs for young people and women and elderly protection.

a) Cereal processing in terms of grain conditioning, the transformation scheme is as follows:

Threshing / Shelling / Crushing / Screening

Diagram No. 1 Grains processing and packaging

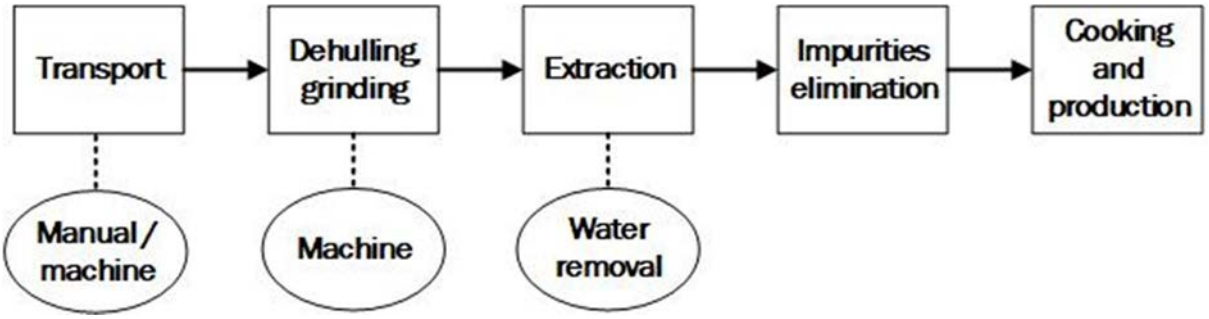


Source: Dramane Toure Nable. August 2016

b) Cassava tubers processing

Attieke's preparation is long, painful and has no rest for women. Transport-shelling-grinding, paw extraction, removal of starch and impurities.

Diagram No 2 Production of Attieke



Source: Dramane Toure Nable. August 2016

6.4- Adaptation by news and renewable energies

This is the foundation of the project, for all the communes have plenty of sun, wind, sand and many streets, with trees. They will be able to help transform our cities into huge carbon sinks, essential to enter the clean energy era. As such, it is planned to have access to sufficient material and financial resources, to training adapted to the best technologies for relieving strenuous tasks, to solar energy, wind energy, etc. To these technologies, the project focuses on improved stoves, cook stoves, blue carbon with mangroves, shoreline development, and protection of coastal shores against erosion.

VII- PROBLEMATIC AND JUSTIFICATION

7.1- Problematic

Côte d'Ivoire has committed to reduce its greenhouse gas emissions by 28% by 2030. A reduction that could reach 36% in case of external financial support. To achieve this, the country wants to increase its share of renewable energy in its electricity mix to 16%. This work also commits the country to put a stop to deforestation and its degradation. Côte d'Ivoire is thus committed to better manage its forests and to embody the concept of "zero deforestation agriculture".

For the authorities of Cocody, the access of their commune to the renewable energies in particular to the photovoltaic solar energy, to the wind turbine, to the bioethanol, which are renewable energies, clean, recovered and transformed directly in electricity from the light of the sun or wind, in place of current fossil energy, is possible and will be very beneficial to start a real energy transition without carbon oil and maintain a healthy environment.

Figure n°9: Improved Solar dryer SIDEES

Similarly, the transformation of the 13 municipalities of the District and initially, all of the commune of Cocody, into a huge carbon sink (green and blue carbons), by planting 5 million trees along all streets, riverbanks and in residential courtyards, to restore and sequester the carbon emitted by housewives, vehicles polluting and eradicate greenhouse gas, is possible to limit the temperature of the climate between 2C and 1.5°C until 2100.

Thus, out of the 134 km^2 of area covered by the municipality, this will be 4000 ha of planted trees, generating a total sequestration potential gain of 107 445.7 tCO2eq / year and storing at the level of its biomass in total 557.38 tc/ha according to the Kyoto Protocol's CDM methodology.

The construction of 100,000 solar dryers popularized for 400,000 women, to eradicate pollution and the use of firewood involved in the drying of food, to avoid 90% of CO2 emissions, reduce by 80% the time of drying of food and eliminate mold, is possible to limit the temperature of the climate to 1.5°C until 2100.

Gain estimated at more than 6,320,000,000 teq CO2/year according to the Gold Standard Methodology.

The production of 300,000 ERI improved high-performance, latest-generation ERI-Ankôrôtôtolà fireplaces, popularized for 300,000 housewives in the commune of Cocody, will prevent significant emissions of CO2 from the atmosphere each year to eradicate deforestation with these permanent massive cuts of kitchen wood and reduce by 90%, the cooking time of food, is possible to limit the temperature of the climate at 1°C5 by 2100. Gain evaluated: 18 960 000 000 teq CO2 / year, according to Gold Standard Methodology.

Figure n°10 : Traditional cooking system of Attiéké with logs of wood

Figure n°11 : Improved cooking system ERI of Attiéké with one single twig

In addition, it will help eliminate the large amounts of smoke produced by traditional cooking stoves, which according to WHO are responsible for the deaths of 1.5 million people each year, many of them children and women (lung diseases). It will also help to triple women's time savings in the countryside, as the firewood harvesting chore takes up too much time, will also reduce household spending in towns that buy wood or charcoal and create thousands of green jobs for local artisans.

The construction of 5,000 units of capture and recovery of methane produced during cooking by women, Attiéké and other highly polluting residues, installed in the eleven Ebrié villages of Cocody, Attiéké producers, to avoid emission into the atmosphere, from this gas with very high global warming power, capture it and then turn it into clean electricity to provide lighting and even cook food. This is possible and will help to eradicate pollution, greenhouse gas and limit the temperature of the climate to 1°5 C until 2100.

Gain estimated: 18 960 000 000 teq CO2/ year, according to the Gold Standard Methodology.

Anaerobic digestion and bioethanolisation will also help to avoid 37 932 000 000 teq / year.

The training of 500,000 young volunteers from the District of Abidjan to green jobs in energy transition, will generate 100,000 green direct jobs for Cocody and 400,000 indirect jobs.

The installation through the 13 communes of the District, of 10,000 local civil society committees including 1000 in Cocody, linked to 1000 focal points for climate protection, the prevention of insecurity and religious fundamentalism, will help to reverse the global warming trend of the planet and also to consolidate peace and lasting stability.

In Côte d'Ivoire, according to the competent authorities, rainfall has decreased by around 13% since the 1980s and during the last decades a temperature increase of 0.8° C has been recorded. In all cities and towns of Côte d'Ivoire, the number of periods of intense heat and extreme events (heavy rains, floods, droughts), are constantly increasing. The natural freshwater reserves are very small and the sources of our main rivers are threatened by low water and pollution.

These changes have resulted in desertification, declining agricultural yields, increasing coastal erosion, the recurrence of natural disasters and increased migratory flows.

As such, all West African states, such as those in the Sudano-Sahelian region, pay a high price and sometimes, through blood or drownings in the North Sea, the consequences of this global warming. The AQIM jihadist terrorist attacks of 13 March 2016 in Grand Bassam are living examples.

For the Ivorian President Alassane Ouattara: "in these conditions, the implementation of the Paris Agreement is not an option, it is an imperative. The Government will focus, as a matter of priority, on identifying the structuring projects that will enable it to meet its commitments, as part of its Nationally Determined Planned Contributions (INDC). At the same time, the focus will be on further improving and strengthening the environmental and climate governance framework at all levels. Our desire is to reach, within the deadlines, the development of a business plan climate to accompany the implementation of our National Development Plan 2016 - 2020, the Sustainable Development Goals after 2015 and the Paris Agreement on Climate ".

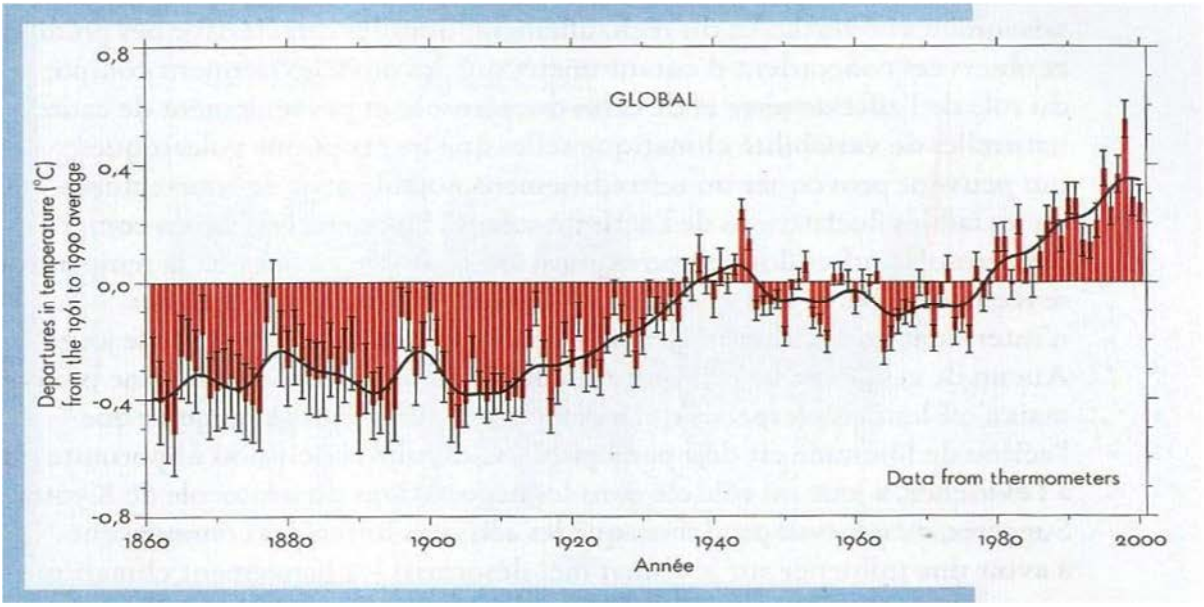


Figure n°12: Emissions of carbon dioxide, methane, nitrous oxides and sulfur dioxide, for three of the scenarios recently proposed by the IPCC for the period 1990-2100.

Hence, the personal involvement of President Ouattara in obtaining unanimously, this "ambitious and binding agreement", in the presence of 150 Heads of State and Government, at the 21st Session of the Conference of the Parties on climate change (COP21), held from November 29, 2015 to December 12, 2015 in Paris-Le Bourget, to limit as much as possible to + 2° C otherwise + 1.5° C before 2100, the temperature involved in climate change , so that Africa, continent emitting less, does not suffer all the weight of pollution of the large emitters of C02.

In fact, it is almost two centuries since, in order to ensure an expansion in their mode of development, European countries with a developed economy will start to print a sustained rate of growth for their industries and, from the 1860s, make the choice of fossil fuels that unfortunately emit

abundant amounts of greenhouse gases dominated by CO2. These lifestyles based on intensive production, will operate at the expense of climate, lead to pollution, permanent rise in temperature, warming and climate change.

Imitating these developed countries, so-called emerging countries (China, India, Mexico, Brazil, South Africa), to ensure their own development, will in their turn, take the same path of pollution of the planet as the first cities, emitting even more, large amounts of CO2.

The consequences are everywhere these ever-increasing variations and elevations of the world temperature. We now know that these "climate changes" can no longer be stopped: they will take place and, if nothing is urgently done to limit them, the global temperature of the planet could increase and reach 4°C by the time end of the century. The resulting disasters will then be so violent that many states may simply disappear.

Humanity can still act to limit them, if all together, the leaders of this world who unanimously accepted the "universal, ambitious and binding agreement of Paris-Le Bourget", pledged to ensure that each countries of the world and its people, respect the objectives they have set for the UN, to reduce the greenhouse gas emissions of the planet, by reducing the temperature of the climate to + 2°C, even + 1.5°C until 2100.

Thus, thanks to the sun, the electricity produced will be everywhere in Africa, accessible to all. And it is more than the light that will be brought, it is the knowledge, it is the education, the development. It is especially the adaptation of these populations to climate change.

Hence this project, aiming to complement and support the action of the Ivorian Government, the African Initiative, the ECOWAS, the efforts to reduce the effects of climate change, sustainable management of the continent's environment, fight against illegal immigration and terrorism in West Africa, built on field experiences.

7.2- Justification

The reality of climate change requires the development of innovative solutions to reduce greenhouse gas emissions and produce renewable energies that can replace fossil fuels (oil, gas and coal).

Indeed, the issue is global. The last century has been characterized by the preponderance of an industrial economy based on fossil fuels, especially oil. Their scarcity requires the development of new renewable, clean, non-polluting sources of energy to meet the current and future needs of a growing world population. At the same time, governments are seeking to increase their energy independence to strengthen their competitiveness. A dual need arises: to optimize energy consumption for human needs (reduction of consumption and energy efficiency) and to develop the renewable energy mix in a context of sustainable development.

Indeed, for almost two centuries, because of the man, the temperature of the climate of the planet did not cease to rise and for cause, the generalized expansion of the pollutions and the emissions of greenhouse gases which involve everywhere in the world, from acute climate crises to high temperature records caused by high CO2 concentrations, but also from food and energy crises. However, it is clear in recent years that many extreme climatic events: drought, desertification, low

flows of major rivers, floods, famine, cyclones, melting ice, rising sea levels, ocean acidification cause a lot of displacement of populations, including illegal migrations, but are recovered by religious terrorists. For the scientists, the observation is clear: over the last 400,000 years, the carbon dioxide content has not exceeded 300 ppm (365 million or parts per million) and never that of methane has exceeded 0.8 ppm. But for just over two centuries, the concentration of greenhouse gases other than water vapor, increases rapidly in the atmosphere in response to human activities.

On the other hand, the carbon dioxide content, now 365 ppm, has increased by 30% for ¾ because of the use of fossil fuels. That of methane has more than doubled over the last 300 years, reaching almost 1.8 ppm, mainly because of the intensification of agriculture which, through the use of nitrogen fertilizers, is also partially responsible for the 20% increase in nitrous oxide (0.31 ppm).

This capacity depends on the structure of the molecules. Thus, if we put in the atmosphere the same mass of methane and carbon dioxide, the heating power of methane will be 56 times greater than that of CO2. In the case of nitrous oxide, the factor is 280; it is 1,200 for the ozone of the lower atmosphere. On the other hand, greenhouse gases such as Chlorofluorocarbons, which are involved in the destruction of stratospheric ozone and which were mainly used in the cold industry, have, with an equal mass, a warming capacity of 5,000 and 10,000 higher than that of carbon dioxide.

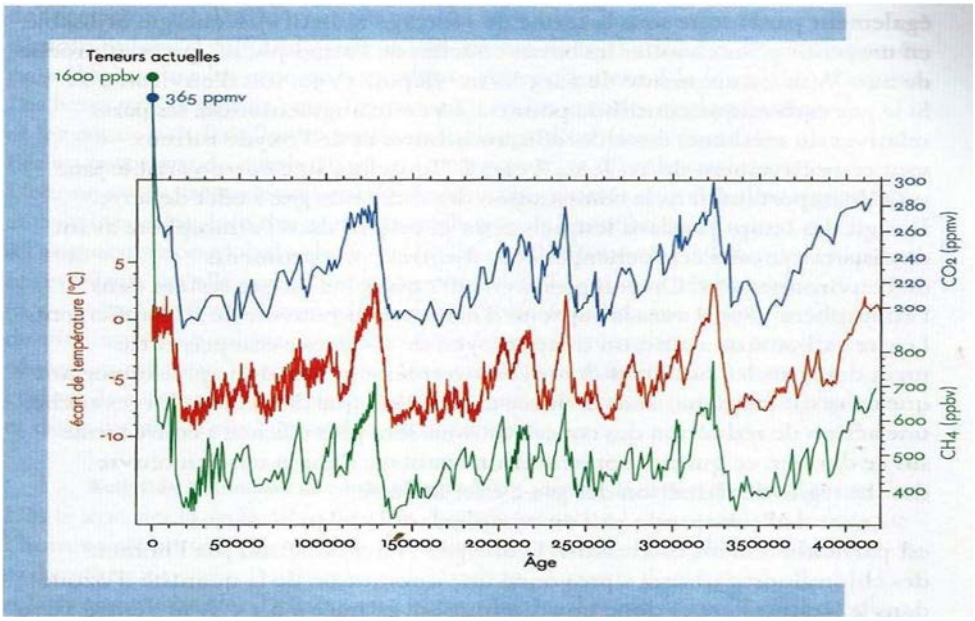


Figure n°13: Variation of CO2 concentrations (top curve) and methane (bottom curve)

Fortunately, their concentration in the atmosphere remains much lower, of the order of 0.004 ppm. The energy used on average to heat the lower layers of the atmosphere which was close to 240 Wm2, has increased by 2.43 Wm2 since 1750, or about 1%. These are therefore serious facts due to an extremely rapid variation in natural evolution, which confirms that human activities strongly modify the levels of carbon dioxide and other greenhouse gases in the atmosphere.

Beyond the concentration of these different gases in the atmosphere, one must also take into account their ability to absorb infrared radiation and send it back to the earth's surface.
It is important to note that while carbon dioxide contributes 60% of this increase, the respective shares of methane, chlorofluorocarbons and nitrous oxide are respectively 20%, 14% and 6%. But when comparing greenhouse gases, another variable must be taken into account, namely the time during which all these gases remain in the atmosphere before disappearing or being exchanged with other compartments. . When we consider the global effect of the different constituents, we see that all play a significant role in the additional greenhouse effect. It is therefore understandable that the longer a gas stays in the atmosphere, the more it will be able to exert its warming power. Carbon dioxide, which has an average residence time of between 1 and 2 centuries, has a greater impact on the environment than methane, which has a lifespan of only 10 years.

Thus, most of the greenhouse gas emissions produced in the world by man, comes from the use of fossil fuels, which corresponds to about 6 billion tons of carbon emitted per year. Stabilizing atmospheric concentrations would imply a reduction in emissions of more than 40%. Hence the magnitude of the problem, since it is directly the modes of production of the energy consumed by the man who are thus questioned. These are in fact 40% based on oil, 20% on gas and 25% on coal. The remaining emissions are caused by agricultural practices characterized by deforestation that decreases the ability of vegetation to trap carbon dioxide in the atmosphere. And since carbon dioxide has an average residence time of between one and twp centuries, we can understand how very serious is its impact on the environment and the climate, with all these consequences.

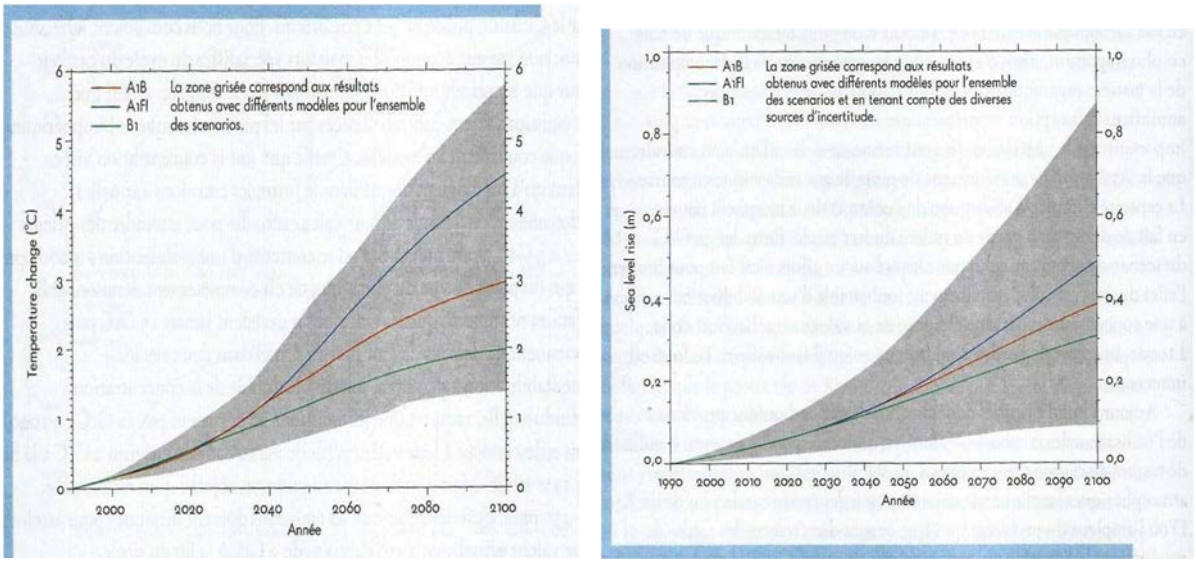


Figure n°14: Prediction, up to 2100, of the increase of the average temperature of the planet and the level of the sea for different scenarios proposed by the Giec.

Hence also the urgency, in the name of climate justice, to eradicate the sources of greenhouse gas emissions, by limiting the use of fossil fuels and coal and their immediate replacement by renewable energy. Decisions that are certainly difficult to apply in the real world by developing and emerging countries, as well as the notions of economic development and individual comfort, are closely linked to those of carbon energy consumption.

The biggest greenhouse gas polluters in the world are the industrialized countries of the North, namely the United States, Europe, America and Australia, to which must be added the emerging countries of the world: China, India, Mexico, Brazil, South Africa.

Africa and its one billion inhabitants are responsible for only 3-4% of the world's greenhouse gas emissions. So, emit less. But it is the continent which is the most affected by the effects of global warming on the health of its population, on soils, crops, forests, air quality, the safety of residents, etc.

In West Africa and the project area, only 3% of the population has access to electricity and 80% of the villages are without electricity. Many will not have it before 100 years. Factors that contribute to the deterioration of living conditions in rural and peri-urban areas, the inaccessibility of people to basic social services and electricity, reinforce regional inequalities and disparities, spread illiteracy and prevent an important fringe of the population, poor, to educate themselves, to inform themselves, to train themselves to overcome poverty, hunger, unemployment, diseases and above all, the spread in these stricken areas, of the expansion of terrorism.

In Côte d'Ivoire, for example, the penetration rate of electricity (number of electrified localities in relation to the total number of localities in Côte d'Ivoire) is 29%, and more than 71% of rural populations do not have access to electricity. Unfortunately, many basic social services such as health, education, human hydraulics, do not have full access to electricity, even in localities yet electrified. Thus, the efforts made by the population to build schools, housing teachers, community health centers, multipurpose homes etc., often remain in vain, because without electricity, they cannot be truly operational.

The country is sunny with a good solar deposit estimated between 4 and 5 KWh / m² / J (1500KWh / m²/year). Solar energy can therefore be well suited to remote localities of the interconnected national network and especially to small population, and whose needs can be summed up in lighting, incidentally to the supply of household electrical appliances and communication (radio, television, mobile) and the provision of electricity to health centers (vaccine storage) and multipurpose homes, etc.

