

# MEEMSAL Theory for an Effective Fight against Insalubrity

Ibrahima Sakho

Department of Physics Chemistry, UFR Sciences and Technologies, University of Thies, Thies, Senegal

Email: Ibrahima.sakho@univ-thies.sn

**How to cite this paper:** Sakho, I. (2023) MEEMSAL Theory for an Effective Fight against Insalubrity. *Journal of Environmental Protection*, 14, 824-840.  
<https://doi.org/10.4236/jep.2023.1410046>

**Received:** July 26, 2023

**Accepted:** October 24, 2023

**Published:** October 27, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

Insalubrity is an environmental problem that undermines the living environment as well as the health of populations. The 2016 WHO press release indicated that environmental unsanitary conditions cause 12.6 million deaths per year. This alarming number of deaths is enough to justify the imperative need to fight against any source of insalubrity on a planetary scale. One of the effective strategies for combating any form of insalubrity is the MEEMSAL (an acronym for “Mon Espace d’Evolution Mon SALon”) theory. According to this theory, the eradication of insalubrity and all other forms of anthropogenic pollution must start at school by training learners in eco-citizen education. It is demonstrated in this work that the application of the foundations of the present theory makes it possible to form MEEMSAL generations, some of which will be the future elites and decision-makers of our different nations, which in the long term, will create a healthy environment on a global scale.

## Keywords

Insalubrity, Living Environment, MEEMSAL Theory, Anthropogenic Pollution, Eco-Citizen Education, MEEMSAL Generations, Environment

## 1. Introduction

According to the Larousse (<https://www.larousse.fr/dictionnaires/environnement/30155>), the environment designates either the set of elements (biotic or abiotic) that surround an individual or a species, some of which contribute directly to meeting its needs, or the set of objective elements (air quality, noise, etc.) and subjective (beauty of a landscape, quality of a site, etc.) constituting the living environment of an individual. The abiotic factors of an ecosystem are all the components that determine the physical space or biotope in which the biocenosis develops. Abiotic

elements can be geographical or topographical (latitude, longitude, altitude, orientation, slope...), climatic (temperature, sunlight, relative humidity, wind, atmospheric pressure, precipitation, concentration of suspended particles...), edaphic (soil composition and structure) and chemical (components of air, water and soil) [1]. Biotic factors are all living organisms: animals, plants, fungi, bacteria and other micro-organisms (all kingdoms of nature), as well as the interactions they have between them. All of these factors give rise to what is known as biocenosis [2]. The biocenosis-biotope system with the eco-biological interdependencies established in it is called ecosystem [3]. The various human activities in the biosphere, a term often used instead of environment, induce anthropogenic pollution that perniciously degrades terrestrial and aquatic ecosystems (freshwater ecosystems and marine or saltwater ecosystems). Discharge of huge quantities of mercury into the rivers flowing towards the Ebrié lagoon in the South of Abidjan [4] is a tangible illustration of anthropogenic pollution induced by human activities. One of these aggressions is the insalubrity characterized by a lot of nuisances degrading both the living environment and the health of the populations. Insalubrity can be defined as any nuisance preventing the inhabitants of a given area from enjoying cleanliness, safety and tranquility in the streets, places and public and private buildings. This societal scourge also affects several developing countries, particularly the countries of sub-Saharan Africa [5]. Similarly, the problem of insalubrity due to wastewater is a sword of Damocles hovering over the seas and oceans of the globe. Globally, 80% of wastewater is untreated, not to mention the 10% of the population who dump everything in nature [6]. In the specific case of Senegal, despite the adoption of a law in 2020 prohibiting the use of disposable and single-use plastics, only 9000 tons of wastes are reprocessed out of the 20,000 produced each year. The rest of the untreated plastic waste threatens the survival of fauna and flora, as well as the Senegalese maritime cultural heritage. Plastic pollution also contributes to unsanitary conditions and the depletion of natural coastal resources [7]. Moreover, it is not rare to see in the Senegalese capital, someone throwing in the middle of the street or on the roadway, in all innocence, orange peels, a banana peel, peanut shells, a used tissue, bag or plastic cup [8]. In many countries, the fight against insalubrity consists of waste management programs in public spaces. Indeed, waste management in African cities is nowadays dominated by the system “Partenariat Public-Privé” (3P or PPP) set up in the United States and the United Kingdom since 1970 [9]. This 3P policy spread to developing countries from the 1980s. At a “Partenariat Public-Privé”, the State or a State institution delegates its functions to a private company under a service contract. In the case of Cameroon, it is a private company, the “Société Hygiène et Salubrité” du Cameroun (HYSACAM), who is authorized to ensure the collection of waste [10]. In Senegal, l’Unité de Coordination de la Gestion des déchets solides” (UCG) created by Ministerial decree n° 12551/MCGCV/IAAF dated November 17, 2011 is responsible for coordinating the collection, transportation, landfilling and

