



Rice production and consumption in the DRC

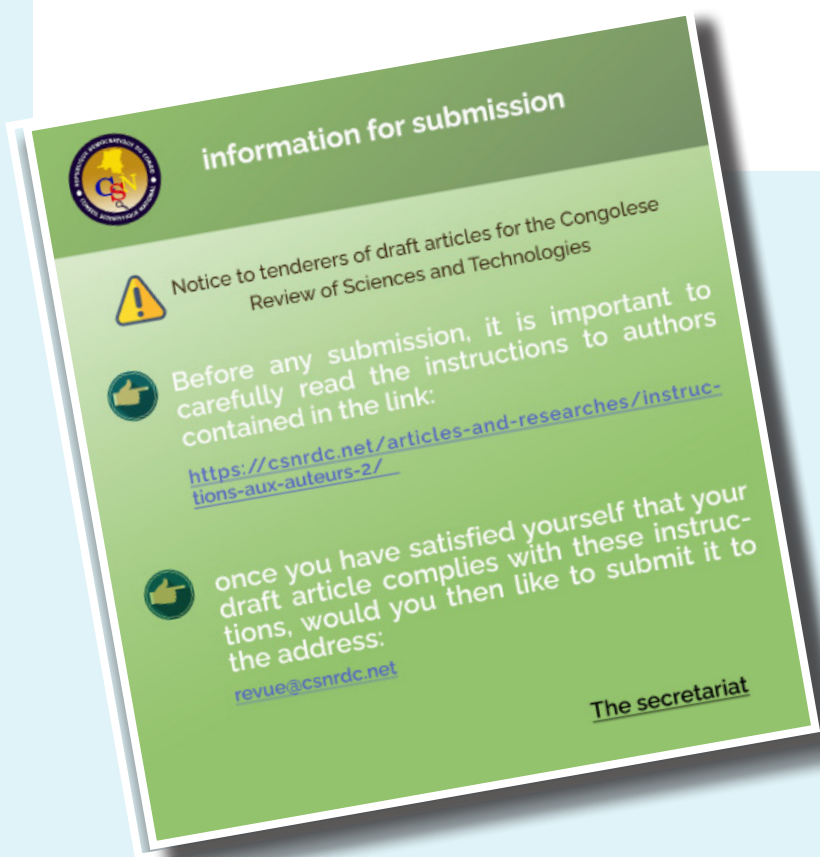
AEC: Gilbert KABANDA laid the first foundation stone for the «Construction for the Multidisciplinary Diagnostic and Radiotherapy center, Radiopharmacy center and Higher Education of Nuclear Sciences and Techniques» of Kinshasa

Gilbert KABANDA puts an end to the strike



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Minister Gilbert KABANDA puts an end to the strike

On 07 November 2023 in Kinshasa, members of the National Union of Scientific Research (NUSR) suspended strike action by agents and executives in the Scientific Research and Technological Innovation sector throughout the Democratic Republic of Congo.

According to the President of NUSR, Mr. OKITOL LWEMBO Jean Marie, the government has finally redressed the injustice that has been suffered by scientific, technical and administrative research personnel for many months. The latter have been restored in their rights, and they will no longer have to gnash their teeth. They will also benefit from the Bibwa scale already in force for their colleagues in Higher and Universities Education (HUE). All the personnel working at the Ministry of Scientific Research and Technological Innovation are smiling again. They are happy, and they have come to show their gratitude to the Minister responsible, Dr Gilbert KABANDA, who made a solemn commitment to support them in their efforts, which have borne fruit and been crowned with success.

Thus said, thus done, the workers of SRTI applaud with both hands the efforts made by their boss and his fellow members of the government involved in the handling this issue. The NUSR has nothing but praise for Minister KABANDA, throwing flowers at him for the successful outcome of his life-saving action on behalf of scientific research and technological innovation staff and executives.

From the 4th trimester of 2023, therefore, the per-

sonnel of the Centers, Institutes and Specialized Services of the SRTI will benefit from the Institutional Bonus at the level of the intermediate scale already applied to the HUE. As a result, they have decided to end their strike action and return to work immediately.

Let's note that the ceremony was attended by several of prominent figures or personalities. These included: the Minister of SRTI, the Director of Cabinet and Deputy Director of Cabinet of the Minister of SRTI, the Permanent Secretary of the NSC, as well as some heads of research centers and institutes.

Communication Unit of the Minister of SRTI and Christian MAZONO



Speech by the President of the Scientific Council Prof. MPIANA TSHIMANKINDA Pius on the occasion at the official launch ceremony of the development project for access of the development project for equitable and sustainable access to drinking water in disadvantaged townships on the outskirts of Kinshasa (the case of Bumbu and Mont-Ngafula townships) at the University of Kinshasa on 12 August 2023

“ Ladies and Gentlemen,

Thank you for your kind introduction.

I would like to share with you today my views on water and sanitation issues,

at a time when the University of Kinshasa is hosting a development project to provide equitable and sustainable access to drinking water in disadvantaged townships on the outskirts of Kinshasa (the case of Bumbu and Mont-Ngafula townships).

1. The significance of water issues: Water as the basis of life

First of all, let me say a few words about the importance of water and its multifaceted nature. Water is the basis of all life and an indispensable resource not only for sustaining human life and health, but also for preserving the ecosystem and all economic activities. Today, in the twenty-first century, water has become even more important than it was in the past, due to urbanization and rapid population growth in developing countries, combined with the effects of climate change.

Water: a cyclical and unevenly distributed resource

The Earth is a planet of water. Around 70 per cent of its surface is covered by oceans and fresh-water inland. It is said, however, that 97% of all the water on earth comes from the sea, which is difficult to use for humans. and that freshwater makes up only 3 per cent of the total. It is also said that 80 per cent of freshwater exists in the form of ice, and that the remaining 20 per cent is found underground. So river water, which is relatively easy for us to use, accounts for just 0.0004 per cent of all the water on the planet. In other words there are only about 200 tons of water available for every person on earth. Although we use water every day without paying much attention to it, we have to recognize that it is undeniably a very scarce resource.

Water is a resource that is constantly being recycled in nature. And it is purified in the course of its cycles. Just as waste water is purified and reused again, water is a cyclical resource that can be used sustainably. However, it is an unevenly distributed resource. Heavy rainfall can cause flooding, while a lack of water leads to drought and desertification. By its very nature, water is a resource that is not immediately available when and where it is needed. Similarly, water is essential for sanitation facilities such as toilets, which are indispensable in our daily lives.

Water as a trans-sector issue

Another feature of water is that it relates to many issues, including the environment and climate change, health, education, agriculture and food, economic growth, disaster risk reduction and peace. In other words, an appropriate response to water issues could have positive effects in many other areas.

2. Tackling water issues: past efforts by the international community Millennium Development Goals (MDGs)

The MDGs, towards which the DR Congo must work alongside the other countries of the world, include the goal of "halving the proportion of people without sustainable access to safe drinking water and basic sanitation". This meeting is in the middle of the road to achieving the MDGs. At a time when developed countries suffer from a lack of drinking water or sanitation, 1.1 billion people in the world, a fifth of all those living in developing countries, lack access to drinking water. 2.6 billion people almost half the total population of developing countries - still do not have access to basic sanitation. While the proportion of people with access to basic sanitation rose rapidly in East Asia, from 24 per cent in 1990 to 45 per cent in 2004, sub-Saharan Africa saw only a marginal



NSC President, Prof. Pius MPIANA TSHIMANKINDA

improvement of 5 per cent, from 32 per cent to 37 per cent, in the same period. As a result, and also due to the lack of appropriate hygiene practices in everyday life, around 1.8 million children die as a result of unsafe water every year.

