**Supporting Health Systems and Environment in the Democratic Republic of Congo: A Call for Action**

**Innocent MUFUNGIZIa,b,c\* and Aymar AKILIMALIc,d**

aEarth Sciences, Faculty of Sciences and Technologies, University of Kinshasa, Kinshasa, B.P. 190 Kinshasa XI, DR Congo [innocent.mufungizi@unikin.ac.cd](mailto:innocent.mufungizi@unikin.ac.cd)**;** <https://orcid.org/0000-0001-7231-5456>

bLeGeolog Research Team, Kinshasa, DR Congo

cDepartment of research, Medical Research Circle (MedReC), Bukavu, DR Congo [aymarakilimali@gmail.com](mailto:aymarakilimali@gmail.com)**;** <https://orcid.org/0000-0001-9393-1215>**;**

dThe marine biological association (MBA), Plymouth, United Kingdom;

**\*Corresponding author**

56 Ingende, Kindele, Mont Ngafula, Kinshasa, DR Congo

+243 97 59 87 318

[innocent.mufungizi@unikin.ac.cd](mailto:innocent.mufungizi@unikin.ac.cd)**;**

<https://orcid.org/0000-0001-7231-5456>

**Abstract**

Developing countries face several factors to achieve the Sustainable Development Goals (SDGs). The DR Congo is one of the five poorest nations in the world and faces several challenges in combating problems related to poverty, health, and sanitation while linking the environment to anthropogenic activities. Several environmental studies have focused on poor waste management and its impacts on health. The DR Congo does not have a sanitation or waste management system, which accentuates the presence of organic, plastic, and metal waste in cities and near households. These observations cause a health emergency, which can be alleviated and resolved by the establishment of an adequate sanitation system. Waste can be recycled and returned to usable raw materials. Finally, it will be necessary to establish a water safety management plan to combat all diseases linked to the consumption of non-potable water.

**Keywords:** Developing countries, solid waste, liquid waste, recycling, public health, anthropogenic activities

**Main text**

Aware of the effort that a country must make to achieve sustainable development goals, the Democratic Republic of Congo (DR Congo) joined the Management for Development Results approach in 2001, and in 2015, its government developed the National Strategic Development Plan, which first set objectives to be achieved in the five-year plan from 2019 to 2023 (DR Congo, 2021). These objectives highlight access to health, access to drinking water, and sanitation, as well as the reduction of inequalities because, being a country with a weak and non-diversified economy with a health system that is destabilized by several epidemics of tropical diseases, its inhabitants choose to switch to self-medication, and childbirths are carried out at home, thus increasing the cases of maternal and fetal deaths. Being at the end of this first quinquennium, we observe a balance sheet that appears negative. According to the World Bank, the DR Congo was one of the economically poorest nations in the world; approximately 62% of its population, or more than 60 million inhabitants, lived on an income of less than 2.15 USD per day. These figures prove why access to health care services is very limited as well as health coverage, which is very low (World Bank, 2023). In fact, we observe at the level of environmental management and biodiversity in the DR Congo, organic and inorganic waste including plastics and metals, which are the cause of a major sanitation problem. Solid waste is categorized as follows: a cover of waste that appears as the spreading of waste on a surface; a pile of waste that appears as a cover on a given surface but which already begins to gain height; and finally, the wild waste site, which becomes a large mass over a large surface area with a significant height and is visible in most cases on satellite images. We therefore observe a high coverage of waste, a high number of piles of waste, and several wild wastes lacking any adequate management system.

But also, in certain areas and regions of the country, the DR Congo, household and industrial wastewater is not well channeled, it is directly discharged into the residence environments of the population, contaminating the groundwater and at the same time causing sources of stagnant water, which constitutes a major health problem by allowing the development and reproduction of numerous disease-carrying insects. There is also a serious problem with access to public toilets. Some people relieve themselves easily in the river, which is unfortunately used to capture water which is used to supply the water treatment plant intended for human consumption. This observation constitutes a very serious problem facing the health of the population (World Bank, 2010). Stagnant water causes the relative and absolute humidity of the soil, which has negative links with the progression of the epidemic of certain infectious diseases (Jüni et al., 2020), but also the proliferation and reproduction of certain insects, which are vectors of diseases such as mosquitoes, a pathway directly towards malaria, which recorded in 2021 with 95% of cases and 96% of deaths centralized in Africa (WHO, 2023a). Several cases of typhoid fever are recorded each year, which are caused by bacterial infections due to contaminated water consumed in the region (WHO, 2023b), and recurrent cases of cholera continue to increase due, in particular, to a lack of access to water. drinking water (Kayembe and Harry, 2023). These major health problems that exist within the Congolese population constitute a health emergency, and the majority of these problems are preventable. So, to fight against these health problems, the steps to be taken must include both the Congolese government and its population. The government of the DR Congo, through its Ministry of Health, must draw up a water health security plan and respect it in all its terms, including respect for the protection perimeters of hydraulic structures for the exploitation of water intended for human consumption, the construction of public toilets that respect health standards, the sanitation of environments, and the construction of drains to channel waste water, but also a system for treating this water before leaving it in nature for the protection of ecosystems. The Congolese government and its Ministry of Health should also encourage small businesses that thrive in the plastic bottle and bag recycling sector. On the other hand, the population must be educated on the management of organic and inorganic waste.

**Declarations**

**Conflicts of Interests**: The authors declare that there is no conflict of interest.

**Funding**: The authors declare that they did not receive any financial support for this work.

**Acknowledgment**: Not applicable.

**Ethics approval**: Not applicable.

**Consent for publication**: Not applicable.

**Availability of data and materials**:Not applicable.

**Author contribution:** All authors participated in the conception of the study, contributed to the drafting of the manuscript and approved the final version.

**REFERENCES**

1. Democratic Republic of Congo (DR Congo). (2021). National Strategic Development Plan from 2019 to 2023. Available at: <https://www.undp.org/fr/drcongo/publications/plan-national-stratégique-de-développement>
2. World Bank. (2023). Democratic Republic of Congo - Overview. Available at: <https://www.banquemondiale.org/fr/country/drc/overview#:~:text=La%20RDC%20est%20l%27une,Afrique%20subsaharienne%20vit%20en%20RDC>.
3. World Bank. (2010). Kinshasa doubles its drinking water distribution capacity. Available at: <https://www.banquemondiale.org/fr/news/feature/2010/02/25/world-bank-funding-helps-kinshasa-double-its-drinking-water-distribution-capacity>
4. Jüni P, Rothenbühler M, Bobos P, Thorpe KE, da Costa BR, Fisman DN, Slutsky AS, Gesink D. (2020). Effets du climat et des interventions de santé publique sur la pandémie de COVID-19 : une étude de cohorte prospective. CMAJ. 2020 Nov 2;192(44): E1374-E1382. French. doi: 10.1503/cmaj.200920-f. PMID: 33139430; PMCID: PMC7647477.
5. World Health Organization (WHO). (2023). Paludisme. Available at: <https://www.who.int/fr/news-room/fact-sheets/detail/malaria>
6. World Health Organization (WHO). (2023). Typhoid fever. Availabe at: <https://www.who.int/fr/news-room/fact-sheets/detail/typhoid>
7. [Kayembe, N., Harry, C.](https://orbi.uliege.be/profile?uid=p220417) (2023). Modalités, trajectoires préférentielles et facteurs explicatifs des dynamiques de diffusion spatio-temporelle des épidémies de choléra en République Démocratique du Congo (RDC). ULiège - Université de Liège [Sciences], Liège, Belgium. Available at : <https://orbi.uliege.be/handle/2268/306009>