treatment/recovery (including the management of equipment and infrastructure) of solid waste throughout the national territory; to ensure the coordination of street cleaning, to ensure the continuity and the current affairs of the programs and projects of the State in the field of solid waste management [11]. Despite the efforts of the State, the public spaces of Dakar present very desolate scenery (streets eaten by sand, car washes degrade the roadway, daily disposal of plastic bags, pipes spewing their fetid wastewater in many neighborhoods, chemical pollution due to exhaust gases, noise pollution in the markets and in the carpentry, cabinetmakers and metal workshops which abound everywhere in the districts, etc.). In addition, insalubrity has become a real scourge that is plaguing city of Kinshasa. Former nicknamed “Kinshasa the beautiful”, today the Congolese capital has become “Kinshasa the trash”. Rubbish is littered almost all over the city. The provincial city of Kinshasa can be considered today as a megalopolis of insalubrity, where not everyone is sensitive to environmental issues. Most of the gutters are either blocked or non-existent depending on the neighborhood. The increase in insalubrity and the degradation of this ecosystem have taken on worrying and dangerous proportions for the Kinshasa population. Insalubrity shares daily life with populations whose attitude is either resignation or indifference [12]. This development clearly poses the serious problem of the deterioration of the living environment in the Senegalese capital in particular and in other communes of Senegal such as Mbour, Kaolack and Ziguinchor [13]. Many developed countries have succeeded in making their cities clean by adopting legislative mechanisms allowing fines to be imposed on those responsible for unsanitary conditions. For example, a simple spit in the street results in a fine of 100 Swiss francs in Lausanne, throwing a cigarette butt a fine of 68 euros in Paris, a deposit waste a fine of 450 euros in Toulouse, urinating in the street, 200 Swiss francs in Geneva, throwing garbage along the road through the window of his car, 450 euros in France etc. Rwanda is the example that should inspire all African countries that want to overcome the filth and insalubrity of their cities. Indeed, all Rwandans between the ages of 18 and 60 are obliged to devote the morning of the last Saturday of each month to community service, including waste collection in cities and street cleaning. The Rwandan capital also organizes a car-free day once a month to promote physical exercise [8]. Despite all the efforts made, most of our cities in Senegal are still unhealthy. It therefore seems that, the appropriate solution is the one that allowed people to be reluctant to throw the slightest filth or dirt into their daily living spaces. This necessarily involves an eco-citizen education of young people from an early age. The MEEMSAL theory constitutes an effective but long-term response to the eradication of any form of nuisance that could compromise the cleanliness, safety and tranquility of populations in the streets, places and public and private buildings. In the second section, we present the foundations of MEEMSAL theory. In the third section, we give in the form of images examples of MEEMSAL spaces. We draw a conclusion and outline perspectives in the fourth section.

---

## 2. Foundations of the MEEMSAL Theory

### 2.1. The Observation

Environmental degradation is attributable solely to human activities in the biosphere. In African villages and towns, it is neither the local community authorities nor the state authorities who dump waste all over the place in inhabited spaces. The degradation of the living environment induced by aesthetic pollution due to the massive discharge of household waste and plastic waste, the dumping of wastewater from septic tanks in the streets in winter, etc., are indeed the work of populations. It follows that the creation of healthy environments where it is good to live at the level of African villages and cities, must imperatively pass through an environmental education of the populations to enable them to acquire skills of interpersonal, these skills guaranteeing eco-citizen behavior. Many Western countries have understood this challenge. This is how in countries like France and Spain, the streets are washed at night (we were amazed to see firsthand this cleaning of French and Spanish streets during our tourist visit in 2004). Other countries such as Japan and the USA can be cited as examples of nations where the streets are cleaner than many African homes.

According to the above, it is urgent to sensitize African youth on the need to protect their spaces of evolution against all forms of pollution for their own development (we only have the earth as a place of residence). Pupils and students being much more receptive to environmental problems, their mobilization as vectors of awareness and warning of uninformed populations is undeniably one of the most promising avenues to explore.

### 2.2. Birth of the MEEMSAL Concept

To encourage populations to live in a healthy environment, it is necessary to ensure that any space where man moves daily is perceived as a VIP lounge, the cleanest and most maintained place in a house. This is how the concept MEEMSAL was born. It is our proposal as of the conference on “air pollution” that we had the honor of hosting on June 15 2019 on the occasion of World Environment Day organized by the Master of Engineering and Environmental Management (MIGE) of the University of Thies in Senegal. MEEMSAL is an acronym for “Mon Espace d’Evolution Mon SALon” (My Evolution Space My Living Room: MESMLR).

Consciousness of the need to have clean development spaces (streets, workshops, bus stations, markets, beaches, schools, hospitals, etc.) can arise in school spaces (elementary schools, colleges and high schools) and academics throughout the rural and urban areas of the countries confronted with the degradation of the living environment of the populations. This would then allow the creation of MEEMSAL villages, MEEMSAL cities, MEEMSAL regions, MEEMSAL countries and MEEMSAL continents. Each individual would then live in a globally healthy environment.