Water and sanitation are closely linked to other issues, such as poverty, health, education and gender, where progress must be made to achieve sustainable development.

Where water supply and irrigation facilities stabilize agricultural production, wider positive effects can also be expected in terms of poverty reduction. Behavioral changes, as well as the development of sanitation facilities, are of crucial importance for the health of mothers and children.

For the health of mothers and children. The provision of simple water supply facilities on the outskirts of towns frees children from the burden of walking to a distant water source for their families and allows them enough time to attend school and receive an education.

As these examples show, solving the problems associated with water and sanitation will make a significant contribution to achieving the other MDGs as well.

The United Nations Secretary-General's Advisory Board on Water and Sanitation

Since the beginning of the 21st century, the international community has intensified the debate on water. The UN Secretary General's Advisory Board on Water and Sanitation was established in 2004 to make recommendations to the UN Secretary General. In 2006, during the presidency of the late Mr. Ryutaro Hashimoto, the Council put forward what was subsequently called the "Hashimoto Action Plan", a collection of recommendations to the international community on the action it should take on water and sanitation issues.

His Highness the Crown Prince of Japan is currently the Honorary President of the Council, while His Royal Highness Willem Alexander, Crown Prince of the Netherlands, is its Chairman.

Next May, the tenth meeting of the Council will be held in Japan on the eve of TICAD IV.

Cyclical management of water resources

First of all, it is important to be conscientious in our quest for sustainable use of water resources. To be precise, we need to make the concept of cyclical management of water resources a reality. To this end, it is necessary to extend the recognition of good water governance - or good water resource management, which is a trans-sectoral, integrated and regionally broadened at regional level, which can be adapted to the local conditions of each area.

Use of high technology and know-how

Secondly, we must be aware of the need to accumulate and then use technologies and know-how in this field. The DR CONGO must rely on its researchers having sufficient advanced knowledge in the water sector and use it to promote the efficient use of water resources.

Human security

Thirdly, I would like to draw your attention to the concept of human security. Human security is a perspective that emphasizes both the "protection" and the "empowerment" of every individual so as to protect people from life-threatening threats, including environmental degradation and natural disasters, and to help them to realize their full potential. Access to safe drinking water and basic sanitation is essential for everyone who wants to lead a healthy and dignified life. Floods and droughts are major threats to human life.

Our aim is not only to provide infrastructure and technology but also to empower and develop communities by, for example, organizing local committees that can debate water management issues and provide assistance to community residents, including women, to become self-sufficient. This will lead to human security if self-governing communities can take charge of sustainable water management; improve sanitation and hygiene practices, such as hand washing.

A participatory approach:

Cooperation between central and local government, public-private partnerships

Finally, water is an issue that requires the participation of all stakeholders. It is an issue that requires a "participatory approach". Action by central government alone is not enough. I believe that the role played by local governments, the bodies closest to local residents, is extremely significant in determining the way in which water supply and sewerage are carried out.

In order to protect the future of our planet and make steady progress towards a bright future, I would like to conclude my speech by saying that the development project for equitable and sustainable access to drinking water in the disadvantaged Communes on the outskirts of Kinshasa, as a scientific structure, will play a leading role in the community's debates on water and sanitation.

Thank you very much for your attention!

”



NSC President

Production and consumption of rice in DRC

Rice is an increasingly popular food in the DRC. Its cultivation is of major importance to the country's food security and self-sufficiency. Despite the fact that rice is only the seventh most important crop after cassava, plantain, fruit, maize, groundnuts and vegetables, the rice sector is a major focus for agricultural development in the Democratic Republic of the Congo (DRC). However, in terms of cereal production, it is ranked second after maize.

Despite the advantages for the development of the agricultural sector in the Democratic Republic of Congo (DRC), the sector faces a number of constraints, including: (i) climatic hazards, (ii) difficulties in accessing finance, inputs, equipment and land,

(iii) low productivity of production systems, (iv) low organizational and operational capacity of stakeholders,

(v) poor control over water and the development of irrigated agriculture, (vi) accelerated soil degradation, (vii) poor development of storage and conservation infrastructure, (viii) under-exploitation of irrigable land (1% exploited), (ix) existence of undeveloped lowlands and (x) the mismatch between supply and demand for local rice.

Rice is the most important cereal in the human diet.

It is estimated that half the world's population has a diet based essentially on the consumption of this cereal.

The country's food imports, in monetary terms in 2020, are as follows: fish (USD 175 million), poultry (145 million), cereals (96 million), beef (45 million), pork (35 million) and dairy products (33 million).

With rapid urbanization, rice is becoming an increasingly important part of household food consumption, not only in the major cities, but also in certain parts of the country, because it is easy to preserve and prepare.

With local supplies unable to cover the country's rice needs, the DRC is forced to resort to imports, which are increasing all the time. These imports have the effect of increasing the trade balance deficit and en-

tail a high cost in currency costs. They also exacerbate the fierce competition between locally produced rice and imported rice, which is always available on the market and sometimes at lower cost, which does not encourage local producers.

The question of boosting agricultural production in general, and rice production in particular, continues to be an issue in the DRC. The rice-growing sector appears to be at an early stage of development and is facing major challenges (i) increasing production and controlling production costs, (ii) adding value to raw products by reducing post-harvest losses and processing, and (iii) optimizing income during materialization.

Rice production in the DRC has been unable to keep pace with the growth in demand.

The continuing rise in imports has helped to bridge the widening gap between supply and demand, particularly in Kinshasa. This growth in raises the question of import dependency, which exposes the country to shocks on the international market, with serious consequences for its food security and political stability, as demonstrated by the events that took place during the 2008 food crisis.

In more general terms, it is fair to say that rice is increasingly becoming part of the eating habits of people in both rural and urban areas of the DRC.

Of all the qualities of rice found in the DRC (long grain, rounded, puffy, sticky, fragrant, firm when cooked, etc.), Congolese people prefer long grain rice that is puffy, firm when cooked and aromatic. Rice with a high swelling power is preferred.

Production in the DRC

The rice production system is essentially rain-fed or upland without fertilizers. The regions with the greatest rice-growing potential are, in order of importance, Tshopo (28%), Maniema (20%), Grand Equateur (Mongala, South Ubangi, North Ubangi, 13%) and Sankuru (11%). Rice is produced in the DRC by a variety of small-scale producers. These producers face enormous difficulties in obtaining supplies fertilizers and plant protection products.

Average production in the DRC was

314,000 tons in the period from 2005 to 2018, with a peak of 318,750 in 2011.

Production remained stagnant from 2005 to 2011 and fell from 2012 to 2016.

From 2016 to 2018, the production curve grew by 3.5%, as shown in Figure 1 below. This growth is due, among other things, to the contribution of certain projects, the improvement and acquisition of processing units and the country's membership of the CARD initiative.

In terms of area and yield

The average area sown is 417,000 hectares for the period 2005 to 2018, with an average yield of 0.75 tons/Ha.

In general, the trend in sown areas and yields has remained linear from 2005 to 2011.