Figure n°15: Strategy for reducing greenhouse gases and sequestering carbon.

Similarly, the contribution of bioethanol as fuel on the one hand for cooking food by substitution with butane gas (fossil oil) or firewood and, on the other hand, after distillation, as a biofuel substitute fossil oil reducing emissions from urban transport by 20% is possible. According to the experts, using biofuel, the carbon dioxide (CO2) content is 50% lower than that of regular gasoline.

But all these objectives cannot be achieved, without inventive innovation or general awareness for a collective awareness of the dangers of greenhouse gas, without training and without significant increase in income, without adaptation or reforestation, to enable them to climb the climatic scale, energy and food, with all the risks and inadequacies.

They cannot be without spending more money, time and human strength, because the mode of development bequeathed to them and recommended, is not financially profitable for them and makes their tasks even more difficult. Indeed, it destroys them physically very early and sometimes even drunkards, because the levels of investment are already very high for them and leads them very often to perpetual debt. It pushes them to finally destroy the environment, especially the by-products of the biodiversity of their terroir, to satisfy the needs of the richest.

This is the trap engendered by hydro climate change, namely: Green House Gases-Global warming-Desertification-Illegal immigration-Food insecurity-Terrorism-HIV-AIDS-Poverty.

In this circle are locked up for a long time, populations, vulnerable, destitute and idle, hence, all try to escape, but cannot.

The solution of combining complementary strategies for access to renewable energy, coupled with adaptation to overcome global warming and simultaneously reduce income poverty and energy poverty, is not within the reach of the people. But this remains indispensable. And in the current state of affairs, only the provision of adequate means to help them adapt and reverse the trend in their favour, remains the ultimate solution to compensate for all these losses.

VIII - INSTITUTIONAL FRAME

The supervisor of the project is the Ministry of Health, Environment and Sustainable Development. The Commune of Cocody is the project ownership and project manager, The guardianship of the commune of Cocody is under the Ministry of State, Ministry of the Interior and Security; The general coordinator of the project is the Mayor of Cocody, Mr. N'GOAN AKA KACOU Mathias; The project's International Focal Point, both the interface of the Cocody, is the Earth Rights Institute-Headquarters, represented by its Regional Office in Abidjan. Project Manager International Delegate is provided by Earth Rights Institute-Headquarters. The project benefits at the level of sustainable cities, downstream from its tutelage, the Ministry of State, Ministry of the Interior and the support of the Governor of the Autonomous District of Abidjan. It benefits from the special support of the Ministry of Health, Environment and Sustainable Development and will call on all international experts for the success of its programs. It will be decentralized, run and managed at grassroots level, with local communities.

IX- ACTIVITIES AND PROGRAMMING RESULTS

- The number of activities is: 13 and the Axes of intervention, 65.

1- Renewable energies including solar, wind, bioethanol,
methane sensors;

2- CO2 emissions avoided with high performance ERI improved cookstoves

3-Reforestation and carbon sequestration

4- Sustainable transport

5-Adaptation to climate change

6-Citizen Security

7- Accompanying measures

-The number of sub-activities is: 90.

- Statement of the strategic impact of this project

The strategic impact of this project in the 13 municipalities of Greater Abidjan, is stated for the 2016-2020 effect and from 2020 to 2030 as follows: By 2020, the Municipality of Cocody and its inhabitants, unanimously selected among the 13 municipalities of the District of Abidjan, as a starting point to host the first phase of this climate project, implement innovative, inclusive and diversified activities to combat climate change, pollution, poverty and terrorism, sustainable income and green jobs, to reduce the municipality's greenhouse gas emissions to 50% in 2020 and 90% in 2030, in order to limit the rise in global temperatures to + 1 ° 5 C, otherwise at + 1 ° C, by the end of the century in 2100.

X- INDICATORS AND EVALUATION PLAN

10-1 Renewable energy indicators, including solar and wind:

- Number of solar photovoltaic plants in the 20 major public sites;

- Number of households lighting by solar kit;
- Number of public lighting installed in the municipality and operating with solar.
- Number of wind farms installed in the 4 villages of the commune, Blockhauss, Cocody-village, M'Badon and N'Pouto, working in the wind;
- Number of women in the municipality using solar dryers to cook Attiéké and other foods, instead of firewood, to eradicate 100% the use of wood fires and to avoid 100% CO2 emissions and halve the cooking time of food;
- Number of housewives in the municipality using solar dryers to dry food, avoid CO2 emissions, reduce drying time by one-quarter and eliminate mold;
- Number of housewives in the municipality using improved ERI improved cook stoves, called "ERI mousso kôrôtôlà", reduce by 90% the consumption rate of wood for cooking and avoid emissions into the atmosphere, significant amounts of CO2 ;

10.2- Energy efficiency indicators

- The number of women using ERI improved stoves
- The number of women using methane sensors

10.3- Reforestation indicators, carbon sinks by reverberation of arteries and mangroves

- the number of neighbourhoods in the municipality, carbon sinks;
- the number of streets in the municipality, carbon sinks;
- the number of green spaces in the municipality, carbon sinks;
- the number of villages in the municipality, carbon sinks;
- superfine planted in mangroves, carbon sinks.

10.4- Adaptation Indicators, general awareness

- Number of people listening to ecological radio FM, against greenhouse gas emissions, pollution.

10.5- Indicators Adaptation, formation of civil society against terrorism

- Number of people trained to prevent terrorism

10.6- Indicators of security, stability and peace

- the number of people practicing green urban agriculture

10.7- Capacity Building Indicators

- The number of people trained to eliminate greenhouse gas emissions.
- The number of people trained in the use of solar dryers, improved ERI stoves.

10.8-Poverty Alleviation Indicators

- Number of people living with two US dollars a day, fivefold.
- Number of developed water wells

- Number of families now having access to solar electricity has increased fivefold.
- Number of people listening to ecological radio to fight poverty.

XI- STRATEGY

11.1- Method

The two elements that characterize this intervention strategy are: information, sensitization, identification of sites and implementation of project activities in the field.

The method used for the diffusion of the various programs, is the active and participative method which relies, according to the situations, on:

- exchange of brainstorming experiences;
- practical cases;
- exercises and practical work;
- simulations and role plays;
- testimonials of experiences;
- evaluations of the content of the training;
- trainers evaluations by participants;
- evaluations of participants by trainers;
- commitment to action and post-training follow-up;

11.2- Approach

The strategy used is that of the participatory approach created both around new and renewable energies, reforestation and adaptation, to eradicate greenhouse gas emissions, food insecurity, terrorism and poverty. It is a powerful way to achieve many sustainable development goals.

As such, it is created around renewable energies, reforestation, adaptation and security, to ensure sustainable stability, eradicate greenhouse gas emissions, food insecurity, poverty, terrorism, religious fundamentalism, insecurity of people and property, and illegal immigration.

Accompanying measures relate to improving food security, organic food and vegetable farming, apiculture, organic farming, provision of small urban agriculture equipment, training materials, monitoring and management, institutional support and capacity building.

ERI will provide support, assistance and supervision necessary for the proper functioning of the project. It will support the normal operation of all the management committees thus created, through sensitization sessions and monitoring and evaluation training, with a view to rational and more efficient management of the funds set up and the equipment provided. ERI will take care of the realization of all the programmed infrastructures, realized within the deadline.

To do this, the strategic axes that will be used are: advocacy, social mobilization and outreach.

11.2.1- Advocacy

An important advocacy will be made with the development partners, the African public authorities, the political and administrative authorities of the States concerned and decentralized Regions, local authorities, community leaders and associations, in order to win their adhesion and also to raise awareness on the need to:

- Stop the actions that lead to global warming in Côte d'Ivoire;
- Stop the green housing gas emissions and the actions that lead to the degradation of land and water;
- Stop actions that lead to desertification;
- Ensure food self-sufficiency and food security;
- Eradicate poverty, unemployment and insecurity;
- Prevent and better manage natural ecological disasters and other social evils;
- Provide clean electricity to all;
- Eradicate pollution, toxic waste, bush fires.

11.2.2- Social mobilization

- It will consist in informing and sensitizing all the partners in sustainable development, in order to promote their total memberships and support to the project.
- For renewable energies, reforestation and adaptation, local management committees will be set up in each village and will benefit from capacity building. The project will promote the active participation of beneficiary communities at all stages of the project cycle, involving them in its implementation as well as in the monitoring of intervention operations. Such an approach will facilitate the strengthening of social cohesion in the target communities and its ownership by local actors, while sharing the benefits, but also the obligations inherent to the project.

This intervention strategy will strengthen the capacity of the management committees of the beneficiary communities and generate skills within them, to ensure the sustainability of the local energy supply of solar energy.

- It will also guarantee green employment opportunities for young people by enabling them to contribute to the maintenance of solar panels and to participate as promoters of renewable energies.
- In order to have a referential support that could underpin the participative process, the project will facilitate the creation of exchange spaces bringing together governmental and local authorities, experts and researchers.
- Post-installation follow-up of 24 months will be ensured, in order to support the populations in the dynamics of perpetuation.

11.2.3- The intervention of proximity

The project activities will be carried out according to the sustainable development and local sustainable integrated community development approaches, to allow a better participation of all and especially, to facilitate the appropriation and the replicability of the project.

11.2.4- The promotion of the public-private partnership

The project will raise the awareness of private sector companies, which want to invest in sustainable development and carry out actions for the benefit of the municipality and disadvantaged populations, on new and renewable energies such as solar and wind power, to improve people's access to energy services.

In the perspective of supporting rural electrification, a close partnership will be developed to ensure the deployment of renewable energies through the promotion of solar projects.

11.2.5- The search for complementarity and synergy of action with other photovoltaic energy development and community infrastructure rehabilitation initiatives

The project will facilitate the coherence of ongoing interventions and develop a synergy of actions between solar projects and the community infrastructure rehabilitation program, including the Poverty Reduction Support Program and the MDG Achievement Program. The Ministry in charge of energy, will play a key role in the definition of the criteria of selection of the beneficiary localities, and also in the technical follow-up of the works.

a- Capacity development The project will facilitate the capacity building of national institutions and structures, local communities and civil society organizations involved in the development of solar, wind, green and blue carbon sinks.

b- Concretely, this axis will take into account the technical assistance to be provided to the structures concerned, to help them diversify their sources of reforestation and improve access to energy services. Beneficiaries will receive knowledge in advocacy, management planning and monitoring-evaluation, with a view to sustaining interventions and national approval.

c- The community approach and the strengthening of social cohesion

d- The project will adopt a community-based approach and provide support to local communities, to ensure the collective maintenance of solar panels and the proper functioning of basic social infrastructure, connected and facilities.

e- For their management, the focus will be on discipline, civility, the organizational capacity of management committees etc.

f- Taking into account equality between men and women

g- The support project will ensure that all its components meet the needs of both men and women. The inclusion principle, which calls for the construction of a new social justice report, will be adopted at all stages of project implementation, with a view to equity between men and women.

11.2.6- Limiting factors

- Late disbursements of each phase of the project
- Late delivery of materials, equipment, seeds and nurseries of different products could jeopardize the success of the project.
- Political instability
- The winter period could slow down the progress of the work.
- A cessation of disbursements could hinder the smooth implementation of activities and thus jeopardize the success of the program.

11.2.7- Solutions to activist factors

- The planning of the activities was spread out taking into account the time constraints of the women, the young people and the peasants and also, the agricultural calendar and the period of the rains.
- The different program plans execute as agreed
- The project is constantly monitored by each partner of development.
- The management of the project funds is done in a transparent manner and according to the international rules in force.

11.2.8- Implementation plan of activities

The project will be implemented in 24 months from the start of funding.

11.2.8.1- Andragogical means

To facilitate the dissemination and acquisition of knowledge, the project will implement the following means:

• Pedagogical documents: training booklets, data sheets, monitoring and management sheets
• Illustration tables
• Seminars - Professional Development Workshops and Coordinating Committees

11.2.8.2-Training

The training will take the form of modules in seminars, colloquia and workshops
Monitoring and mentoring will be provided by ERI and development partners.
Evaluation will be provided by ERI and partners of development.

11.2.8.3- Access to mangrove plants

It will be provided by SODEFOR, OIPR, ERI, CNRA, etc.

11.2.8.4-Cooperation Plan

To provide better guidance, ERI will provide technical support to many international organizations for sustainable development.

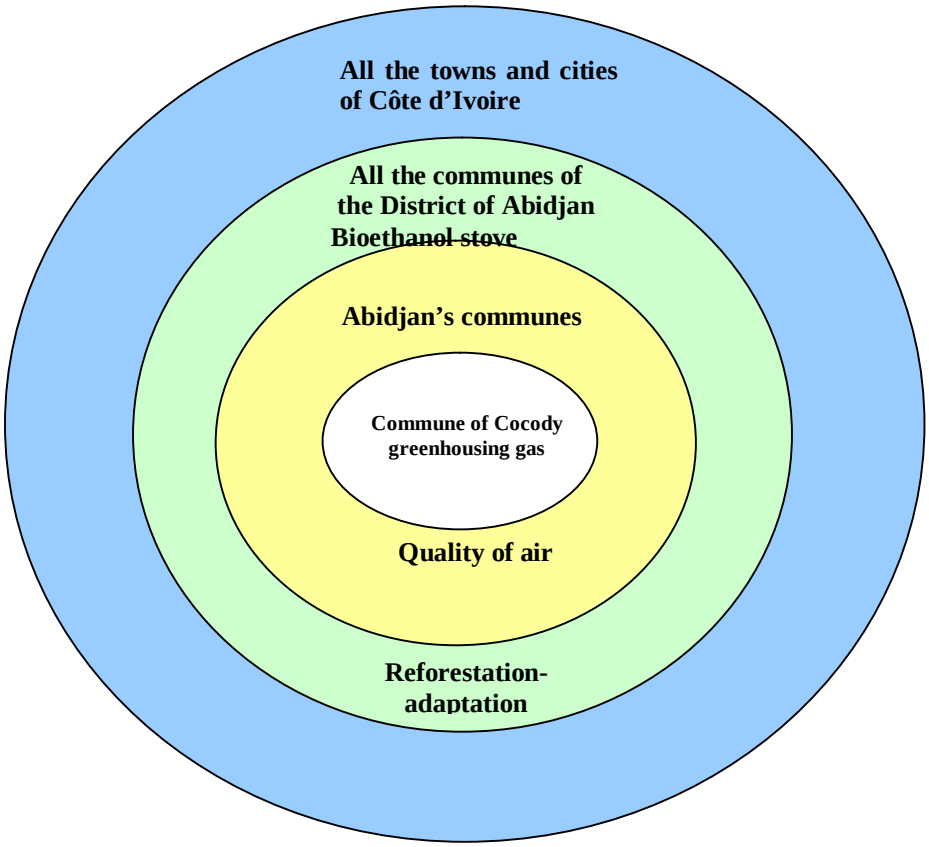


Figure n°16: Strategy for reduction of green housing gas emissions and sequestration of carbon

Source : DRAMANE TOURE NABLE, January 2016

XII- OPERATIONAL FRAMEWORK

N°	Specific objectives	Activities	Expected results	Actors	beneficiaries	Verification Sources
01	Sensitize 7 million hts of Abidjan including 800,000 of Cocody, on greenhousing gas emissions, insecurity.	Change of attitude and aptitude	7 millions hts of Abidjan including 800.000 of Cocody, sensitized.	Cocody, ERI, Partners.	Cocody And Abidjan. Civil society	Lists;Reports Testimonials; Observations.
02	Train 100,000 trainees in climate adaptation	fight against greenhousing gas emissions, pollution	100 000 agents trained	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials;
03	Train 200,000 civilian volunteers against terrorism	Fight against terrorism	200,000 trained civil society members	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
04	Organize 06 seminars / dissemination workshops on climate results;	Exchange, dissemination, transfer of knowledge	The results of the project, are transferred by workshops seminars	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
05	Take charge of the project, expenses of missions, studies, world meetings the objective of the project.	Exchange, dissemination, transfer and dissemination of knowledge	Project members are supported in missions, to global summits	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
06	Install 20 photovoltaic solar power plants	lighting of all sites	20 solar power plants illuminate 20 sites	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
07	Install 20,000 solar kits for 20,000 households	lighting of poor households	20,000 poor households without lights, equipped	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
08	Install 10,000 solar street lights, for street lighting	public lighting of Cocody by solar system	10,000 solar street lights, illuminate all Cocody	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
09	Install 4 wind farms to power 4 villages	Wind turbine lighting, clean energy,	4 coastal villages of Cocody, lit by wind	Cocody, ERI, Partners	Cocody And Abidjan.	Lists; Reports Testimonials; Observations.
10	Produce and supply 5000 solar cookers, to cook the Attieke	Cooking of household food, by solar	5,000 Attieké producers use solar cookers	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
11	Popularize 100 000 solar dryers with women, to avoid C02	Drying of products and foods, by solar	100,000 housewives use 100,000 solar	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.

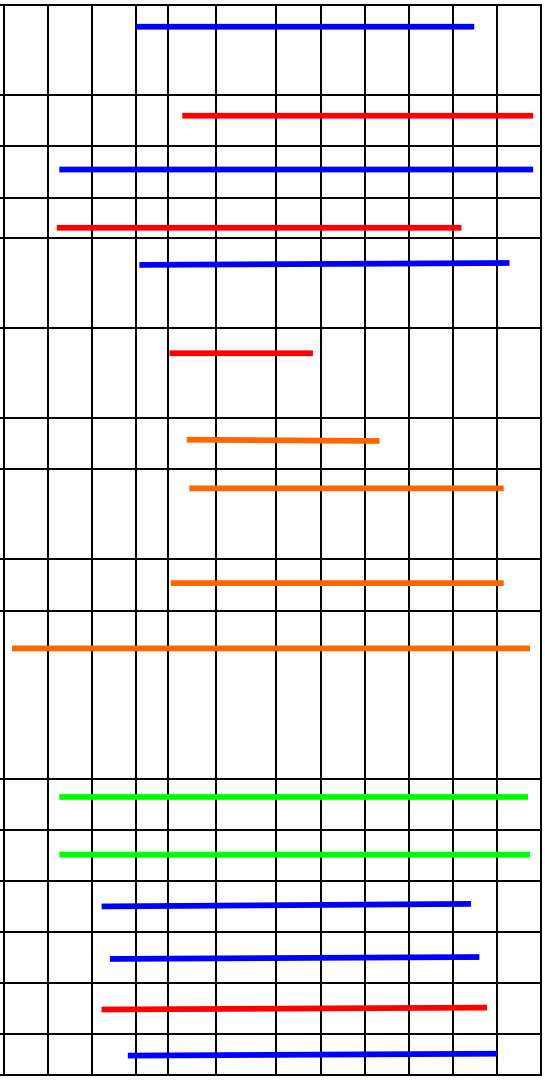
			dryers			
12	Produce and disseminate to housewives, 300,000 ERI improved ERI homes	Energy efficiency and firewood abandonment	300,000 women now use ERI improved stoves.	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
13	Capture methane by 5000 sensor units	Elimination of pollution, greenhousing gas emissions	10,000 Attieké producers	Cocody, ERI, Partners	Cocody	Lists; Reports Testimonials; Observations.
14	Production of 300,000 bioethanol and carbon cook stoves for women, to avoid greenhousing gas emissions	Production and extension of cook stoves	300,000 cook stoves with bioethanol, to avoid CO2 emissions	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
15	Production of 12,000 tons of bioethanol from the molasses residues of the three sugar complexes	Production of 3 billion tons of bioethanol	3 billion tons of bioethanol products, replace butane gas and avoid CO2 and greenhousing gas	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
16	Plant 1 million shade trees	Creating green carbon sinks, sequestering CO2	The green carbon sink of Cocody and Abidjan is created	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
17	Plant 1 million mangrove trees	Creation of blue and green carbon sinks	Blue carbon sinks and green sequester CO2	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
18	- Create and equip 500 green spaces in the town of Cocody, to beautify the city and capture carbon.	Creation of green carbon sinks to beautify and sequester carbon	500 green spaces, created or restored, as in Europe and Asia	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
19	Create in Cocody, the first ecological radio climate awareness	Awareness of climate protection, against greenhousing gas emission, pollution	1 ecological radio created, works, sensitizes	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
20	create one civil observatory, for climate protection, for sanitation, for fighting against greenhousing gas and prevention	climate protection, sanitation, prevention of climate disasters	Populations follow the instructions of the civil observatory created on climate, hygiene	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.

21	-Install 5,000 civil mobilization committees to save the climate and ensure civil security	Prevention of terrorism and mobilization	100000 volunteers trained and equiped	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
22	Accompanying measures	Studies, missions Training, equipment agent	Equipments -3 Ministries -Municipality, ERI, project	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
23	Capacity building for both ministries, the Municipality, the project and the focal points	Ministries, Municipality and the project	The 3 Ministries have their capacities strengthened.	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
24	Institutional support to the projectt, to Min. Envir. Min. Interior.the Municipality, ERI	Technical ministries, tutorship, Municipality	The 3 Ministries have their capacities strengthened.	Cocody, ERI, Partners	Cocody And Abidjan. Civil society	Lists; Reports Testimonials; Observations.
25	Monitoring and evaluation	Framing	All actors and beneficiaries	Commune of Cocody	Commune of Cocody	Lists; Reports Testimonials; Observations.
26	Internal and external audit	Evaluation	All actors and beneficiaries	Commune of Cocody	Commune of Cocody	Lists; Reports Testimonials;

XIII- ACTIVITIES PLANNING

N°	ACTIVITIES	YEARS 2018	2019	2020
01	General sensitization			
02	Training against green housing gas and climate adaptation			
03	Civil society training for climate and security			
04	Installation of photovoltaïc solar power stations			
05	Installation of photovoltaic solar power plants			
06	Installation of photovoltaic solar power plants			
07	The installation of the traffic lights			
08	Popular solar dryers for women			
09	Production of improved high efficiency ERI stoves			
10	Installation of methane capture units			
11	Production of bioethanol cook stoves			
12	Bioethanol production in a factory			
13	Installation of wind farms for 4 lagoon villages			
14	Restoration of green carbon sinks by 2 million trees			

15	Restoration of the blue carbon sink, 2 million mangrove	
16	Sustainable transport	
17	Ecological valorization of Cocody Bay	
18	Reverdure of 500 green spaces of the municipality	
19	Creation in Cocody of the first ecological radio climate	
20	Creation of the civil climate observatory ERI of Abidjan	
21	Installation of Civil Climate and Safety Committees	
22	Implementation of the "All to GREEN Transport" program	
23	Valorization of sidewalks and sanitation	
24	Establishment of the Arboretum program of wild food plants and medicinal plants active in our cities, to safeguard them and for future generations.	
24	Civil mobilization of climate watch and security	
25	Accompanying measures	
26	Capacity building	
27	Institutional support	
28	Monitoring/evaluation	
29	Internal and external audit	



XIV-RISKS RELATED TO THE IMPLEMENTATION OF THE PROJECT

14.1- Risks of failure

- Failure to start scheduled activities in time to be executed;
- the non-respect of the calendar;
- The resumption of the war in Ivory Coast.