### 2.3. Fight against Insalubrity by Applying the MEEMSAL Theory

It should already be noted that there are several initiatives aimed at involving young people in the fight against the deterioration of the living environment. In Senegal, for example, local communities have continuously involved students and young people in activities aimed at protecting Senegal's biodiversity. To support and complement these existing activities, the UNESCO Regional Office in Dakar launched in 2021 a field initiative aimed at raising awareness among the populations of the Senegalese coast about the protection of the environment and the ocean as well as promoting marine cultural heritage. These activities targeted public schools and fishing communities in the Dakar region. At the same time, educational and awareness-raising activities on the protection of the marine environment and the promotion of maritime heritage in the Dakar peninsula were organized during the months of September and November 2021. Awareness posters "see is not a trash can" were distributed to coastal populations; discussion groups were organized with wharf managers, fishermen, wholesalers and women who sell fish products; exhibitions on the composition of Senegalese maritime heritage and artistic production workshops have been organized in schools to facilitate understanding of the concepts of underwater cultural heritage and marine pollution. Finally, the awareness campaign was widely disseminated on social networks. In total, at least 15,000 Internet users have been reached by information and awareness-raising campaigns on social media and more than 30,000 school children have benefited from activities and educational materials. The initiative raised awareness among young people in local communities about the dangers of coastal pollution, the socio-economic difficulties associated with it, the destruction of the marine and coastal environment and the need to implement sustainable solutions [7]. However, these initiatives must be supported upstream by continued education and training of young people and adults in the environment and eco-citizenship.

The MEEMSAL theory is based on the fundamental assumption that, training and education in environment and eco-citizenship of learners is one of the most viable solutions to eradicate any form of nuisance in public and private spaces where man evolves. For this, the MEEMSAL theory recommends integrating modules relating to the environment and eco-citizenship into school and academic programs. In addition, this theory recommends creating MEEMSAL clubs in each establishment (school, college, high school and university). These clubs should federate to migrate to inter-school and inter-university MEEMSAL environmental clubs. The main missions assigned to the members of these clubs are set out below

Each learner who is a member of a MEEMSAL club must be a whistleblower ambassador in their residential area. For this it is necessary to:

- 1) Organize for MEEMSAL students a seminar on education and training in environment and eco-citizenship.

At the end of this seminar, members of MEEMSAL clubs must:

2) Roll out weekly awareness-raising campaigns at district level around the slogan: ZERO SET-SETAL (ZERO cleaning) throughout the national territory by 2050. This would allow, after more than 25 years of sensitization to make inhabited areas, areas specific to the image of European, Japanese and American cities to name but a few. To achieve this, it is necessary to curb the emergence of new anti-MEEMSAL neighborhoods, that is to say neighborhoods that will become unhealthy as soon as they are populated.

Members of MEEMSAL clubs must then:

3) Draw up a map of all the new neighborhoods likely to be created from January 2025, for example.

4) Sensitize local authorities on the need to make these new neighborhoods MEEMSAL neighborhoods. For this it is necessary to:

- Draw up a map of flood-prone areas (these inhabited places are often flooded during the rainy season, forcing populations to live in dirty waters that are sources of disease and pollution);
- Delineate sanitation perimeters (non-habitable areas, landfill areas, etc.);
- Implement an efficient sanitation network before any construction;
- Develop green spaces: lawn + shade trees (for recreation and relaxation areas);
- Build well-paved streets lined with solar street lights, rainwater drainage systems and shady trees;
- Develop play areas (for children: while avoiding noise pollution);
- Set up a regulatory and controlled landfill area (to avoid anarchy);
- Create a space dedicated to the neighborhood shopping center: no goods or foodstuffs should be sold or bought in the street);
- Set up a space dedicated to the neighborhood market with canteens organized by batch according to the type of products marketed: no goods or foodstuffs should be sold or bought in the aisles between canteens or around the market);
- Develop spaces dedicated to health structures (health huts, dispensaries, hospitals, clinics, etc.), schools (schools, colleges and local high schools);
- Set up a large workshop space: this space would accommodate all the mechanics, welders, metal carpenters and cabinetmakers, clerks, etc. No workshop should be built in a corner of the neighborhood or any street;
- ..., etc.

Once the mapping of all the new neighborhoods likely to be created from January 2025 is available:

5) Empty the stock of slums by eradicating all aesthetic pollution (due to household waste, plastic materials), physico-chemical waste due to stagnant water with foul odors and the open-air incineration of wild dumps arranged between the streets of the districts, sources of air, water and soil pollution, etc., and this over a period of 25 years.

For that:

6) Create MEEMSAL neighborhood committees made up of:

- All learners (pupils and students) in the district; each committee should:
- Be piloted by the “MEEMSAL” student;
- Supervised by an ad hoc committee of Elders MEEMSAL made up of elementary school teachers, middle-secondary teachers, religious and customary leaders, Imams, Priests residing in the district.

The steering committee must be set up under the aegis of the Mayor of the municipality where the neighborhoods are located and should also offer environmental and eco-citizenship education programs for students in primary and middle secondary schools living in the municipality.