However, there was a drastic fall in the area sown between 2013 and 2014, due in particular to insecurity in some of the coun-

try's provinces (North and South Kivu, the greater Kasai area, Ituri), rice diseases and pests, and disturbances linked to climate change. From 2015 to 2018, there was an upward trend in the area under rice while yields remained linear (fig.2).

At the level of Consumption

Le riz entre de plus en plus dans les habitudes de consommation de la population. Le riz est devenu un aliment de plus en plus populaire dans les habitudes de consommation de la population en milieu rural et urbain. Et le riz produit localement est aussi populaire

que le riz importé. Parmi toutes les qualités de riz trouvées dans le DRC (long grain, arrondi, gonflant, collant, aromatisé, ferme quand cuit, etc.), les Congolais choisissent généralement le long grain, gonflant, ferme quand cuit et aromatisé. La préférence est donnée au riz avec un fort pouvoir gonflant, ce qui donne à la ménagère l'opportunité d'avoir assez de nourriture pour sa progéniture.

Avec une population croissante, des habitudes alimentaires changeantes et l'appel du riz en tant que céréale qui peut être conservée plus longtemps et est facile à cuire, la demande de riz augmente constamment.

Le riz au DRC est principalement utilisé pour la consommation humaine et la fabrication de bière.

L'utilisation du riz dans la préparation de la bière est estimée à 16% de la production nationale. L'augmentation constante de la population et la demande des brasseries signifient que les besoins du pays en riz, pour lesquels il a déjà un déficit, augmentent constamment.

La tendance est de recourir aux importations de riz, ce qui entraîne une perte de devises étrangères estimée à plus d'un milliard de dollars américains par an (Source: Banque Centrale du Congo). La figure 3 illustre l'évolution de la consommation de riz au DRC.

At the level of Imports

Le volume moyen des importations de riz de 2005 à 2018 a été de 173 000 tonnes. En général, les importations ont augmenté de manière constante, avec une baisse de la période 2006 à 2008 (fig.4). Cette croissance des importations est justifiée par la population croissante, la production restant plus ou moins statique à environ 317 000 tonnes. Ces importations ont un impact négatif sur l'équilibre des paiements.

Types of rice cultivation

Les différents types de riz cultivés au DRC sont les suivants :

- Riz de plaine ou riz de montagne : 85% de la surface agricole
- Riz de plaine irriguée : 2% de la surface agricole
- Riz irrigué : 12%
- Riz de plaine : 0,5%.

L'introduction de NERICAs développées par Africa Rice au DRC depuis 2000 a permis d'améliorer le niveau de productivité des producteurs congolais de riz.

La recherche se concentre actuellement sur le développement de variétés résilientes au climat et nutritives, avec une haute productivité, un climat, un sol et une fertilisation, et des qualités organoleptiques appréciées par les consommateurs.

Current state of rice productivity in the DRC

Les rendements du riz ont montré des tendances positives ces dernières années.

Cela est certainement dû au fait que de nouvelles variétés (NERICA) ont été introduites, et que des technologies appropriées ont été diffusées aux producteurs de riz.

Malgré ces avancées technologiques confirmées, la productivité du riz des agriculteurs est toujours très faible par rapport au potentiel obtenu sur la station de recherche. À peine 25% du rendement de la station.

The 5 main health benefits of rice

- Le riz peut aider à maintenir un poids santé;
- Le riz brun protège contre les maladies chroniques;
- Le riz blanc soutient l'énergie et restaure les niveaux de glycogène après l'exercice ;
- Le riz blanc est facile à digérer ;
- C'est un céréale sans gluten;

Characteristics of rice

Le riz est riche en fibres, antioxydants, source de vitamines B, manganèse et sélénium, et aide à prévenir le début de certaines maladies. C'est pourquoi il est souvent recommandé par les nutritionnistes.

Le riz contient 145 calories/100 g parce qu'il est riche en amidon.

Rice value chain

L'offre nationale est estimée à 1,56 million de tonnes de riz, avec un besoin de 21,4 kg/personne/année. L'offre apparente est de 10 kg/personne/année, ce qui entraîne des importations de 70 000 tonnes/année.

Les indicateurs financiers de la chaîne de valeur sont très favorables : (i) un rapport coût-bénéfice de 18,7 ; (ii) un coût des ressources domestiques (CRI) de 13,7% ; (iii) un rapport coût-bénéfice économique de 14,4% ; (iv) un coefficient de rentabilité de 64,6%.

Les opportunités commerciales liées à la chaîne de valeur résultent de :

1. La demande croissante de riz des brasseries ;
2. L'importance du marché local due aux changements d'habitudes alimentaires en milieu urbain ;
3. Les interventions des institutions de recherche pour diffuser les variétés améliorées (NERICA) ;
4. Les gains de productivité grâce à la gestion de l'eau ;
5. Réduire la déforestation grâce à l'agriculture irriguée.

Dr. Daniel DIBUE MUNKAMBA/INERA





Minister Gilbert KABANDA receives innovator Samuel SUNGU, an 11-year-old child

Family photo with RSIT Minister Gilbert KABANDAA

On 02 November 2023, Gilbert KABANDA, Minister for Scientific Research and Technological Innovation, received Samuel SUNGU, an 11-year-old Congolese genius, in his office.

Scientific genius in the prime of life

Samuel SUNGU presented his new creation to Minister Gilbert KABANDA. His talent for technological invention is admirable.

His ingenious work consists of creating a mechanical shovel from makeshift materials. Samuel SUNGU dared and he succeeded. To accomplish his feat of creating this machine, he used corks, epicraniums, syringes and certain plastics. The genius Samuel

SUNGU simply used natural water to power his mechanical shovel. And that's simply what makes his machine work and roll, i.e. move on the spot or move to the left,

Right and forward, up and down, or vice versa, up and down.

The Head of Scientific Research and Technological Innovation was simply captivated,



Congolese engineer Samuel SUNGU presents his "tractor" prototype to SRTI Minister Gilbert KABANDA

fascinated, charmed and seduced by Samuel SUNGU's very young age and his concrete achievements.

Dr Gilbert KABANDA could not believe his eyes. Samuel SUNGU belongs to the category or race of men born under a lucky star. This young man would never have believed since he came into the world that one day he would meet a Minister of the Government of the Republic. This day, a great day for Samuel SUNGU, will remain engraved

engraved forever in his memory and in the memory of his father, Papa LANDU SUNGU, who accompanied him and who, thanks to the work of his child, also had the honor of being received by a Minister of the Government of

the Republic.

In turn, like his son himself

the father of the tiny Congolese researcher couldn't believe his eyes.

From now on, the tiny Congolese inventor has entered the big league.

From now on, his work will speak for him on the national and even international stage.

His first steps in scientific research are undoubtedly indicative not only of the greatness but also of the pride he takes in his country, the Democratic Republic of Congo, where he was born and where he lives, for himself and his future, and for his family.

Minister Gilbert KABANDA presented the young inventor with a sum of money. After the meeting, the little inventor Samuel SUNGU and his father were very moved and thanked the Minister for his hospitality.

Communication Unit of the Minister of SRTI/Christian MAZONO and BELESI Consort/NSC



On November 16, 2023, Minister of Scientific Research and Technological Innovation Gilbert KABANDA laid the foundation stone for the construction of the Multidisciplinary Diagnostic and Radiotherapy Center, the RadioPharmacy Center and Higher Education of Nuclear Sciences and Techniques of Kinshasa, on behalf of the French Atomic Energy Commission (CEA)..

