



# ANNUAL REPORT 2020



*Combating Climate Change.  
Improving Livelihoods*

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Federal Ministry  
of Education  
and Research





## FRONT COVER

### CIREG Project



The German Federal Research and Education Minister, Anja Karliczek and her Nigerien counterpart, Minister of Higher Education, Research and Innovation, Yahouza Sadissou (Former Chairman of the WASCAL Ministerial Council).



BMBF funded Renewable Energy Development Project on “High Technology Laboratory Construction for Production of Biogas, and Up-to-date Efficient Cooking Tool Mechanisms Implementation.



### Greenbuilders Project





## CONTENTS

ACRONYMS & ABBREVIATIONS	06
MESSAGE FROM EXECUTIVE DIRECTOR	08
MESSAGE FROM THE FUNDER	09
WASCAL GOVERNANCE	11
RESEARCH AND INNOVATION	12
CAPACITY BUILDING PROGRAMME	20
FINANCE AND OPERATIONS	26
YEAR IN BRIEF	30

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Hassirou  
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Board Chairman



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(Togo)  
1st Vice-Chairman



Dr. Francis A. Boateng  
(Ghana)  
2nd Vice Chairman



Dr. Flora Chadare  
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Member



Prof. Nicolas Barro  
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Member



Prof. Vafi Doumbia  
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Member



Dr. Karsten Hess  
(Germany)  
Member



Dr. Moussa Djire  
(Mali)  
Member



Prof. Chinedum Nwajiuba  
(Nigeria)  
Member



Prof. Issaka Youm  
(Senegal)  
Member



Dr. Fatou Faye  
(The Gambia)  
Member



Mr. Alain SY Traore  
(Ex-Officio Member  
representing ECOWAS)  
Member



Dr. Arona Diedhiou  
SAC REPRESENTATIVE

## SCIENTIFIC ADVISORY COMMITTEE (SAC) MEMBERS

**Dr. Arona Diedhiou**  
Chairman

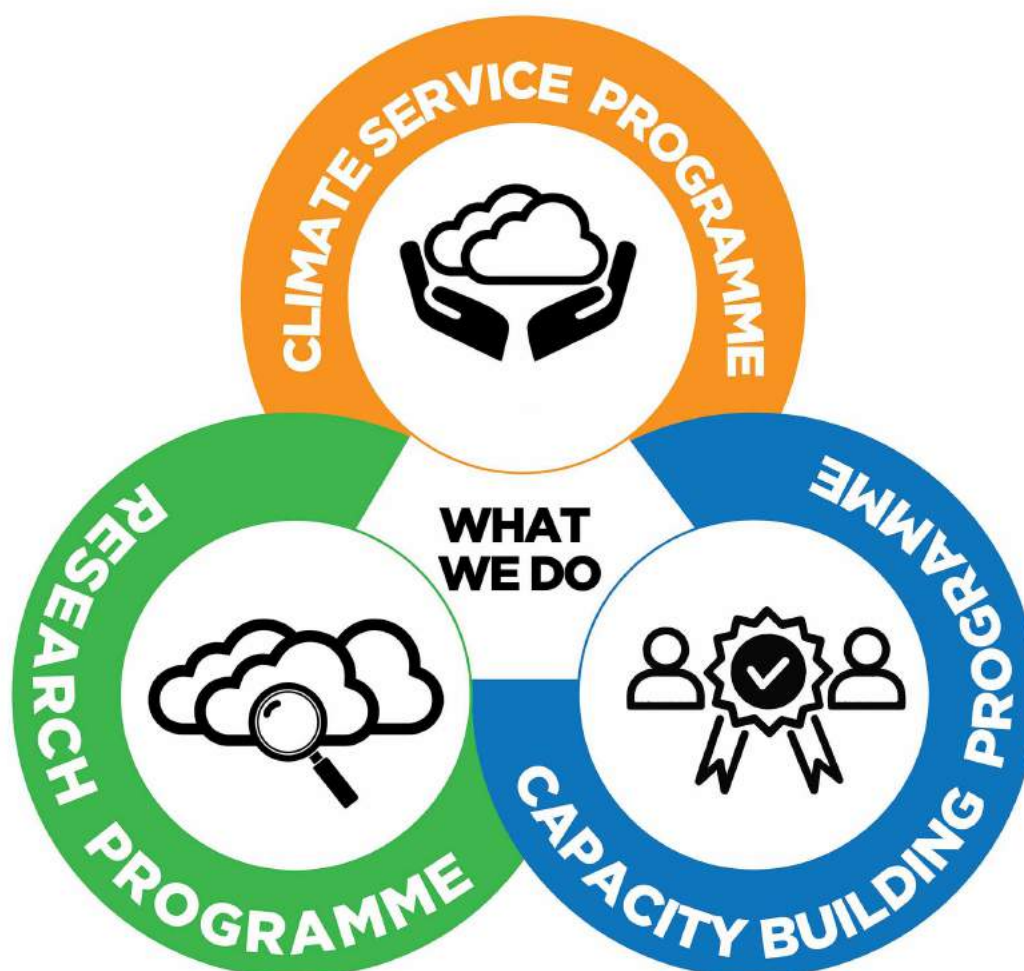
**Prof. Adjima Thiombiano**  
Member

**Dr. Hassan Virji**  
Member

**Prof. Anna Creti**  
Member

**Prof. Janos Bogardi**  
Member

**Prof. Dr. Daniela Jacob**  
Member



We are guided by the UN Sustainable Development Goal 13 in our quest to Combat Climate Change and Improve Livelihoods



# ACRONYMS & ABBREVIATIONS

AAU - Association of African Universities	PROGRAMME
ABN - Niger Basin Authority	DWR - Department of Water Resources
ABM - Mono Basin Authority	EBID - ECOWAS Bank for Investment and Development
AfDB - African Development Bank	ECOS - Ecosystem Change and Services
AGB - Aboveground Biomass	ECREEE (ECOWAS Centre for Renewable Energy and Energy Efficiency)
AGRICORA – Agriculture et Gestion des Risques Climatiques: Outils et Recherches en Afrique	ERA4CS – European Research Area for Climate Service
AWS - Automatic Weather Stations	ESMs – Earth System Models
BMBF - German Federal Ministry of Education and Research	FUT MINNA - Federal University of Technology, Minna
BON – Biodiversity Observation Network	FUTA- Federal University of Technology, Akure
CIREG - Climate information to support integrated renewable electricity generation	GERICS - Climate Service Center Germany
CMIP5 - Coupled Model Inter-comparison Project phase 5	GCM - Global Circulation Mode
CNRFP - The Centre National de Recherche et de Formation sur le Paludisme	GITEC – GITEC Consult GMBH
CoC – Competence Centre	GSP –Graduate Studies Programme
COP – Conference of Parties	GTS - Global Transmission System
CORDEX - Coordinated Regional Climate Downscaling Experiment	HPC - High-Performance Computing
CORDEX – Coordinated Regional Climate Downscaling Experiment	HYREM – Hydrology and Water Resources Management
COSPAR – Committee on Space Research	IFPRI - International Food Policy Research Institute
DBH - Diameter at Breast Height	IMARA - Impact Analyses and Risks Assessment
DLR-PT – Project Management Agency, German Aerospace Center	IPCC - Intergovernmental Panel on Climate Change
DRP - DOCTORAL GRADUATE RESEARCH	IPR-IFRA- Institut Polytechnique Rural de Formation et de Recherche Appliquée,

