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RIAS 2022 Policy Workshop

**Soil Salinization:
Global Problem, Local Solutions**

4 November 2022

Program

Soil salinization, which is the process of salt accumulation in terrestrial landscapes, is arguably one of the least known effects of climate change yet one of the most impactful. Despite being a natural phenomenon, anthropogenic factors have significantly contributed to its acceleration and intensification in recent years, so much so that it has become a pressing threat to human activities and ecosystems. Arid and semi-arid territories are usually associated with the chance of salinization. A dry climate, however, is only one of the many risk indicators. The rising sea level and the rampant coastal erosion characterizing the current climate emergency are important drivers of salt accumulation in territories previously untouched by the problem. Equally damaging to the delicate saline balance of soil and water are poor agricultural and water management practices, including improper drainage, irrigation with salt-rich waters, and inappropriate use of fertilizers.

Delta regions, which are at the same time among the most environmentally rich and diverse areas of the world and some of the most highly stressed and exploited spaces on the earth, are particularly exposed to salinization and its disruptive consequences. Their natural characteristics expose them to flooding, subsidence, and direct saltwater intrusion – all occurrences that can lead to the accumulation in soil and water of water-soluble salts such as sodium, calcium, chloride, sulfate, and bicarbonate. Furthermore, due to the intense competition for land and water use that characterizes these areas, the adverse effects of salinization are heightened in coastal zones and wetlands.

Salt accumulation makes for a formidable physiological threat to ecosystems and can result in potentially devastating outcomes in already vulnerable areas. High salt concentration destroys crop production, as salt influences plant development and affects the metabolism of soil organisms, leading to severely reduced soil fertility. Even when salinization does not turn previously arable land into wasteland, it still forces farmers to abandon traditional cultivation methods and move – when possible – to more salt-tolerant crops. This process results in reduced food variety for human use, erodes biodiversity, and heavily jeopardizes agricultural activities, including livestock production. The deterioration of water quality also has a severe impact on industrial practices relying on a constant inflow of freshwater. Similarly, it threatens the supply of drinking water and increases water management and treatment costs for local populations.

In October 2021, as a testament to the global extent of the danger, the UN Food and Agriculture Organization co-organized a Global Symposium on Salt-affected Soils (GSAS21) that focused on “halting soil salinization and boosting soil productivity.” The increasing awareness of the effects of salt concentration and the interest in finding common solutions

have prompted experts around the world to work on innovative methods and technologies that could help tackle the problem. Specific initiatives to bring relief to the different territories impacted by salinization have also multiplied at the national level. In the United States, for example, the Fish and Wildlife Service awarded more than \$20 million in December 2021 to support projects in 13 coastal states to protect and enhance thousands of acres of coastal wetlands endangered by salt intrusion along with sea level rising and ever-growing human activities. Surrounded by the oceans and reliant on the productivity of many of its coastal regions, salinization is indeed today an especially problematic issue in the United States. But the problem of salinization is also significant in regions such as Zeeland, where an extensive agro-industrial complex thrives in proximity to the salty waters of the North Sea and on a territory mostly below sea level.

Due to the complexity of the matters at stake, designing an efficient approach to manage and mitigate the effects of the increasing soil and water salinization means combining scientific and technological knowledge with long-term and forward-looking policy planning. Outside the realm of experts, local authorities need to be involved too. They need to address salt concentration as a serious public policy issue and put forward a vision for the reorganization and readaptation of industrial and agricultural spaces and coastal landscapes. The scope of this workshop is to help bridge the gap between technical expertise and policymaking by favoring the establishment of fruitful synergies and exchanges of know-how and competencies across the Atlantic. At the same time, it aims to pave the way for a policy-oriented discussion that can help identify the best practices for sustainable governance of coastal regions easily subject to salinization.

This workshop, led by world-class experts in water management, agricultural and industrial planning, and environmental policy, focuses on the most substantial challenges, perspectives, and action plans concerning soil and water salinization in the Netherlands and the United States. By sponsoring this discussion, we invite citizens and professionals alike to start reckoning with one of the most insidious repercussions of our current climate crises and we aim to showcase possible patterns of adaptation working both at the local and global level.

Friday, 4 November 2022

**Priorij – Abdij 8
4331 BK Middelburg
The Netherlands**

- 10:15** **Welcome and Introduction by Damian Pargas, RIAS Director**
- 10:30** **Marcela Laguzzi, *Senior Program Manager Fresh Waters, Ministry of Infrastructure and Water Management, The Netherlands***
- 11:00-12:30** **Session I – Modification, Resilience, and Adaptation**
- Christopher Miller, *Manager/Conservation Agronomist, USDA-NRCS Cape May Plant Materials Center, USDA Northeast Climate Hub Team-Collaborating Scientist/Partner, USA*
 - Katarzyna Negacz, *Postdoctoral Researcher, Institute for Environmental Studies, Vrije Universiteit Amsterdam, The Netherlands*
 - Molly Mitchell, *MA Program Director, Research Assistant Professor, Center for Coastal Resources Management, Virginia Institute of Marine Science, USA*
- 12:30-14:00** **Lunch**
- 14:00-15:30** **Session II – Management, Planning, and Solutions**
- Liliane Geerling, *Senior Lecturer and Researcher, HZ University of Applied Sciences, The Netherlands*
 - Wouter Quist, *Advisor Water Quality and Ecology, Ministry of Infrastructure and Water Management, The Netherlands*
 - Vincent Klap, *Senior Policy Water Officer, Province Zeeland, The Netherlands*
- 15:30-16:00** **Roundup and Conclusion**
- 16:00** **Drinks**

This workshop is sponsored by