14.2-Risks and precautions

14.3-Precautions to guarantee the success of the action

- The populations of Cocody and Abidjan, having learned lessons on the effects of climate change, practice activities that protect the climate.
- Sensitization of young people to even more commitment and awareness.
- Creation of 30 000 committees to fight against EGES and climate change.
- Good training of the beneficiaries.
- Selection of NGOs to train, supervise and monitor and evaluate members of grassroots groups.

- Awareness of the population on the real extent of the consequences of greenhouse gas emissions in global warming.

XV- SUSTAINABILITY OF THE ACTION AFTER THE IMPLEMENTATION OF THE PROJECT

The project will easily become sustainable for the following reasons:

- These are activities that generate many new green jobs.
- The women and young people of the beneficiary group and the target group are responsible for the sustainability of this project.
- the action after the implementation of the project.
- The current project is replicable. As such, depending on the results of Cocody, it will extend to 12 other municipalities in the District of Abidjan and also within the country.

ERI and its partners will be present in all areas including training, equipment, supervision and monitoring and evaluation.

Women and young people will be regularly trained. Their recycling and improvements will be done throughout the project and after the project, to allow this specific group to be fully supported.

XVI- GUARANTEE PLAN FOR COMMUNITY PARTICIPATION

Participation in the project of all the populations of the municipality of Cocody especially women and young people, is automatically acquired.

Indeed, it is the Mayor of Cocody and its administered, who have solicited this project, in an advocacy supported by several young people and young girls, during the meetings organized by the Town hall and ERI in December 2015, during the World Summit Climate (COP21), held from November 29 to December 10, 2015 in Paris-le-Bourget in France.

They emphasized the urgent need to eradicate greenhouse gas emissions everywhere, the main cause of climate change and global warming.

Also, they insisted on the access of everyone to solar and wind energy, reforestation, adaptation, the contribution of small technologies to alleviate difficult tasks, and training to defend the climate and fight against terrorism.

XVII- ACCOMPANYING MEASURES

17.1- At the level of accompanying measures

They concern:

- the Technical Ministry, Ministry of Environment and Sustainable Development, for its actions of daily struggles against EGES, global warming and also, for its tutelage concerning this climate knowledge project.

- the Ministry of State, Ministry of the Interior and Security, tutelage of the communes of Côte d'Ivoire including Cocody.

To these two administrative and political supervisions, we must add the decentralized, which is the City Council of Cocody to which we must take into account, the technical structures that are the Administrative Focal Point (the Commune of Cocody) and the International Technical Focal Point (ERI), NGOs, village communities, civil society,

17.2- Capacity building:

- Strengthen the capacities of the Ministry of Trustees, namely the Ministry of State, Ministry of the Interior and Security,
- Strengthen the capacities of the Technical Ministry in charge of climate issues namely the Ministry of Environment and Sustainable Development.
- Strengthen the capacities of the central focal point, the international focal point (ERI), NGOs, village communities, civil society organizations.

17.3- Institutional Support

- Assure the assumption of the expenses of studies, missions, formation and wages.
- Provide support for monitoring / evaluation, management, staff, experts, project materials and equipment, vehicles, fuel, maintenance.
- Ensure the support of the National Focal Point and the International Focal Point (ERI), NGOs, village communities, civil society.

XVIII- MONITORING / EVALUATION

18.1- At the level of monitoring / evaluation Training, adaptation

18.2- At the level of commitment to action

The city council and ERI, its international partner, will ensure that, at the end of each session, each participant defines their immediate objectives and develops a tactical action plan to achieve their objectives.

18.3- At the final evaluation level of the training

Immediately, at the end of the dissemination of each module, an evaluation is planned to ascertain the degree of satisfaction of the participants with the content and the performance of the trainers.

At the end of each session, a daily assessment is planned to allow the trainers to know the level of satisfaction and the expectations of the beneficiaries.

At the beginning and at the end of each module, the trainers will also carry out an evaluation which will contribute to assess the level of knowledge acquired and the degree of interest of each participant in the lessons taught.

At the end of the training, a global evaluation of the program, modules, pedagogy and organization methods, will be put in place by the promoter and the participants, to enable the various partners to measure the quality of the services provided.

XIX- AUDIT / CONTROL

19.1- Internal Audit

The audit and control will be constant and will be in accordance with the rules of the Donor Administrative and Financial Procedures Manual, under the coordination of ERI and international partners. Unannounced and regular audits will take place constantly.

19.2-The External Audit

They will take place at all stages of the project and will be censored by an external audit report.

XX- LOGICAL FRAMEWORK ANALYSIS

At the end of the project, an overall evaluation of the program of activities, modules, methods of pedagogy and organization, will establish by the promoter and the partners, to enable the different actors to measure the quality of the services provided.

ANALYSIS OF THE LOGIC FRAMEWORK OF THE COMMUNE OF COCODY PROJECT: ABIDJAN BLUE AND GREEN CARBON WELLS

	Logic of intervention	INDICATORS		Sources and means of verification	Hypotheses	Frequency of collections	Persons in charge
		Objectively Indicators verifiable	Indicators definitions				
Overall objective	Overall, for 24 months, it is: - contribute in two years, to the reduction of greenhouse gas emissions to 50% in 2020 and 90% in 2030, to limit the increase in the temperature of the planet to + 1 ° 5 C, otherwise at + 1 ° C in 2100:	After 24 months, The greenhousing gas emissions are reduced to 50% in 2020 and 90% in 2030 and concur to limit in 2100, the increase in the temperature of the planet below + 1 ° 5C	Indicators for verifying greenhouse gas emissions	Overall evaluation report Testimonials Observations Activity reports	Real involvement of the populations of Cocody and all the Partners	Monthly	Municipality of Cocody, ERI, OIPR, SIDEES, SODEFOR, Development partners
	- raise awareness on climate protection, green jobs, against greenhousing gas emissions, pollution, insecurity, terrorism, poverty, the 7 million inhabitants of the Autonomous District of Abidjan including the 700,000 inhabitants of Cocody, common starting the project.	- the 7 million inhabitants of Abidjan including sensitized 700,000 inhabitants of Cocody undertake actions of climate protection, security	Indicators of change in attitude and aptitude	Overall evaluation report Testimonials Observations Activity reports	Real involvement of the populations of Cocody and the District of Abidjan	Monthly	Municipality of Cocody, ERI, OIPR, SODEFOR, Development partners
	- train 2,000,000 agents	200,000 green jobs created	Green Poverty Indicators		Real		

	- install 20 solar power plants, 20,000 solar kits, 10,000 street lights, 4 wind farms, 5,000 solar cookers, 100,000 solar dryers, 300,000 improved stoves, 300,000 bioethanol cookers	- 20 solar power plants, 20,000 solar kits, 10,000 solar street lights, 4 wind farms, 5,000 solar cookers, 100,000 solar dryers, 300,000 improved fireplaces	Indicators for reducing the climate temperature of the planet	Testimonials Activity reports Overall evaluation report Testimonials Observations	involveent of all Project Partners	Monthly Monthly	Municipality of Cocody, SIDEES, Development partners
	-Build 4 bioethanol plants producing 10 million tons / year of bioethanol produced by the 4 factories Ferké1, Ferké2, Zuénoula et Borotou Koro, , producing in turn 5 million tons of bioethanol for cooking and 5 million tons of biofuel	-4 bioethanol plants producing 10 million tonnes / year of bioethanol produced by the 4 factories, producing in turn 5 million tonnes of bioethanol for cooking	Bioethanol indicators, for household cooking Bioethanol indicators, for biofuel-biodiesel bi production.	Activity reports		Monthly	ERI, Development partners
	- planting one billion of trees in 13 Communes of Abidjan District, with 4 million trees in Cocody, 2 million in protected areas, and roads, and 2 million mangrove trees on coastal zone of Ebrie Lagoon from Cocody to Bingerville in order to restore vegetation cover and biodiversity, and increase green and blue carbon sequestration pools (CO_2)	- one billion of trees are planted in 13 Commune of Abidjan District, with 4 million trees in Cocody, 2 million in protected areas, and roads, and 2 million mangrove trees on coastal zone of Ebrie Lagoon from Cocody to Bingerville in order to restore	Indicators of biodiversity restoration Indicators for verifying greenhouse gas		Security of the field staff		Mairie de Cocody, OIPR,

		vegetation cover and biodiversity, and increase green and blue carbon sequestration pools (CO_2)	emissions	Sources and means of verification			SODEFOR, ERI developpement partners
Specific objectives	Specifically, during the first twelve (12) months, it is about: - in 3 years, contribute to the reduction of greenhouse gas emissions (EGES) to 50% in 2020 and 90% in 2030, to limit the increase in global temperatures to + 1 ° 5 C, if not + 1 C - sensitize all 7 million people in Abidjan, starting the project from Cocody and its 800 000 inhabitants, commune start-up of the project, on climate protection, the fight against EGES, pollution, insecurity, terrorism, poverty, - train 200,000 agents - install 15 solar power plants,	By the end of 12 months The greenhousing gas emissions are reduced to 50% in 2020 and 90% in 2030 and concur to limit in 2100, the increase in the temperature of the planet below + 1 ° 5C - the 7 million inhabitants of Abidjan which sensitized 700,000 inhabitants of Cocody undertake actions of climate protection, security 200,000 green jobs	Definition of indicators Indicators of changing attitude and aptitude Indicators of reduction of unemployment / poverty Energy efficiency indicators	Overall evaluation report Testimonials Observations Activity reports Overall evaluation report Testimonials observations Activity reports Testimonials Observations Activity reports Overall evaluation report	Hypotheses Membership and real involvement of everyone in the project Membership and real	Frequency of collection Monthly Monthly	Mairie de Cocody, ERI, OIPR, SODEFOR, developpement partners Person in charge Municipality of Cocody, ERI, OIPR, SIDEES, SODEFOR, Development partners

	15,000 solar kits, 10,000 street lights, 4 wind farms, 4,500 solar cookers, 75,000 solar dryers, 300,000 improved stoves, 300,000 bioethanol stoves -Construct 3 factories at biofuel sites producing 12 million tons of bioethanol-biofuel / year, from sugar cane molasses, and at the sugar complex sites of Ferké1, Ferké2, and Borotou Koro, using bioethanol , to replace fossil fuel oil - 1 billion trees planted in the 13 Communes of the District of	created Are occupied by the 200 000 trained agents - 20 solar power plants, 20,000 solar kits, 10,000 solar street lights, 4 wind farms, 5,000 solar cookers, 100,000 solar dryers, 300,000 improved fireplaces will be installed in the town of Cocody -3 biofuel plants built on the sites of Ferké1, Ferké2 and Borotou Koro sugar complexes, producing 12 million tonnes of biofuel bioethanol / year, from sugar cane molasses, using bioethanol, and replacing fossil fuel oil -4 million trees on the billion trees of the District of Abidjan,	Indicators of solar energy, clean energy, tending towards zero carbon emissions, by substitution with wood and fossil oil Bioenergy, bioethanol production indicators for cooking household food Bioethanol-biofuel-biodiesel indicators Green carbon sink indicators by reforestaion in shrubs Blue carbon	Testimonials Observations Activity reports Overall evaluation report. Testimonials Observations Activity reports Overall evaluation report	involvement of everyone in the project Membership and real involvement of everyone in the project Membership and real involvement of everyone in the project	Monthly Monthly	Municipality of Cocody, ERI, OIPR, SODEFOR, Development partners Municipality of Cocody, ERI, OIPR, SIDEES, SODEFOR, Development partners Municipality of Cocody, ERI, SIDEES, Development partners

	Abidjan, of which 4 million cocody with 2 million tree plans for protected areas, arteries and 2 million mangrove plants on the coast of Ebrié Lagoon from Cocody to Bingerville, to restore the plant cover of biodiversity and create huge carbon sinks and blue carbon, sequestering	planted in the Cocody communes, including 2 million tree plans for protected areas, arteries and 2 million mangrove plants on the coast of Cocody Ebrié Lagoon in Bingerville, to restore biodiversity and create huge green carbon sinks and blue carbon	sink indicators by reforestaion into mangrove plants		Membership and real involvement of everyone in the project Membership and real involvement of everyone in the project Membership and real involvement of everyone in the project	Monthly	ERI Development partners Municipality of Cocody, ERI, OIPR, SIDEES, SODEFOR Development partners ERI Development partners

Expected results	At the end of 24 months : The greenhousing gas emissions are reduced to 50% in 2020 and 90% in 2030 and concur to limit in 2100, the increase in the temperature of the planet below + 1 ° 5C - the 7 million inhabitants of Abidjan, of which the 700,000 inhabitants of Cocody, sensitized, undertake actions of climate protection, security 200,000 green jobs created Are occupied by the 200 000 trained agents - 20 solar power plants, 20,000 solar kits, 10,000 solar street lights, 4 wind farms, 5,000 solar cookers, 100,000 solar dryers, 300,000 improved fireplaces will be installed in the town of Cocody At the end of 24 months : - the first 3 factories built, operate	By the end of 24 months : 1-The number of inhabitants of the 13 communes of the District, sensitized; 2-The number of inhabitants of the municipality trained against terrorism 3-The number of trainees trained in green economy; 4-The number of green jobs held; -5 The number of solar power plants work; 6-The number of solar streetlights illuminate; 7-The number of wind farms installed; 8- The number of functional solar cookers; 9- The number of solar dryers work; 10- The number of improved stoves	Indicators of reduction of EGES Monitoring and evaluation indicators Indicators of green job creation Renewable Energy Efficiency Indicators Indicators of reduction of EGES	Activity 1: Mission = 500 000 000 FCF. Activity 2 : Renewable Energies. = 1 045 000 000 000 FCFA. Activity 3: Sustainable Transportation 315 500 000 000 FCFA. Activity 4: Mangrove restoration = FCFA 343 billion. Activity 5: Flora restoration 312 500 000 000 FCFA. Activity 6: Sustainable coastal development =	real involvement of all Project Partners real involvement of all Project Partners real involvement of all	monthly monthly monthly monthly	Municipality of Cocody, ERI, OIPR, SODEFOR Development partners Municipality of Cocody, ERI, OIPR, SODEFOR Development partners

	and produce 8 million tons of bioethanol for household cooking and 3 billion tons / year of bioethanol-biodiesel fuel, -4 million trees on the billion trees of the District of Abidjan, planted in the Cocody Communes including 2 million tree plans for protected areas, arteries and 2 million mangrove plants on the coast of Ebrié lagoon from Cocody to Bingerville, to restore biodiversity and create huge green carbon sinks and blue carbon	installed; 11- The number of bioethanol plants work; 12 tons of bioethanol to supply household cooking stoves; 13 tonnes of bioethanol-biodiesel fuel used in motor vehicles; 14-The number of streets, revegetated; 15-The number of gardens and spaces, revegetated; 16-The area of lagoon shores, blue carbon sinks, plants in mangroves; 17- The number of listeners of ecological radio; 18-The number of meetings of civilian anti-terrorism committees in the commune and in each district and each service. 19-The number of	Monitoring and evaluation indicators Indicators of green job creation Indicators of reduction of EGES Monitoring and evaluation indicators Indicators of green job creation	CFAF 257 billion. Activity 7: Spatial planning = CFAF 2298 000 000 000. Activity 8: Water protection x = 90,000,000,000 FCFA. Activity 9: Improvement of the daily 214 000 000 000 CFA. Activity 10: Improving women's resilience, 347,700,000,000 CFA Activity 11: Risks = 25,000,000 FCFA Activity 12:	Project Partners real involvement of all Project Partners real involvement of all Project	monthly monthly monthly monthly monthly	Municipality of Cocody, ERI, OIPR, SODEFOR Development partners Municipality of Cocody, ERI, OIPR, SODEFOR Development partners

		beneficiaries of the accompanying measures; 19-The number of beneficiaries of capacity building; 20-The number of monitoring and evaluation; 21-The number of audits ;		Community adaptation FCFA 150,000,000,000 Activity 13 r Training, IEC = 297 450 000 000 FCFA Activity 14: Accompanying measures = FCFA 86 020 000 000 Total cost : FCFA 3,988,895,000,000	Partners		Municipality of Cocody, ERI, OIPR, SODEFOR Development partners

COUT DU PROJET

EN US DOLLARS

OBJECTIFS STRATEGIQUES	A1	A2	A3	A4	A5	TOTAL
1-Création à Bagba, de l'Observatoire climat de la société civile du District d'Abidjan, de Côte d'Ivoire	1 300 000	350 000	150 000	100 000	100 000	**2 000 000**
2.-Construction de logements sociaux pour les démunis déguerpis, victimes du changement climatique	900 000	500 000	100 000	100 000	100 000	**1 700 000**
3-Sensibilisation générale, mobilisation citoyenne pour le climat	750 000	170 000	50 000	50 000	50 000	**1 070 000**
4- Education-Formation-Séminaires-Ateliers						
4.1- Education des préscolaires et du primaire	200 000	100 000	50 000	50 000	10 000	**410 000**
4.2- Formation						
-Formation des collégiens et lycéens	200 000	100 000	50 000	50 000	10 000	**410 000**
-Formation des étudiants (UFHB)	200 000	100 000	50 000	50 000	10 000	**410 000**
-Formation de la société civile (ERI)	300 000	190 000	50 000	50 000	10 000	**600 000**
- Formation dans les Entreprises (ERI)	250 000	100 000	100 000	50 000	10 000	**510 000**
- Formation des cadres (UFHB)	200 000	100 000	100 000	50 000	10 000	**460 000**
4.3-Séminaires	200 000	100 000	100 000	50 000	10 000	**460 000**
4.4-Ateliers	200 000	100 000	100 000	50 000	10 000	**460 000**
5-Etudes et recherche sur la prévention des risques et l'adaptation des victimes au changement climatique	200 000	200 000	100 000	100 000	100 000	**700 000**
6- Amélioration de la qualité de l'air	200 000	200 000	200 000	200 000	180 000	**980 000**
7- Produits chimiques						
7.1- Lutte biologique contre Balanogastrie Kolae	100 000	100 000	100 000	50 000	10 000	**360 000**
7.2- Eradication des pesticides dans la cola et les aliments ivoiriens	500 000	250 000	50 000	30 000	10 000	**840 000**
7.2-Lutte contre les végétaux du lac de Yamoussoukro	500 000	250 000	50 000	30 000	10 000	**840 000**
8- Déchets- pollutions-recyclage-compostage, salubrité	200 000	100 000	50 000	50 000	10 000	**410 000**
9- Assainissement des déchets plastiques de lagune	1600 000	100 000	50 000	30 000	**20 000**	**1 800 000**
10- Développement d'urinoirs dans les villes	100 000	50 000	10 000	10 000	10 000	**180 000**
11-Promotion des Energies Renouvelables dans le bouquet Energétique du District d'Abidjan et de la région du projet						
11.1-Energie solaire en milieux dépourvus	1700 000	500 000	100 000	100 000	100 000	**2 500 000**
11.2- Energie éolienne dans 10 villages côtiers ;	1400 000	500 000	100 000	100 000	100 000	**2 200 000**

12-Bioénergie						
12.1- Valorisation du Bioéthanol pour substitution au gaz butane et à l'électricité fossile	500 000	100 000	100 000	50 000	50 000	**800 000**
12.2-Valorisation de la biomasse-énergie	100 000	100 000	100 000	50 000	50 000	**400 000**
13- Amélioration de l'efficacité énergétique						
13.1-Foyers améliorés de dernière génération	300 000	300 000	100 000	50 000	50 000	**800 000**
13.2- Amélioration de l'Efficacité Energétique des Bâtiments publics et privés.	100 000	100 000	100 000	30 000	20 000	**350 000**
13.3- Amélioration de l'Efficacité Energétique de l'Eclairage Public	100 000	100 000	100 000	50 000	50 000	**400 000**
14- Transports verts, Eco-conduite et mobilité durables Mixité Sociale, pour améliorer la résilience des communautés aux impacts du climat						
14.1- Aménagement à valeur de modèle et d'exemple, des voies Bd. CNPS, Bd. Latrille, Bd. Mitterrand, Bd. de France	900 000	200 000				**1 100 000**
14.2-Tous pour le vélo	100 000	50 000	20 000	20 000	20 000	**210 000**
14-3- Développement de sites	50 000	10 000	10 000	10 000	10 000	**90 000**
15- Restauration des écosystèmes de la biodiversité						
15.1-Restauration des Ecosystèmes de mangroves, en vue de la résilience en séquestration de carbone et de création de sanctuaires pour les espèces endémiques.	550 000	100 000	100 000	30 000	20 000	**800 000**
15.2- Arboriculture d'arbres fruitiers, pour séquestrer le carbone, améliorer les revenus et protéger le climat.	350 000	100 000	50 000	30 000	20 000	**550 000**
15.3- Création dans les villes, de conservatoires de plante alimentaires et aromatiques sauvages menacées, pour restaurer la biodiversité, séquestrer le carbone.	400 000	100 000	50 000	30 000	20 000	**600 000**
15.4- Restauration des écosystèmes forestiers des 2 districts autonomes du pays et des 40 villes du projet par 7 millions d'arbres à fleurs parfumées, des rues, parcs jardins et résilience en séquestration du carbone.	900 000	100 000	50 000	30 000	20 000	**1 100 000**
16- Lutte contre la dégradation des sols agricoles urbains						
16.1- Restauration de la fertilité des sols agricoles par les légumineuses, pour éradiquer la dégradation des terres, assurer la sécurité alimentaire, nutritionnelle et l'autonomisation.						
16.2-Apiculture et pollinisation pour lutter contre la dégradation des terres agricoles, améliorer la productivité et les revenus, protéger la biodiversité.	200 000	100 000	50 000	30 000	20 000	**400 000**
	200 000	50 000	50 000	50 000	50 000	**400 000**
16.3- Agriculture familiale urbaine féminine péri-urbaine, pour assurer l'approvisionnement régulier des marchés des villes et l'autonomisation des femmes.	200 000	150 000	100 000	80 000	70 000	**600 000**