Details will be announced in the next edition.

Read for you

The king of herbs, a plant with multiple virtues

Africa is the cradle of humanity, not because of its history, but because of the diversity and richness of its vegetation. Indeed, among these plant species, the king of herbs ranks high, a seasonal plant known for its medicinal virtues that herbivores dare not consume, hence its name « king of herbs »

With its scientific name of *Ageratum conyzoides*, this herb generally grows in Africa. Many communities use it, and its name differs according to the region or zone (Mooré: rōbre, Dioula: nongou, Lélé: bonbonjuru). The "King of Herbs" is a plant with multiple virtues that has been used for centuries in almost every region of Africa, and even outside the continent in countries such as Australia and Latin America. It is said to treat more than 289 diseases, and is highly effective against impurities, enabling women with fertility problems to realize their dreams.

In fact, all you need to do is consume the king of herbs, first dried and then prepared as an herbal tea. Using a teaspoon, take the tea lukewarm and drink it ev-

ery morning on an empty stomach for around 6 months.

This treatment is said to combat painful menstruation and women's worms (pelvic pain). In this case, simply extract the juice and drink it.

Last but not least, the king of herbs has other benefits for the human body and its environment: it is said to be a detox for those wishing to give up smoking. It is said to combat bad breath, evil spirits, night-time diapers, the evil eye and theft.

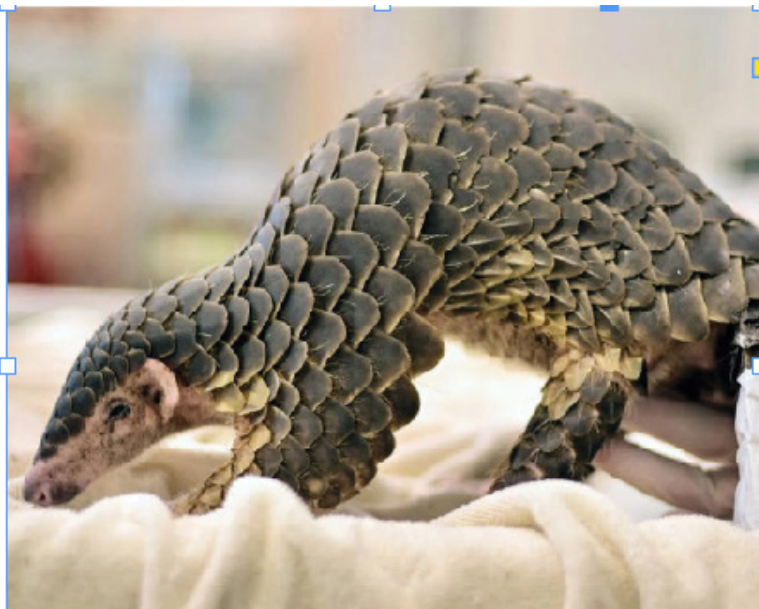
www.artistesbf.org

Scientists discover a new species of pangolin

Thanks to analyses of the scales of this mammal, a favorite target of poachers, scientists have discovered that a ninth species exists..

The pangolin, accused of being responsible for the Covid-19 pandemic before being cleared, is back in the news. Scientists have discovered a new species of pangolin by analyzing confiscated scales of the mammal.

Until now, scientists believed that there were only four Asian and four African varieties of this nocturnal mammal, which is the victim of extensive global trafficking. But a study published



this Monday in the scientific journal Proceedings of the National Academy of Sciences revealed that a ninth species had escaped scientists' attention.

"Manis mysteria"

It was first the analysis of 27 scales confiscated in Hong Kong in 2012 and 2013 that put researchers on the trail of a ninth species. However, the scientists were unable to draw any definitive conclusions at the time, as the available gene fragments were too small in quantity.

Based on this initial work, researchers then analyzed scales that had been confiscated in China's western Yunnan province in 2015 and 2019, and discovered a new lineage, "distinct from the eight pangolin species currently known".

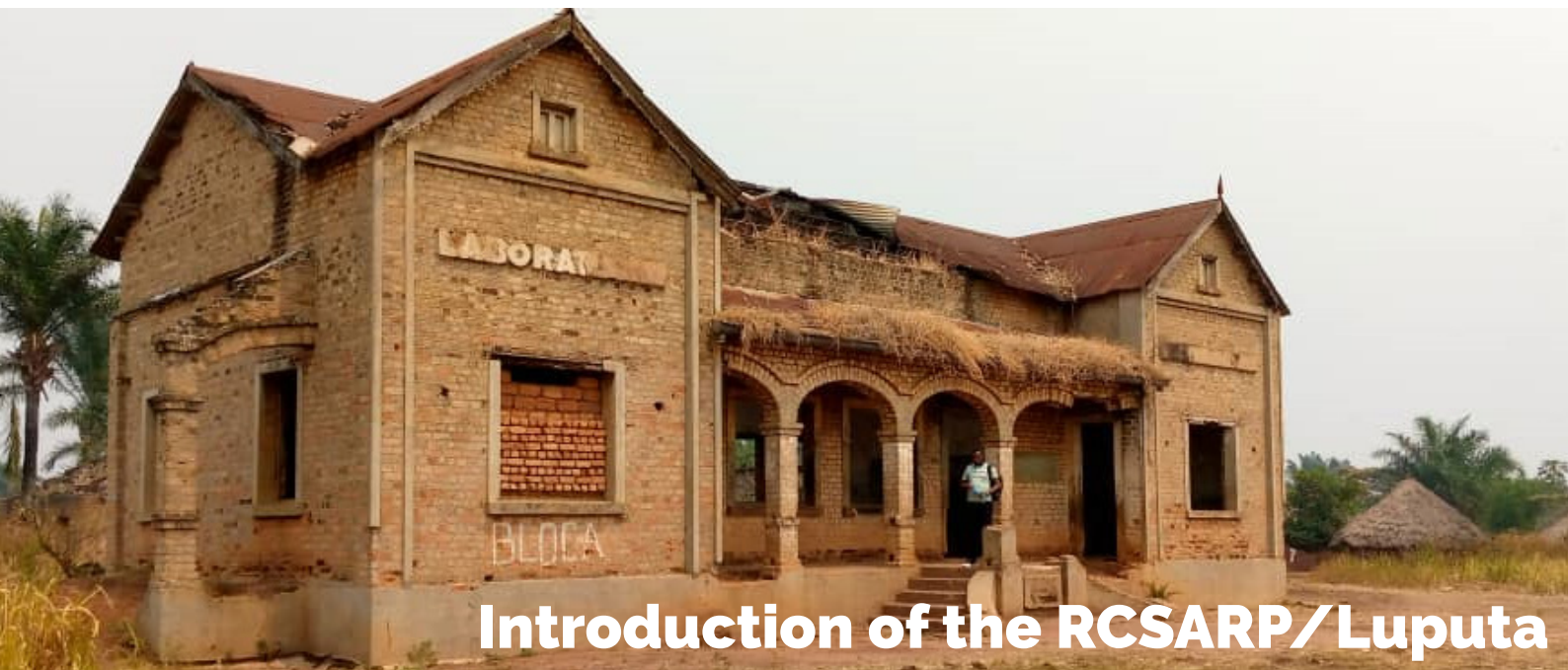
As it bears similarities to the Asian branch of the pangolin family, known as "Manis", the researchers named it "Manis mysteria",

in reference to its enigmatic nature.

