



## 4th UNESCO Africa Engineering Week (AEW) and 2nd Africa Engineering Conference (AEC) 2017 25<sup>th</sup> -29<sup>th</sup> September 2017

### Kigali Declaration on Effective Waste Management in Africa.

#### **Preamble:**

The participants at the 4th UNESCO Africa Engineering Week (AEW) and 2nd Africa Engineering Conference (AEC) on “Effective Waste Management in Africa”, held in Kigali, Rwanda, from September 25-29<sup>th</sup>, 2017, discussed the current state, future, and expected innovations of the various fields of engineering with regard to waste management and other issues facing the world and humanity, and the relationship between these problems and national development with emphasis on Africa in general and Rwanda in particular. The participants applauded Rwanda’s green growth strategy and its effort towards effective achievement of the sustainable development goals (SDGs).

In this regard, the country was further urged to implement the resolutions of this conference to forge ahead with its integrated sanitation and waste management planning in Kigali and the six secondary cities. This strategic leadership in waste management by Rwanda will indeed inspire the rest of Africa to follow suit, especially at a time Rwanda takes over the leadership of the African Union (AU).

Major topics of discussion of the 2<sup>nd</sup> Africa Engineering Conference were devoted to:

- Solid and liquid waste management,
- Entrepreneurship in waste management, especially waste as a resource and waste transformation technologies,
- Trends and sustainability in waste management,
- Education and training in waste management,
- Urbanisation and waste generation and industrial waste management
- Urban development and infrastructure,
- Ethics and professionalism in engineering practice,
- Young engineers and future leaders, and
- Women in engineering.

The results of these discussions are presented in the following Kigali Declaration on Effective Waste Management in Africa.

**Considering that:**

- The United Nations has unanimously adopted a set of Sustainable Development Goals (SDGs) and an associated 2030 Development Agenda to address extreme poverty and grand challenges of development;
- Lack of effective waste management means the atmosphere is contaminated by countless man-made substances such as sulphur, nitrogen oxide, and fine particulates, which have a major effect on human health;
- Many people in the world today have no available drinking water, and many live in unsanitary conditions due to inadequate wastewater facilities;

- Global warming is steadily increasing, causing an increase in the size of typhoons and hurricanes and more frequent heavy rains and droughts, in addition to tornadoes and strong winds and damages resulting from natural disasters are incurred by many countries throughout the world every year, to this effect the conference delegates convey goodwill messages to the peoples of Sierra Leone, the USA and Mexico who were recently hit by natural disasters;
- The building of safe and reliable infrastructure, agricultural reforms, and industrialization all require large numbers of engineering graduates;
- Life-cycle and systems thinking in development proposals and projects require thorough analysis of their technical, economic and environmental feasibility and social and cultural impacts, before their approval and implementation, and
- International governance institutions must strengthen the involvement and linkages between science, engineering, education and policy for sustainable development;
- Ethics and professionalism must be enhanced to ensure zero tolerance to corruption as a guarantee for development and prosperity to the people of Africa.

**Declare that:**

1. Substantial technological improvements as well as sound, evidence based policies are needed for effective waste management using values of reducing, reusing, and recycling, can help our community, and the environment by saving money, energy, and natural resources and will assure access to fresh

and safe drinking water, energy, sanitation, communications, shelter, and transport services in communities of Africa;

2. The conference believes that inadequate involvement of African stakeholders in finding solutions to their problems is the reason for underdevelopment of the continent. Hence Africa by exchanging and applying appropriate policies, scientific knowledge, engineering creativity and best practice with up-to-date technology on waste management, engineers can substantially introduce sustainable solutions into most areas of activity that contribute to African citizens' quality of life and well-being. To this effect, we call our Governments to introduce the use of local content and professionals in projects to a level not less than 40%, and build trust and capacity to increase this through regional and international partnerships for technology and skills transfer.
3. The contamination of the atmosphere, water, and soil has a severe effect on the lives and livelihoods of humanity. Engineering must promote innovations to assure the quality of the air, of drinkable water, and of clean soil.
4. In order to mitigate the effects of natural disasters, that create problems in the water environment, waste management and food production, Engineering has to implement measures to protect infrastructure with the most resilient technologies.
5. Engineering is the activity of utilizing the output of science and technology to create safe and prosperous lives for humanity. Engineers must, not only work for the advancement of specialist knowledge in the areas of science, technology, and engineering, but they must also take into account ethical and professional concerns especially by taking responsibility to fight corruption.

6. The emission of greenhouse gases such as carbon dioxide is accelerating global warming. Climate change causes effects such as drought, heavy rains, extreme cold, and extreme heat throughout the world, which in turn affects the survival of plants and animals. Engineering must intensely apply its proficiency to reduce carbon dioxide emissions in numerous fields including development of diversified energy sources, power generation technology, energy usage technology, and energy conservation technology.
7. Engineering education especially in waste management is important for enabling people to make good use of up-to-date scientific knowledge and engineering means and processes to advance the state-of-the-art technology to improve the quality of life of citizens of Africa. Engineering education must be introduced into every area of society, e.g. in “Engineering Liberal Arts, Cultural Heritage, Entrepreneurship, and Critical thinking”, and included at each educational stage in schools from early childhood, all the way to the Engineer’s professional career.
8. The increase of women (who comprise roughly half of the population) entering the realm of engineering is essential for ensuring the availability and balance of sufficient engineering professionals to take charge of economic development through implementation of feasible engineering projects. The number of opportunities in engineering education for women must be increased.
9. Engineers as members of society must carry out their work providing for the enhancement of the life conditions of society through effective waste

management, focusing their activities on the creation of a prosperous and safe society.

10. The low visibility of UNESCO at the Kigali event must be corrected to ensure that Engineering gets the impetus it deserves and, that WFEO and UNESCO should establish a framework to ensure that this does not happen again in future Africa Engineering Weeks.

Finally, we urge Africa's leaders to accept this opportunity to engage the World and Africa's Engineering Community as a full partner in addressing the complex challenges as we evolve toward a sustainable planet. The World and African Engineering Community is ready, willing and able to contribute its expertise, creativity and dedication to achieve the elements of this Declaration.

Dated this 28<sup>th</sup> September 2017 in Kigali, Rwanda

**For the Institution of Engineers Rwanda (IER)**

Eng. Papias Kazawadi Dedeki

The President;

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**For the Federation of African Engineering Organizations (FAEO)**

Eng. Julius Riungu

The President;

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**For UNESCO, Regional Office for Eastern Africa, (Nairobi)**

Alice Auma Ochanda, PhD

Programme Officer – Gender and Science;

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**For the World Federation of Engineering Organizations (WFEO)**

Eng. Martin Manuhwa

WFEO President's Representative;

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