KNUST - Kwame Nkrumah University of Science and Technology	for Food Security and Greenhouse Gas Observations
LU - Lancaster University	TCBF - Tiger Capacity Building Facility
MCSs - Mesoscale Convective Systems	TCS - Total Carbon Stock
MiFMASS - Multi-scale Flood Monitoring and Assessment Services	UAC- Université d'Abomey-Calavi
MPI-ESM-MR - Max-Planck Institute Earth System Model for Medium Resolution	UAM- Université Abdou Moumouni de Niamey
MRP -Masters in Research Programme	UCAD- Université Cheikh Anta Diop de Dakar
NDAs - National Designated Authorities	UENR - University of Energy and Natural Resources
NDCs - Nationally Determined Contributions	UFHB- Université Felix Houphouët Boigny
PAUWES - Pan African University - Institute of Water and Energy Sciences	UL- University of Lome
PTJ - Project Management Jülich	USPCALERS - Upscaling Site-Specific Climatesmart Agriculture and Land use practices to Enhance Regional productionSystems
RC - Research Cluster	UTG - University of the Gambia
RCM - Regional Climate Models	WABES - West Africa Biodiversity and Ecosystem Services
ReCON - Regional Collaboration Network	WADI - WASCAL Data Portal Infrastructure
ReHON - Regional Hydrology Observation network	WMO - World Meteorological Organization
REOF - Rotated Empirical Orthogonal Function	WP - Water Productivity
ReSON -Regional Socio- economics Observation Network	WRAP - WASCAL Research Action Plan
RU - Rockstock University	
RSO - Remote Sensing Observation Network	
RSO - Remote Sensing Observation Network	
SAC -Scientific Advisory Committee	
SEACRIFOG - Supporting EU-African Cooperation on Research Infrastructures	

## EXECUTIVE DIRECTOR'S MESSAGE



**Dr. Moumini Savadogo**  
Executive Director

The year 2020 was a challenging one due to the outbreak of the novel Covid-19 which affected numerous corporate activities as well as our partners globally. Despite this challenging situation which was a threat to WASCAL operations, work proceeded remotely to ensure that its vision and relevance were kept alive.

As an international organization dedicated to becoming one of Africa's leading institutions in the provision of climate services, capacity building and research, in and for West Africa, there was the need to identify and maximize trending and potential partnerships towards the realization of WASCAL's objectives.

This report captures the main activities performed by the Executive Management for the year 2020 and outlined on the governing bodies achievements, administration and finance, research, capacity building and communication.

The governance structure of WASCAL consists of the Ministerial Council, the Governing Board, and its ad hoc committees are well established and functioning. Their roles towards the development of WASCAL cannot be underestimated. Additional to the governance structure, WASCAL delivers its promised objectives through an organizational structure composed of three (3) directorates: The Executive Directorate; the Directorates for Finance and Administration and Capacity Development, both based at the headquarters in Accra, Ghana, and the Department of Research and Services provision Directorate at the CoC in Ouagadougou, Burkina Faso. The organisation continues to build synergies with strategic national, regional and international partners towards the development and implementation of the programmes.

Leveraging on the achievements of the past years, as well as taking into consideration opportunities and foreseen challenges, the year 2020 was a year of sustainability and negotiations to keep the smooth running of the organisation regarding its activities, events, and visibility campaigns. The objective related to governance and partnerships is to sustain WASCAL as a regional science service centre through sustainable funding to respond to the needs of member countries and West Africa for resilient development.



# MESSAGE FROM THE FUNDER

**Dr. Karsten Hess**, Head of Division, Global Change & Climate Research, BMBF



**A**t the German Federal Ministry of Education and Research we believe in West Africa's passion to train the next generation of scientists and policy makers to fight Climate Change. That is why we are proud to be part of this WASCAL story. We support WASCAL technically and financially, so that they can provide the world class graduate studies they are noted for.

I am particularly delighted about the partnership between the German Federal Ministry of Education and Research and WASCAL. At BMBF, seeing WASCAL grow into an International Centre of Excellence in combatting Climate Change and improving livelihoods gives us joy to be part of the ever-growing success story.

This partnership continues to grow in leaps and bounds. Over the years, we have churned out several master's and PhD West African graduates with international appeal; we have provided globally appealing Climate Change research services, and world class infrastructure. These efforts have gone a long way to successfully combat Climate Change and improve livelihoods within the West Africa sub-region.

The existence of WASCAL has been made possible by the tremendous involvement of the Federal Republic of Germany in the fight against Climate Change. And we are proud to be part of this success story.

As a Leading Regional Science Centre in integrated Climate Change management, Climate services and Capacity Building WASCAL works together with several other local, national, and international stakeholders in Interdisciplinary Research Projects on various Climate Change thematic areas.

We are very optimistic about the future of WASCAL, and we look forward to working together for many years to come in this worthy cause.

# WASCAL GOVERNANCE

**WASCAL as a well-established and sustainable Science Service Centre: WASCAL affirms its effectiveness in providing strategic support with functional good governance schemes composed of a Ministerial Council and a Governing Board, backed by a Scientific Advisory Committee and ad hoc committees (Audit, Fundraising, Competence Centre (CoC) ). All these governing bodies are functional, meet regularly, provide sound guidance and decisions.**

## **Support to Board Activities during the Year 2020**

The appointments of the new Governing Board members and SAC members carry strong opportunities for the organisation. Six (6) new board members and five (5) new SAC members were added on 1<sup>st</sup> October 2020 per the rules and regulations of the constitution. The SAC has been strengthened with new profiles for gender, policy, and renewable energy. These changes are good signals governance and potentially good for further development of the institution.

## **Institutional reform, policies, rules and regulations**

The executive management was strengthened, and necessary reforms which started in 2019 were completed. All the key scientific positions and the vacant positions for the directors were successfully filled beginning 2020.

WASCAL is continuously improving its financial management and visibility: WASCAL continues to develop and implement management policies and tools

in compliance with international standards. The recruitment of the two directors of the institution at the beginning of 2020, also serve important asset for the institutional development.

### Strategic Partnerships and Sustainable Funding

**Our partnerships and networks are continuously growing:** Several new agreements were signed in 2019 and 2020 between WASCAL national, regional, and international landmark partners enlarged with partnerships with German institutions. In Africa, our partnership with ECOWAS has been strengthened through a new agreement with its specialized Centre for Renewable Energy and Energy Efficiency (ECREEE). At the international level we are seeking close collaborations with the NDC partnerships initiative, the climate Security Expert Network (CSEN), the United Nations Framework Convention on Climate Change (UNFCCC). Agreements were signed with several partners for the implementation of many projects and the existing partnerships are being kept functional.