Most of the Asian pangolins arriving in Hong Kong and Yunnan province are believed to be from Southeast Asia. The scales of this mammal, a victim of worldwide trafficking, are coveted for their use in traditional medicine. The small animal is also highly prized for its meat.

More than a million pangolins were reportedly poached in the wild between 2004 and 2014, but all international trade in the animal was banned in 2016.

www.msn.com



Introduction of the RCSARP/Luputa

The Research Center for Selection and Adaptation of Ruminants and Pigs (RCSARP/ Luputa) is governed by Ministerial Order n° MINRSIT/CABMIN/WK/2011 of October 19, 2011, which defines its missions.

I. Activities :

RCSARP carries out the activities formerly carried out by the Agrobiologic Center (ABIC).

As such, RCSARP/Luputa carries out research, selection and adaptation with a view to creating :

- domestic animal breeds with high genetic potential,
- hardy animal breeds, i.e. resistant to disease,
- prolific animal breeds,
- animal breeds with high protein-rich meat production,
- animal breeds with high protein-rich milk production,
- mohair animal breeds,
- animal breeds with good palatability.

These activities aim to improve the living conditions of thousands of Congolese through quality work, and to encourage the

DRC to innovate breeds that never existed in the country, and to conduct in-depth research into disease resistance.

Several areas will be taken into account, including :

- food security,
- economic growth,
- employment

1. Food security

This center is based on food security to be able to respect the four pillars that cover the good and the best food security :

a. Availability

The Center is available in quantity of animals and broodstock, Available to take care of agents and animals (take care).

b. Access

Access to food corresponds to the ability of agents to obtain food when it is available.

c. Utilization

Which integrates food safety and nutritional

welfare.

d. Stability

Which aims to ensure adequate food at all times, given that availability and access must remain stable.

2. Economic growth

In economic terms, livestock farming and the products derived from it provide an important part of the population's diet, accounting for 40% of total energy intake and improving living conditions.

Improving living conditions

To achieve this, CRSARP must improve animal welfare in livestock farming, which means first and foremost eliminating sources and intensities of pain during their lives (castration and caudectomy of pigs, beak trimming of hens, dehorning of cows) and during slaughter.

Impact of livestock farming on the environment

In many countries, livestock farming contributes to deforestation, as forested land is cleared either to make way for cattle grazing or to produce crops (very often soya)

which are then used to feed the animals.

- Air quality,
- of water,
- of the soil,
- land use and biodiversity.

3. Employment

The more activity increases, the more needs accumulate, so RCSARP responds positively to the underemployment sector in the Democratic Republic of Congo.

II. Location

RCSARP is headquarters in LUPATA, LUILU Territory, in the LOMAMI Province.

III. Stations

Stations will be opened in the following cities :

- KABINDA in the Province of LOMAMI,
- KANIKI MUTEMBWE in HAUT LOMAMI Province,
- INONGO in BANDUNDU Province,
- KUTU in the Province of BANDUNDU

It may open other stations and sub-stations throughout the country, subject to authorization from the supervisory authority.

IV. Working

The Center is managed by a Management Committee, headed by Dr Gabriel-Cyrille

TSHIAMALA KABEYA, as General Manager, assisted by Mr. Vincent MANYONGA, Scientific Director, and Mr. Héritier TSHIAMA MULAJ, Administrative and Financial Director. RCSARP/Luputa has six (6) departments:

1. breeding department,
2. agri-food department,
3. biomedical analysis department,
4. artificial insemination and genetic improvement department,
5. sanitation and grazing department,
6. phytosanitary and pharmacy (laboratory) department.

This Center has a staff of 63 agents

RCSARP/Luputa's projects are :

: Breed improvement ;

- Domestic animals with high genetic potential, Hardy animals, i.e. resistant to disease,
- . Prolific animals,
- . Animals with high protein-rich meat production,
- . Animals with high protein-rich milk production,
- . Mohair animals,
- . Animals with good palatability, - Rehabilitation of the entire infrastructure,

- .Construction of a modern laboratory for animal processing, - Construction of station offices and opening of sub-stations,
- .Construction of a milk processing building,
- . Production of eggs,
- . Manufacture of mohair,
- . Production of wheat, soya, maize, mucuna and other protein seeds for animal and pig feed,
- . Specific staff training,
- . Provision of work equipment,
- . Creation of a tourist site.

Portrait

Who is the RCME CEO, Prof. MABELA MAKENGO MATENDO ?

Married and Father of several children, Rostin MABELA MAKENGO MATENDO, General Director of the Research Center in Mathematics Education (RCME), is Professor at the Faculty of Sciences, Department of Mathematics/Computer Science at the University of Kinshasa, and visiting Professor at several universities and higher institutes in the DRC. He is currently Head of the Department of Mathematics and Computer Science, Faculty of Science, University of Kinshasa, and a member of the African Mathematical Union and the International Mathematical Union. He has successively held the positions of Backbone Coordinator (Internet Network) at the University of Kinshasa, Head of Section in Statistics at the Statistics Higher Institute (SHI) in Kinshasa and Head of Section in Networks and Maintenance Techniques (NMT) at the same University.

Appointed in January 2021, Professor Rostin MABELA MAKENGO MATENDO, General Manager, took up his post on January 14, 2021. He is a hard-working, energetic and optimistic leader with an eloquent track record of experience and managerial qualities.

Rostin MABELA MAKENGO MATENDO graduated from the University of Kinshasa (UNIKIN) in 1987 with a Bachelor's degree in Mathematical Sciences, majoring in Operational Research (Diffusion Processes and M/G/m Queues), which led her to embark on post-graduate studies.



Prof. MABELA MAKENGO MATENDO. CEO of RCME

In 2004, he obtained a Advanced Studies Diploma (ASD) in Mathematical Sciences, majoring in Applied Mathematics, specializing in Operational Research (Priority Queues) at the University of Kinshasa. In 2008, he obtained a PhD

in Mathematical Sciences, specializing in Applied Mathematics and Applied Probability (Stochastic Processes) from the same university.

Professor Rostin MABELA MAKENGO MATENDO has followed several other training courses. He participates and intervenes in several national and international scientific conferences and symposiums in several places including :

- in Kinshasa, CIMPA Research School on "Arithmetic and Algorithmics and Cryptography", University of Kinshasa, Kinshasa, May 07 to May 18, 2018.
- in Accra, Workshop with School on " Stochastic Analysis, Financial and Insurance Mathematics (SAFIM), AIMS/ACCRA, from 20/08 to 24/08/2018.
- in Algeria, CIMPA Research School on "Stochastic Analysis and Applications", University of Saida (Algeria), March 01 to March 10, 2019.
- in Accra, Workshop with School on "Data Analysis and Applications", AIMS/ACCRA, from 29/07 to 02/08/2019.
- in Brazzaville, Participation in the 10th Pan-African Congress of Mathematicians, Brazzaville, August 1 to 06, 2022. Theme: Mathematics and Challenges for African Development.