17- ECO CAMPUS	**400 000**	**100 000**	**100 000**	**100 000**	**100 000**	**900 000**
18-Protection des ressources en Eau						
18.1- Appui à l'accès des pauvres à l'eau potable pour tous	200 000	100 000	50 000	50 000	50 000	**450 000**
18.2- Aménagement durable des côtes lagunaires et des cours d'eau, pour séquestration de carbone	500 000	200 000	50 000	50 000	50 000	**850 000**
18.3- Aménagement durable de la baie de Bagba	700 000	100 000	50 000	50 000	50 000	**950 000**
18.4-Aquaculture et pisciculture durables, pour améliorer les revenus et vaincre le changement climatique	300 000	100 000	50 000	50 000	50 000	**550 000**
19-Salubrité, Pollution, Amélioration de la qualité de l'air						
19.1- Amélioration de la qualité de l'air dans l'espace du projet	500 000	100 000	50 000	50 000	50 000	**750 000**
19.2- Lutte contre les particules fines en villes	200 000	200 000	100 000	100 000	100 000	**700 000**
20-Adaptation, risques, résilience						
20.1-Adadption, amélioration de la résilience des femmes de la région du projet, aux effets climatiques	300 000	200 000	50 000	50 000	50 000	**650 000**
20.2-Evaluation quantitative des risques et mise en place du référentiel territorial	100 000	100 000	50 000	50 000	50 000	**350 000**
21- Appui à la santé des pauvres victimes du climat						
21.1-Appui aux centres de santé de la Cité Rouge, pour soins aux malades démunis, victimes du climat.	200 000	100 000	50 000	50 000	50 000	**450 000**
21.2- Appui au centre de soins de pauvres de Bromakoté	100 000	100 000	50 000	50 000	50 000	**350 000**
21.3- Appui aux centres tradithérapeutes de soins de pauvres	50 000	50 000	50 000	50 000	50 000	**250 000**
22-Sécurité alimentaire et nutritionnelle						
22.1-Appui à la riziculture féminine au Nord et Nord-Est	200 000	50 000	50 000	50 000	50 000	**400 000**
22.2-Appui à la riziculture féminine à l'Ouest, Sud et Sud- Ouest	200 000	50 000	50 000	50 000	50 000	**400 000**
22.3-Agriculture vivrière et maraichère péri- urbaine pour la sécurité alimentaire et l'autonomisation des femmes	200 000	50 000	50 000	50 000	50 000	**400 000**
22.4-Appui aux coopératives féminines de production et de commercialisation de produits vivriers pour assurer l'approvisionnement des marchés, accroitre les revenus	300 000	50 000	50 000	50 000	50 000	**500 000**
22.5- Appui aux fermes d'élevages féminins des cycles courts, pour accroitre leurs revenus, les adapter au changement climatique et créer des emplois.	300 000	50 000	50 000	50 000	50 000	**500 000**

23- Amélioration du quotidien des Ivoiriens et développement durable à impacts immédiats						
23.1- Appui d'urgence aux femmes déguerpies, démunies et aux victimes du changement climatique.	240 000	140 000	40 000	40 000	40 000	**500 000**
23.2- Amélioration de l'accès et des résultats scolaires des filles et enfants de parents pauvres, victimes du climat	230 000	200 000	100 000	50 000	50 000	**630 000**
23.3- Amélioration de la règlementation	100 000	60 000	10 000	10 000	10 000	**190 000**
23.4- Amélioration de l'activité économique des industries nationales	100 000	50 000	50 000	10 000	10 000	**220 000**
24-Mesures d'accompagnement						
24.1-Appui institutionnel						
- Personnel	1 000 000	1 000 000	1000 000	900 000	900 000	**4 800 000**
- Véhicules	300 000	30 000	20 000	20 000	20 000	**390 000**
- Carburant	200 000	200 000	200 000	200 000	200 000	**1 000 000**
- Fournitures techniques	230 000	230 000	280 000	280 000	50 000	**1 070 000**
- Matériels techniques	300 000	300 000	300 000	300 000	300 000	**1 500 000**
- Ministère de tutelle et Ministère technique	100 000	100 000	50 000	50 000	50 000	**350 000**
- ERI	300 000	200 000	100 000	50 000	50 000	**700 000**
24.2-Renforcement des capacités						
- 24.2.1- Ministères techniques	100 000	100 000	50 000	10 000	10 000	**270 000**
- 24.2.2-Expertise mondiale ERI	100 000	100 000	100 000	100 000	70 000	**480 000**
- 24.2.3- Coopération internationale	100 000	10 000	10 000	10 000	10 000	**140 000**
- 24.2.4- Lobbying	100 000	50 000	10 000	10 000	10 000	**180 000**
- 24.2.5- Encadrement, suivi-évaluation	100 000	20 000	100 000	100 000	10 000	**330 000**
- 24.2.6- Assurance	50 000	50 000	30 000	20 000	20 000	**170 000**
25- Audit					50 000	**50 000**
TOTAL GENERAL	**24 550**	**10 360**	**6090**	**4 950**	**4 050**	**50 000 000**

XXIII- DETAILED TOTAL COST OF THE PROJECT in millions of CFA Francs

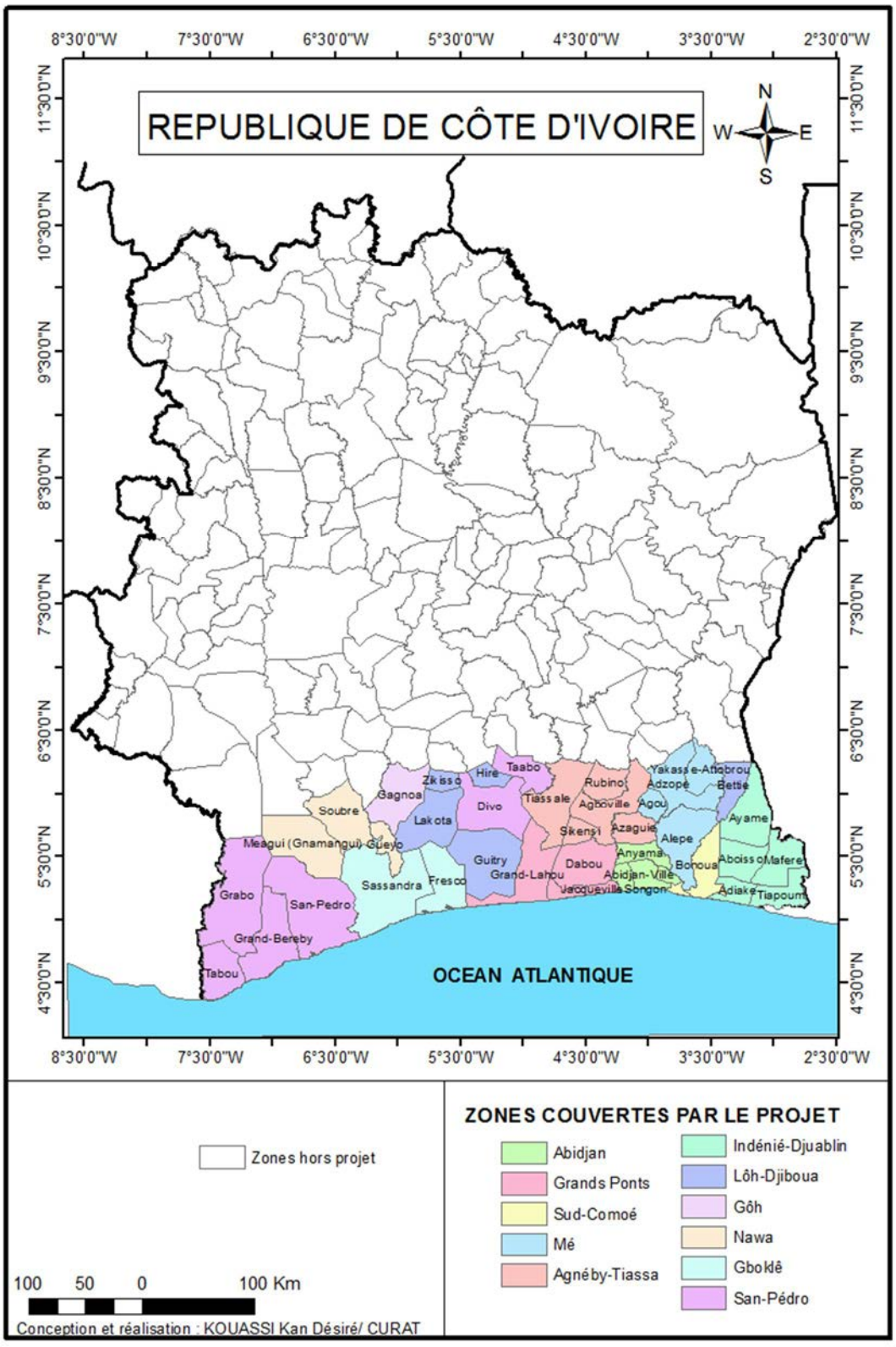


Figure n°17: Regions and areas covered by the autonomous project of Cocody green city

MINISTRY OF HIGHER EDUCATION
AND SCIENTIFIC RESEARCH

UNIVERSITY OF FELIX HOUPHOUËT
BOIGNY ABIDJAN-COCODY

University center for research and application
in remote sensing (CURAT)

French Associate Laboratory LAF N° 401
African Doctoral School of Remote Sensing (EDAT)
Center of Excellence of CRUFAOCI

UFR of Earth Sciences and
Mining Resources (UFR-STRM)

FEASIBILITY STUDY

Vulnerability, adaptation and improvement of the resilience of women in the Commune of Cocody and the District of Abidjan, to the effects of climate change (temperature and pluviometry).

UNIVERSITY OF FELIX HOUPHOUET BOIGNY- COCODY- ABIDJAN

Professor SORO NAGNIN, Dean of UFR STRM
Professor HAUOHUO ASSEYPO : IGT
Professor KOUAME KAN JEAN : Director of CURAT
Professor KOBY ASSA : IGT
Professor DJAGOUA ERIC M'MOI VALERE : CURAT
Professor DONGO KOUASSI : CURAT
Dr. KABLAN MALAN ARMAND, Assistant : CURAT

ABSTRACT

Current, Trends in climate variations are recognized globally to increase the vulnerability of urban populations, which are struggling to adapt. The present study aims to assess the population vulnerability of the Commune of Cocody, Abidjan, Côte d'Ivoire; in terms of living conditions and sanitation, associated with the effects of climatic variations (temperature and rainfall) and adaptation measures to mitigate these effects. The methodology was based on an integrated approach. An analysis of the urban land use through the processing of Landsat satellite images (1986, 2000 and 2014) by the supervised classification method, made it possible to analyze urban dynamics. The characterization of the climatic evolution dynamics benefited from the analysis of forty years (1973-2012) of climatic data (temperature, rainfall and relative humidity). Thus, various tests of rupture detection and analysis of variability and the extremes of climatic parameters were carried out. The collection of local indicators of vulnerability and the analysis of the climate socio-economic impacts, as well as populations perception, were possible by means of geographical surveys and households (n = 584).

"MOVE" conceptual framework was used as a basic model for indicator selection and vulnerability characterization. The results revealed that Cocody city has a rapid dynamic of land use dominated by an increase in buildings (124.29%) and a natural environment reduction (forest, water and scrub). Also, a significant trend increase in temperature is observed, forcing the urban populations of Cocody to live in a long hot period and thermal discomfort. About rainfall, obstruction of the sanitation and drainage system by household waste and the inadequacy of the rainwater drainage system are found to be the first causes of the floods. These floods had significant socio-economic impacts on the population, often resulting in loss of life, family dislocation and loss of property. Several neighborhoods in Cocody city such as, Palmeraie and Bonoumin have been identified as very vulnerable to a climate change inducing hot days and extreme rainfall. This vulnerability could aggravate with the increasing of the population and the number of children under 5 years old. The creation of green spaces by neighborhood, the planting of street trees, the updating of the rainwater drainage system through the rehabilitation and construction of the infrastructures, awareness of the populations to abandon the bad practices on the sanitation and drainage infrastructure and the intensification of waste collection in rainy seasons are recommended to mitigate the effects of climate extremes. Added to this is the involvement of the population in flood warning systems.

Keywords: Adaptation, Conceptual Framework "MOVE", Cocody, Green space, Urbanization, Climate change, Vulnerability

1- BACKGROUND

The development of all nation is closely related to its level of urbanization (Boadi et al., 2005). Today, more than 50% of the world's population lives in urban areas (Appleyard et al., 2007). As a result, there is a rapid increase in these urban areas to meet the needs of the people. Although Africa is the least urbanized Continent in the world, estimates show that urban dwellers are expected to double by 2030 (UN-Habitat, 2008). In sub-Saharan Africa, 55.9 per cent of urban dwellers live in slums because of low incomes and poor urban planning; the highest proportion in the world (UN-Habitat, 2016). This high population density in these areas thus contributes to the outbreak of infectious diseases (cholera, tuberculosis, influenza, etc.) due to poor living and sanitation conditions (UN-Habitat, 2008). Therefore, it is the poor planning of urbanization that forces the poorest people to live in unhygienic conditions, exposing themselves not only to the health risks, but also to the effects of climatic variations.

As a result, there is a dilemma in community planning on how to achieve sustainable urban development. Urbanization has rapidly transformed the ecosystem into infrastructure and buildings that increase thermal storage capacity (Luber and McGeehin 2008, Marinucci et al. 2014). The heat storage capacity is amplified by the mass of building materials, which can increase the temperature in the city by more than 5 to 11˚C, compared to the countryside, and the evaporation cooling potential is reduced, due to areas devoid of vegetation (UNFPA, 2007). The Intergovernmental Panel on Climate Change (IPCC) reports, with moderate confidence, the occurrence of a significant increase in the hottest days and the coldest nights (IPCC, 2012); a condition aggravated by climate change (Wilby, 2008). Climate change is likely to result in more frequent and intense waves and heat islands and increased floods, worsening the conditions of the most vulnerable populations (UNFPA 2007, IPCC 2012).

Urbanization and climate could act synergistically to increase the burden of disease. Knowing that climate change is associated with rising temperatures and changes in rainfall patterns (Serdeczny et al., 2016) that could have repercussions on the living and sanitation conditions of populations. Urban areas should to be able to provide a good environment and a healthy life. Thus, adaptation to climate variations presents many challenges in urban areas, given the conditions of hygiene and human security (Fernández and Lutz 2010, Djibril et al., 2012). So, it is imperative to take into account, on the one hand, the dynamic relationship between climate conditions and urbanization, and on the other hand, the impacts of these phenomena on vulnerable populations in urban planning, particularly in Sub-Saharan Africa. .

As a developing country in West Africa, Côte d'Ivoire is not immune to this trend of urbanization, and these impacts on the living conditions and sanitation of the population. In

recent years, it has experienced strong population growth accompanied by accelerated urbanization. Indeed, projections show that the urban population of Côte d'Ivoire is expected to increase from 56.6 to 62.8%, for the years 2020 to 2030 (UN-Habitat, 2008). The public and private sectors are investing heavily in the housing sector to satisfy the population. This trend towards urbanization is more pronounced in Abidjan, the economic capital, with an estimated urbanization rate of 97.3% (INS, 2014). That induced one question to explore, whether urbanization takes into account changing climatic conditions, to help mitigate the adverse effects of climate.

Although many studies have been carried out to date on nature and urbanization, few have taken into account the impact of climate change on local residents, and more particularly on the most vulnerable people in society. Moreover, few of these studies have highlighted the impact of climate on the living conditions and sanitation of populations resulting from a lack of consideration of environmental conditions in urban planning. Thus, this study aims to fill this gap, and to provide decision-makers with essential information on the dangers facing the population with regard to climate change influencing the living conditions of citizens.

2- RESEARCH OBJECTIVES

General objective of this research is to assess population vulnerability of the Commune of Cocody, in terms of living conditions and sanitation, associated with the effects of climatic variations (temperature and rainfall) and adaptation way for mitigating these effects.

Specifically, it will be:

i) to characterize the urban dynamics and the evolution of climatic parameters in the Commune of Cocody during the last three decades;

ii) assess the vulnerability of Cocody populations, in terms of living conditions, to heat effects induced by climate variability;

iii) assess the vulnerability of Cocody populations to floods related to rainfall variations and sanitation deficits;

iv) develop an integrated approach to adaptation strategies to increase the response mechanisms of the population to the various climate-related threats.

Research hypothesis

The main hypothesis of the study is that: several indicators exist and locally influence the vulnerability of urban populations. These indicators are influenced by urban dynamics and climate variations.

The specific assumptions are:

i) rapid urbanization is under way in our cities and does not take into account climate change;

ii) several local indicators would influence the vulnerability of urban populations to temperature rises;
iii) several local indicators exist and would actively participate in the vulnerability of urban populations to floods;
iv) a good climate change adaptation strategy should take into account local indicators and interactions between climate and urban.

Research questions

The main research question is: what are the local indicators that influence the vulnerability of urban populations to climate variations and what are the appropriate adaptation strategies in a context of rapid urbanization?
Based on the objectives of the study, this study attempts to answer the following questions:
i) what are the characteristics of the urban dynamics and the behavior of climate variability parameters over the past three decades and what are the relationships between them?
ii) what is the spatial distribution of populations most vulnerable to heat effects induced by climate variability?
iii) what is the spatial location of the populations most vulnerable to floods due to rainfall variations and sanitation deficits?
(iv) what integrated approach is needed for the development of effective adaptation strategies to climate change?

3- ORIGINALITY OF THE STUDY

The interest of this study lies in the fact that it intelligently addresses the scientific aspects whose importance is paramount throughout the process of developing adaptation measures for mitigating the effects of climate variation (temperature and rainfall). This work is distinguished on three levels: the thematic, the methodology and the results.

i) About the theme

With regard to the issue addressed, in West Africa, particularly in Côte d'Ivoire, there are few studies in the field of variability and/or climate change focusing on urban living conditions. In addition, few studies have highlighted the influence of climate on human well-being in an area of rapid urbanization. Therefore, this study is one of the research that takes into account the dynamic relationship between climatic conditions and urbanization by focusing on the vulnerability of urban populations to climate change and/or change, the risks of exposure to its effects and the effects of climate change and adaptation strategies in a world influenced by changing climatic conditions and rapid urbanization

ii) Methodologically

About the methodology, it is a transdisciplinary research that uses the social sciences to validate environmental science investigations in a perspective of sustainable development. This work is based on a new and innovative approach for determining the vulnerability of populations. It is based on a multi-disciplinary approach that judiciously implements several methods ranging from the identification and development of local indicators that influence the vulnerability of populations in the Commune of Cocody, to the proposal of effective adaptation strategies to the effects of climatic variations. This new method, widely used in developed countries, considers vulnerability as a function of exposure, susceptibility and lack of resilience. It is an approach that estimates, quantifies and spatially represents the vulnerability of urban populations to climatic conditions.

iii) In view of the results obtained

Thus the presented work, is rich of relevant results. This research contributes to the field of climate change, urban planning, sanitation and living environment, risk management and management, and human security. It shows how urban planning policy can contribute to making people more vulnerable to the trend of temperature and rainfall variations. Understanding how urban populations are exposed and vulnerable to the effects of temperature rise and rainfall intensity and determining the local indicators that influence their living conditions, contributes to the understanding of the interactions between urbanization and climate on the one hand, and between man and the environment on the other hand. The conceptual framework "MOVE", which is a conceptual framework used to reduce the vulnerability of populations in Europe, has been used to select and categorize local indicators of vulnerability to climate variations. It has made it possible to integrate both socio-economic and environmental indicators in order to have a single index of vulnerability. These results clearly demonstrate that social and environmental indicators influence the vulnerability of urban populations, which are governed by the rapid urbanization policy, thus helping to make the urban population vulnerable to the effects of climate. Through to the thorough study of the Commune of Cocody, this research brings information with a strong internal validity. The results obtained made it possible to propose strategies of adaptation adapted to fight against the effects of heat and the repeated floods such as the proposal of a map of future green spaces to be promoted, the establishment of a calendar for the collection of garbage and the creation of water points at different intersections of the municipality. This research is the starting point for future research focused on urbanization in a world influenced by climate change.

By its approach and the results obtained, this study unambiguously establishes **the links between climate, population and urbanization policy.** Thus, the results obtained are of an inestimable contribution as much for the municipal authorities of Cocody as for the scientists. This work is an essential contribution in studying the impacts of climate change and human pressure on the environment.

Extent of the study

The study is limited to the Commune of Cocody, municipality of the city of Abidjan (Côte d'Ivoire). This municipality was chosen because of the paradox expressed by the fact that it is a social municipality of high standing (prestigious commune where resides the President of the Republic of Côte d'Ivoire and many other famous personalities of the country) with a relatively large number of people affected by the floods. This commune is also experimenting with some poor, disadvantaged areas, such as Anono, M'Badon and Blokauss. It records the largest number of people affected by the floods in Abidjan. According to the Office for the Coordination of Humanitarian Affairs (OCHA), more than 40,000 people (50%) are threatened by floods.

4- METHODOLOGICAL APPROACH

4.1. Geographic location of the municipality of Cocody

The Commune of Cocody is one of the communes of the District of Abidjan (economic capital of Côte d'Ivoire). It is located north-east of Abidjan between latitudes 5°19' and 5°27' N and longitudes 3°54' and 4°1' O (Figure 1). It has an area of 144.59 km^2 (20.8% of the total area of Abidjan). The 2014 census gives a population of 447,000 inhabitants, almost double the population of 1998, which was estimated at 251,741 inhabitants (INS, 2014). The Commune of Cocody is delimited in its northern part by the Commune of Abobo, in its southern part by the Ebrié lagoon, in its eastern part by the municipality of Bingerville and in its western part by the Commune of Adjamé (Figure 17). With the exception of Côte d'Ivoire Pharmacy (CIPHARM), it has not officially registered any industry. This shows that the Commune of Cocody is a municipality more reserved for housing. The expansion of the city of Abidjan is more apparent in Cocody. There is a tendency to confuse this municipality with that of Bingerville, a Commune belonging to the District of Abidjan. The Commune of Cocody is easily recognizable by its hotels of high standings like the Hotel Ivoire (SOFITEL Ivory) and the Golf Hotel. It houses most of the prestigious schools in Côte d'Ivoire, such as the Félix Houphouët-Boigny University, the Normal School of Administration (ENA) and the National Institute of Arts and Cultural Actions (INSAAC). It is also home to

the largest hospitals in the country such as the University Hospital Center of Cocody (CHU) and the Polyclinic Sainte Anne-Marie (PISAM). However, this beautiful town experiences some disadvantaged areas like Anono and M'pouto villages that are considered not to belong to the Commune of Cocody, but autonomous villages.