Successful meeting of the chairman of the WASCAL Ministerial Council and the German federal minister of BMBF on the strategic development of WASCAL beyond 2022 on 11 February 2020 and a conclusion of the joint meeting was signed between the West African Countries and Germany in the areas of research, academic training, and expansion of the research infrastructure on issues of Climate Change and sustainable energy supply.





# — 01 —

## RESEARCH

WASCAL, through its Competence Centre has the mandate to conduct state of art and problem-solving research activities in WASCAL and implement research projects under the WRAP 2.0 call. The main purpose of this mandate is to support high quality or evidence-based and impact-oriented research for development and service delivery in the context of Climate Change and Climate Variability in West Africa

The key objective is to conduct state of art and problem-solving research activities. Performance evaluation of the WASCAL Competence centre: base on the goals of the Competence Centre, the performance evaluation is shown in Table 1. The means of verification and assumption made for the evaluation is also shown in the Table1. The designated Priority Research Themes (PRTs) and the structure of these programmes reflect WASCAL's strategic goals for the next three years. The PRTs are composed as follows:

<b>Priority Research Theme 1:</b> Land use and Cover/Land Degradation/ Climate Change Nexus	<b>Priority Research Theme 2:</b> Risks and Vulnerability to Climate Extremes
<b>Priority Research Theme 3:</b> Rural-urban and Cross Border Migration in West Africa	<b>Priority Research Theme 4:</b> Sustainable Agriculture/Climate Smart Landscapes Nexus
<b>Priority Research Theme 5:</b> Renewable and Green Hydrogen	

RPT 1	<b>Land use and Cover/Land Degradation/Climate Change Nexus (LDC).</b> Generating an updated high-resolution West African time-variant Land Use/Land Cover database along with their thermal and physical parameters. Under LDC, two Research-Innovation projects, CONCERT and LANDSURF, are executed. The results of this PRT will improve the representation of surface conditions in climate models and ultimately contribute to the development of a tailored dynamical vegetation model for the region.
RPT 2	<b>Risks and Vulnerability to Climate Extremes (RiVex).</b> harmonizing information on climate extreme events, vulnerability, and potential risks. It specifically develops tools and metrics to understand, quantify and mitigate present-day and future risks associated to multi-hazards and compound events induced by climate, climate variability and change. The FLURIFLOOD project is executed under RiVEx
RPT 3	<b>Rural-urban and Cross Border Migration in West Africa (RUM).</b> This PRT aims at investigating the interlinkage between climate and environmental changes, population dynamics, gender, conflicts, livelihood opportunities and migration. Under RUM, two Research-Innovation projects, MIGRAWARE and MiTra-WA, are executed (Box 2).
RPT 4	<b>Sustainable Agriculture/Climate Smart Landscapes Nexus (ACS).</b> Improving food and nutrition security and livelihoods through sustainable intensification of agriculture while contributing to Green-House-Gas mitigation efforts and carbon sequestration potential. The WRAP2.0 funded project GreenGaDe is executed under this PRT.
RPT 5	<b>Renewable and clean Energy (REN).</b> Providing a wide range of research and services portfolio in areas of energy efficiency, hydrogen energy, waste-to-energy, solar, wind, hydropower energy and their mixes. It provides science-based solutions to increase the adoption of renewable energy and innovative technologies under a changing climate.

## Regional Impact of Projects

The regional impacts of projects outcomes to public, private and other end-users to the region is discussed in this section. This report focuses on reporting the documented impacts of the core activities (and projects) rolled out at the competence during the last two years. These are described in the different project documents and are part of the monitoring and evaluation process following the below principles:

- i. Linking benefits identification to both project and program management.
- ii. Establishing benefits identification as a shared responsibility and
- iii. Aligning identified benefits to WASCAL's strategic goals.

The outcomes/benefits of the projects were organized following the key impact areas as (i) Mitigating effects, (ii) Adaptation technologies (iii) provision of climate and environmental services (iv) capacity development and (v) knowledge sharing.

### Output/ Outcome / benefit of Projects at the Competence Centre

*The output and benefits of the projects executed at the the competence center is as listed below:*

- i. **Energy Supply for Healthcare Facilities (EnerSHelf):** Increasing Ghana's weather/Climate observation network, off-grid mini-PV power plant to tow rural Hospitals and the project also achieved an increase in the access of electricity to rural communities.
- ii. **Improving Rainfall Information and Rainwater Usage for Adapted Agricultural Production under High Climate Variability (AgRIAN):** Increasing the observation & forecasting of extreme rainfall events in Burkina Faso using Microwave Link networks. Installation and capacity building of rural Burkina Faso communities in rainwater harvesting & reuse, optimize the use of flood plain farming.
- iii. **The West African Biodiversity & Ecosystem Services (WABES):** Regional West African experts in the fields of biodiversity and ecosystem services exchanged experiences on IPBES developments with their colleagues at international level (external speakers) during annual workshops. Thirty students (two from each of the ECOWAS member countries) have benefitted from the full scholarship SPIBES MSc programme offered by WABES. These biodiversity and ecosystem services pool of experts are trained and will be able to support their national governments
- iv. **Upscaling site-specific climate-smart agriculture and land use practices to enhance regional production systems in West-Africa (UPSCALERS):** A Web App to deliver agroclimatic information services to a network of 200+ farmers & extension intermediaries across Burkina Faso, Ghana, Niger & Mali (i.e. The AgInfo package) developed: installed 8 biodigesters and 36 compost pits to support crop-livestock circular bioeconomy of 120



farmers Burkina Faso, Ghana, Niger; supporting the African Union research-Innovation congress in the participative observations/modelling with farmers, extension intermediaries for the Africa We Want Agenda 2063.

- v. **Climate information for Integrated Renewable Electricity (CIREG):** Off-grid renewable solutions and mixes of solar, hydro & wind powers in West Africa
- vi. **Green Builders project (Green-Builders):** Green Builders offers Multistakeholder Platforms (MSPs) consolidated relationship among 500 stakeholders (municipalities, plant nurseries owners, market gardeners, waste collector, waste composter). It provides different possibilities for addressing and solving the issues related to waste management in cities across Burkina Faso and Ghana.
- vii. **Disaster Risk Reduction Practice Research and Capacity Building Support to ECOWAS (DRR):** Enhanced Regional Capacity to Disaster Risk Reduction and Management. Additionally, early warning systems are established to prevent major natural hazards and comprehensive preparedness and contingency plans for the region.
- viii. **Capacity building in support of weather, water and climate services in Mali and Niger:** critical human capacity gaps and training needs for the modernization of the national hydro meteorological services in Mali and Niger identified. Guidance notes for developing concepts of operations based on global best practices developed. Training curriculum developed.
- ix. **AGRICA:** Generate Climate Risk Profiles of Burkina Faso and Niger in which climate impact assessment, focusing on the evolving trends for temperature and precipitation, future water availability for agricultural production, future crop yields and the suitability of land for crop (and in specific countries, livestock) production, under different climate change scenarios.
- x. **WASCAL Data Repository and Portal (WASREP):** Provision/dissemination of surface observations data to provide ground evidence of climate change and support the scientific guidance paving the way to better adaptation and mitigation actions. WASCAL High Performance Computer (WAS-HPC): Acquisition and setup of a High-Performance Computing system at CoC to provide West African Scientists with regional access to high performing computation and simulation facilities and tools for the sake of running regional mitigation and adaptation models and scenario