He supervised the doctoral theses of the following people :

- MUKÉBA KANYINDA J., P., Fuzzy Markov Chains and Parameter Evaluation of a Product-Formed Fuzzy File Network, National Pedagogic University (NPU/Kinshasa), December 2016.
- KIKOMBA KAHUNGU MIKE, Simultaneous Optimization:
Sectorization and Application to Air Traffic, National Pedagogic University (NPU/Kinshasa), November 2017.
- MAMANYA TAPASA F., Multiflot Analysis in a Blurred Environment. Application to the Road Transport Network of Kinshasa City. National Pedagogic University (NPU/Kinshasa), 2018.
- KASIAMA NGI ONKOR, Contribution to the Discriminant Factorial Analysis

of Symbolic Interval Data. Application to Cardiovascular Disease Prediction, National Pedagogic University (NPU/Kinshasa), 2021

He is the author of several publications and scientific articles, including :

- Mabela M. & Loposso, Evaluation of Jackson Network Performance Parameters by Filtering, Annals of the Faculty of Sciences.
- Mabela M. & al, Fuzzy Probability Distribution and Fuzzy Distribution Function of a Fuzzy Random Variable, Annals of the Faculty of Sciences.
- J.P. Mukeba Kanyinda, R. Mabela Makengo, B. Ulungu Ekunda & D. Ntantu Ibula, Fuzzy Eigenvalues and Fuzzy Eigenvectors of Fuzzy Markov Chain Transition Matrix Under Max-Min Composition, Journal of Fuzzy Set Valued Analysis.
- J.P. Mukeba Kanyinda, R. Mabela Makengo, B. Ulungu Ekunda, Computing Fuzzy Queueing Performance Measures by L-R Method, Journal of Fuzzy Set Valued Analysis, N°1 (2015), 57-67.
- Didier Kumwimba S., Rostin Mabela M, Marcel Rémon & Walo Omana R., Fuzzy Itô Integral Driven by a Fuzzy Brownian Motion, Journal of Fuzzy Set Valued Analysis.
- Walo Omana, R., Kumwimba Seya, D., Mabela Makengo, R., Integration of Fuzzy Set-Valued Function with respect to a Fuzzy Density Measure, Far East Journal of Mathematical Sciences.
- Lewis N.K. Mambo, Rostin M.M. Mabela, Isaac Kanyama & Eugène M. Mbuyi, On the Contribution of the Stochastic Integrals to Econometrics, Applied Mathematics.
- Lewis N.K. Mambo, Rostin M.M. Mabela, Jean-Pierre Bosonga & Eugène M. Mbuyi, Review on the Current Stochastic Numerical Methods for Econometrics Analysis, American Journal of Computational Mathematics.
- Rostin M.M. Mabela and Jean W. Alonge, Performance Parameters Evaluation of the waiting Markovien

M/M/1 System in Transitory Regime, Annals of Sciences Faculty.

- Kumwimba S. Didier, Walo O. Rebecca, Mabela M. Rostin, Badibi O. Christopher, Kankolongo K. Patient, Marcel Remon, Fuzzy Stochastic Differential Equations Driven by a Fuzzy Brownian Motion, Journal of Applied Mathematics and Physics.
- Tresor Landu Ngoyi, R. Gilles Bokolo, Rostin Matendo Mabela, Analytical solution to the Black-Scholes Equation: Adomian Decomposition Method Versus Lie Algebraic Approach, Hipotenusa Journal of Mathematical Society.
- Baudouin ADIA LETI MAWA, Rostin MABELA MAKENGO MATENDO, Jean Pierre MUKÉBA KANYINDA, Bopatriciat BOLUMA MANGATA, Analysis of the Performance Measures of a Non-Markovian Fuzzy Queue via Fuzzy Laplace Transforms Method, Journal of Computing Research and Innovation (JCRINN).
- Yves Tinda Mangongo, Joseph-Désiré Kyemba Bukweli, Justin Dupar Busili Kampempe, Rostin Matendo Mabela and Justin Manango Wazute Munganga, Stability and global sensitivity analysis of the transmission dynamics of malaria with relapse and ignorant infected humans, Physica Scripta.
- Chabo Byaene Alain, Mabela Makengo Matendo Rostin, Konde Nkiama Numbi Joël, Muhindo Mavoko Hypolite, & al., Relationship between customer satisfaction and customer loyalty in the clinical laboratory of the University Hospital of Kinshasa, Democratic Republic of the Congo, Journal of Economics and International Business Management.

MAZONO MPIA Christian /NSC

Research ethics and research ethics: what's at stake for the statistician ?

Research ethics proposes a reflective approach to the values and purposes of science. It is therefore distinct from research ethics, which consists of the principles and regulatory procedures to which projects and publications are subject in order to guarantee the scientific validity of projects and their legitimacy within a democracy. It is also distinct from scientific integrity or deontology, which propose mandatory rules or standards. Admittedly, all these approaches converge on the desire to produce good science, but research ethics questions the very meaning of science as a common good in our society.

The researcher and reflective ethics

In their day-to-day work, researchers are faced with dilemmas: they have to make choices that engage their personal and collective responsibility. Research ethics consists first and foremost in becoming aware of these choices, and questioning their reasons, risks and presuppositions in a context that is always complex and singular. Training in research ethics means learning to question our research practices and their false self-evidence, and to take responsibility for our choices, which are based on hierarchies of values.

In an initial wave inaugurated by the Nuremberg Code, research ethics developed mainly in the form of principles and regulations: do no harm, respect the autonomy of individuals (with informed consent), promote justice, the 3Rs principle (Reduction, Refinement, and Replacement), the precautionary principle, which promotes consideration of long-term consequences, etc.

Since 2015, a research ethic (subjective genitive) has been developing, i.e. a reflexive ethic that invites researchers to question their practices, values and aims. How do they carry out their research (on a personal, collective and institutional level)? Why do they do it? For whom?

Ethics and/or regulation

Ethical regulation in research is not enough. By its very nature, science always produces unforeseen and unpredictable situations and problems, which escape regulation. Researchers must therefore make a personal commitment to their research in order to determine the criteria and conditions for good science. This is particularly true for projects carried out with vulnerable people in developing countries, or with individuals who do not always have the physical, political and moral capacity to understand the issues at stake in the scientific projects in which they are involved.

Ethical regulation generally takes place downstream of research: once the project has been defined and designed, it must be submitted to validation bodies. Research ethics accompanies scientific practice from conception through to the reporting of results, at every stage of the project, since it expresses the researcher's questioning of his or her practices, values and the goals he or she pursues in his or her work.

The statistician and ethical issues

Some disciplines may appear to raise fewer ethical issues than others, insofar as they have no direct applications. In reality, all

scientific activity involves the responsibility of researchers. Statistics are a case in point, insofar as they are used in many fields (economic, legal, political, social, etc.).

The statistician, in the sense of the person who determines statistics, imposes a certain vision of the situation, of reality, through predefined categories. It is the statistician himself who defines his representation of reality. And "what the statistician does not measure, does not exist". As such, they exercise an exceptional form of "creative" power. In addition, statistics claim to be objective, with all the coldness and precision of a raw figure on a given situation, but this is to pay little heed to the presuppositions behind the construction of this figure and the difference between the numerical and quantified representation of the situation, not to mention the way people feel about it. The French example of the threshold for distinguishing between the unemployed and the employed is conclusive: someone who has worked 74 hours in a month is classed as unemployed, while someone who has worked two hours more is deemed to be in work and therefore not unemployed.

It's also worth pointing out that since all these figures originate from a measurement effort, it becomes plausible that errors may exist. They may be the result of inattention, fatigue, forgetfulness, a faulty tool... or a deliberate or unintentional lie on the part of the people surveyed.