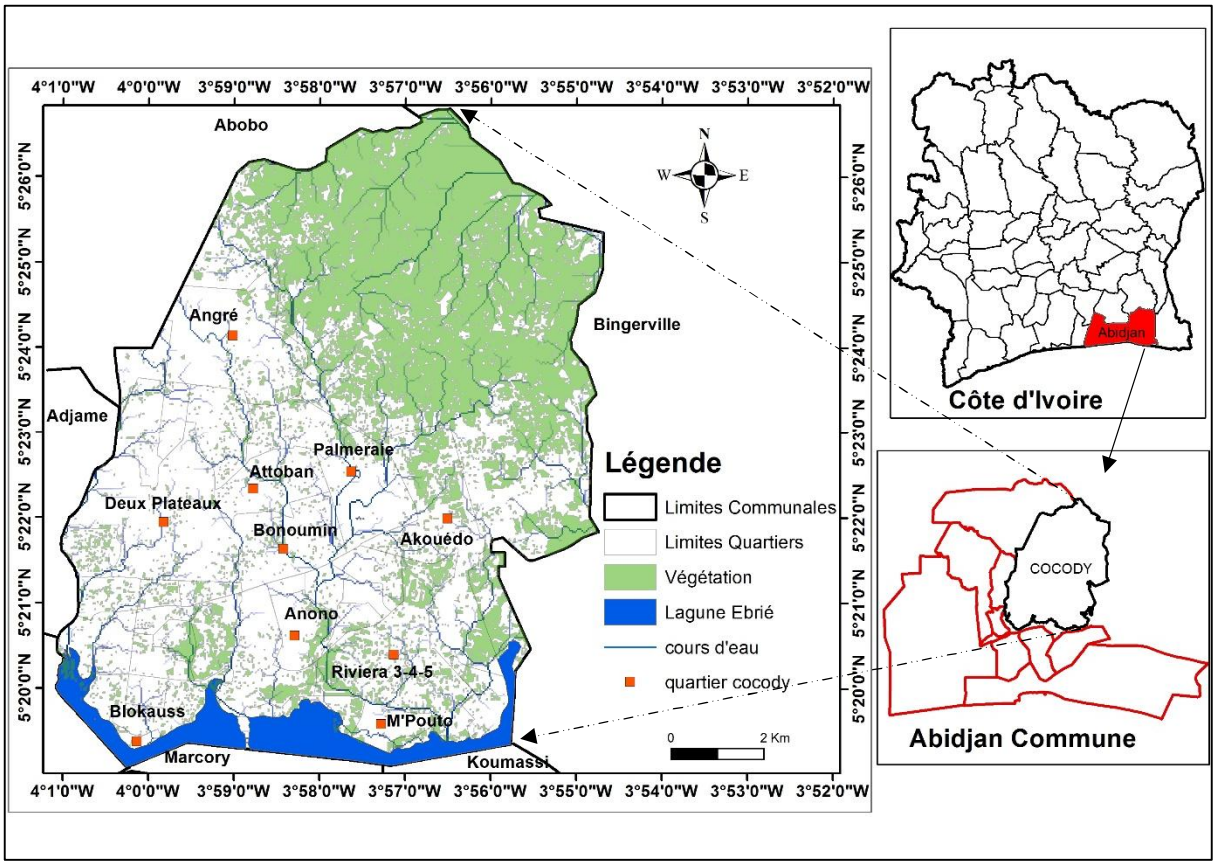


Figure n°18: Location of the commune of Cocody

4.2- Characterization of urban dynamics and climate behavior

4.2.1- Mapping the dynamics of land use in the Commune of Cocody

Image preprocessing was possible using ArcGIS 10.1. The TM (Landsat 4) and ETM (Landsat 7) sensors have seven spectral bands, while the OLI_TIRS (Landsat 8) have eleven bands. For each satellite image, all the bands were chosen and allowed to create a stacked layer called "composite images". Then, these images were georeferenced by projecting them into the World Geodetic System (WGS) of 1984 (WGS 1984). Thus, to improve the image, a combination of three bands was used.

The classification method of urban space was used to classify ROIs into four classes such as built, green or scrub, water and forest. A total of 36 training sites were used for the differentiation of each class. This consisted of five training sites, to differentiate the forest while, respectively, ten, nine and twenty training sites helped to differentiate the scrub, the

water and the frame. The classification of the images was evaluated based on the pre-existing land cover maps of the years 1986, 2000 and 2014 provided by the CCT. They were used as "field reality", especially for the years 1986 and 2000 due to the lack of factual images sufficient to attest to the land use of a given location. As for the 2014 image, validation was possible through to the data collected during the geographic surveys and the truth data from the field. The stratified random sampling method was used to select the sample cases. It consisted of placing a minimum number of observation points in each category (water, scrub, forest and buildings). According to Hay (1979), sample sizes must be representative and meaningful for an assessment of accuracy. As a result, 40 reference points derived from each of these maps (1986 and 2000) and field truth data for the 2014 image were assigned to each class throughout the community. This gives a total of 160 reference points for the four classes. This method makes it possible to compare a location sample on the classified image with the same locations on the "field reality" map. An error matrix resulted from this comparison. Thus, the total precision of a classified image was obtained by dividing the sum of the good predictions by the total prediction (160 in the case of this study). A percentage of 85% accuracy was considered for an acceptable classification. The Kappa coefficient (K) was also taken into account in the study. It was obtained using the following equation:

$$K = \frac{N\sum_{i=1}^{r} X_{ii} - \sum_{i=1}^{r}(x_{i+} * x_{+i})}{N^2 - \sum_{i=1}^{r}(x_{i+} * x_{+i})} \qquad \text{(Eq. 1)}$$

Where N is the total prediction,

X_{ii} is the good prediction,

x_{i+} corresponds to the reality and,

x_{+1} refers to the total reference point of a class.

After evaluating the accuracy of each classified image, the statistics of detected changes were obtained by simply comparing the area of each class over time. Thus, the percentage of loss and gain from 1986 to 2014 for each class was calculated.

4.2.2- Characterization of the temperature

The characterization of inter-annual variations in temperature was done, using average annual temperature data to analyze annual trends in temperature evolution. An overall trend of 40 years (1973-2012) of temperature variation was analyzed. The data taken into account for the analysis are the annual average maximum and maximum extreme temperatures, as

well as the minimum annual average and minimum extreme annual temperatures. Using the Excel software, graphs of maximum, minimum and average annual temperatures are plotted for good visibility of the different trends. In order to appreciate the different climatic periods undergone during the last four decades (1973-2012), the standardized temperature anomaly index was used. It is an index, regularly used by many authors (Huang and Dool, 1993, Jones and Hulme, 1996, Edwards et al., 2002) to analyze the coldest and warmest years from a value reference. The standardized temperature anomaly index is calculated from the reduced centered variable method according to the following formula:

$$\boldsymbol{I = \frac{T_i - \overline{T}}{\sigma}} \qquad \text{(Eq. 2)}$$

With I, standardized anomaly index;
Ti, Temperature of the year i;
$\overline{\boldsymbol{T}}$, mean temperature over the observation period (1973-2012) and
σ, standard deviation.

Evaluation of thermal discomfort using the Thermo-Hygrometric Index

The Thermo-Hygrometric Index (THI) is used to evaluate heat stress or bioclimatic conditions. It has been frequently used as a Thom discomfort index (Balogun and Balogun, 2014) and is defined according to the following formula:

$$\boldsymbol{THI = T - 0,55 * (1 - 0,01H)(T - 14,5)} \qquad \text{(Eq. 3)}$$

With THI, Thermo-Hygrometric Index;
T, the mean annual temperature;
H, the mean annual relative humidity.
The table 2 gives the correspondences of the climatic conditions with the THI. It has already been used in Nigeria by Balogun and Balogun (2014) to evaluate thermal comfort and seems to be adapted in the humid tropical climate of sub-Saharan Africa.

Table N°2 : Thermo-hygrometric index correspondence with the climatic environment

IT (°C)	Conditions of discomfort
THI < 13	Cold
13 < THI < 14,9	Fresh
15 < THI < 19,9	Confortable
20< THI < 26,4	Hot
26,5 <THI < 29,9	Very hot
THI ≥ 30	Ardent

Source : (Kyle, 1994), adapted

4.2.3- Characterization of rainfall

Floods usually result from the combination of extreme weather and hydrological events such as heavy rainfall and surface runoff (Liu et al., 2006, Zhou, 2014). However, they do not occur all the time of the year. They are seasonal and occur at a specific time of the year, specifically, during rainy seasons (Tschakert et al., 2010). Thus, the analysis of the critical periods consisted in the analysis of the daily rainfall heights exceeding 100 mm, as well as the consecutive heights of days of rain equivalent or exceeding 100 mm of rain. By the way, daily data of 40 years of rain are analyzed and graphed using Excel software to track their evolution over time. This consisted of following the evolution of the critical period (April-July) during the last 40 years (1973-2012), but also the critical height of flood during this same period. The probabilities of occurrence of critical days, as well as critical periods are also analyzed through the return periods of these phenomena.

4.3. Assessment of the vulnerability of populations to climate variations

The qualitative and quantitative approaches were used in this study to assess the vulnerability of the inhabitants of Cocody commune to climatic conditions, according to their living and sanitation conditions. For quantitative vulnerability assessment, a set of indicators that measure both the social and ecological dimensions of the three components of vulnerability, namely exposure (E), susceptibility (S), and lack of resilience (LoR), has been identified. The indicators for the vulnerability analysis have been developed according to the different components of “MOVE” conceptual framework. To complete the quantitative assessment, additional information on the ecological dimension of vulnerability, and especially on the potential impacts of the hazard on the ecological system, was analyzed through a series of interviews and analyzed qualitatively. Common conclusions were drawn from the two methods applied.

The aggregation of the three components (E, S and LoR) into a final composite indicator of socio-economic vulnerability was then performed using the equation (Depietri et al., 2013, Welle et al., 2014):

$$\boldsymbol{V = E(\frac{1}{2}\ (S_i + LoR_i))} \qquad \text{(Eq. 3)}$$

Where:

"V" refers to the vulnerability index of a neighborhood "i".

"S_i" and "LoR_i" are the susceptibility and the lack of resilience of the neighborhood "i" respectively.

4.4- Development of an integrated approach of adaptation strategies to climate variations

Effective strategies for adapting to heat effects have taken into account trends in variability and climatic periods and the conditions of thermal discomfort to which populations are exposed. Also, they took into account the endogenous adaptation methods of these populations, their perceptions on the evolution of the climate and the importance of green spaces in mitigating the effects of heat. To do this, a correlation analysis was first required. It was done between the components of vulnerability (exposure, susceptibility and lack of resilience) and the vulnerability index in order to analyze the factors influencing vulnerability to take into account in the proposal of adaptation strategies to the effects of heat. The Pearson correlation index was used for this purpose to study the significance of the existing relationships between vulnerability. Subsequently, vulnerability-component correlations, conclusions drawn from the results of temperature variations, the discomfort index and population perceptions were combined with previous strategies to identify effective strategies adapted to climatic conditions and urban dynamic.

Concerning the vulnerability of populations to floods due to rainfall variations and sanitation deficits, the adaptation strategies used initially considered the dynamic relationship between urbanization and the drainage network. Based on the results of the geographic survey, the proposed adaptation strategy was based on gaps in the sanitation deficit that could lead to flooding and/or cause risks of household infection during flood. Factors and/or components with a significant correlation to vulnerability were carefully analyzed and necessary indicators/factors were proposed for effect mitigation. The strategies specifically addressed indicators that have a positive relationship with vulnerability for mitigation and indicators that are negatively correlated with vulnerability to reinforce their influences on the vulnerability index. This study wanted to be social and thus centered on the man. Also, all the strategies developed will be applied to them. It was therefore imperative to take into account their perceptions and wishes. Thus, all strategies developed were compared to the perceptions and/or wishes of the populations to retain the most relevant.

5. RESULTS

5.1. Urbanization dynamics for the Commune of Cocody from 1986 to 2014

Considering the two combined periods (1986-2000, 2000-2014), we notice a noticeable change in the urban landscape of the commune of Cocody. The land-use dynamics are presented in figure 19.

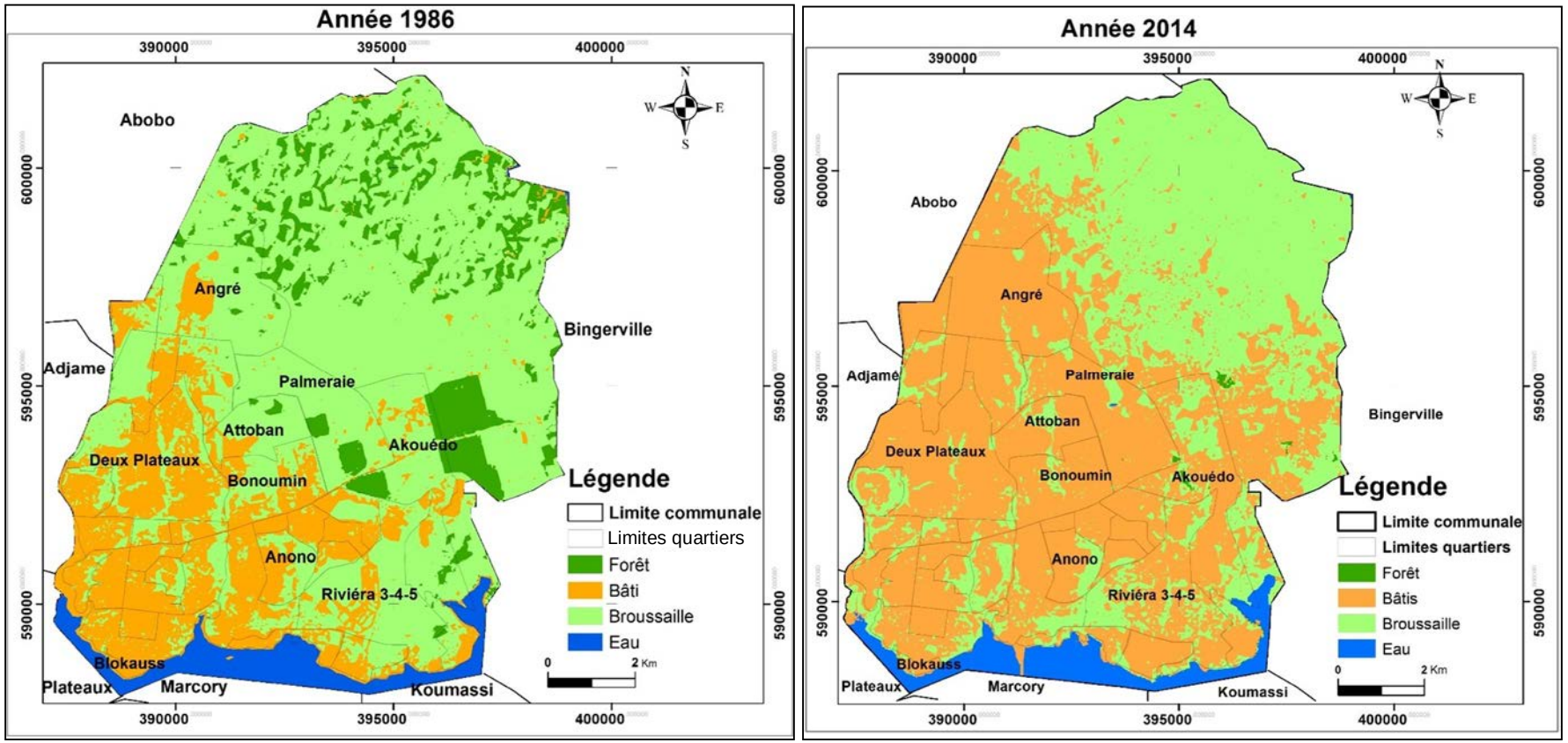


Figure n°19: Land use dynamics at Cocody in the Decades 1986-2014

A progressive, rapid and continuous substitution of the natural space (water, forest and scrub) by the building is observed. The natural environment has decreased in size drastically. The forest and bare soil have almost disappeared. It can also be noted that the expansion of buildings is from South to North. In 1986, the surface of the natural environment was visibly larger than that of the area occupied by the building. In 2014, the opposite is observed with a significant decrease in the natural environment. The statistical report of the urban dynamics of land use in the commune of Cocody is summarized in the table below.

Table 4: Statistical report of detected changes in Land use for 1986-2014 period

		Built	**Forest**	**Water**	**Brushwood**
Initial area (1986)	km^2	**30,10**	**11,53**	**5,94**	**75,07**
Final area (2014)	km^2	**67,51**	**0,20**	**5,43**	**49,50**
Observed	km^2	**37,41**	**-11,33**	-0,51	-25,57
difference	(%)	**124,29**	-98,26	-8,59	-34,06

The overall statistical report of the land use of the town of Cocody from 1986 to 2014 highlights a considerable increase in the surface of the buildings. In 1986, the size of the buildings was 30.10 km^2, but this size reached 67.51 km^2 in 2014. This corresponds to an extension of 37.41 km^2 or 124.29% increase. It is also the only class that has recorded an increase in its area. The forest lost 11.33 km^2 (98.79%) of its total area. The same observation was observed for the water and brush classes, which lost respectively 0.51 km^2 (28.58%) and 25.57 km^2 (34.06%) of their initial surface. The figure 27 summarizes the dynamics of land use in the Commune of Cocody, for the years 1986, 2000 and 2014.

5.2- Evolution of climatic parameters in the municipality of Cocody

5.2.1- Temperature evolution

The temperature anomaly index is shown in figure 20. It shows the hottest years and the coldest years. The anomaly curve shows that from 1973 to 2012, we went from a cold period to a warm period. It also makes it possible to differentiate the temporal evolution of the temperature in three (03) periods:

- the first period starts from 1973 to 1982. It is a period characterized by a cool climate where annual temperatures are constantly below average;
- the second period extends from 1983 to 1997. During this time, the temperature was generally moderate with exceptions of hot (1995) and cool (1985 and 1986) years;
- the third period concerns the period from 1998 to 2012. It is a period of intense heat with annual temperatures exceeding the average. The years 2002, 2003 and 2012 are the exception with moderate temperatures.

The year 2008 was the hottest year of the series, while 1976 is presented as the coldest year. The trend curve expresses more than 73% the temporal evolution of the temperature. It shows a rapid upward trend in mean inter-annual temperature with a rate of 0.07° C/year.

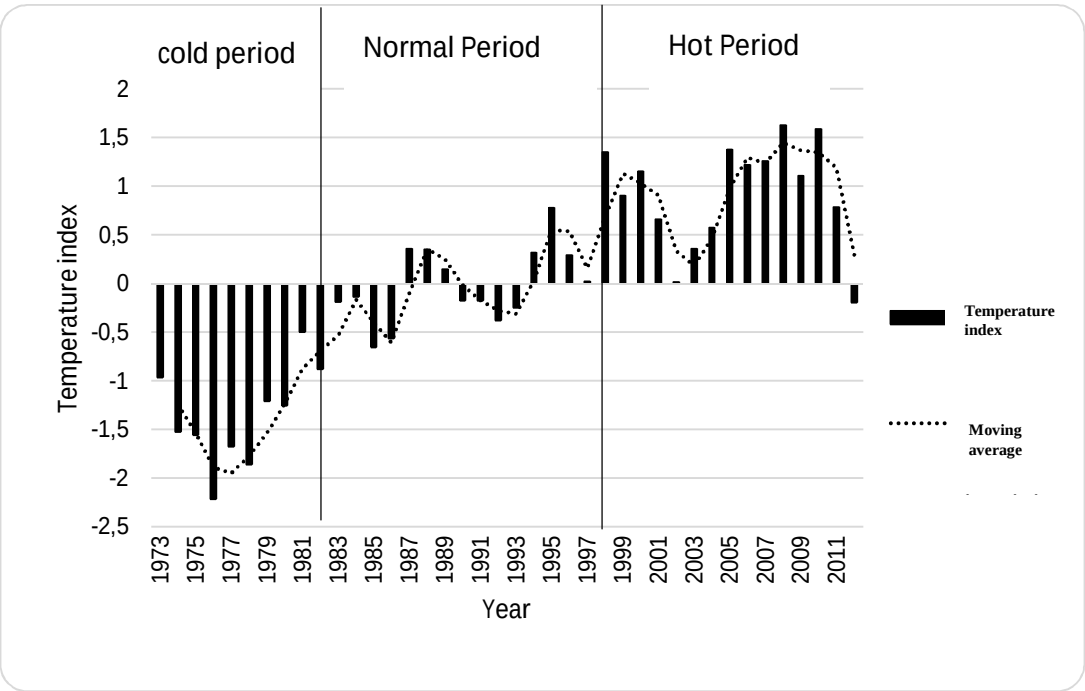


Figure n°20: Temporal evolution of the average temperature in Abidjan from 1973 to 2012

In general, the temperature of Abidjan undergoes a change from a period when the climate was relatively cool to a current period where the climate is characterized by intense heat.

In general, the environmental discomfort of the population evolves in "boom and bust" but shows an ascending pace progressively. The THI curve varies from 25.02°C in 1976 to 27.65 in 2010. The linear trend line expresses more than 65% the evolution of THI. Analysis of this line confirms the upward trend of THI, at a rate of 0.046° C/year. It highlights an accentuation of thermal discomfort over the years. The period from 1973 to 2003 corresponds to a time when the climate was hot with exception the year 1998 which was a warmer year. Since 2004, the population of Abidjan has been experiencing a period of thermal discomfort with a very hot climate. The year 2012 is the exception with a hot climate.