7) Identify the types of pollution specific to the residential district: some districts are invaded by plastic materials, others by stagnant water or waste water, others by the insalubrity induced by waste from markets, another by the anarchic occupation of workshops springing up like mushrooms on every street corner, etc.

8) Educate households to have at least three trash cans in each house:

- A bin for biodegradable waste;
- A bin for non-biodegradable waste;
- A bin for metal waste.

NB: households must be trained by MEEMSAL students in waste sorting techniques in terms of biodegradable, non-biodegradable, recyclable, non-recyclable, recoverable (energy recovery, compost, etc.), non-recoverable waste.

9) Raise awareness among local communities for the implementation of daily waste collection systems. This is very operational at the “Cité Institut Pasteur de Fass Mbao”, in Dakar, Senegal: a truck passes every day at 10 am. to collect garbage: unfortunately there is no mechanism for sorting waste: a veritable “soupou kandia” of household waste (soupou kandia is a Senegalese dish consisting of a stew with okra and palm oil accompanied by rice). This collection system makes it possible to create a local workforce responsible for collecting and transporting the waste to the landfill centers. This is observable in the city of Thiès in Senegal where transport is provided by coachmen using carts pulled by donkeys: this means of transport makes it possible to protect the environment against air pollution due to the massive release of toxic compounds from the exhaust pipes of trucks. However, it is necessary to lay out passageways reserved for carters who must not take the streets: there is a risk of the streets becoming dirty with droppings deposited by horses or donkeys and of slowing down the mobility of vehicles (movement of donkeys being too slow).

10) Raising awareness among local authorities for the creation of regulated landfill centers and waste treatment centers: recycling and energy recovery at city or regional level.

11) Invite the security and defense forces (police, gendarmes, soldiers) and health service agents for daily patrol operations for constant monitoring of the state of cleanliness of inhabited spaces; surveillance cameras may be used.

12) Invite local authorities to take severe penalties against any perpetrator of

insalubrity by fines of 5000 F for any object or dirt thrown in the street up to one month in prison for any repeat offender.

13) Work with waste treatment centers; recycling and energy recovery: subjects for Master's dissertations built around these themes with internships in the identified centers.

14) Encourage Imams and Priests to focus their sermons at least once a month on the need to keep neighborhoods clean for the well-being of pollution (they are already part of the MEEMSAL Committee of Elders, so they must play their part fully).

15) Introduce the annual MEEMSAL prizes awarded to the three districts closest to each municipality: examples free distribution of school supplies to all pupils and students in the award-winning districts. This is a source of relief for parents and therefore a motivating stimulus to get them to keep their homes clean.

These prizes can first be awarded to the cleanest school in the neighborhood "MEEMSAL School", to the cleanest middle school "MEEMSAL Middle School" and to the cleanest high school "MEEMSAL High School" then globally to the cleanest neighborhood "MEEMSAL Neighborhood".

16) Make a tri-monthly report on the state of pollution and the deterioration of the living environment in each district. These reports (made available to local authorities and the State via the Ministries concerned) must at least present:

- Difficulties encountered during awareness campaigns;
- Proposals to solve the problems encountered;
- The positive results obtained;
- Prospects for future campaigns.

Note that with regard to the 12<sup>th</sup> point relating to fines, it is desirable to create a National Civility Police (NCP) responsible for monitoring the daily behavior of populations in their different areas of evolution. NCP agents must hold the baccalaureate series S diploma and undergo at least two years of training. A year of military service and a second year of training in environmental science with an emphasis on the causes of insalubrity and their consequences on the living environment and on the health of populations. NCP agents can be recruited on the basis of 5 to 10 young people/district (depending on the size of the district). Such a program will also be an opportunity to integrate young graduates into working life. NCP agents, with motorcycles, should make the rounds daily in all street corners, taking turns every 12 hours (due to 5 agents/patrol). This would deter the perpetrators of insalubrity. Finally, the PNC agents should be assisted in their missions by the agents of the hygiene service of their commune. Note that these patrols are extremely effective. For example, during the COVID-19 pandemic, the Senegalese authorities took a series of measures to limit the spread of the virus. To a curfew from 8 p.m. to 6 a.m., wearing a mask was compulsory, gatherings prohibited, and businesses in the capital had to close on certain days of the week. The defense and security forces (DSF) were responsible for enforcing these obligations. For the recalcitrant, he had a fixed fine, between 1500 (2.29



euros) and 3000 CFA francs (4.57 euros) which was dissuasive. These DSF patrols made it possible to enforce the confinement (with the slogan: stay at home) until the relaxation of the barrier measures.