There's also another form of dishonesty, where a researcher will, for example, disregard data he's collected that doesn't support his hypothesis. This is known as "number crunching" or "data embellishment", a thorny problem in research. On several occasions, national and foreign economist experts have come back to this kind of practice in the DRC, where statistics are "forced" to demonstrate a certain efficiency of the measures taken, whereas the reality is different.

Another ethical point, a little more technical, is the use of hypothesis testing in differential statistics, and in particular the famous P-value that determines whether the hypothesis is verified or not. Indeed, it is becoming increasingly common for hypotheses to be "posed" or made after data has been collected, rather than the other way round. This leads to a bias in the conclusion as to whether or not the hypothesis is true.

Finally, the last point is the misunderstanding of statistics by those who simply read them, or the misunderstanding of the difference between statistical correlation and causation.

Recurrence of flash floods and landslides on the Rift slopes west of Lake Kivu, DR Congo: what integrated watershed management?

The world, and more specifically the tropical region, is facing major challenges linked to changing climatic conditions and the socio-economic and environmental crises that give rise to natural disasters. Recent decades have been marked by the outbreak of landslides, often accompanied by flash floods on the mountain slopes west of Lake Kivu. On May 04, 2023, a major event occurred in Kalehe, causing significant direct and indirect damage in several villages, including BUSHUSHU and NYAMUKU-BI. These events reflect the consequences of current environmental disturbances.

The present research aims to elucidate the predictability of these types of event, their mode of operation (common points and particularities of each), their prediction and measures for their mitigation in the future. Field observations and the use of pre- and post-event satellite imagery will help contextualize these events with a view to damage assessment. Previous knowledge will enable us to elucidate the foreseeable characteristics of these events, thanks to landslide inventories, flash flood passages, maps

of susceptibility to deep ancient and superficial landslides, etc. It is more than certain that these events will continue to recur as the region's climate and land-use patterns change.

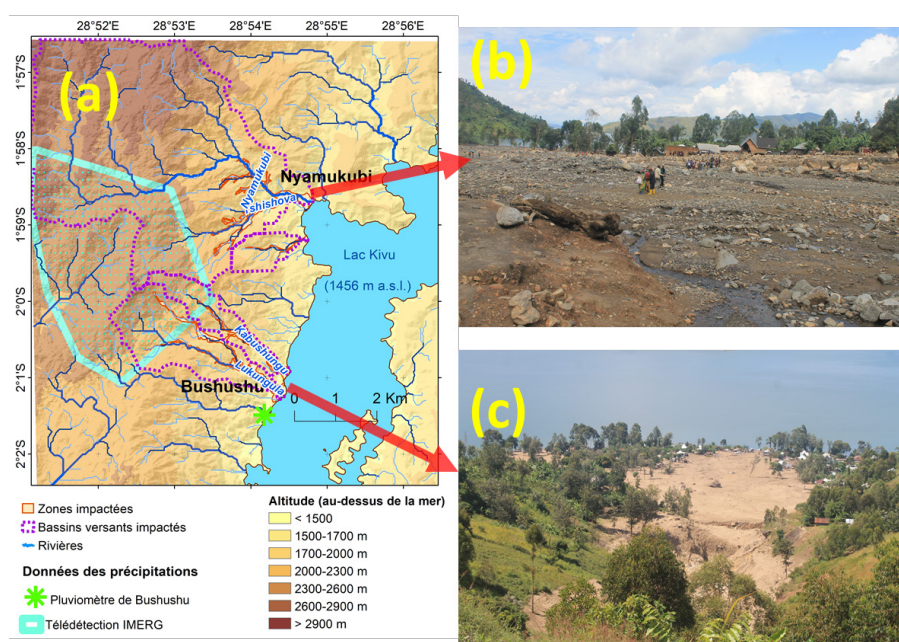
In fact, forecasts show that similar events are likely to occur in the future, due to the predisposition of the topography (steep slopes in particular), the numerous cracks that are evolving, ongoing deforestation, and so on. Mapping out risk zones of risk zones is one of the keys to prioritizing

low, medium, high and major risk zones within watersheds. In this way, preventive recommendations can be made for human settlements and land use in areas presenting high to major risks. One participatory solution would be to promote the reforestation of unstable slopes with adapted native species.

Recommended actions include monitoring, scientific research, relocation of people living on high-risk sites, updating the contingency plan, setting up an early

warning system, enforcing legal provisions on land allocation and use, and proposing appropriate farming practices. These actions will involve the following players: the national government, the provincial government, local authorities, universities and research centers, research partners, civil protection, environmental civil society, the justice system, local players, religious leaders, politicians, traditional chiefs, local, national and international NGOs, and so on. Interaction between the various players involved in disaster risk management is to be encouraged.

Dr MAKI MATESO Jean-Claude/CRSN-Lwiro



Flash flood event of May 4, 2023. (a) Topographical context and location of disaster sites; (b) impact zone at Nyamukubi village; (c) impact zone at Bushushu village. Some 430 deaths, many missing and around 3,000 homes affected (<https://www.unocha.org/publications/report/democratic-republic-congo/republique-democratique-du-congo-flash-update-3-des-inondations-provoquees-par-des-fortes-pluies-dans-le-territoire-de-kalehe-au-sud-rivu-18-mai-2023>)

PUBLIC-SECTOR RESEARCH CENTERS AND INSTITUTES IN THE D.R. CONGO

RIHS (Research Institute in Health Science)

Objective: To improve the state of health of the population through research in the following fields: pharmaceutical, medical, anthropological, psychological or socio-cultural.

Address: 9, Av. Lukusa C/Gombe; E-mail: dnyembo@gmail.com; Tel: 0824580211

ATSR (Applied and Technologic Sciences Research Center)

Objectif: Mettre au point des matériaux, des appareils, des méthodes ou procédés Objective: To develop materials, equipment, methods or processes with a view to finding solutions to the population's urgent problems in various fields: housing, rural development and the modernization of the society.

Address: 106, Blvd du 30 Juin, C/Gombe; E-mail: Jeannoel.mputu@gmail.com; Tel: 0821138261

RCHS (Research Center in Human Sciences)

Objective: To ensure the human development of the Congolese people through the study of its social, economic and political dimensions with a view to identifying the factors that have a positive or negative influence on its development.

Address: :33,Av.comité urbain C/ Gombe; E-mail: mingashang@yahoo.fr; Tel: 0819377821

RCMT (Research Center in Mathematics Teaching)

Objective: To carry out research in the field of mathematics teaching with a view to improving quality.

Address: 84, Av. des Ambassadeurs C/ Gombe; E-mail: mabelamatendorostin@gmail.com; Tel: 0815031877

GRC (Geophysical Research Center)

Objective: To provide the country with a national geophysical observation network, for the global study of the internal behavior of the earth in the DRC.

Address: 44, Av. de la démocratie, C/ Gombe(within GMRC); E-mail:tondozi@gmail.com; Tel: 0854426228

AIPS (African Institute of Prospective Studies)

Objective: To carry out forward-looking studies in order to propose solutions to crises and problems linked to the evolution of African societies.

Address: Av. Cardinal Malula, C/ Lemba; E-mail: mgrtarcibangu@yahoo.fr; Tel: 0996658741

MDRC (Multidisciplinary Development Research Center/Matadi)

Objective: To carry out operational research in central Congo in the field of applied linguistics of African cultures and applied sciences

Address: :Hôtel de la porte Matadi; E-mail: Mwanzanicolas5@gmail.com; Tel:0815037949

NCPIR (National Committee for the Protection of ionizing Radiation)

Objective: - Regulatory authority for protection against the dangers of ionizing radiation in the DRC management of radioactive sources of radioactive materials such as uranium.