## Adaptation Technology and smart agriculture impacts with regional beneficiaries

- i. **FSP-AGRICORA:** Distribution of climate smart toolkits to farmers in 12 villages that benefited from the pilot scheme
- ii. **Disaster Risk Reduction Practice Research and Capacity Building:** Flood forecasting mechanism in the ECOWAS region. Policy Note on Strengthening the Academic Network for Disaster Risk Reduction in Togo, Nigeria, Burkina Faso, Ghana and Benin.
- iii. **UPSCALLERS:** Biogas produced provides green energy to households and reduces wood-based fuel use. Biogas improves life conditions, especially for women and children, by reducing kitchen smoke and producing clean light for work and studying for farmer in Burkina Faso, Ghana, Mali & Niger.
- iv. **CIREG:** Installation of an off-grid photo-voltaic (PV) power plant and a centralized PV-based borehole water pumping system in Niger to provide access to clean water for consumption and micro-irrigation of the villagers. Installation of a hybrid solar-hydropower warehouse to Gbandidi community in Southern Togo. 120 households of the village were connected, each receiving two lighting points and a multipurpose power socket.
- v. **Green Builder:** Multistakeholder Platforms (MSPs) consolidated relationship among Municipalities, Plant nurseries owners, market gardeners, waste collector, waste composter. Technology for liquid and solid organic waste and the value of bio waste for compost making available for gardeners, plant nursery owners, waste collectors, municipalities, Ministry of Energy (ANEERE) among 120 stakeholders.
- vi. **AGRICA:** Various adaption technology such as irrigation, Cultural practices, Climatic information, were identified for crop and livestock farmers in various governmental agencies Burkina Faso, Niger.

### 2.5.2. Climate Services from Projects at the Competence Center:

WASCAL developed the Customized and Integrated Climate Services in partnership with GERICS for improved livelihood of peoples of the region. Provide guidance for development of climate and environmental services from on-going projects at the Competence Centre (e.g. World bank capacity building project in Niger and Mali, UPSCALLAR, CIREG, Disaster and Risk Reduction management project). The developed climates services from projects and beneficiaries are listed in the table.

Name of Project	Services developed	Beneficiaries
FSP-AGRICORA	(i) agro climatic information, & climate smart practices against heavy rains (ii) Operational delivery of "1-week & 2-week lead time forecasts" of pluviometric extremes (i.e. False onset for cropping seasons, heavy rain events, soil waterlogging to a network of 120+ farmers based in Northern Ghana & Burkina Faso	Farmers and extension intermediaries in the region
Disaster Risk Reduction Practice Research and Capacity Building Support to ECOWAS	Disaster forecasting and early warning system developed	Togo, Nigeria, Burkina Faso, Ghana, Benin
UPSCALLERS	Development of web application of AgInfo package for large-scale use	ECOWAS Member Countries Region
CIREG	(i) On-going installation of a hybrid Hydropower-solar power generation in Gbandidi (Togo) to provide electricity to the local community business centres.  (ii) Establishment of community led Business management model for the of off-grid & centralized PV-based water pumping system	3 sets of community Business models set-up  120 households get access to electricity for the first time, 60 households get access to clean water from borehole for the first time
GREEN BUILDERS	(i) GIS maps of Waste collection, irrigated area and tree nursery and green space sites and the Mogho Naaba' water channel.  (ii) 400 Nursery plants is produced by plant nurseries owners and disseminate throughout the cities of Ouagadougou and Tamale,	for 120 non-academic stakeholders (city council, ONEA, the Ministry of Urban Development and the Department of Landscape Planning)



	(iii) 20 Trees are planted in front of WASCAL and ANEERE, one of the project stakeholder, offices.	
AGRIC	Adaptation strategies on the feasibility, social acceptance and uptake of adaptation measures among farmers and stakeholders	Farmers, Extension workers, SDG/NDC office in Burkina Faso and Niger
WADI	<p>(i) Regional data sharing and dissemination service with 600+ metadata records of datasets published online for download (directly or upon request) or citation/dissemination.</p> <p>(ii) Regional automatic (hourly) climatic data collection services from the 50 Automatic Weather Stations (AWS) distributed to member countries.</p> <p>(iii) Manual Mesoscale-level data collection at WASCAL Watersheds and Projects Sites, periodically or at request.</p> <p>(iv) Regional remote data computing service to be enabled to provide WA researchers and students with suitable data/models computation and simulation facilities/tools.</p>	<ul style="list-style-type: none"> <li>- WASCAL Competence Centre Scientists</li> <li>- WASCAL GSPs Students Researchers and stakeholders from West Africa (e.g. WASCAL member countries), EU (e.g., Germany, England, Netherlands, France, Italy) and North America (e.g. USA)</li> </ul>





# Providing world class climate and environmental services



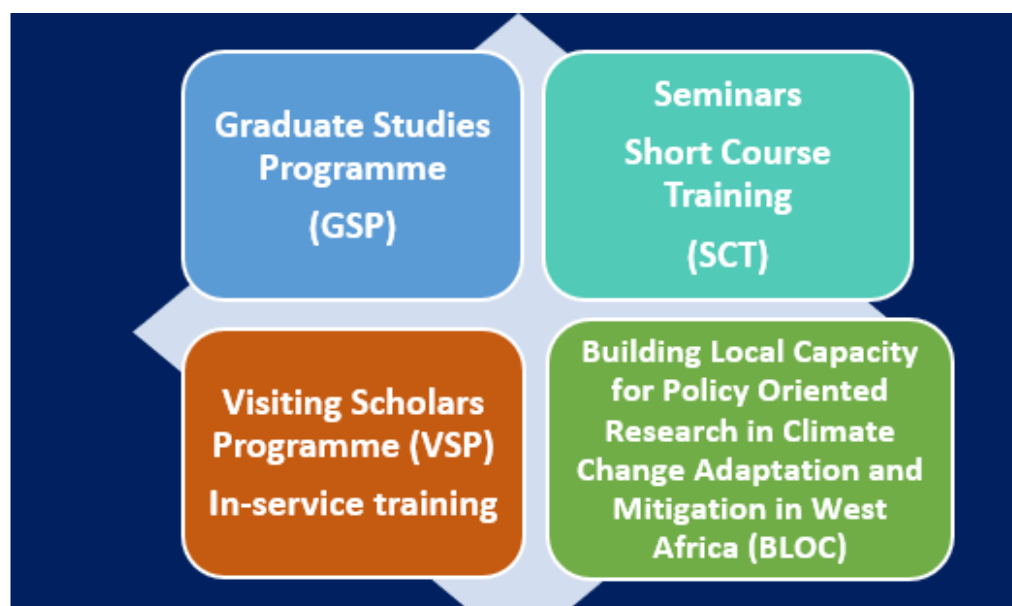
## — 02 —

# CAPACITY BUILDING PROGRAMME

WASCAL Capacity Building Department started training in 2012 with the recruitment of PhD and Master's students in the view to make available the graduates for the 11 West African countries. In addition, the projects are also conducted under WASCAL Research Action Plan 2.0 (WRAP2.0) where some graduates schools are involved.

