



**VOICE OF WASWAC
FOR THE WORLD SOIL DAY 2019**



President's Notes

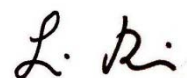
I am very happy to read the article prepared for the World Soil Day. This article is written by Professor Jose Luis Rubio, the vice president of the World Association of Soil and Water Conservation, hence it could be seen a voice from the association.

In this article, with the deep affection for the soil, the author addresses the severe challenges and threats to soil from climate change and human activity.

It is now well-known that soils are fundamental to life on earth. But pressures on soil resources are reaching critical limits due to unsustainable human activities driven by a rapidly growing global population and increased demand for food, feed and natural resources.

Among the different threats soils are facing, erosion is the number one threat. It is estimated half of the topsoil on the planet has been lost in the last 150 years due to soil erosion.

We are celebrating the World Soil Day, with the motto: Stop Soil Erosion, Save Our Future which is proposed by GSP, FAO. Let it lead our continued commitment to prevent soil erosion, mitigate its negative effects on human health and the environment, and remediate eroded soils.



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President of WASWAC

Soil, Desertification and Climate Change

5th December World Soil Day

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Our planet has a very special configuration. The singularity of life develops and is concentrated in a humble and thin layer of soil of only a few centimeters that surrounds it. The rest is a huge mass of inert and lifeless geological material. This living skin of the earth has been and is the basis of the development of civilizations and responsible for the production of food throughout the history of mankind. The fertile soil also stabilizes and reinforces the quality and ecological regulation functions of the territory. The soil helps retain and keep fresh water clean for agriculture, flora, fauna, landscape quality, biodiversity and human consumption. Soil is the elixir and the biological engine of the Earth that recycles organic materials by the activity of millions of microorganisms that improve its structure and thus increase its capacity to mitigate erosive processes, overflow and flood effects, drought periods, impact of forest fires and the misuse and management of the territory.

The soil and the atmosphere interact permanently by exchanging humidity, gases, compounds and energy flows. The soil evolves adapting and oscillating in response to changes of the climatic parameters and, in turn, the atmosphere receives the influence of the functioning and processes of the soil. They share the same reality and they will share the same future. Therefore, the soil is also a powerful climate regulator. It constitutes the second largest deposit of organic carbon on the planet, only behind the oceans and far ahead of the carbon stored by the atmosphere and vegetation. It also regulates other greenhouse gases such as fearsome methane or nitrogen oxide and affects surface albedo, radiation balance, emission of aerosols and dust particles, moisture balances and evapotranspiration, which are part of the complex system of climate regulation of the planet.

However, all this enormous potential, essential for the proper development of the productive, social and environmental aspects of the planet, is threatened. About twelve thousand years ago, in the Holocene, the stabilization and improvement of the climate made possible the development of agriculture, and as a consequence, the construction of the first cities, civilizations, science, technology and progress that we now enjoy. And precisely now all this is endangered by another climate change. But this time not natural but triggered by man. Current anthropic climate change threatens the destabilization and collapse of basic productive systems and crucial socio-economic structures. And all this due to the chemical alteration of the atmosphere that implies the alteration of the climatic parameters and their feedback with terrestrial ecosystems. The current level of well-being and progress, at least in some parts of the planet, has its Achilles tendon in the consequences of the immense tonnage of greenhouse gases that we continue to emit into the atmosphere for more than two centuries.

It is a global threat unprecedented in the history of mankind. We can say that climate change is the greatest social, economic and environmental challenge of the 21st century. In many aspects we face problems of consequences that are still unknown and unpredictable, whose control will require scientific knowledge and new answers and smarter ways of relating to the natural environment.

It is a global problem, but with varying degrees of local impacts and consequences. In the drier areas of the planet, the warming trend will increase the levels of aridification and thus its vulnerability to desertification problems. Desertification, the result of sensitive natural conditions (edaphic, geomorphological and climatic) and inadequate human actions, is a set of numerous processes that go unnoticed initially but can progressively reach levels of very serious consequences for the stability and productivity of the territory. Overlapping, in the affected areas, a whole series of interrelated processes act, such as loss of organic matter from the soil, degradation of its structure, surface crusting and compaction, aridity, variability and torrentiality of rainfall, decrease in plant cover, salinization ,etc. that weaken the biological quality of the soil, its resilience, its fertility and its ability to withstand erosive rains that inexorably wash and drag the soil of burned forest slopes and from abandoned or poorly managed agricultural areas, on their irreversible path to valley bottoms , coastal areas or the sea.

In its final consequences, when high degradation is reached, all the biospheric potential of the affected areas is endangered and at these extreme levels there is a double rupture: the one that affects the provision of ecosystem services of the territory and the one that affects to the agricultural and forestry productivity of the terrestrial ecosystem. When we reach these extremes, when we lose the soil, we lose everything. Then, the territory becomes a wasteland and unproductive for all purposes.

Most international climate change assessment reports, such as those produced by the IPCC (Intergovernmental Panel on Climate Change Assessment), predict a series of trends for the drylands: temperature rise, rainfall decrease, climatic variability, extreme climatic phenomena, increased incidence of droughts, increased forest fires, reduced soil moisture, and salinization, that can increase the aridity of the territory and consequently the risks of desertification. In turn, desertified areas have an impact on climate change through different feedback mechanisms already mentioned. The concurrence of both trends will have very negative consequences due to the increase of their effects.

These predictions and evaluations, are direct, are scientifically supported and very worrying. They force the urgent development of effective and innovative mitigation and adaptation measures and strategies. The mitigation aspects are logically important but the global / local interaction of the warming trend causes perverse effects in the affected areas. In the drylands we can and must legislate to address the change to removable sources of energy and to reduce harmful emissions in a carbon-free economy and many other necessary measures, but this will not free us from droughts, floods, increased forest fires, instability of the territory and decreased water resources and agricultural production and an increasingly arid and inhospitable environment. Therefore, proactive and preventive adaptation measures must be a priority and it is now when they must be designed and implemented. A chemically altered atmosphere does not understand administrative problems, laws or geographical competencies or deadlines. He is indifferent and implacable and will act in the direction that the current human experiment is marking it.

A new vision and a change of course is imposed in our energy model, in the really sustainable management of our resources and in the interaction with the natural

environment, the soil and the territory. In many aspects we cannot continue doing things in the same way as until now because this would lead us to a disaster announced in socio-economic and environmental terms. In this forced change of course, innovation, new approaches and creative solutions have to play a crucial role, and in it institutions, companies, the academic and scientific world and society in general, should be the most important agents impellers. The future is open. And this future must bring the opportunity for change and improvement in our social, economic and environmental relationship with our unique and abused natural environment. We play too much in it.