#### **2.4. Possible Action Plan, Immediately after the Training and Creation Seminars of MEEMSAL Clubs**

Each MEEMSAL Club or each MEEMSAL Inter-school or Inter-university Environment Club places its credo in action: act effectively and efficiently (too much talk kills action). Once the MEEMSAL clubs have been created, it is recommended to:

1) Create MEEMSAL neighborhood committees: the MEEMSAL student being the focal point;

2) Make an inventory of the nature and level of pollution in each district: film crew to capture all the unhealthy areas through images;

3) Go to each house in the neighborhood for an awareness campaign and to “measure” the degree of awareness of the populations in relation to the state of degradation of their neighborhood: screening of films obtained during filming, screening of films showing on the scale of which developed states, the state of cleanliness of various human development spaces (schools, colleges, high schools, universities, streets, markets, villages, towns, etc.);

4) On the sidelines of awareness campaigns in the houses: have a questionnaire to collect the opinion of the populations on at least:

- How do you intend to proceed to make your school clean as such a MEEMSAL school (compare an image of the neighborhood school with that of a MEEMSAL school, see Section 2.6); questionnaire intended for school-children, school teachers, supervisors, Directors, etc.;
- How do you intend to proceed to make your college clean as such a MEEMSAL college (compare an image of the college established in the neighborhood with that of a MEEMSAL college, see Section 2.6); questionnaire for students, teachers, supervisors, Principal, etc.;
- How do you intend to proceed to make your high school clean as such a MEEMSAL high school (compare an image of the high school located in the neighborhood with that of a MEEMSAL high school, see Section 2.6); questionnaire intended for students, teachers, supervisors, the Censor, the Principal, etc.;
- How do you intend to proceed to make your University clean as such a MEEMSAL university (compare an image of the University established in the city or the municipality with that of a MEEMSAL University, see Section 2.6); questionnaire intended for students, teacher-researchers, administrative, technical and service personnel, the Rector and his staff, etc.;
- How do you intend to proceed to make your neighborhood clean as such MEEMSAL neighborhood (compare an image of the neighborhood to that of a clean African or Western neighborhood); questionnaire intended for dis-

trict chiefs, imams, bishops, notables, etc.;

- How do you intend to proceed to make your municipality (or region) clean as such MEEMSAL municipality (or region) (compare an image of the municipality: some pockets of insalubrity with that of a clean African or Western municipality); questionnaire intended for the Governor, the prefect, the sub-prefect, the Mayor, their collaborators, the agents of the hygiene service, etc..

Filled questionnaire must be sent to the coordination level of MEEMSAL inter-school or inter-university clubs for processing and then for drafting reports to be sent to all local elected officials and to the Ministries of Education, Higher Education, Health, Environment, Town Planning and the General Secretariat of the government of the country concerned. The second action plan will be rolled out after evaluation of the first action plan.

## 2.5. The First Implementations of the MEEMSAL Theory

After its theorization in 2019, we had the initiative to organize the first International Conference on training and education in the environment and eco-citizenship correlated with the Launch of the MEEMSAL Interuniversity Environment Club for the promotion of an education eco-citizen towards African youth. This conference should see the participation of the various Senegalese universities as indicated by the logos of the banner (see **Figure 1**).

In addition, were invited the Ministry of Higher Education, Research and Innovation, represented by Dr Awa Lucie Thione, Coordinator of the Palmeraie project at the Directorate for the Promotion of Scientific Culture, the Ministry of Environment and Sustainable Development, represented by Prof. Henri LO, Director of the Center for Environmental Education and Training; the Ministry of Town Planning, Housing and Public Hygiene represented by Dr Domaye DIENG, experts at the General Directorate for the Living Environment and Public Hygiene, Director of Cleanliness and Public Hygiene, the Action and Initiatives Group for Alternative Development represented by Mr. Christian FAYE, Executive Secretary of the Action and Initiatives Group for Alternative Development (GAIA), the National Museum of Natural History of Paris represented by Prof. Yves GIRAULT from the National Museum of Natural History in Paris, Head of the European program H2020-MSCA-RISE-2014, “Geopark”, and regular researcher at the Center for Research in Education and Training relating to the environment and eco-citizenship UQAM, Montreal, Quebec, Canada. The different delegations and the chronogram are as follows.



**Figure 1.** University of Thiès\_07\_10 October 2019.

1) Universities and delegations

- Alioune Diop University of Bambey (UADB)

Head of delegation: Prof Moussa DIENG, Vice-Rector in charge of Research, Innovation, External Relations and Partnership.

Other members:

- Prof Ousseynou KA, Medical specialist in public health;
- Binta Diop, student in environment L3 sustainable development;
- Moustapha Gaye, student in energy M1 interuniversity master in renewable energy.

- Cheikh Anta Diop University of Dakar (UCAD)

Head of delegation: Dr Awa DIOUF SYLLA, Consultant in environment and biodiversity, missionary at the Institute of Environmental Sciences (ISE) of the University Cheikh Anta Diop of Dakar.

Other members:

- Ouedrago Pingd-Winde Nafissatou CYNTHIA, Master 2 student at ISE/UCAD;
- Papa Ibra MIME, student in Master 2 Project Engineering, expert in social and solidarity economy at ISE/UCAD.

