UNESCO special Session

Frontiers in Water Science and Technology Research: UNESCO and the International Decade of Science for Sustainable Development

Dr. Dalal Matar Alshamsi

Director of National Water and Energy Center

Associate Professor, Geosciences Department

United Arab Emirates University

Dalal.shamsi@uaeu.ac.ae

Outline

- **Water Science for Sustainable Development**
- **Frontiers in Water Science and Technology Research**
- **Current research trends addressing the SDGs #6 and #7**

Water Science and Technology for Sustainable Development

- Working towards **water security** using sustainable materials and cost-effective methods

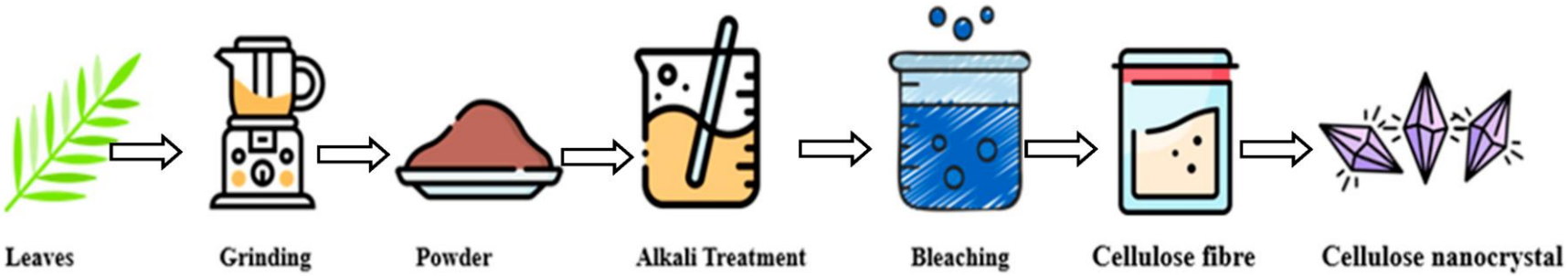
  - Designing the non-conventional supporting technologies using mainly *clean energy* and *local available materials* (e.g. palm trees parts in GCC, agricultural waste), and improving their mechanical properties.
  - Implementing *circular economy*

Frontiers in Water Science and Technology Research

- The gaps in the climatic data
- The lack of the continuous lithological logs
- Difficulties in reaching the available data and cleaning them
- Aquifer's delineation
- Aquifer's classification and possible hydraulic connectivity which might affect the chemical signature and model's training and validation.

Current research trends addressing the SDGs #6 and #7

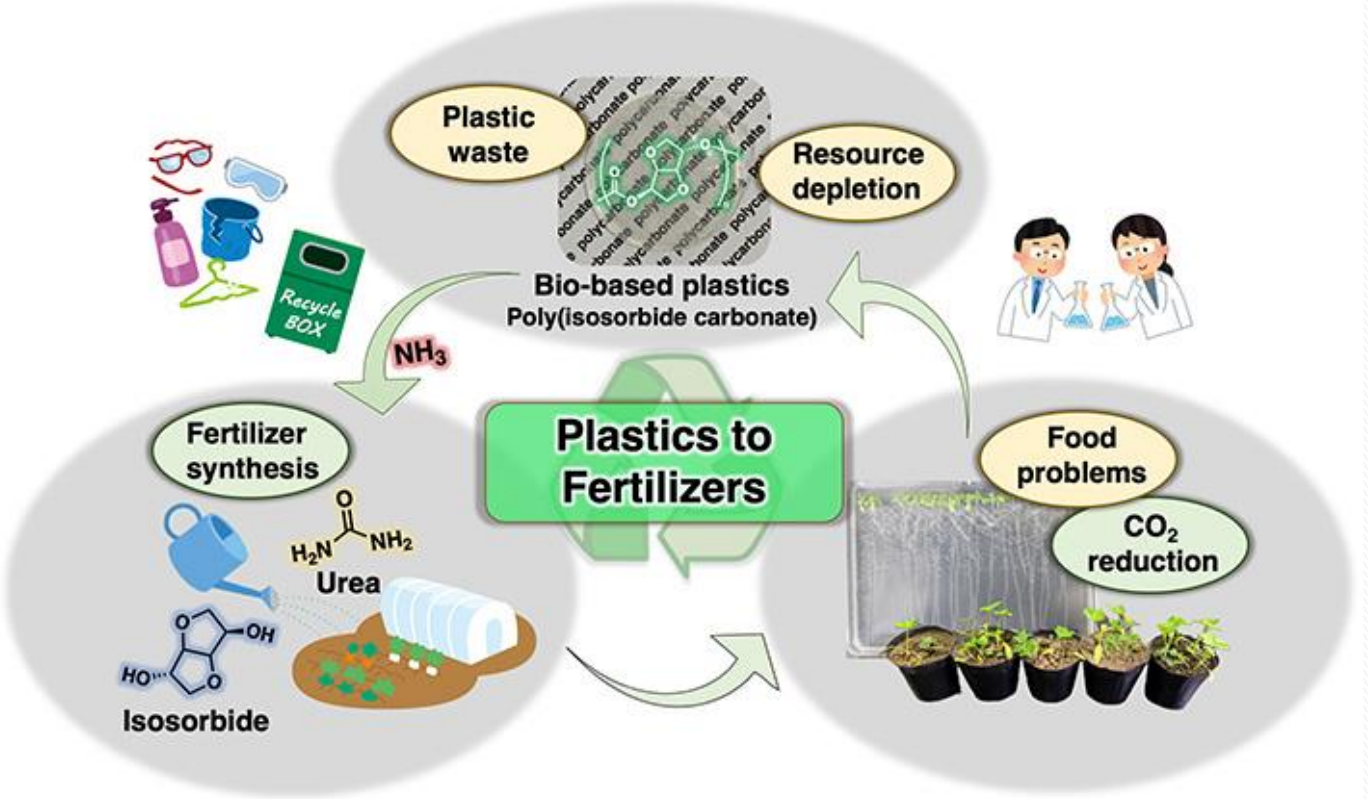
- Filling the **climate data gaps** using **AI**, and the possible methods of model **validation**.
- Using **sustainable materials** and **organic matter** for water purifying and unconventional resources production
- **Energy efficiency** in water industry and technology



Date Palm Tree Leaf-Derived **Cellulose Nanocrystal** Incorporated Thin-Film Composite forward Osmosis Membranes for **Produced Water Treatment**. https://doi.org/10.3390/membranes13050513

Current research trends addressing the SDGs #6 and #7

- Water and energy efficiency in agriculture and food industry
- Producing high quality food products, and bioplatics, from food co-production waste



Acknowledgements

- United Arab Emirates University
  - Research Affairs
  - National Water and Energy Center
  - Geosciences Department

- Denmark Technical University, Denmark: Department of Environmental and Resource Engineering & Center of Nuclear Technologies.

- Hohai University, China: College of Hydrology and Water Resources
- GCC Water Science and Technology Association