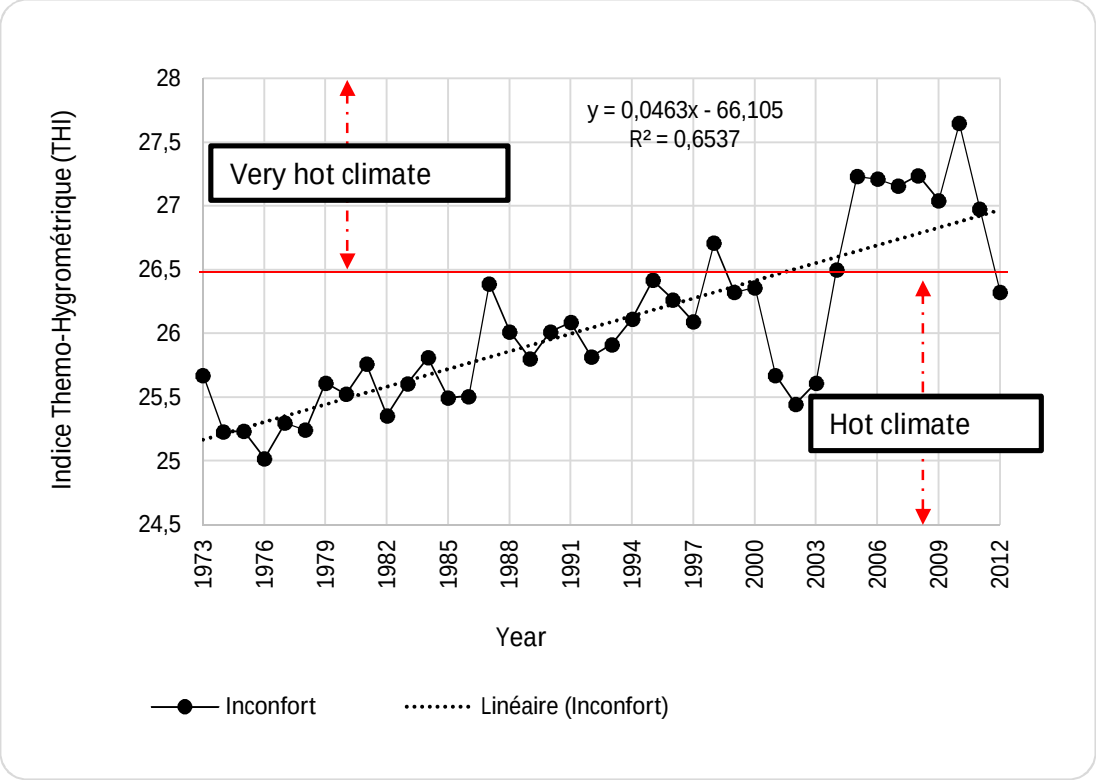


Figure n°21: Temporal evolution of the discomfort index in Abidjan

5.2.2- Characteristics of rainfall in Cocody-Abidjan

From 1973 to 2012, the maximum annual rainfall in Abidjan reached heights ranging from 38.6 mm to 311.6 mm. From 1973 to 1982, the evolution of annual rainfall extremes was relatively constant. From 1983, this evolution is subject to a fluctuation dominated by daily rainfall amounts greater than 100 mm. It should be noted that annual maximum extremes represent the largest amount of rain of a day of the year (annual maximum daily rainfall). Generally, these amounts of rain are one of the causes of flood in Abidjan. The trend line shows a general appearance at the weakening of these annual daily quantities of rain likely to generate floods.

With regard to the monthly rainfall extremes, they correspond to daily rainfall amounts and/or consecutive days of rain exceeding 100 mm. The results are shown in table 4. Over 58 days of extreme rainfall recorded during the rainy seasons, during the 40 years of the observation series (1973-2012), 49 (84.5%) occurred during the great rainy season (April-July) and 5 (8.6%) during the short rainy season (October-November). This corresponds respectively, over the 40 years of observation, to a probability of occurrence of a particular year of extreme rain of 122.5% and 12.5% for the great and small rainy season respectively. During the great rainy season, over 45 days of extreme rainfall recorded during 40 years of observation, 30 (55.6%) were recorded during the month of June. The probability of occurrence of extreme daily rain in June, for a particular year, therefore appears equal to 75% with a return period of more than one year (T = 1.33). The calculations give 75% the probability that an extreme daily rainfall will occur one or more times in June of each year.

The month of May appears to be the second month of the great rainy season marked by extreme rainfall with 10 days (18.5%) over 45 days of extreme records in 40 years. This value corresponds to 25% probability of occurrence of extreme daily rain in May. This induces a return period of four years (T = 4 years) for extreme rainfall in May. Thus, calculations give more than 25% the probability that each year, an extreme daily rain occurs one or more times in May.

Table 5: Statistics of monthly extreme daily rainfall from 1973 to 2012

	Jan	Fev	Mar	Apr	May	Juin	Jul	Aout	Sept	Oct	Nov	Dec
N_c	0	1	0	2	10	30	7	1	2	4	1	0
P_{occ}	0	0,25	0	0,05	0,25	0,75	0,175	0,025	0,05	0,1	0,025	0
T	0	40	0	20	4	1.33	6	40	20	10	40	0
P_{real}	-	2,5	-	5	25	75	17,5	2,5	5	10	2,5	-

The month of June records 60 critical consecutive days of rain out of a total of 106. This statistic represents a 1.5-fold frequency of flood critical moment frequency in each month of June. Also, May appears as the second month with more critical flooding moment. The data show that during 40 years of observation, May recorded 24 critical periods. The consecutive rainfall amounts vary from 112 mm to 553 mm, with an average rainfall of 233 mm.

During the long rainy season (April-July), the greatest amounts of rain are observed during the period from May 20th to July 6th. They are very intense during the month of June (Figure 37). Rainfall showers are in the period from May 29th to June 22nd. These average amounts of daily rainfall give an idea of the critical period of flood considering the daily rainfall extremes and the consecutive rains.

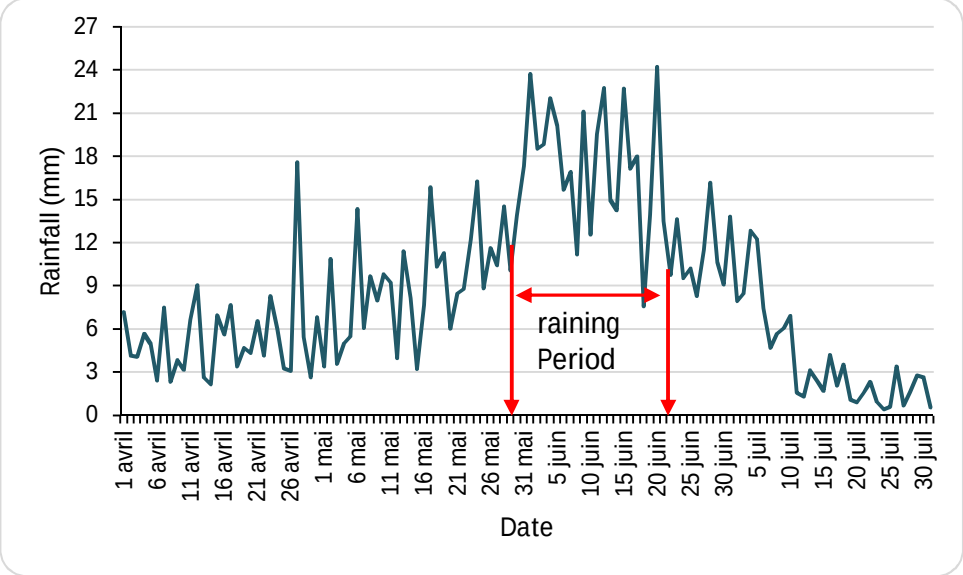


Figure n°22: Average daily rainfall from April to July in Abidjan from 1973 to 2012

The figure 23 gives a frequency of occurrence of daily rainfall in Abidjan (and therefore in Cocody) during the major rainy season from 1973 to 2012. Rainfall is more regular from May 24 to June 18, with a frequency of at least two days of rain out of three.

The synthesis of figures 22 and 23, places the critical period of flood in the city of Abidjan from May 29 to June 18. During this period, it is likely to have at least two days of rain in three with an average daily rainfall of at least 15 mm.

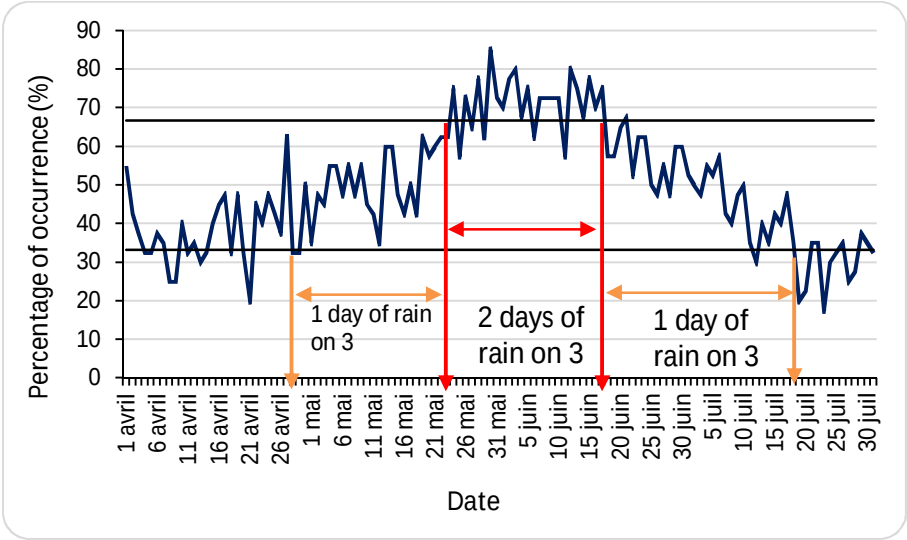


Figure n°23: Frequency of occurrence of daily rainfall in Abidjan from 1973 to 2012

5.3- Vulnerability and adaptation of urban populations to temperature effects

The figure 24 reveals a lack of green spaces in several neighborhoods in the town of Cocody, Attoban, M'pouto, Akouédo, Blokauss, Val doyen, Plateau Dokui and Cannebiere specifically. Moreover, in neighborhoods where green spaces exist, they are asymmetrically distributed. Many residents would be more than 500m or more than 1km from these natural environments. The green spaces are more concentrated in the south of the Commune, in the old neighborhoods firstly built, and are absent in the new neighborhoods. In many neighborhoods, these green spaces are poorly maintained and often transformed into a market. There are some neighborhoods, which have a well-maintained green space, as shown in the green space of the Riviera Palmeraie. The number of green spaces in the Commune decreases in the direction of the process of urban dynamics.

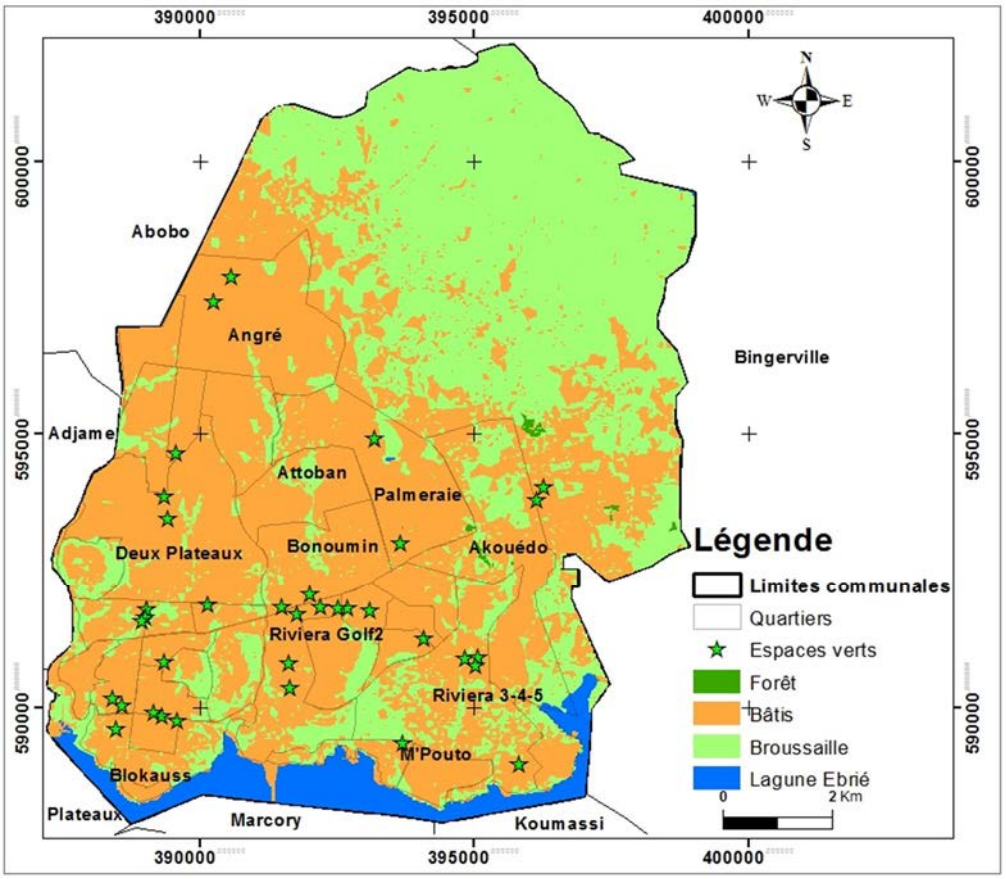


Figure n°24: Spatial distribution of green spaces in Cocody

The result of the combination of the three components of vulnerability namely exposure, susceptibility and lack of resilience gives the vulnerability map to heat. According to this map, more than half of Cocody's neighborhoods have a heat vulnerability ranging from medium to very high. Six neighborhoods of Cocody appear very vulnerable to the effects of heat. These are mainly Plateau Dokui, Danga, Blokauss, Anono, M'pouto and M'badon districts. These neighborhoods are generally low-class neighborhoods with the exception of Danga which is of average standing. The areas of very low vulnerability are Agban, University, CHU, Gendarmerie and Sideci-Zoo, Akouédo and Riviéra-EECI.

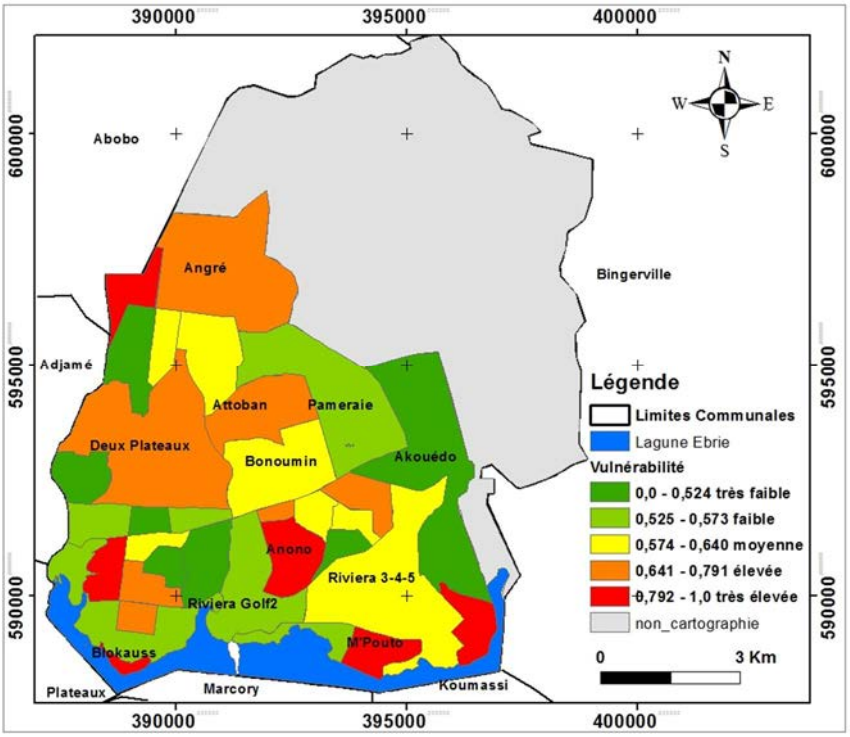


Figure n°25: Neighborhood vulnerability of Cocody populations to heat effects

5.4- Vulnerability and adaptation of populations to rainfall

Although designated flood zones, five wards, after geographic surveys, were decommissioned as yet unaffected. These are the districts of the Riviera Golf, Embassy, Agban Gendarmerie, Ecole Gendarmerie, and the City of Arts. The flood zones seem to follow the drainage network.

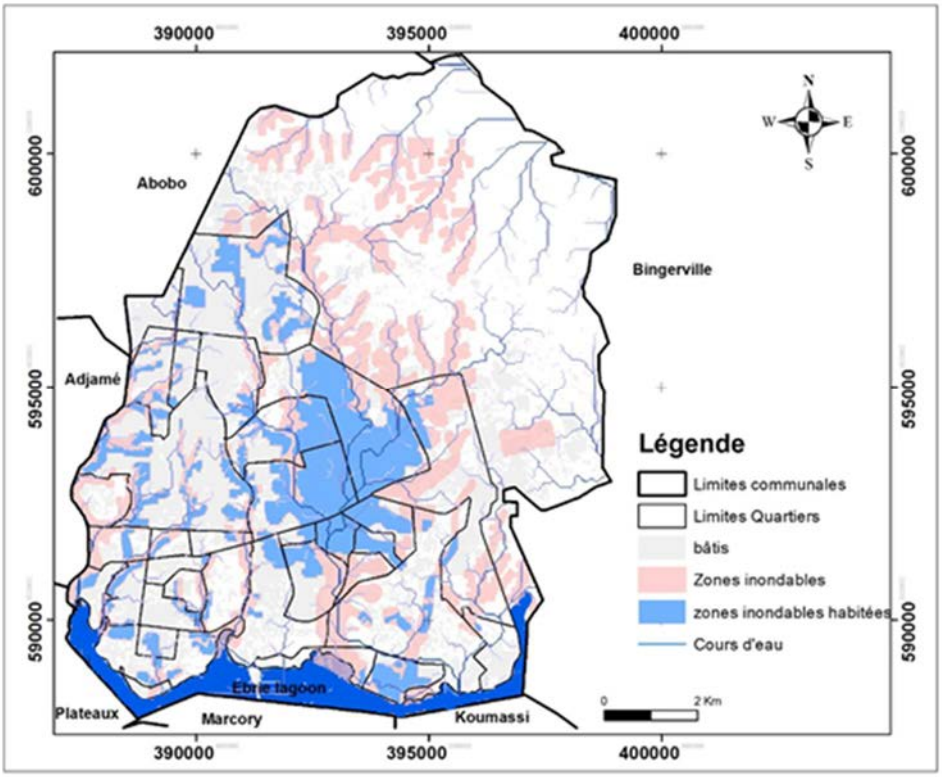


Figure n°26: Manned flood areas of Cocody (OCHA, 2014, updated)

Floods related to environmental issues in the municipality of Cocody concern waste management, the drainage system and the state of road infrastructure after flooding episodes. Among the 29 neighborhoods surveyed in the municipality, 41.4% of them are really concerned about floods related to environmental problems as described below.

With regard to the environmental problems of waste management, 75 sites of wild waste disposal are observed everywhere in the commune of Cocody, particularly in ten districts of the commune. All 75 litter stations have a volume of approximately 1361.65 m^3. Among the 75 wild deposit stations discovered, 64% are within 5 m of the drainage system. Bonoumin, Angré, Anono and Palmeraie share the largest volume (92%) of this waste with respectively 111.6 m^3, 131.8 m^3, 922 m^3 and 92.22 m^3. Regarding the question of the drainage system, 95 rainwater drainage systems were noticed as not functioning correctly in 12 districts of the municipality. 34.7% of these drainage systems are illegal and Anono, one of the low-income neighborhoods of Cocody commune has the highest number with 18 out of 23 observed in the area. All of these problem drainage systems observed in the 12 districts are either blocked (73.7%), broken (29.5%), cracked (43.2%), or blocked by sand (100%). They are generally subject to anarchic connections (41%) by the disposal of household solid and liquid waste. In terms of road infrastructure, 61 roads in 11 neighborhoods in Cocody are degraded. 4.5% of these roads are inaccessible or out of service. All these roads are either cracked, interrupted, blocked, abandoned or even difficult to access or impracticable (Figure 27).

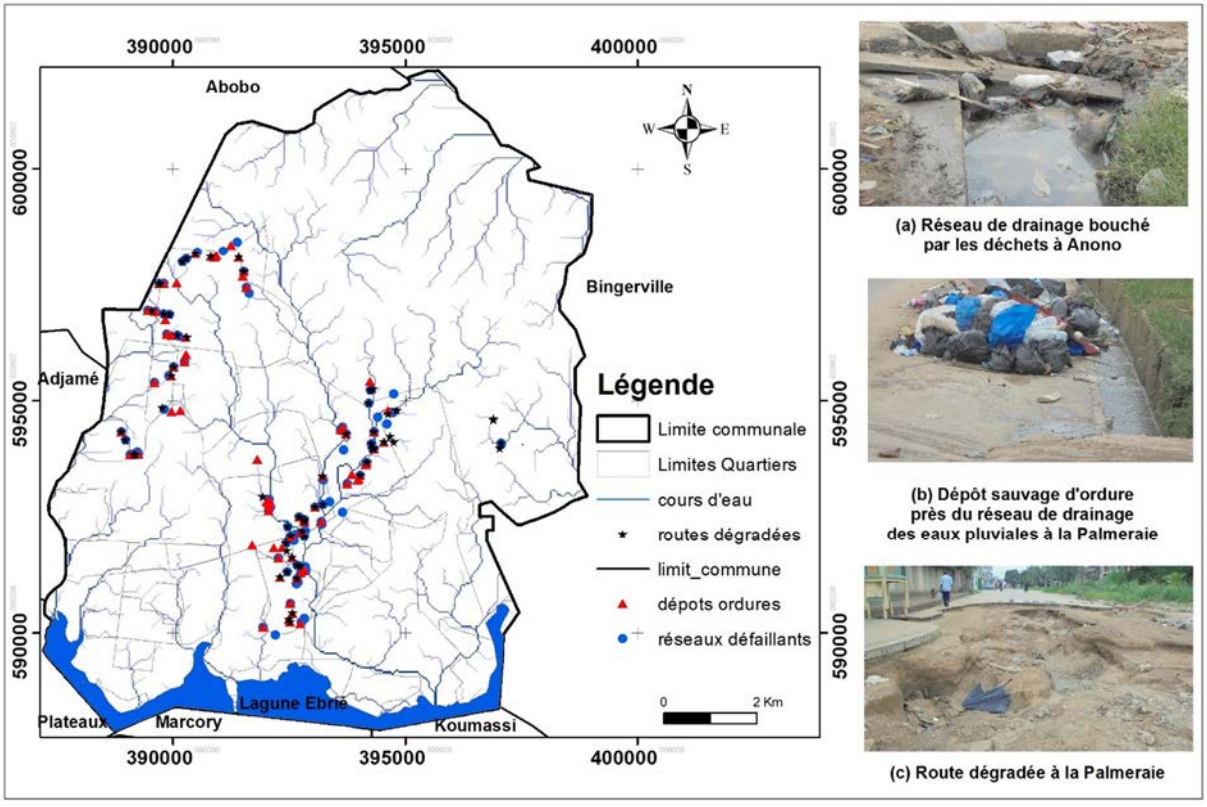


Figure n°27: Spatial distribution of environmental problems related to floods in Cocody

The aggregation of all indicators used and the combination of all components of the vulnerability, namely the exposure to floods, the susceptibility and the lack of resilience make it possible to highlight the vulnerability map of the populations of Cocody to the floods. The analysis of this map shows several neighborhoods in the municipality of Cocody that are vulnerable to flooding. More than half of the neighborhoods have a vulnerability ranging from medium to very high. The populations of six districts of Cocody appear with a very high vulnerability. These are the people of Palmeraie, Attoban, Riviera-Sogefiha, Riviera-Sideci, Copraci-Coprim and Blokauss. This vulnerability is variously distributed in the commune but it is more perceptible in the North-East and South-West.