- Gaston Berger University of Saint-Louis (UGB)

Head of delegation: Prof Diène NDIAYE, Head of Doctoral Training in Physics, Chemistry and Engineering Sciences (PCSI) of the Doctoral School of Sciences and Technologies of UGB.

Other members:

- Ndeye Ndickou KEBE, PhD student; research theme: production of biogas from fish residues;
- Mahamat Batran MOUTA, Master's student in Renewable Energies;

- University of Thies (UT).

Head of delegation: Prof Mapaté NDIAYE, Vice-Rector in charge of Research, Innovation and Cooperation.

Other members:

- Prof Ibrahima SAKHO, theorist of the MEEMSAL concept, Coordinator of the MEEMSAL Interuniversity Environment Club, responsible for the Environmental Chemistry module of the Master's in Engineering and Management of the Environment (MIGE) of the UFR Sciences and Technologies;
- Prof Ibrahima MBAYE, Director of the UFR Sciences and Technologies;
- Dr Issa SAKHO, head of the Master's in Engineering and Environmental Management (MIGE) of the UFR Sciences and Technologies;
- Promotion of the MIGE (30 students) project leader of the creation of the Club Environnement Interuniversitaire MEEMSAL;
- Head of MIGE: Miss Fatoumata NIANG.

- Assane Seck University of Ziguinchor (UASZ)

Head of delegation: Prof Ali Bamol SOW, Vice-Rector in charge of Cooperation and Relations with the Professional World, Director of the Oceanography, Environmental and Climate Sciences Laboratory (LOSEC) of the UFR Sciences

et Technologies.

Other members:

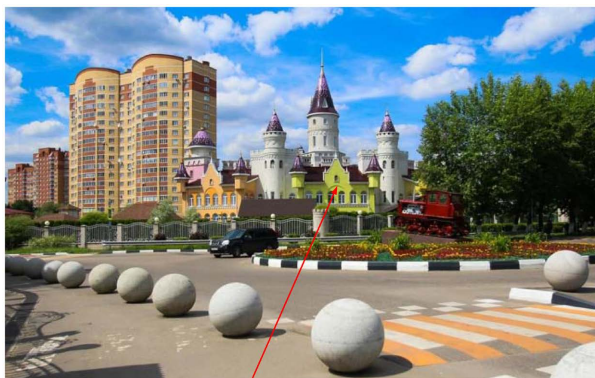
- Prof Mohamed Mahamoud CHARAHABIL, Head of the Agroforestry Department of the Science and Technology UFR, Head of the Agroforestry & Plant Production doctoral training at the Science and Technology UFR;
- Lemou Ndiaye Camara, Master student in Planning and Sustainable Management of Forest and Agroforestry Ecosystems;
- Ousseynou Thiam, Master student in Planning and Sustainable Management of Forest and Agroforestry Ecosystems;
- Jules BASSE, PhD student in tropical climate and impact at LOSEC;
- Hamady Ngansou SABALY, PhD student in Environment and Renewable Energies at LOSEC.

## 2.6. Chronogram: From October 07 to 10, 2019 (See Table 1)

Unfortunately the conference was postponed due, among other reasons, to the COVID-19 pandemic.

## 2.7. Examples of MEEMSAL Spaces (See Figures 2-9)

In 2050, MEEMSAL students enrolled in 1<sup>st</sup> primary class (1<sup>st</sup> grade) in October 2025 will then be 25 years old: some of them will then be in Master or in Doctorate and will be the future elites and political decision-makers in their respective nations.



**Figure 2.** MEEMSAL Neighborhood Model: “Castle of Childhood” kindergarten in Russia: one of the most beautiful kindergartens in the world (“Castle of Childhood”: Castle of childhood).



**Figure 3.** MEEMSAL college model: Professor-Dargent College (Lyon).

**Table 1.** Chronogram of the activities.

<b>Activities</b>	<b>Hourly</b>	<b>Animator</b>
<b>Day of October 07</b>		
Establishment	08:00-09:00	Organizing committee
Opening speech	9:00-10:00	Prof Ibrahima Sakho, Coordinator of the Interuniversity Club MEEMSAL /Head of delegation/Minister EDD
Conference: education and training relating to the environment and eco-citizenship	10:00-13:00	Prof Yves GIRAULT, Professor at the National Museum of Natural History in Paris
Lunch break-prayers	13:00-15:00	-
Establishment of the of the Interuniversity Club MEEMSAL office	15:00-18:00	All attendees
End of the works	18:00	-
<b>Day of October 08</b>		
Establishment	08:30-9:00	Organizing committee
Conference: contribution of research to the Promotion of Cleanliness	9:00-11:00	Dr Diomaye DIENG, Director of Cleanliness and Public Hygiene, Ministry of Urban Planning, Housing and Public Hygiene
Film: education in sustainable waste management and energy (1st part)	11:00-13:00	Prof Henri LO, Director of the Center for Environmental Education and Training, Ministry of the Environment and Sustainable Development
Lunch break-prayers	13:00-15:00	-
Exchanges on the missions to be assigned to the of the Interuniversity Club MEEMSAL (1st part)	15:00-18:00	All attendees
End of the works	18:00	
<b>Day of October 09</b>		
Establishment	08:30-9:00	Organizing Committee
Confrontational exchanges of environmental education and training programs at the Ministry of the Environment and Sustainable Development and the National Museum of Natural History of Paris	9:00-11:00	Prof. Henri LO & Prof. Yves GIRAULT
Film: education for sustainable waste management and energy (2nd part)	11:00-13:00	Prof Henri LO, Director of the Center for Environmental Education and Training, Ministry of the Environment and Sustainable Development
Lunch break-prayers	13:00-15:00	-
Exchanges on the missions to be assigned to the of the Interuniversity Club MEEMSAL (2nd part and end)	15:00-18:00	All attendees
End of the works	18:00	
<b>Day of October 10</b>		
Establishment	08:30-9:00	Organizing Committee