### 3.1. 2020 Objectives

- **To Educate high level qualified people on climate related issues for West Africa**
- **To Enhance capacity of workers to tackle climate issues to increase livelihoods**





## Impact stories

The activities of Capacity Building programme have been achieved in the view of WASCAL's vision taking into account the benefit for each country to reach the sustainable development goals.

As part of the vision to educate more climate experts for West African countries, BMBF, in collaboration with West African countries continues to support WASCAL to educate and provide experts. The target is to have one thousand (1000) experts in the thematic area hosted by the Lead Universities. These thematic areas related to Climate Change are Water resources in Benin, Biodiversity in Côte d'Ivoire, West Africa Climate System at Akure, Agriculture in Mali, Energy in Niger, Human Habitat at Minna, Economics in Senegal, Education in The Gambia, Disaster and Risk Management in Togo, Informatics in Burkina Faso, Marines Sciences at Cabo Verde. So far 262 graduates have been trained and are working for the countries as Climate Experts after three batches of graduation from 2012 to 2019. The graduates are composed of 109 Masters holders and 153 PhD Holders. The same figures give the numbers of PhD and Master's holders per country.

During, the year 2019, one-hundred and thirty-two (132) new candidates were selected for 2 Masters Research Programmes and 10 PhD programmes. The implementation of the curricula started in January 2020 by courses with lecturers in Classroom. March 2020 led us to use online courses with the lockdown imposed by the Covid 19 globally. Students' proposals have been defended successfully in each school with the collaboration of advisory board members. The students received their research budgets and are in their respective countries collecting data. Since March 2020, all the meetings with Directors, BMBF, Vice-Chancellors are ongoing remotely. Despite the Covid 19 pandemic, twenty-two (22) candidates have been selected



for the two master's programmes at Ouagadougou and Mindelo in 2020. They followed the language courses from their respective countries online. At the end of the courses the students joined the schools based on a Covid 19 test.

The department organized events such as webinars and also met Vice-Chancellors of Leads Universities. After the meeting with Vice-Chancellors, a committee was put in place to develop strategies to strengthening the collaboration with BMBF and the sustainability of the graduate schools.

For the good perspective of students, alumni and scientists, online registration form was created and the online access to journal have been made operational after training and a recruitment of a new repository officer.

During the yearly implementation of the project, 4 reports were written to highlight activities conducted in the twelve (12) graduate schools, German Partners and the headquarters and capacity building.

## Educational Activities

The 132 students of batch 4 joined their schools in January for 6 months course in the 10 PhD schools and 3 semester courses for the two master's schools. During the period 224 lecturers were mobilized to share their knowledge with the students. The lecturers made presentations virtually from Africa (West Africa, South Africa), Europe (Germany and France), America (USA, Brazil)

More than 80 % of the courses have been done online due to the prevailing Covid 19 pandemic.



A new international Master's Programme in Green Hydrogen Technology will start in 2021 with four (4) countries identified to host the cohort of 60 Masters students.

Fee paying students admitted in the Master's Programme in Cabo Verde with the support of MAVA foundation (1 in the first batch and 3 in the second batch). One student has been admitted for the PhD programme in Climate Change and Land Use, KNUST-Ghana and 10 students in the PhD programme Climate Change and Biodiversity in Côte d'Ivoire.

## Research Activities



There was proposal writing workshops to highlight GSP implementation of research activities and more collaboration. For the PhD schools, a total of 110 research topics were served for data collection in order to develop technology for adaptation with the teamwork of 336 supervisors and co-supervisors from lead universities and German Institutions.

In addition, 22 Master students are working on their defense in July or August 2021. Climate Change and Marine Sciences students are scheduled to travel to Germany, barring the situation of the Covid 19.

On renewable Energy activities in collaboration with Julich, WASCAL, in collaboration with Juelich is working on a Research Programme to identify the



potentials of each West African country on Green Hydrogen Production. A team of fifteen (15) expert teams are working in each country with the graduate schools as key players in 11 countries where they are established. The first data collected are being analyzed to provide the Atlas.

### Alumni Network

In August, the WASCAL alumni, through the country representatives shared their experiences with BMBF and WASCAL Directors. WASCAL alumni also have opportunity to be part of Post-Doc selected by DAAD. Four (4) WASCAL alumni have so far been selected by DAAD.

### Strategic Partnerships

As part of efforts to ensure its impact and visibility, WASCAL CBD held several meetings to interact on topics related to the operationalization of various Memorandum of Understanding or new partnerships for joint proposal writing.

Strengthen the collaboration with graduate schools, a meeting was organized to interact with Vice Chancellors of the Lead Universities to share with them the impact stories of WASCAL while dialoguing on strengthening collaboration for sustainability.





Our Masters and Doctoral programmes  
are **affiliated to 11 leading universities**  
in West Africa



*Combating Climate Change.  
Improving Livelihoods*



Federal Ministry  
of Education  
and Research

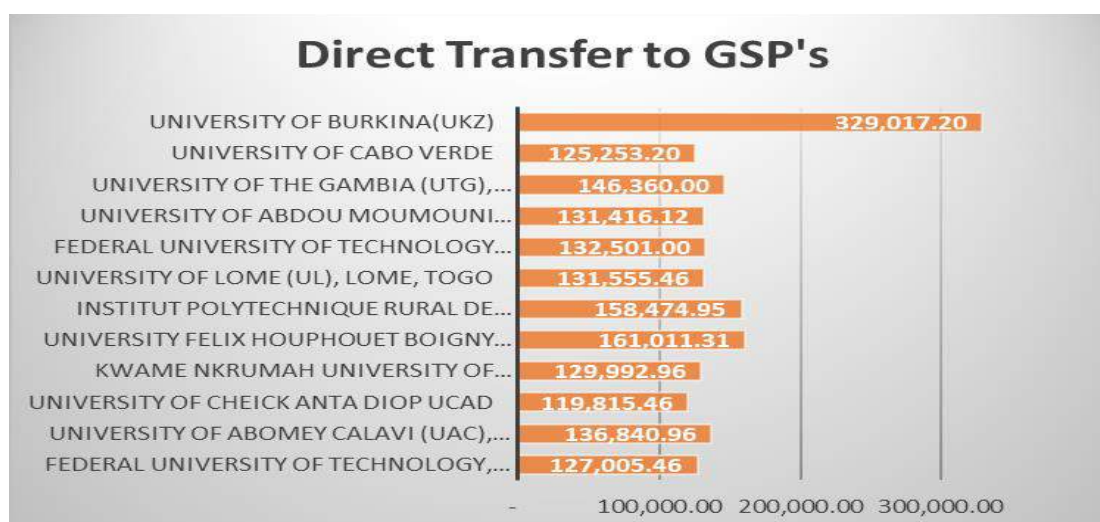
# — 03 —

## FINANCE & OPERATIONS

The Finance and Administration Department continues to improve WASCAL's finance and administrative processes and procedures for effective operational support.

