



**International Center for Biosaline Agriculture**  
**Strategic Plan 2024 - 2034**



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## Executive Summary

Soil and water resources are essential to agriculture, but they are under serious threat across different agroecosystems due to a range of natural and human factors. Globally, one of the biggest threats to agriculture today is salinization and sodification, either occurring naturally or caused by human activity. It is a complex threat; especially when it is combined with other agricultural risks such as drought, soil erosion, and water scarcity.

Yet climate change and population growth are forecast to increase pressure on agroecosystems worldwide and consequently accelerate salinization and sodification, especially in regions which already face considerable constraints on agriculture. While agricultural productivity and production will be affected in most regions, these challenges will disproportionately impact

the lives and livelihoods of smallholder farmers and other food producers in already fragile agroecosystems. It is estimated that salinity directly affects the livelihoods of 1.5 billion people globally and around 25% of the world's arable land is affected by salinity today.

To address this challenge, it is important to develop and adopt innovative solutions for sustainable and productive agriculture under unfavorable conditions to ensure future food, water and livelihood security.

With 25 years of research and development experience in biosaline agriculture, ICBA is well-positioned to lead future agricultural research, development and innovation to tackle the challenges of salinity and other stresses in saline and arid environments. ICBA will follow a holistic and integrated approach to sustainable

agricultural development with a unique focus on salinity, water scarcity and other stresses and their interactions within and impacts on agrifood systems.

ICBA will leverage its extensive expertise and mobilize its partners in different countries to make a positive lasting impact on the lives and livelihoods of farming communities through agricultural science and innovation.

Under its motto "*Agriculture for Tomorrow*", ICBA will work to **Prevent, Manage and Recover** from salinity in agroecosystems. The center will work with partners to create and scale up innovative science-based solutions for preventing and managing salinity and restoring saline environments to improve agricultural productivity and production that underpins rural economies and livelihoods.



## Challenges

### Our Changing World

The next decade will bring a series of changes that will directly impact ICBA, its ability to successfully achieve its Vision, and make meaningful contribution to the United Nations Sustainable Development Goals.



Salinity



Climate change



Globalization and localization



Technology and infrastructure



Funding availability



Political and economic situation





# Salinity



Almost 25% of the world's arable land is affected by salinity



Estimates suggest this could be 50% by 2050



Salinity directly affects the livelihoods of 1.5 billion people

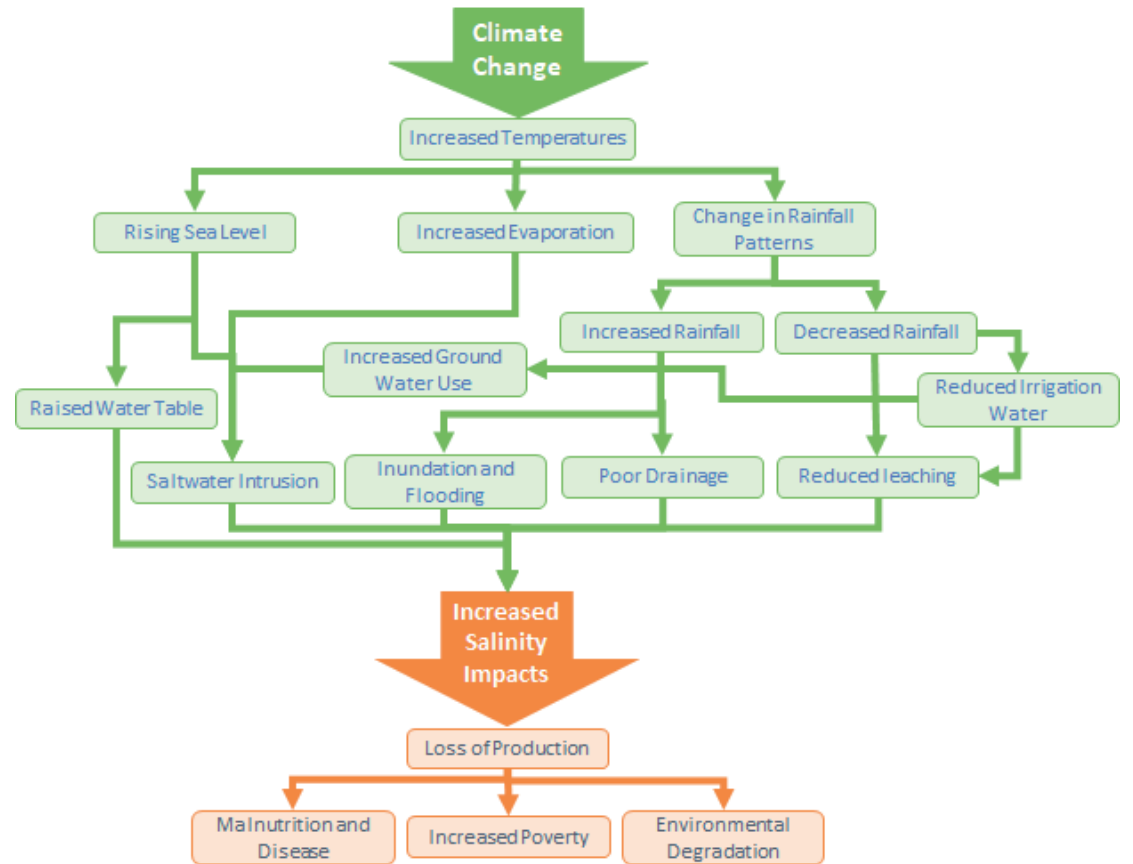
Salinity currently affects around 33% of the world's irrigated agricultural land and 25% of all arable land globally (or around 1 billion hectares). Much of this is in arid regions, already challenged by harsh climates such as the Middle East, North Africa and sub-Saharan Africa. When salinity impacts rural communities that already face poverty and food insecurity, there is little to no tolerance for agricultural productivity loss. At scale, this loss of agricultural productivity affects national food security, increasing dependence