Address: 4675, Av. Colonel Ebeya, Immeuble Quitus 2ème niveau; Email: Flory1963@gmail.com; Tel: 0816684665

AEC (French Atomic Energy Commission)

Objective: To carry out, promote and coordinate scientific and technical research in various fields of science and industry, concerning the use of atomic energy and space research.

Address: UNIKIN building; E-mail: Steve.muanza.kamunga@gmail.com; Tel: 0808643248.

CGI (Congo Geographic Institute)

Objective: Production of the base map of the DRC at a scale of 1/50,000 and its derivatives.

Address: 106, Blvd du 30 Juin, C/Gombe; E-mail: Fidele.balibuno@unikin.ac.cd; Tel: 0974449240.

GMRC (Geologic and Mining Research Center)

Objective: To carry out studies and analyses to improve knowledge of the soil and sub-soil of the national territory.

Address: 44, Av. de la démocratie, C/ Gombe; E-mail: rolandkakule@gmail.com; Tel: 0851506161

NIASR (National Institute for Agronomic Study and Research)

Objective: To promote the development of agriculture in the Congo. To maintain varieties, multi-local trials, and its farmers, management and conservation of germplasm. Set up a program to monitor and evaluate research activities.

To disseminate new varieties. Give the emerging technical department its reason for being, with a view to producing basic and pre-basic seed. Resume publication of the agricultural magazine to disseminate research results.

Address: 13, Av. des Cliniques, BP :2037 KINSHASA , C/Gombe; E-mail: domikankonde@yahoo.fr; Tel: 0818248620

RCALC (Research Center into African Language and Culture)

Objective: To coordinate and carry out all research projects concerning African languages and cultures.

Address: 53 C, Av. Makiso, blvd du 30 juin, Kisangani/ Tshopo. Tel: 0851934320

AFRC (Agro-Food Research Centre/Lubumbashi)

Objective: To identify processes for processing and preserving basic local agricultural products. To improve the quality of imported or locally produced foodstuffs by applying approved standards and quality control.

Help the technological development of the existing agro-industry by providing them with technical assistance wherever possible.

Address: 1, Av. Président ILEO, Q/CRAA, C/Lubumbashi; E-mail: Julesnkulu@gmail.com; Tel: 0997131002

SSRC (Social Science Research Center / Bandunduville)

Objective: to carry out practical scientific research into major socio-economic and cultural issues.

To promote sustainable aquatic development.

Address: 29, Av. de la mission, Q/Salongo, C/Basoko. BANDUNDUVILLE, BP. 223; E-mail:akuzituka@gmail.com; Tel: 0815898971

FERC (Forest Ecology Research Center /Mabali)

Objective: Scientific research on plants, aquatic species and animal species.

Address: D.S/MBANDAKA D.S/MBANDAKA/PROVINCE OF ECUADOR; E-mail: bosomboependi2@gmail.com; Tel: 0825241704

NDRC (Nutritional Diseases Research Center/Gemena)

Objective: Research into diseases linked to malnutrition, such as related diseases by isolating certain molecules, such as SYZYSIUM GUINESIE to combat amoebic yeasts and diarrhea in South Ubangi.

Address: Mobutu n° 220/A. GEMENA/ SOUTH UBANGI PROVINCE; E-mail: cherusangi@yahoo.fr; 0992416091

NSRC (Natural Sciences Research Center /Lwiro)

Objective: To carry out, promote and coordinate research in the fields of science, technology and industry throughout the DRC.

Address: LWIRO LWIRO , TERRITORY OF KABARE/SUD KIVU; E-mail: robert.kasisi@umontreal.com; Tel: 0996806699.

MDRC (Multidisciplinary Development Research Center /Bunia)

Objective: To carry out operational research in the north-east of the DRC in the fields of applied linguistics, African cultures and applied sciences.

Study of nature, fauna, flora and protection of endangered species.

Address:BUNIA/ITURI; E-mail: Kermwathomas@gmail.com; Tel: 0997717070

HRC (Hydrobiology Research Center in Uvira)

Objective: To program, coordinate and monitor research activities in hydrobiology, limnology and hydrology.

hydrobiology, limnology and fisheries in all ecosystems.

Address: 115, AV. du Congo, Q/Kimanga, C/Kalundu, UVIRA / SUD KIVU; E-mail: bida-kamuhoza@gmail.com; Tel: 0997716307.

CoE/CBRNEC (Chemical, Biological, Radiological and Nuclear Excellence Center)

Objective: To contribute to the mitigation of chemical, biological, radiological and nuclear risks.

Address: 106, Blvd du 30 Juin, C/Gombe; E-mail: Odette.kabena@gmail.com; Tel: 0816904370.

GVO (Goma Volcanological Observatory)

Objective: Prevention of volcanic risks by monitoring volcanoes and Lake Kivu. Management of natural risks; scientific research.

Address:142, Avenue Du Rond Point ; Quartier Les Volcans ; Commune de Goma ; Ville Goma; North-Kivu; E-mail: mavotulu@gmail.com; Tel: 0998584734

WERC (Water and Environment Research Center)

Objective: To serve as a training and research center focusing on water and environmental management.

To propose solutions to problems that could arise around water. Create a national network of Congolese scientists and researchers to analyze and disseminate information on the impact of climate change in the DRC. Promote education and the right to the environment.

Address: 44, Comité Urbain C/ GOMBE; E-mail: ngelipatience@gmail.com; Tel: 0818105625.

RCSARP (Research Center for the Selection and Adaptation of Ruminants and Pigs)

Objective: To carry out studies and research in the field of ruminant and pig breeding

Address: 45, Av. Lumumba, Q/de la gare, LUPUTA/ KASAI-ORIENTAL; E-mail: tshamalagabriel@gmail.com; Tel: 0851817370

NCRS (National Center for Remote Sensing)

Objective: Research in remote sensing.

Address: PLACE ROYAL IMMEUBLE PLACE ROYAL IMMEUBLE KASAI; E-mail: davidngindub@gmail.com; Tel: 0815103502.

NCROS (National Center for Research in Oral Science)

Objective: To carry out studies and research in the field of oral health.

Address: 13, 10ème Rue, Industriel Quarter, C/Limete; E-mail: Cnrsbd.rdc@gmail.com; Tel: 0822244152; 0811835159; 0840922982

CAS (Congolèse Academy of Sciences)

Objective: Promotion and dissemination of science, technology, arts and letters. Support for inventive initiatives.

Address: Sciences Faculty/ UNIKIN local 28; E-mail: jlmuyembet@gmail.com; Tel: 0813330242

MIPRC (Matadi Interdisciplinary Pedagogical Research Center)

Objective:--Information science.

Address: The buildings of the Matadi Higher Pedagogical Institute; Tel: 0896501462



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1. to deliberate on the guidelines and priorities of the scientific and technological research plans and programs to be carried out in the country ;
2. to deliberate on the allocation of resources from the State budget to scientific and technological activities;
3. supervising the financial management of research centers and institutes
4. approving the budgets of the Research Institutes and Centers and submitting them to the Minister for Scientific Research for approval
5. approving the organic regulations of the Research Institutes and Centers;
6. . proposing to the Minister for Scientific Research the appointment and promotion of scientific and administrative personnel.

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