## Continued

Synthesis of work on the creation of the Interuniversity Club MEEMSAL + perspectives	9:00-11:00	<b>All attendees</b>
Closing + delivery of certificates	11:00-13:00	Prof Ibrahima Sakho, Coordinator of the Interuniversity Club MEEMSAL/Heads of Delegation
Lunch	13:00	-



**Figure 4.** MEEMSAL high school model: Lycée Michelet—Vanves (France).



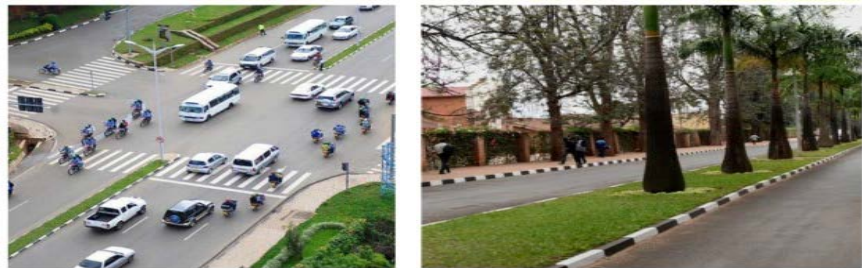
**Figure 5.** MEEMSAL university model: Flagler College, USA.



**Figure 6.** MEEMSAL model of university social campus: Cheikh Anta Diop University, Dakar, Senegal.



**Figure 7.** MEEMSAL district model: Colmar, Alsace, France.

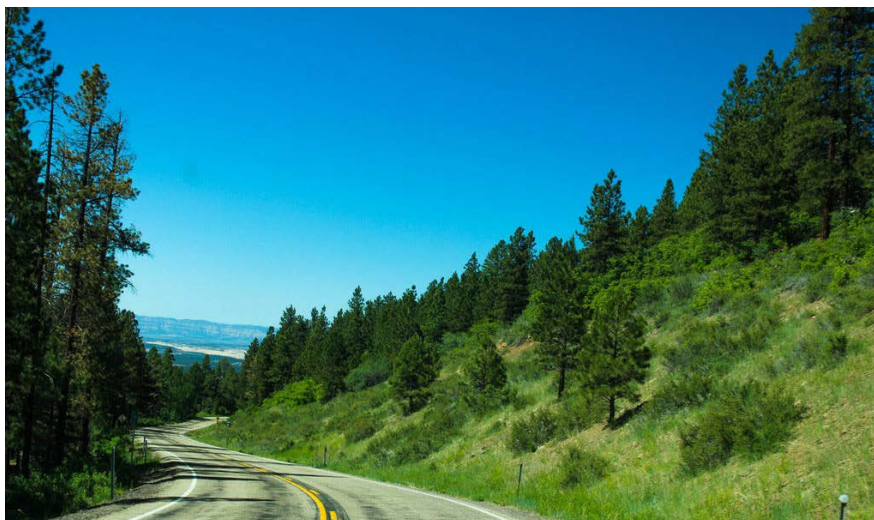


**Figure 8.** Street and city model MEEMSAL, Rwanda.

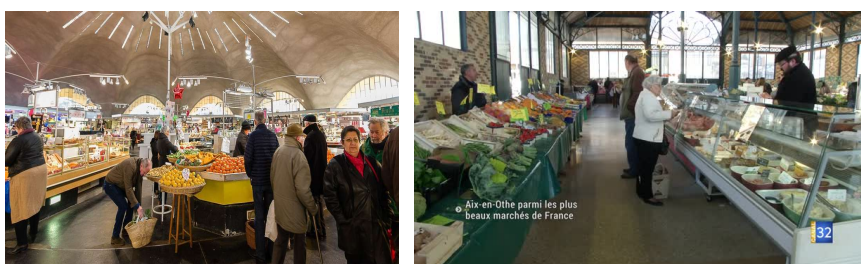


**Figure 9.** MEEMSAL village model: Giethoorn, Netherlands.

Noticed. In the city, the recurring problems revolve around pollution, noise and traffic jams. In short, the real problem is the cars. We offer you to live in a serene setting located in the Overijssel region of the Netherlands. The village Giethoorn is nicknamed “The Venice of the North”! There, you will not come across any cars, but 2620 inhabitants circulating by bicycle or by boat (in the network of canals which cross the village). As a result, pollution is greatly reduced in this space thanks to this way of life (see **Figure 10** and **Figure 11**).