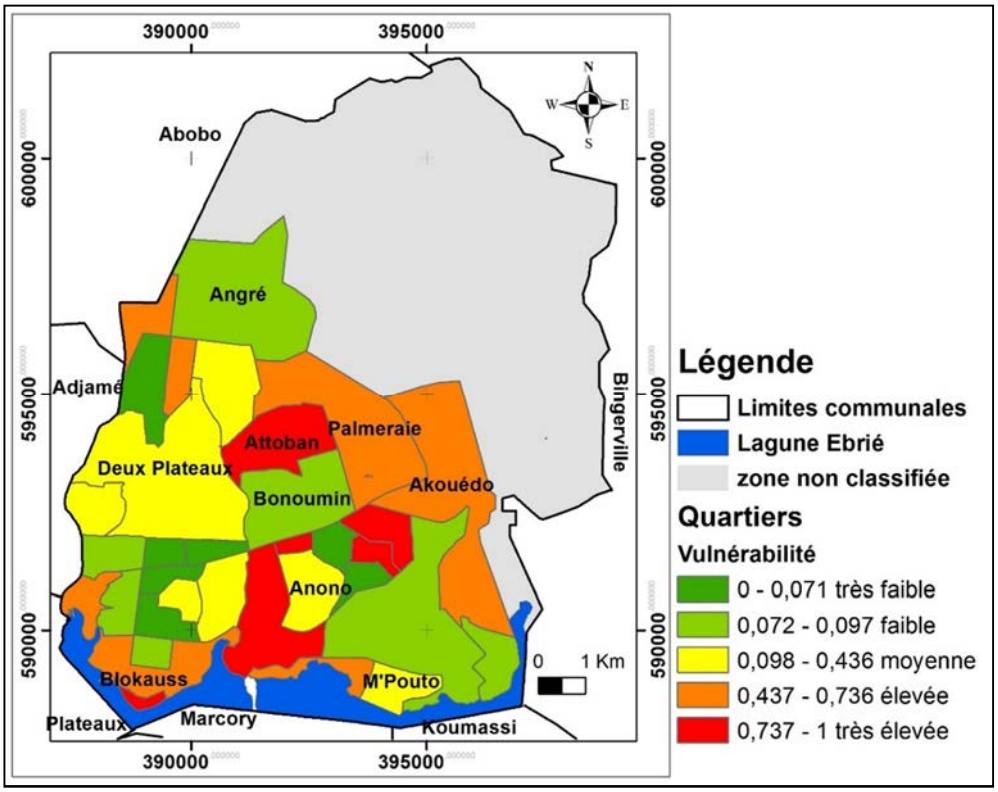


Figure n°28: Neighborhood vulnerability of Cocody populations to floods

5.5- Strategies for adapting to climate variations

Climate variations have had negative impacts on urban populations. Regarding the effects of heat, in addition to the thermal discomfort felt by the entire population, there are also impacts related to health and well-being such as dermal problems, visual and many others. With regard to floods, the impacts are at two levels: socio-economic and environmental level. At the socio-economic level, there has been dislocation of families, abandonment of private property, and loss of property. Environmental impacts mainly related to the destruction and erosion of roadways. The results of the research help to develop a conceptual framework leading to decision making for better adaptation strategies to climate effects. Adaptation strategies to climate variability take into account the

process of urbanization, climatic characteristics and existing adaptation measures. The diagram in figure 29 gives the different steps of the adaptation strategy to the effects of climate variations.

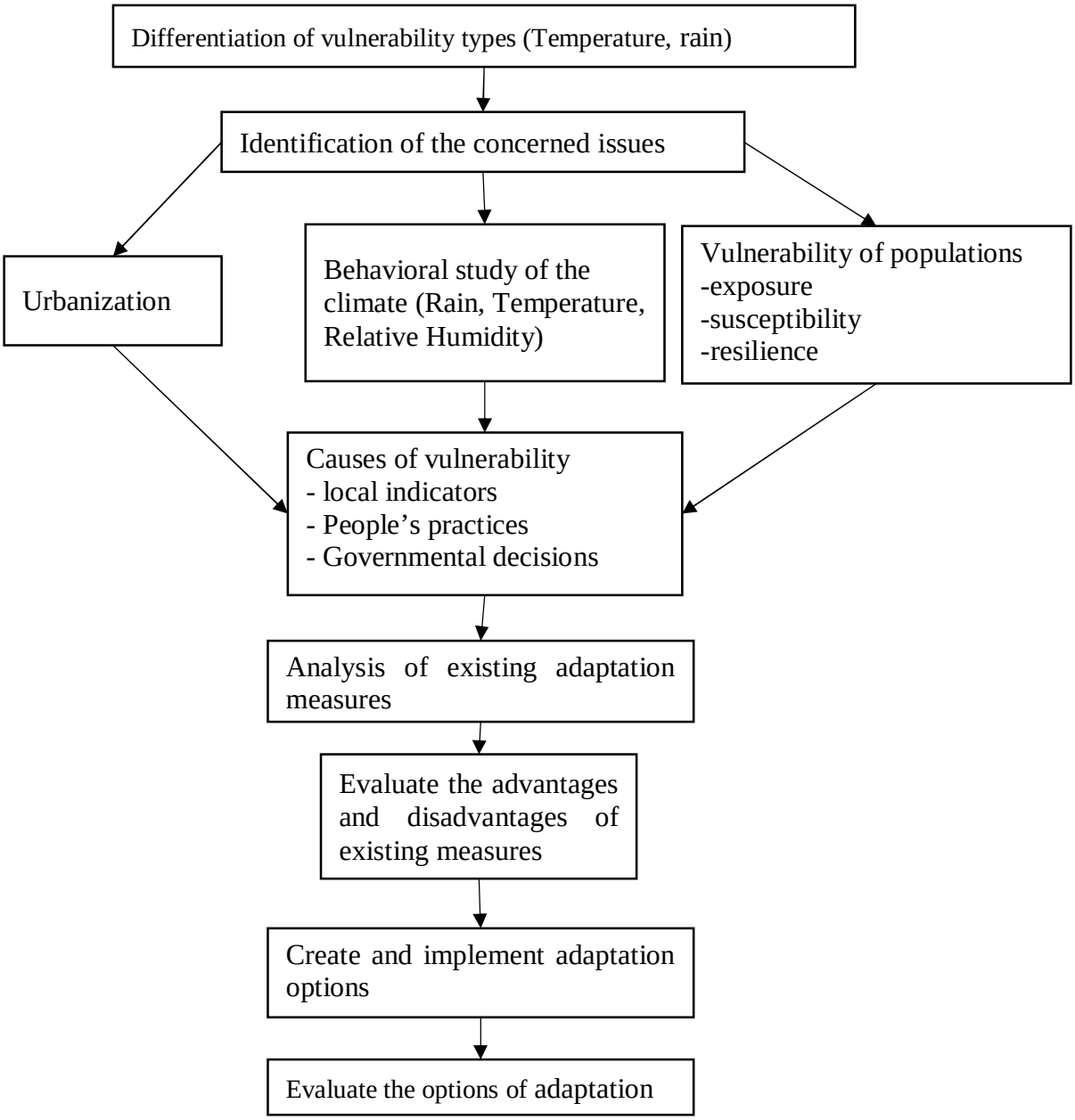


Figure n°29: Conceptual framework for adaptation to climate variability effects

GENERAL CONCLUSION AND PERSPECTIVE

In recent decades, the community of Cocody has experienced a rapid increase in population which has been followed by increased demand for urban land and a significant transformation of the natural environment into buildings. However, this rapid urbanization does not seem to take into account the evolution of the climate, with its corollaries of temperature rise and the occurrence of extreme rainfall, thus generating areas more vulnerable to climatic hazards. Moreover, the repeated occurrence of floods in Cocody and the thermal discomfort felt by local residents create a paradox between high-standing township deemed well-planned and exposure to climatic hazards such as

floods and the effect of heat. The methodology of the study consisted mainly in the use of a conceptual framework called "MOVE framework" for the evaluation of vulnerability to climatic hazards. Also, It included three years of Landsat satellite imagery (1986, 2000 and 2014), for the characterization of urban dynamics, and the analysis of forty years of climate data (temperature, rainfall and relative humidity), for characterization of climatic behavior. Geographical surveys and household surveys, respectively, for the collection of local vulnerability indicators and for population perception of climate, were also taken into account in the study methodology. Important results have been obtained.

Urban dynamics and climate behavior

From 1986 to 2014, commune of Cocody underwent a rapid urbanization, characterized by a very significant increase of buildings (124%) and a noticeable decrease of the environment (98.79%, 22.74% and 99.44% respectively for forest, vegetation and bare soil). The gradual loss of the natural environment is due to the expansion of the bare soils which, in return, are gradually being replaced by the expanding structures towards the south and south-east of the commune of Cocody in 2014. As for spatial and temporal variation of temperature in relation to the land occupation, the results showed high temperatures at the level of the areas dominated by the buildings, whereas the areas, with strong dominance of the natural environment (water and vegetation), the temperatures are the lowest. The evolution of the temperature has shown a continuous warming of the climate in Abidjan. Regarding the temperature index, he highlighted three different climatic periods, including a period from 1973 to 1982 characterized by a cool climate, a period from 1983 to 1998, with a moderate climate and a period from 1999 to 2012 which behaves like an extremely hot period. Thus, since 2004, the population lives in a thermal discomfort dominated by a very hot climate. With regard to rainfall, the results of the Pettitt and Hubert tests showed a period of rainfall failure in 1982, at the meteorological station of Abidjan thus missing a surplus period before the rupture and a deficit period after breaking. However, this decrease in rainfall does not seem to have an effect on the occurrence of floods, which are known as the results of extreme or consecutive daily rainfall.

Vulnerability and adaptation to climatic variations

The commune of Cocody has an important lack of green spaces. Several neighborhoods in the town are missing. This exposes most of its inhabitants to the effects of heat. Thus, several neighborhoods of the commune appear very vulnerable to heat. The local populations of Cocody have a good perception of the evolution of the temperature and even declare to be affected by its effects. Thus, these effects are manifested by discomfort, dermal problems, tiredness, nervousness, headaches and eye problems. The population of Cocody is also subject to rainfall hazards generating floods.

The causes of these floods have been identified as being related to a failure of the drainage system, poor household waste management and rapid urbanization. Also, several neighborhoods have been identified as hot spots of floods. These are the neighborhoods of the Palmeraie, Bonoumin, Angré, Riviera-Sideci and Riviera-Sogefiha. As for temperature, several neighborhoods in the town of Cocody have been identified as very vulnerable to floods. The floods had an impact on the population, ranging from the destruction and loss of property to the dislocation of families. The study proposed an integrated approach for a good adaptation strategy.

Recommendations

The dynamics of land use has an incident on the spatial variation of temperature. It also has a notorious effect on the exposure and vulnerability of populations to climatic variations. Thus, to minimize the impact of climate on the urban population, the results of our research recommend:

- Good collaboration between the authorities in charge of urban development and scientists;
- - Use of population statistical data for good planning of urbanization;
- Creation and good management of green spaces in all neighborhoods of the municipality and at suitable distances for their use;
- Restitution of reserved sites for green spaces and good management of the natural environment;
- Consideration of climate change in urban planning;
- Collaboration with the authorities in charge of urban development and scientists;
- Establishment of a climate-based waste collection schedule, which will include amplification of collection during critical flood periods.

Research Perspectives

The indicator-based vulnerability assessment method used in this study is a new method that is little used in Africa, specifically in Sub-Saharan Africa. It makes it possible to have a spatial distribution of the most vulnerable populations and thus helps decision-making. Thus, this study opens with several research perspectives. We then envisage a more global study of the dynamic relationship between urbanization-climate-human behavior and health. This takes into account:

- an integration of several local indicators (habitat typology, street trees, etc.) and the use of more precise climate data;
- a clinical study of the impact of heat effects on the health and well-being of populations;
- a specific study of the contribution of extreme rains and floods to the feeding or groundwater pollution.

A- CHRONOGRAM OF THE PROJECT

N°	ACTIVITIES	YEARS											
		2018				2019				2020			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
1	Sensitization												
2	Identification of poor women												
3	Assessing the poverty level of poor women												
4	Assessment of the vulnerability level of women												
5	Women's training 30,000 women trainers												
6	Establishment and equipment of trained women;												
7	Training and equipment of women in entrepreneurship;												
8	Student training												
9	Encourage students from modest conditions												
	Seminars and symposia												
	Accompanying measures												
	Institutional support												
	Monitoring and evaluation												
	Internal Audit												
	External audit												

B- COST OF THE PROJECT

LIGNE BUDGETAIRE	**COST (XOF)**
1- Sensitization of all the women of Cocody, the District of Abidjan and the Project Region, to notions of climate protection as well as the fight against greenhouse gas emissions and the means of eradicating them.	1 200 000 000
2- Identification of 300,000 women in the target group of precarious and at-risk neighborhoods in the municipality of Cocody and the District of Abidjan, victims of climate change;	500 000 000
3- Evaluation of the poverty level of women in precarious neighborhoods in the town of Cocody, victims of climate change;	500 000 000
4- Assessment of the level of vulnerability of poor women in the municipality regarding the impact of climate change;	500 000 000
5- Training of 30,000 women trainers and leaders of the various local communities victims of climate change, in modern techniques of adaptation, mitigation, general sanitation, hygiene and economic and financial empowerment, charged in their turn to train and mentor the 300,000 others, then propagate and disseminate the approach;	3 000 000 000

6-1 Establishment and equipment of trained women (restoration) 6-2 Establishment and equipment of trained women (organic urban family farming) 6-3 Establishment and equipment of trained women (food trade) 6-4 Establishment and equipment of trained women (aquaculture) 6-5 Establishment and equipment of trained women (short cycle breeding) 6-6 Establishment and equipment of trained women (market gardening) 6-7 Establishment and equipment of trained women (retail trade) 6-8 guarantee fund	70 000 000 000 30 000 000 000 50 000 000 000 10 000 000 000 20 000 000 000 20 000 000 000 20 000 000 000 80 000 000 000
7- Training, equipment and Establishment of 30,000 women to modern entrepreneurship;	20 000 000 000
8- Organization at CURAT, diploma courses for Masters and PhD (200 students);	1 500 000 000
9- Encouragement of students from modest conditions to complete their studies;	500 000 000
11- Organization of seminars and symposiums for actors	1 200 000 000
12- Institutional support	2 500 000 000
13- Monitoring and evaluation	500 000 000
14- Internal Audit	300 000 000
15- External audit	500 000 000
	327 700 000 000

MINISTRY OF HEALTHINESS, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

National Platform for Disaster Risk Research

Quantitative assessment of natural risks and disaster risk reduction in the municipality of Cocody, and implementation of the territorial reference system

Professor OCHOU DELFIN

Summary

Man has always developed the spaces on which he lived to ensure his survival and improve his comfort. The increase in the world's population, its concentration in ever larger and denser urban spaces, the increase in industrial and commercial activities, all these elements have led to major imbalances, a depletion or a degradation of the natural resources that threaten our planet and humanity itself. Many states, political and economic leaders, developers, citizens have engaged in a sustainable development approach to limit nuisance or restore equilibrium, including via eco-cities. This is ambitious and hopeful for future generations; it is complex and mobilizes very important financial and human efforts in the short term, but it is necessary and beneficial; it is very profitable in the long term and should allow developing new economic models. However, the efforts deployed must not be invested at a loss, or even destroyed by major events that would be impacted by insufficiently prepared companies; because major events will occur, notably induced by climate change.

It is a certainty. One cannot have a sustainable development without quantifying and integrating natural hazards into territorial planning. And it cannot, at the same time, be developed without a good understanding of the territories and involvement of the populations. The tools and answers provided to date both on the evaluation and the quantification of natural risks on the one hand, and on the knowledge of the territories on the other hand, are insufficient, and for many reasons: lack of powerful tools information gathering, lack of public support for risk prevention, lack of integrated approaches, ineffective early warning systems.

This project aims to provide an operational response in terms of data collection and structuring of knowledge, quantification of natural hazards and early warning system, information sharing and community involvement. It is structured around four key strategic pillars, essential to the development of a balanced, secure and resilient territory, here in the municipality of Cocody:

1. The establishment of an effective information collection system to have comprehensive, detailed and up-to-date data on the entire community of Cocody, involving local populations,
2. A quantitative assessment of the natural risks to which the municipality is exposed (floods and landslide),
3. The establishment of an early warning system for a greater effectiveness of the responses to the crises, and to reduce quantitatively the number of victims,
4. The implementation of a web mapping platform for management and information sharing, managed by the municipality of Cocody, in order to better manage the territory, better control it, and better decide on its development, its planning, and its protection and give assistance to the population.

Four initiatives will be developed and implemented alongside the project of quantitative assessment of natural risks and disaster risk reduction, and implementation of the territorial reference system:

1. A program of 10 conferences at the University Félix Houphouët-Boigny (UFHB) on disaster risk reduction, and on integrated approaches to "Natural Development and Risks", as part of a dedicated master program that will be reinforced;

2. A program of cleaning of the drainage system, by the populations, on a test area of Cocody, considering the data acquired in the field and managed within the platform;
3. The integration of natural hazards into the Abidjan master plan, on the initiative of the Commune of Cocody and in connection with the Autonomous District of Abidjan, and the proposal for a regulation on spatial planning (buildable, unbuildable, conditionally buildable - constructive) on the basis of regulatory zoning.
4. Two crisis simulation exercises (floods) will be carried out in conjunction with the municipal authorities, civil protection, NGOs operating in the Cocody territory, and the population.
These four initiatives will help develop a real risk culture, both within the population and in the academic community, to implement new responsible land management practices, and to develop dual "development and risk" approaches on the basis of innovative tools (web platform, smartphones, drones ...).

OBJECTIVES

The objective is to:
i) build local capacities, both human and material, to collect data (hazards, vulnerability, socio-economic data) to conduct a quantitative risk analysis integrating the impact of climate change on the municipality of Cocody, and neighboring municipalities, and establish the associated indicators; mobilize the capacity of the academic community to assist in the collection and structuring of data.
ii) Create a web-based mapping platform that will build on a scalable database; this platform will structure and host the data acquired, and will allow the sharing of information between all the stakeholders of territorial development and the protection of populations. It will form the structuring element of the territorial information system (SIT) of the municipality.
iii) Develop an early warning system involving local populations and communities, in conjunction with local actors (Cocody commune), national and NGOs, to better organize the response during crisis situations.
iv) Build a framework for prevention and response to natural disasters. The ultimate goal will be to strengthen risk reduction capacities through the establishment of a local information collection system, the establishment of an alert system, the development of response capabilities in the event of crisis, and the definition of adaptation options. It will also involve developing integrated "planning and risk" approaches with operational implementation in spatial planning documents.
v) Undertake actions to reduce natural risks by involving the population, particularly in terms of maintenance of drainage, information and education networks.
It is more specifically about:
1. collect in the field the spatial data (on the basis of very high resolution images) necessary for disaster preparedness, centralize them within the platform (database and associated sharing tools), and produce the analyzes dynamics in decision support in the event of a crisis, as well as in disaster risk reduction.

2. Acquire or digitize the exposed elements (community assets) and collect on the ground the associated socio-economic data allowing to characterize the issues of the territory of the municipality and to assess their vulnerabilities.
3. Carry out an inventory of historical natural phenomena (floods, ground movements) and associated damage (human, material, economic and environmental damage), by associating the academic environment of Abidjan,
4. Make hazard maps for different return periods and different intensities for each of the natural phenomena, associating the academic environment of Abidjan,
5. Evaluate the impact of climate change on the basis of different scenarios,
6. Establish a Web-based information sharing platform compatible with existing core platforms so that local authorities, national bodies (National Natural Hazards Platform, Civil Protection, Ministry of the Environment), international institutions and NGOs can share knowledge and respond in a coordinated way to crisis situations.
7. Set up a reliable, verifiable and efficient bottom-up alert system that can be used to trace information, centralize it and share it. The system must make it possible to assess the extent of the crisis and monitor its evolution.
8. propose measures for risk reduction and adaptation to climate change, consistent with the development of an eco-city. The measures will include:
a. the consideration of risks in land-use planning with land-use zoning proposals to be included in the territorial planning documents, namely:
i. Zones of free construction (without constraint),
ii. Controlled construction areas (with recommendations and obligations),
iii. Construction prohibition zones
b. The construction methods according to the risk zones,
c. Information of the populations (contents and modalities).
9. Sensitize people to natural disasters and existing warning tools.
10. Train the agents of the municipality of Cocody and its operational partners to use the platform and related tools, to transfer ability and strengthen skills.

Expected results

In general and according to the objectives, the following results are expected:
1. In the territory of Cocody, precise socio-economic spatial data are collected for each building and made available from the municipality of Cocody and its partners. The tools (hardware and software) available are efficient, easy to use, dynamic and scalable. Hazard maps (floods, ground movements) are developed and integrated into the quantitative risk analysis system.
2. The impact of climate change is integrated into hazard maps and quantitative risk analysis.
3. The centralized alert and crisis management platform are made available to local and national authorities. This multi-media platform (Web and Local) is accessible to all actors of the humanitarian response in case of disaster. This platform includes the collected data, which are updatable, which

allow for the simulation of crises, and which also will contribute to prepare online, dynamic and shareable intervention and contingency plans. A GIS type spatial visualization is requested. The platform dynamically and spatially integrates all bottom-up alerts and allows the triggering and quantified management of crises, the magnitude of which is measurable quickly. These crises are managed and monitored in real time by several actors simultaneously, and the platform integrates decision support tools.

4. The centralized alert and crisis management platform is compatible with the tools of the partners (Autonomous District of Abidjan, Ministry of the Environment, Civil Protection, ...) to build a single framework for disaster risk reduction in the municipality of Cocody (alert, response, adaptation), and more broadly in the territory of the District of Abidjan, in liaison with all risk management stakeholders.

5. An evolving tool is available to the populations and stakeholders concerned to trigger warnings, from the field, in the event of natural phenomena and negative impacts. These alerts are centralized on the platform.

6. People are made aware of natural disasters (floods, land movements), and are informed of the warning tools. They are also sensitized to the management of solid waste and the maintenance of rainwater collection networks, under the supervision of the competent services of the Commune of Cocody.

7. The agents of the municipality involved in the project are trained in the new methods, and are autonomous for the continuation and extension of the project in the district of Abidjan.

8. The commune of Cocody is equipped with tools for data acquisition, data transmission and crisis monitoring.

9. The framework for disaster risk reduction and adaptation are defined upon Cocody in coherence with the neighboring communes and the Autonomous District of Abidjan.