### **Executive Summary of end of -Year Report**

During the fiscal year-1 January to 31<sup>st</sup> December2020- The focus was financial sustainability coupled with effective fund management to obtain commitment for the external funding from other Donors to WASCAL. In an unprecedented chain of events, the outbreak of COVID-19 has amplified the prevailing slowdown in the global economy, as well as in the Ghanaian economy. Aside from the lockdown situations impacted on the economy, the activities of WASCAL were also shifted due to the pandemic – WASCAL was challenged with new risk and uncertainty in its resource's mobilization and funding of key activities for the period under review. Despite these challenges, the financial management of WASAL has been key proactive and consistent in providing effective financial support to key prioritize areas of the organizations activities to ensure that our target is achieved.



## Restructuring Exercise

The restructuring exercise which was started in 2019 came to an end in the first quarter of year 2020. Seventeen people were identified for the exercise. Six out of the number were deployed to other projects. Eleven people were finally served with notification. All entitlements for the affected staff have been duly paid.

NAME	POSITION
Dr. Jesse NAAB	RTC -Sustainable Agric. - Climate Smart Agriculture
Dr. Belko Abdoul Aziz DIALLO	Data Management Scientist
Dr. Safietou SANFO	RTC-Rural-Urban and Cross border migration
Dr. Kwame HACKMAN	GIS Technician
Dr. Salack SEYNI	RTC-Risk and Vulnerability
Dr. Oble NEYA	RTC-Land Use Land Cover and Land Degradation

Similarly, recruitment exercises were carried out in the later part of year 2020 for Regional Thematic Coordinator and Communication Officer positions for the Renewable Energy project. Dr. Bruno Korgo was identified as suitable candidate for the Regional Thematic Coordinator position and Mr. Ousmane Drabo for the Communication Officer position. Mr. Igor Bassan Bado has also been appointed as Project Communication Support to assist in the Communications section. It is hoped that the identified candidates will assume duty in January 2021.

## Performance Management System

New performance management and assessment forms were developed and shared with management. They included: annual performance plan form, mid-year review and annual performance assessment forms. The new forms are currently being used. Scores for staff performance assessment for year 2020 are being compiled for management decision making.

Due to new developments, the Employee Personnel Policy Manual has been revised and submitted to management for their consideration.

- The scientists at the CoC by providing the needed information to finalize project proposal documents.
- Provided personnel management support to foster the collaboration with AGRA and other sister organizations
- Provided personnel management support for CIREG, UPSCALLERS, World bank and other projects to ensure efficient delivery.



Providing relevant climate services  
for West African governments,  
regional economic bodies  
and other stakeholders **to give climate  
change related decision making at all levels**

# THE YEAR IN BRIEF

## **WASCAL'S FATOU GUEYE APPOINTED FIRST FEMALE PROFESSOR OF ECONOMICS AT UCAD, SENEGAL**



Director of the WASCAL's Doctoral Research Programme (DRP) in Climate Change Economics, at the Cheikh Anta Diop University Senegal, Fatou Gueye, has become the first female professor in Economics at the University since its establishment in 1957.

This was announced by the Committee of the 'Conseil African et Malgache de l'Enseignement Supérieur (CAMES)', the solely mandated Inter-governmental Entity in charge of assessing applications from national University teaching and research personnel for an academic promotion, in all the 18 Francophone African countries.

Fatou Gueye recently ascended to the position of the Director of the WASCAL Doctoral Research Programme in Senegal, after serving as the Assistant Coordinator from 2011. She obtained her PhD in Economics in 2012 as part of the Inter-university Postgraduate Programme (NPTCI) at UCAD. She was then recruited at the Department of Economics of the Faculty of Economics (FASEG) in 2008 where she has been actively involved in research work on the informal sector in West and

Central Africa, undertaken by CREA/Cheikh Anta Diop University for more than 12 years till now. She has also conducted research on various topics about sustainable development.

### **FIGHTING COVID-19- WASCAL STAFF IN THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE DONATE TO 50 FAMILIES IN NIGERIA**



As part of efforts to fight the global pandemic corona virus, members of staff of the Doctoral Research Programme-West African Climate Systems (WACS -FUTA) have donated 50 packs of COVID-19 palliatives to a neighbouring village to the University, Ibule-Soro. The packages were meant to ameliorate the biting effects of the COVID-19 lockdown. Voluntary donations were received from members of staff as well as few other well-wishers.

### **WASCAL CoC ENGAGES WEST AFRICAN PLAYERS IN METEOROLOGICAL OBSERVATION NETWORK**



The WASCAL CoC in Ouagadougou organized a two-day regional workshop on “ Hydro-Meteorological Observation Networks: Status quo and Perspectives” to interact on the roadmap and future perspectives of the acquired hydro sensors for the region.

The workshop also preceded the official commissioning of the equipment to beneficiaries.

The technical workshop brought together senior scientists, meteorology and hydrology experts, WASCAL's partner institutions, and other West African stakeholders to participate in the technical session of the workshop, with directors of the major river basins; Volta Basin Authority (VBA), Niger Basin Authority (ABN), Organization for the Development of the Senegal River (OMVS) in the sub-region , and representatives from other key institutions like the World Meteorological Organization (WMO)



were also in attendance..

The roundtable discussion session provided in-depth substantive status quo analysis of hydro-meteorological observation networks in the region. The challenges identified by the stakeholders during the workshop include lack of data due to the lack of equipment supported by the lack of data sharing. The obsolescence of most existing equipment, need for a sustainable preventive and curative maintenance and replacement of existing equipment is also a major issue in the region. The need for new and up-to-date sensors and need to extend the observation networks current parameters to new ones like air pollution, ionic composition of water, amongst other is desirable.

### **WASCAL AND WEST AFRICAN VICE CHANCELLORS STRENGTHEN PARTNERSHIPS TO FIGHT CLIMATE CHANGE**



WASCAL held a strategic meeting with its 12 Lead Universities in West Africa to strengthen the collaboration between the organization and Lead University Vice-Chancellors for sustainability.

The meeting which created a communication platform between the vice chancellors of the Lead Universities, WASCAL and BMBF acknowledged the vice chancellors for their comprehensive support to the Graduate Studies Programme of the organization over the years. The meeting also showcased the impact story of the entire WASCAL programme across all the universities in its quest to build capacities to combat Climate Change and improve livelihoods.

### **WASCAL AND ECOWAS SIGN MoU ON GREEN HYDROGEN AND OTHER RENEWABLE ENERGIES INITIATIVES**



WASCAL and the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) signed a Memorandum of Understanding to cooperate in the field of sustainable energy development in West Africa through development of an ambitious and viable project pipeline for investment, implementation and operation, with reference to the Green Hydrogen and facilitate the wide dissemination of Green Hydrogen throughout the ECOWAS region.