**Figure 10.** MEEMSAL road model: Byway 12, in Utah, USA.



**Figure 11.** MEEMSAL market model (French markets).

### 3. Conclusion and Perspectives

In this article, we have shown that despite all the efforts made by the government authorities, particularly in Senegal, the problem of the degradation of the living environment by the populations remains and persists. The application of the MEEMSAL theory will undoubtedly make it possible to eradicate mainly insalubrity and aesthetic pollution in the spaces of evolution of the populations confronted with problems of degradation of the living environment. In addition, the MEEMSAL evolution spaces chosen as a reference in this article are neither in Paradise nor on an extraterrestrial zone: they are indeed on earth. Moreover, they are neither the work of Angels or extraterrestrials: they are the work of mortals. Africans and all the other nations whose populations are confronted with problems of degradation of the living environment are also mortals: they can therefore make their spaces of evolution clean and peaceful spaces, it is a simple question of vision and political will. In particular, African states must stimulate a dynamic change in the behavioral paradigm of African populations, some of whom continue to languish daily in areas of extreme insalubrity. This paradigm shift requires the integration into teaching programs from elementary to higher education of content relating to environmental education and eco-citizenship. Only a disciplined people can make its space of evolution a clean and peaceful living environment.



## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- [1] Márquez, A. (2021) Facteurs abiotiques: Définition, caractéristiques et exemples. <https://www.projetecolo.com/facteurs-abiotiques-definition-caracteristiques-et-exemples-20.html>
- [2] Márquez, A. (2021) Facteur biotique: Définition, caractéristiques, interaction et exemples. <https://www.projetecolo.com/facteur-biotique-definition-caracteristiques-interaction-et-exemples-90.html.2021b>
- [3] Sakho, I. (1999) Les Cahiers de l'Environnement, Impact des Chloro Fluoro Carbones sur la Couche d'Ozone Stratosphérique, Enjeux et perspectives de lutte, Inspection d'Académie de Kolda, Lycée Alpha Molo Baldé.
- [4] Gueu, A., Ouffoué, S. and Digbéhi, B. (2021) Mercury Concentration Profile in Sediment Cores of a Tropical Lagoon under High Anthropogenic Activities around an Urban City—Abidjan, Côte d'Ivoire. *Journal of Geoscience and Environment Protection*, **9**, 83-94.
- [5] Fall, A.S., Fall, A.T., Cissé, R. and Vidal, L. (2017) L'assainissement et l'hygiène en Afrique de l'Ouest et du Centre. [https://horizon.documentation.ird.fr/exl-doc/pleins\\_textes/divers18-01/010071753.pdf](https://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers18-01/010071753.pdf)
- [6] Rakotomanga, A. (2019) Le rejet des eaux usées tue lentement les océans. <https://www.sur-la-plage.com/breves/le-rejet-des-eaux-usees-tuent-lentement-les-occeans-658.php>
- [7] UNESCO (2022) La mer n'est pas une poubelle: Comment un projet pédagogique au Sénégal travaille à la préservation de l'environnement. <https://www.unesco.org/fr/articles/la-mer-nest-pas-une-poubelle-comment-un-projet-pedagogique-au-senegal-travaille-la-preservation-de>
- [8] Sène, M. (2019) Vaincre l'insalubrité, l'incivisme et les incivilités. <https://lequotidien.sn/dialogue-national-le-grand-parti-donne-mandat-a-gakou/>
- [9] Bah Ranie, D. (2011) Les mutations du secteur des déchets ménagers dans la ville d'Abidjan: Emergence d'une nouvelle gouvernance? Working paper Free N°10.
- [10] Ngambi, J.R. (2016) Les pratiques populaires à la rescousse de la salubrité urbaine: La précollecte, un service alternatif aux insuffisances du système formel de gestion des déchets à Yaoundé. *European Journal of Geography*, 1-35. <https://doi.org/10.4000/cybergeogeo.27782>
- [11] Journal Officiel (2012) Arrêté Ministériel N° 12551/MCGCV/IAAF en date du 17 Novembre 2011 portant création et organisation de l'Unité de Coordination de la Gestion des déchets solides (UCG) au Ministère de la Culture, du Genre et du Cadre de Vie. <https://faolex.fao.org/docs/pdf/sen131201.pdf>
- [12] Pembé, F., Thomas, K. and Baudouin, M. (2022) Congolese People Practices towards Insalubrity in the Mombele District. *Open Journal of Ecology*, **12**, 133-148. <https://doi.org/10.4236/oje.2022.122008>
- [13] Sakho, I. (2018) Dégradation des écosystèmes par les matières plastiques. Olympiades des Sciences de l'UFR Sciences et Technologies de l'Université Assane Seck de Ziguinchor, Ziguinchor, Senegal.