10. The national authorities and the Autonomous District of Abidjan are informed about the key stages in the implementation of the project. The local authorities and the population of the town of Cocody were involved in the development of tools as well as informed and aware of the results and analyses.

11. The Master's degree in Natural Hazards at University Houphouët Boigny is reinforced and the Master's students follow a cycle of 10 conferences dedicated to integrated approaches to "Planning and Risks" and to Disaster Risk Reduction.

12. Two crisis simulation exercises are carried out on the basis of information collected on the commune of Cocody (hazards and issues), in connection with the authorities of Cocody, the Civil Protection services, the various NGOs present in the territory of Cocody and involved in crisis management, and finally with the populations concerned.

The tools developed will be made available from the Commune of Cocody, which will have the capacity to update the basic information and adapt the response in terms of prevention, planning and construction of resilience.

AREA OF THE MISSION

The present terms describe the objectives and expected results for this mission.

The scope of the mission is the territory of the Commune of Cocody with its population (approximately 800 000 inhabitants). In the respect of the objectives and the expected results, as they were presented previously, it is to implement the following 4 main activities:

Component 1: setting up a system for collecting territorial data on Cocody

Socio-economic data will have to be collected on the whole municipality, in a complete and precise way, at the scale of each building, as well as data on the other components of the territory, notably the roads and the networks of collection of rainy water data. Information and data will also be collected on historical natural phenomena that have affected the Cocody territory, by also inventorying the impacts suffered. The collections will have to be realized by mobilizing agents of the commune who will be trained, under the supervision of experienced operators, and in close connection with the populations. The tools that will be used will have to allow a fast and efficient work, facilitating the tasks of the operators, and will have to make it possible to update the data easily, in near-real time.

Component 2: Quantitative assessment of natural hazards (floods and land movements)

On the basis of the data acquired in component 1, it will be necessary to draw up hazard maps of floods and ground movements in the town of Cocody and to have a quantitative risk assessment. The quantitative risk assessment must be able to be conducted dynamically according to the assumptions made on the return periods of the phenomena, by integrating the expected consequences of climate change and the evolution of the territories (spatial changes, population growth).

Component 3: Establishment of an Early Warning System Involving Populations

An early warning system involving municipal authorities, state authorities, the various actors in crisis management (including NGOs and the United Nations System), as well as the populations will be set up. It will give the ability to manage alerts in real time, and based on the assessments made, trigger a crisis and mobilize the necessary means of intervention. It is fundamental that the populations are strongly involved and that the system can geo-locate the alerts in order to integrate them into the Territorial Information System of the municipality. It must be able to be shared, controlled and attached to an automated system for defining emergency response plans.

Component 4: Web Mapping Platform, Territorial Information System and Integrated Management Landscaping & Risks

The information collected in components 1 and 2 must be structured within a web mapping platform, on the one hand to capitalize the acquired data, but also to share them between all the actors of the development of the territory and the protection of populations. The basic data acquired can be integrated by all the actors in their own concerns and then establish an integrated approaches to

territorial management. Such approaches are essential to launch a sustainable city approach, to optimize investments and to find the balance of development. This platform may contain modules dedicated to each issue (planning, urban planning, transport, network management, civil security, education, health ...).

This platform will support the implementation of the territorial planning documents, by integrating the prevention of natural risks, in particular by defining the conditions and the modalities of the occupation of the soil according to the levels of risk. This platform for structuring and sharing knowledge will help to better understand the territories, and strengthen development and protection decision-making.

It will also involve implementing the following 4 additional activities:

Annex 1 component: Master's degree in Natural Hazards and student training

The existing courses at the University Félix Houphouët-Boigny will be strengthened, particularly at the Master's level, with a dual "Development & Risks" approach, in conjunction with those responsible for these topics; a cycle of 10 conferences will be set up based on the territory of Cocody. It will involve training students in more integrated approaches by involving them in the field with innovative tools that they can then promote and enhance. The data acquired within the framework of this project as well as the tools and the platform will be accessible so that developments and analysis of modules can be realized; PhD theses may be defined on the basis of identified needs and issues to be solved. It will ultimately bring the university community closer to local authorities and professionals to provide innovative solutions, enhance academic work and promote youth employment, particularly in the sustainable development sectors, eco-cities and the prevention of natural risks.

Annex 2 component: Cleaning program of rainwater drainage systems on a test area

Based on the field data acquired in the project, and in order to raise awareness of the impact of solid waste on natural hazards, a cleaning program for rainwater drainage systems will be set up in a test sector. This work will be carried out under the supervision of the agents of the Commune of Cocody, and will be accompanied with information about the natural risks, about the impacts on the territories, concerning direct damages induced by waters (damage, destruction , victims), or health problems. This module will have to be coordinated with the dedicated programs set up within the municipality of Cocody and in connection with the Autonomous District of Abidjan on the collection and management of solid waste. Depending on the results, this program could be extended to the entire Commune of Cocody, or even to the entire territory of the District of Abidjan.

Annex 3 component: Territorial Planning and Risk Integration in Urban Planning Documents

The quantitative risk assessment should enable the competent authorities to define acceptable risk criteria and thus define the strategy for sustainable development, balanced development and secure territories. Zoning will be proposed in terms of land use, associated with a proposal for a regulation

to define the building zones, unbuildable areas, conditional building zones, as well as any constructive provisions. It will support local authorities, where appropriate in conjunction with national authorities, in an integrated approach to planning and development of territories, or even rehabilitation of unhealthy or vulnerable sectors.

Annex 4 component: Crisis Simulation Exercises

Two crisis simulation exercises (floods) will be carried out in conjunction with the municipal authorities, the civil protection, the NGOs intervening in the territory of Cocody, and the population. It consists at mobilizing the population and testing the tools set up within the framework of this project, and reinforcing the culture of risk. These simulations will also make permit to adapt the dimensioning modules of the responses to the crisis, and to consolidate the decision-making and information-sharing protocols. These exercises will be defined on the basis of the information collected about the commune of Cocody, particularly in terms of past floods and damage, but also on the basis of hazard maps and quantitative risk assessment.

INDICATIVE BUDGET

The indicative budget for such a mission on the four main components is $ 750,000 to $ 1,000,000. The indicative budget for the 4 ancillary components is in the range of $ 100,000 to $ 200,000

INDICATIVE PLANNING

The project (4 main components) can be carried out over a period of 18 to 24 months. The secondary components can be realized over 6 to 12 months, if necessary in parallel with the main activities.

DELIVERABLES

1. **A centralized alert and crisis management platform** with the elements detailed in the "Expected results" section, namely a multi-media and multi-stakeholder platform, including basic data on the municipality of Cocody, allowing simulation of crises, co-construction of intervention and contingency plans based on quantifiable models and simulations, spatial visualization of data and crises, centralization and management of bottom-up alerts, and quantified co-management of crises (verified and updated in real time), with priority management by decision support tools.

2. **Tools for acquiring and updating** data in the field are made available from the operational teams of the municipality and its partners.

3. **A bottom-up alert tool** with recovery of alerts on the centralized platform, is operational, and the staff of the municipality of Cocody is trained,

4. **Restitution meetings** for the decision-making levels of the commune of Cocody and its partners are organized at certain key stages of the development of the project.

5. **The equipment and methods** necessary for the operation of the platform and the field tools are made available from the municipality of Cocody, and the necessary training is provided,

6. **A summary report on the collection of data** (content, limits and recommendations) is produced and given to the municipality of Cocody.

7. **A report on the hazard maps and the analysis of climate change, with the impact on the studied territory is given to the municipality of Cocody; this report will include a detailed framework for disaster risk reduction in the municipality of Cocody** (taking into account risks in the development of the territory - free construction zone, controlled construction zone, no construction zone - constructive modalities in function of the areas at risk, information of the populations - contents and modalities).

8. **Summary reports on each of the components made with the results obtained** will be given to the municipality of Cocody**.**

REPORTING REQUIREMENTS FOR MONITORING

In addition to the technical and financial proposal that the company has prepared in response to the call for tenders, two reports will be requested that will allow the follow-up of this mission:

1. A project launch report: this report must confirm the launch of the project and compliance with the schedule and the methodology that will be followed if changes are to be made following preliminary discussions with the project management teams.

2. End of contract report: This report will summarize the work done and confirm the list of deliverables. It will develop the necessary recommendations for the future work plan with the identification of possible challenges.

TECHNICAL CAPABILITIES REQUIRED

In order to be able to meet the needs of the mission, the office of studies is requested to have at least the following capacities:

1. Acquisition of very high resolution images (resolution <10 cm) for the mapping of priority areas and realization of Digital Elevation Models (DEM).
2. Provision of tablets equipped with GPS for the collection of geo-referenced data in the field.
3. Development on smartphone of applications allowing the sending of alerts.

4. Software development and platform both locally and WEB, with cartographic management, to meet both the needs of the centralized alert and crisis management platform, but also the data collection phase and transmission of alerts in real time.
5. Competent and experienced trainers, with one or more training experiences in IT methods and tools for similar missions.
6. Technical expertise for:
- the development of dynamic geographic databases.
- the production of spatial analyses.
- the creation of hazard maps in the two following areas: floods, ground movements.
- Climate change analysis and definition of adaptation measures.
- development of decision support tools and multi-media platforms (Web and local).
- the ability to manage field teams for data acquisition.
- disaster risk management and emergency preparedness and response.
- Capacity development of local actors (institutional and non-institutional).
The experts working for the company will also have significant experience working in Côte d'Ivoire or in a country in the sub-region.

The team set up by the company must be composed by at least:
- 1 team leader / expert coordinator in disaster risk management and climate change with strong skills in developing GIS decision support tools
- Higher diploma (s) (minimum master degree or above) in life and earth sciences;

- Excellent knowledge of GRC / DRR with more than 10 years of experience in risk analysis and risk management, vulnerability analysis, climate change analysis or equivalent at the international level;

- Confirmed experience on conducting / conducting study / risk assessment
-The team leader must in particular demonstrate more than 10 years of leadership experience in interdisciplinary and multicultural teams;
- Experience in conflict resolution within work teams;
- Excellent analytical, synthesis and writing skills;
- Excellent communication and information dissemination skills;
- Perfect command of the French language;
- Similar operational working experiences in Côte d'Ivoire and the countries of the sub-region will be an asset

1 expert in hydraulics
- Higher diploma (s) (minimum master level or above) in hydraulics;
- Excellent knowledge of hydraulics, hydrology with more than 10 years of experience in flood risk analysis and management, vulnerability analysis or equivalent internationally;

- Confirmed experience in conducting study /study direction/ risk assessment;
- Similar operational experiences of work will be an asset.

1 expert in geomatics, web development, GIS and IT

1 expert in geomatics, web development, GIS and IT

- Higher diploma (s) (minimum master degree or above) in Geomatics;
- Strong WEB, GIS, IT development capacity with more than 10 years of experience;
- Similar operational experiences of work will be an asset.

XXV- REQUEST

The Minister of Healthiness, Environment and Sustainable Development, in charge of climate issues in Côte d'Ivoire, the Minister of Interior, in charge of the municipalities in Côte d'Ivoire including Cocody and the Mayor of Cocody, initiator of this project, are grateful to the Green Climate Fund, for its immense contribution to the reduction of greenhouse gas emissions, in order to limit the increase in the temperature of the planet between + 2° C and + 1.5° C and even 1° C before 2100. They all have the honor to come and submit the present request initiated by the Mayor of Cocody (a district of Abidjan), for funding.

This aims to reduce greenhouse gas emissions to 50% in 2020 and 90% in 2030, in order to limit the rise in global temperature to 1.5° C or even 1° C before 2100.

It relates to:

- the improvement of the daily lives of all Ivorians and Africans;
- the promotion of Renewable Energies in the Energy-Bioenergy Bouquet, and energy efficiency and improvement of the Energy Efficiency of public and private buildings, and public lighting;
- the installation of 30 000 solar street lights including 5000 in Cocody, as well as 2000 solar traffic lights at the 500 most important crossroads of the municipality;
- the supply of 3 million solar kits, including 200,000 to Cocody women;
- the installation of 300 photovoltaic solar power plants, which 30 will benefit to the population of Cocody and Bingerville;
- The supply, with solar energy, of all public and private buildings in the municipality including the University Félix Houphouët Boigny Ecological (UFHB), the Climate Observatory of the civil society, the University Hospital Center (CHU), the high schools, the free of charge health center for the poor in Cocody (Dr. Yobouet's Department) and the one in Adjamé, and Dr. Issiaka's fractures department;
- The production and the supply of 1,000,000 solar and bioethanol stoves to housewives for carbon-free cooking of their food, which 300,000 will be for Cocody women;
- The production and the supply of 1,000,000 photovoltaic solar dryers, including 300,000 to Cocody women, to help them dry their food products quickly and reduce drying time by 70%, eliminate mold and avoid adding more EGES in the atmosphere;
- the production and the promotion of 1 million ecological ovens for household use which will work on solar or bioethanol system for the benefit of the women in the District of Abidjan and the project region, 300,000 of whom are women in Cocody;
- The production and the distribution of 1,000,000 solar water heaters, including 300,000 to the populations of Cocody, in the building sector, to improve the thermal performance of the structural envelope of the buildings;
- the installation of 100 new generation wind turbines for Cocody, the project region and the regions included in the project, including 20 wind turbines for the 4 coastal Ebrie villages of Cocody (Blockhauss, Cocody, M'Badon and M'Pouto), the observatory climate, the Eco-campus of

University FHB, the coastal villages of Bingerville. The remaining 80 are dedicated to the District of Abidjan and the areas included in the project;

- The supply of a bioethanol production unit from the cane molasses of the four sugar complexes of the country, to replace current electricity, butane gas and firewood. These will each produce 12,000 tons of bioethanol per year and 800 tons of organic carbon. This will help reduce more than 75% of CO_2 emissions in the atmosphere and break with the use of fossil;

- The creation of an exceptional wetland, large of 100 Km radius, which will serve as a huge carbon sink and large lung of the country;

- The transformation of all the municipalities, towns and villages located in the project area into an Eco-towns, Eco-cities, Eco-areas, Eco-villages, linked to the Climate Observatory of Civil society ;

- The connection of the project to the towns and cities of: Abengourou, Issia, Daoukro, Sinfra Yamoussokro, Toumodi, Bangolo, San Pedro, Bouake, Korhogo, Bouna, Bondoukou, Katiola, Dabakala, Odienne, Tengrela, Boundiali, Tafire, Daloa, Gagnoa , Divo, Touba, Man, Soubré, Zouan-Hounien, Ferke, Ouangolo, Toumodi, Fengolo, Bouafle, Komboro, Tafiire, Seguelon, Sify, Worofla, Yeleu / Zouan-Hounien, Mankono;

- Sustainable transport and mobility and social diversity in the Commune of Cocody, in the Autonomous District of Abidjan, the Project Region and in the regions included in the project, to improve the resilience of communities to the impacts of climate change;

- The development and the implementation of a sustainable transport and mobility plan including:

- an integrated, inclusive, dynamic, efficient, more active and more reliable transportation system in land use planning that supports more equitable and accessible living options for people, goods and services;

-a well-maintained and low-carbon sustainable transportation infrastructure.

- a sustainable financially and autonomous transportation system.

- A major option for green transport, electric vehicles, mixed vehicles, non-polluting, cycling, clean fuel, fluidity on all roads and at all crossroads in the municipality of Cocody, District of Abidjan;

A withdrawal and/or replacement program in the Project Region, of 100,000 second-hand vehicles in very bad conditions constantly polluting the air, including 5,000 in the Commune of Cocody, with the non-polluting vehicles and by the promotion of solar vehicles, hybrid, electric etc.;

- The banning in the Commune of Cocody, second hand vehicles old than 4 years;

-The priority to the use of clean unleaded, non-fossil fuels, as well as to biofuels, training and upgrading of mechanics of the Commune of Cocody, the District of Abidjan and other cities of the country, in electric vehicle repair techniques, and installation of 1,000,000 catalytic exhaust pots including 100,000 pots for Cocody;

- The supply and the use of new taxis and non-polluting buses, compatible with climate change;

- The help to transporters and their association in the municipality of Cocody, to acquire a non-polluting public transportation cars;

- The sustainable restoration of the Mangrove Ecosystems of Cocody, the District, of Abidjan, the Project Region, and the cities concerned with the project. Afforestation, planting, and sustainable

management of streets, parks and gardens, lagoon shores, bays, riverbanks water, for resilience in carbon sequestration;

- the sustainable restoration of the Mangrove Ecosystems of the Commune of Cocody, the District of Abidjan, the Project Region and the towns concerned with the project, planting of trees, creation of parks and gardens, management of lagoon shorelines, bays, stream banks, for carbon sequestration;

- The sustainable development of lagoon shorelines, bays, the rivers of the Commune of Cocody, the District of Abidjan, the Project Region and the towns concerned with the project, for resilience in carbon sequestration;

- Sustainable restoration of the forest biodiversity ecosystems of Cocody, the District of Abidjan, the Project Region and the cities included in the project, afforestation, planting of trees, management of streets, parks and gardens, lagoon shores, bays, streams, for resilience in carbon sequestration;

- The transformation of our cities into arboretums to protect active medicinal plants and wild food plants threatened with extinction by agriculture.

- Sustainable development of streets, parks and gardens, lagoon shores, bays, streams, Cocody, District, Project Region and project cities, for resilience to carbon sequestration ;

- The creation of the 1st Climate Observatory of civil society, to allow the population to directly ensure the regular monitoring of climate issues of Abidjan and the country, to be trained and train others;

- Territory planning and habitat restoration;

- Sustainable protection, conservation and enhancement of all the lagoon, fluvial and maritime coasts of the Project Region, (Cocody-Bingerville, Marcory, Koumassi, Treichville, Port-Bouet, Plateau, Yopougon, Adjamé, Attécoubé, Songon, Grand- Bassam, Jacqueville, Dabou, Grand-Lahou, Assinie, Bonoua);

- The transformation of lagoon shorelines into pleasure beaches, places of socio-cultural and gastronomic meetings, villages in the town of Cocody (Cocody, Blaukhauss, M'Pouto, M'Badon, Djrogobité), Bingerville, Observatory, Bagba, ESIE, Abata, Akandié);

- Equip fishing village communities with modern fishing equipment to improve their income and protect the lagoon;

- Development on the coast of agricultural parcels of food crops and vegetable gardens with short-cycle organic farms, to help local communities to improve their income to better protect and enhance these sites;

- The creation, the development and the remediation of the parks and gardens of the Commune of Cocody, the District of Abidjan and the Project Region, through the development of 3000 parks, gardens and green spaces in the project area including 150 parks and municipal gardens already geo-referenced in Cocody;

- Sanitation and servicing of all precarious neighborhoods and homes at risk of Cocody, Bingerville (Bagba) and the 14 communes of the Autonomous District of Abidjan;

- Sanitation and servicing of the University of Félix Houphouët Boigny, the Climate Observatory of Civil Society;
- Planning and cleaning up of precarious settlements in the Project Region and regions included in the project;
- The construction of 1,000,000 social housing units in the Project Region of which 200,000 in Cocody, to improve people's daily lives;
- The treatment of household and industrial waste;
- The treatment of household waste and industrial waste from the Akouédo landfill and the main cities of the country;
- Restoration of biodiversity habitats of flora and mangroves
- The planting of 20 million flowering trees in the project area and 20,000 km^2, including 7 million in the 13 communes of the District of Abidjan and 2 million in the Commune of Cocody. The implementation sites are: parks and roadsides, to create huge carbon sinks and renewable reservoirs, to trap carbon emitted by vehicles and households;
- The restoration and planting of 7 million mangroves along 70 km the coastal lagoons from Cocody to Bingerville, Grand Bassam, Assinie, Marcory, Koumassi, Songon, Port-Bouet, Jacqueville, Dabou, San Pedro, including 2 million in Cocody . Which mangroves provide safe habitats for endangered aquatic and endemic species, while preserving biodiversity;
- Protection of Water Resources;
- The planting and restoration of mangrove biodiversity, to improve water filtration and desalination, air quality and fight against erosion and damage caused by floods;
- Recovery and valorization of rainwater, filtering and watering trees and flowers, thus avoiding the waste of water for everyday consumption;
- The desensitization of all our streams;
- Dredging and cleaning up, by local populations, all our rivers, lakes and rivers, made impassable by silting, pollution, deforestation, floating plants etc;
- Training, information, awareness, education;
- The transformation of the UFHB into a Green University, the Eco-Campus of Côte d'Ivoire, responsible for the transformation of all universities in the country and Africa into green universities, Eco-campus and also the promotion of innovative and ambitious initiatives to save the climate;
- Training by the International Earth Rights Institute (ERI) of all students, all teachers of preschool, primary, secondary, technical and private higher, all workers of our businesses, community leaders and leaders, NGOs and civil society for the fight against climate change;
- The development and general restoration of sanitation, personal and collective hygiene, sanitation and the beautification of our cities, towns and villages;
- Risk prevention and the means to cope with it urgently;
- The eradication of unemployment, poverty;
- Climate security and fed citizen area;
- Women's access to climate finance, to adapt and overcome the impact of climate change;

- Humanitarian assistance to vulnerable groups victims of climate change
- Support in accompanying measures;
- Support in institutional measures;
- Capacity building support.

Strengthening international mobilization around Cocody Green City

His Excellency Mr. Alassane OUATTARA, President of the Republic of Côte d'Ivoire, Mrs. Anne Désirée OULOTO, Minister of Healthiness, Environment and Sustainable Development in charge of climate issues of Côte d'Ivoire, the Minister of Interior, in charge of the city councils in Côte d'Ivoire, Mr. N'GOAN AKA Mathias Mayor of Cocody, thank, the authorities of Earth Rights Institute, the United Nations Development Program, the Global Environment Facility, the UN Environment and UN Habitat, the World Bank, the African Development Bank, the Bank West African Development, the Green Climate Fund, the Adaptation and Mitigation Fund, the CTNC Fund, etc., for the special attention given to this request.

XXVI- APPENDICES

ANNEX 1:
OFFICIAL LAUNCHING CEREMONY OF THE PROJECT BY THE MAYOR OF COCODY, Mr. N'GOAN AKA MATHIAS (3RD FROM THE LEFT)

ANNEX 2:
OFFICIAL PLANTING CEREMONY BY THE MAYOR Mr. N'GOAN AKA MATHIAS AND THE REPRESENTATIVES OF THE EMBASSY OF RUSSIA AND KOREA

ANNEX 3

Overview of all Cocody streets transformed in 2020

ANNEX 4

Overview of the planting of all Cocody streets in 2020

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