The Memorandum of Understanding seeks to bring the two institutions together to cooperate in the field of sustainable energy development in West Africa through establishment of an ambitious and viable project pipeline for investment, implementation, and operation, especially with reference to Green Hydrogen.

The project, H2 Atlas Africa will ensure partnership with a consortium of relevant African research institutions to explore the potentials of Green Hydrogen production from the enormous renewable energy sources within the continent. The aim is to support sustainable and economic development in Africa through a viable hydrogen economy.

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### **MRS. ANJA KARLICZEK: HYDROGEN PARTNERSHIP WITH AFRICA PLANNED**



### **BMBF / Hans-Joachim Rickel:**

The Federal Research and Education Minister, Anja Karliczek and her Nigerian counterpart, Minister of Higher Education, Research and Innovation, Yahouza Sadissou

(Chairman of the WASCAL Ministerial Council), agreed in Berlin to establish a hydrogen partnership and strategic measures to expand in West Africa. The Federal Minister of Research Anja Karliczek explains:

“Africa is a continent of opportunities. Green hydrogen as the oil of tomorrow is one of the greatest opportunities. I am therefore very pleased that we have laid the foundation stone for a hydrogen partnership today. It holds great opportunities for everyone involved: for West Africa, for Europe and for Germany as a country of innovation. The start has been made: We have launched a potential atlas on green hydrogen in West Africa. Teams of experts have started their work in the 15 ECOWAS countries. We want to publish the potential atlas by the end of the year.

Cooperation with Africa on the mega-issue of green hydrogen will make Germany a focus of the European Union (EU) Council Presidency. We also contribute to the success of the European Green Deal.

Africa is particularly important to my ministry. That is why I presented our new Africa strategy a year and a half ago. It is based on the guiding principle of ‘creating perspectives!’ And puts innovation, qualification of people and proximity to applications at the centre of our cooperation.

In the WASCAL network, we can look back on a longstanding and trusting cooperation with the West African

countries. We want to intensify this in the mutual interest. This includes our successful Graduate Studies Programmes (GSPs), which have so far produced around 350 graduates in disciplines such as food security and water management.

In addition, with the new building of the WASCAL CoC, we will build a powerful research infrastructure for climate and environmental data. "

The research minister Sadissou said: "WASCAL and the BMBF have been working together successfully for almost ten years and have already enabled 200 young scientists to qualify in ten interrelated topics on Climate Change, to support hydrometeorological observation stations and to provide tailored models and information for politics and local adaptation strategies to work."

## WASCAL CABO VERDE WELCOMES 2ND BATCH OF MASTER'S STUDENTS IN CLIMATE CHANGE AND MARINE SCIENCES



The WASCAL Graduate Studies Programme in Climate Change and Marine Science in Cabo Verde welcomed students from the 2nd batch of the Master in Climate Change and Marine Sciences at the Institute of Engineering and Marine Sciences – ISECMAR, of the Atlantic Technical University.

The event which took place in the Yard of the Building B of ISECMAR, was chaired by the Dignified Chancellor of





the University, Dr. Raffaella Gozzelino and was attended by the Dean of ISECMAR, Dr. Luis Fernandes, the Director of WASCAL Graduate Studies Programme, Cabo Verde, Dr. Corrine Almeida and the Deputy Director, Dr. António Pinto Almeida.

Speaking at the event, the Director of GSP in Cabo Verde, Dr. Corrine Almeida, stated that despite the constraints caused by the COVID -19 pandemic, her team was able to adapt the Programme to meet the conditions for the students to attend lectures via videoconference. Other activities included study visits and field trips.

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### **UNIVERSITY ABDOU MOUMOUNI, NIGER APPOINTS CHRISTOPH RÖVEKAMP AS ASSOCIATE PROFESSOR**

The University Abdou Moumouni of Niamey, Niger has appointed Dr. Christoph Rövekamp, Head of the Division, Energy and Hydrogen



Technologies at the German Federal Ministry of Education and Research (BMBF), as visiting Associate Professor.

By this appointment, Dr Rövekamp will lecture WASCAL's postgraduate students on Climate Change and Renewable Energies at the university. He will also contribute to mentoring alumni on economics and science-policy interface.

The Vice Chancellor of the university, in his appointment letter, recognized Dr Rövekamp's critical contribution and role in West Africa's energy sector, through various programmes, events and stakeholder engagements



to develop and implement curriculum in areas of renewable energy and green hydrogen.

Even more critical is his leadership task in garnering strong African partners to deliberate and formulate strategies in tackling the energy challenges facing Africa

### **BMBF AND WASCAL SUPPORT RENEWABLE ENERGY DEVELOPMENT FEASIBILITY STUDY IN GHANA**



BMBF WASCAL is funding a feasibility study on renewable energies development, for a Pilot Project implementation in Ghana.

Dr Christoph Rövekamp, the Head of Division 722 Basic Energy Research at BMBF, announced this at the opening section of a regional stakeholders' consultation workshop held in Accra-Ghana on Thursday, July 26th, 2018. He said funding from BMBF, would support a joint scientific team of experts from research institutions in Ghana and Germany to seek inputs from, and to collaborate with industry and civil society in the energy sector, including the Energy Commission, Electricity Company of Ghana, GRIDCo, the Kumasi Institute of Technology

Energy and Environment (KITE), the Council for Scientific and Industrial Research (CSIR), the Centre for Climate Change and Gender Studies of the University of Energy and Natural Resources at Sunyani, the Department of Agricultural and Biosystems Engineering at KNUST, the Institute of Statistical, Social and Economic Research, University of Ghana Legon, and a research institution based in Germany. Dr Rövekamp explained that the broad objective of the feasibility study was to conduct a detailed technical and financial assessment of renewable energies, focusing on technologies and their applications in all sectors of the country, and to produce a comprehensive report.

### **SOLAR SYSTEM FOR THE LOCAL ECONOMY**



According to the local electricity supply authority, only 25 percent of the population in Niger has access to electricity. In rural areas, where around 84 percent of the population live, the proportion is only eight percent, "explains Prof. Dr. Ramchandra Bhandari from the Institute for Technology and Resource Management in the Tropics and



Subtropics (ITT) at TH Cologne. In order to promote rural areas in particular, a consortium of African and German universities and private companies is planning to build a solar system as part of a pilot project on the site of a village school in the Dosso region.

The solar system, which is up to 200 square meters in size, will generate between 15 and 20 kilowatts. A groundwater pump with drinking water treatment is to be operated with the electricity generated, which, together with new irrigation concepts, promotes local agriculture. In addition, the local people will have the opportunity to purchase electricity for their companies and to develop new business ideas. Battery rental for villagers, the use of cold stores for agricultural products, charging mobile devices or operating an e-moped as a taxi and delivery service are conceivable. Last but not least, the houses in the village are also to be supplied with energy.

### **BMBF FUNDED BIOGAS LABORATORY PROJECT IN TOGO LAUNCHED**



BMBF funded Renewable Energy Development Project on "High

Technology Laboratory Construction for Production of Biogas, and Up-to-date Efficient Cooking Tool Mechanisms Implementation" has been launched at the University of Lomé, in Togo.

The pilot project seeks to identify new research activities in the field of Renewable Energies in the West Africa sub-Region with the ultimate goal of finding a headway in solving the energy deficiency problems that are faced by countries in the West Africa Sub-Region.

Deutsches Biomasseforschungszentrum, DBFZ, an experienced – German reputable bioenergy firm, and WASCAL, mandated to provide quality Climate Change solutions through research and capacity building in West Africa will be leading the project in Germany and West Africa respectively ably supported by the University of Lomé, Togo.

The Vice Chancellor of the University Professor Koffi Akpagana, made an affirmation for continuity and development.

"To our German and WASCAL partners, I would like to reassure them that we firmly believe that the growth and development of our country cannot be envisaged without a massive investment in renewable energies. The University of Lomé will be a major player in this area, and we are ready to put all the necessary means to achieve this". He said.

The Executive Director of WASCAL, Dr.

Moumini Savadogo, thanked BMBF for their excellent and unflinching cooperation and support to WASCAL. He also cited the manifestation of the cooperation through different embassies of Germany in WASCAL's 11 member countries.

The lab will also be a training centre and an educational exchange medium for young African scientists and the German counterpart where knowledge and experience would be shared in renewable energy

The ceremony, which took place at the WASCAL Graduate Studies Centre in Lomé, was attended by dignitaries like His Excellency the Ambassador of the Federal Republic of Germany, Mr. Matthias Veltin and representatives from BMBF, headed by the Honorable Parliamentary State Secretary, Thomas Rachel and Dr. Christoph Rovekamp who joined in virtually, amongst other decision-makers and other key stakeholders.

In Togo, access to energy is less than 10% in rural areas. Much of this energy is usually in the form of traditional biomass, consisting of charcoal, firewood, agricultural residues and manure. It is evident that increasing the effective and efficient use of biomass for energy purposes can also become a tool for development and poverty reduction and running until the end of 2023, Leipzig scientists are investigating the potential of residual and waste materials in West Africa and providing support in setting up a research biogas laboratory and in

the production of pyrolysis cookers for rural regions.

As part of the German Federal Government's Africa Strategy, the joint research centre (WASCAL) was established by BMBF as early as 2012. With the countries Benin, Burkina Faso, Cape Verde, Ivory Coast, Gambia, Ghana, Mali, Niger, Nigeria, Senegal and Togo, a total of eleven African countries with different focal points are now integrated into the research network. While each country pursues regionally adapted research priorities on different aspects of Climate Change (biodiversity, water, land use, civil security or agriculture), bioenergy plays a particularly important role in Togo.

In the DBFZ's largest foreign project to date, with 3.2 million euros, a significant contribution is to be made to combating Climate Change through the development of research infrastructure and the transfer of knowledge on the bioenergetic use of biogenic organic residues, while at the same time reducing deforestation in the target region of Togo. In line with this starting point, the Leipzig scientists are pursuing the goal of evaluating alternative and renewable energy sources for rural areas and creating the basis for successful implementation. Therefore, in a first step, biomass potentials are to be quantified, technologies are to be examined with regard to their suitability and, in the case of biogas application, a research structure is to be created that is necessary to enable

a sustainable implementation of technologies.

[www.dbfz.de/en/projects/labtogo](http://www.dbfz.de/en/projects/labtogo)

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## **WASCAL COTE D'IVOIRE PARTNERS CLIMATE LEADERSHIP PROGRAMME FOR WOMEN IN WEST AFRICA**



The WASCAL Doctoral School in Biodiversity-African Centre of Excellence on Climate Change, Biodiversity and Sustainable Agriculture (WASCAL / CEA-CCBAD) of the University Félix Houphouët-Boigny

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## **GREEN" HYDROGEN MADE IN AFRICA**

Africa as a successful producer and exporter of sustainably produced hydrogen for a climate-neutral energy supply of the future: that is the idea behind the "H2Atlas-Africa"

project. The central goal is to identify locations in the west and south of the continent that are particularly suitable for the production of hydrogen using renewable energies. Parliamentary State Secretary Thomas Rachel will give the official go-ahead tomorrow,

Cote d'Ivoire, has been chosen to host the Climate Leadership Programme for Women in West Africa (WAFriCLP).

The programme which selected a cohort of 18 women from Benin, Burkina-Faso, Cote d'Ivoire, Guinea, Mali, Senegal and Togo for its implementation, is a women's Climate Change leadership capacity building programme that provides learning, experimentation, education, research and training opportunities for scientists, innovators, and analysts and editors.

The WASCAL GSP in Côte d'Ivoire has one of the best structures used to engage in Climate Change and Land Management. The programme is coordinated by Prof. FatagomaSorho and under the directorship of Prof. Souleymane Konate, the Director of WASCAL Graduate Studies Programme (GSP) in Cote d'Ivoire.

Wednesday, for the project funded by BMBF with around 5.7 million euros. The coordinator is Dr. Solomon Nwabueze Agbo from Forschungszentrum Jülich.

"Africa is a continent with a rapidly growing population and increasing energy requirements. We can only master the challenges of Climate Change and a sustainable, climate-neutral and secure energy supply in Africa and Europe together. Countries in West and South Africa offer enormous potential for renewable energies hydrogen can be produced sustainably, which we need for the energy

transition, “explains State Secretary for Research Thomas Rachel MdB. The National Hydrogen Strategy, which the Federal Government is launched in the cabinet on Wednesday, shows the important role hydrogen will play in the energy system of the future. For example, hydrogen should replace fossil fuels on a large scale, serve as storage for renewable energies.

“At the Research Center Jülich, we set the course for research on green hydrogen as the basis for a sustainable energy industry a few years ago,” explains Wolfgang Marquardt, CEO of the Research Center. “Jülich’s hydrogen research ranges from the basics to technologies for the production, storage and use of hydrogen in new fields of application in mobility, energy management and industrial production. The central question is how green hydrogen can be produced in large quantities and how can be transported over long distances and in large quantities using existing infrastructures and further processed into synthetic fuels and

industrial chemicals using Power-to-X technologies. ”

The most important partners on the African side are the two centers for climate research in Ghana (West African Service Centre on Climate Change and Adapted Land Use, WASCAL) and in Namibia (Southern Africa Science Centre for Climate Change and Adaptive Land Management, SASSCAL).

The results of the “H2Atlas-Africa” project can be used in a variety of ways: as an orientation aid for the construction of pilot plants and as a roadmap for the establishment of a green hydrogen economy in sub-Saharan Africa, which is used by politicians and potential investors. On the scientific side, a close exchange of researchers and students is planned, supplemented by workshops and graduate school programs that WASCAL, RWTH Aachen and Forschungszentrum Jülich organize together.





## KEY PARTNERS



Federal Ministry  
of Education  
and Research



DLR Projektträger



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PARTNERSHIP



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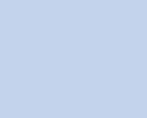
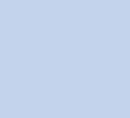
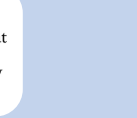
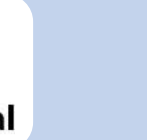
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