on food imports, exacerbating plant diversity loss, and thereby contributing to migration and political instability.

Modeling suggests that climate-change-driven extremes will increase the range of areas impacted by salinity and intensify the impact in areas already affected by it.

ICBA will develop and promote biosaline solutions to prevent, manage and recover from salinity in agricultural lands.

Figure 1. How climate change will increase salinity and its resulting impacts





## Climate change

Climate change directly exacerbates the effects of salinity by increasing temperature and weather extremes and, thus, the risk of crop failures for farmers. It will be crucially important to model and predict the impacts of

climate change and other stresses on agriculture and develop potential solutions. ICBA will develop and promote solutions for sustainable agriculture and natural resources management under climate change.



## Globalization and localization

At times of financial and political turmoil, food security becomes a pressing issue in countries that heavily depend on food imports. And climate-change-related extreme events place additional pressure on already fragile agrifood systems impacted by salinity. However, agrifood systems that support socioeconomically disadvantaged communities in remote regions with arid climates are at most risk.

Increasing local production by adopting new or improved crop varieties, following best practices to maintain agricultural productivity with low water use, and intensifying

production systems can build resilience to various risks at a local level. And establishing local markets for produce and inputs will further reduce reliance on global food supply chains.

However, this requires solutions informed by local food cultures and dietary preferences and can be easily integrated into existing food value chains.

ICBA will support the development of resilient and sustainable local agrifood systems and value chains for novel crops by sharing necessary technology and knowhow.



## Technology and infrastructure

Communities in remote and disadvantaged regions often lack access to technology which underpins most agricultural research and development. However, internet accessibility continues to improve in many of ICBA's target regions. Although it may not always be accessible to farmers, it is making a wider range of knowledge and skill sharing with extension specialists possible.

ICBA will embrace this opportunity to share knowledge and skills and build the necessary platforms and channels for this purpose. The center will harness digital agriculture to meet the needs of farmers, extension specialists and other stakeholders.



## Funding availability

Many of ICBA's national and regional partners are not able to access funding for local projects focused on sustainable agricultural development, natural resources management and other areas. ICBA will work to develop national and regional partners' capacity to bridge this gap by coordinating, consolidating and managing programs and supporting partners in their funding applications.

For donors, this will provide higher levels of governance and accountability, reduce project management costs, and increase potential impact.

ICBA is committed to ensuring the financial sustainability and availability of its initiatives and projects by implementing innovative funding strategies, partnerships, and resource mobilization. ICBA aims to

secure the necessary resources to continue its vital work in promoting sustainable agriculture in saline and arid environments. By collaborating closely with government agencies, international organizations, and private entities, ICBA will unlock novel funding streams and strengthen its financial resilience by focusing on research, applied biosaline solutions, capacity development, and knowledge transfer.



## Political and economic situation

Social, economic, environmental, and political challenges continue to have a disproportionate impact on the lives and livelihoods of the world's most vulnerable communities. Working at the intersection of agricultural science and innovation, ICBA will develop solutions to address food, water,

and livelihood insecurities among farming communities in different regions. ICBA will follow a holistic and integrated approach to making agriculture sustainable, profitable, and resilient in saline and arid environments under climate change.





## ICBA's Proposition

Established in 1999 by the Government of the United Arab Emirates and the Islamic Development Bank, ICBA is a unique international not-for-profit applied research-for-development center. The center's approach integrates strategic alliances, technical expertise, and knowledge empowerment to co-create innovative solutions for sustainable livelihoods and food security in saline and arid environments. The center's research is at the nexus of soil, water, crops, and climate to prevent, manage and recover from salinity in agricultural lands. Through this holistic and integrated approach, ICBA strives to make a lasting positive impact on the lives and livelihoods of farming communities, ensuring their resilience and contributing to a more sustainable future for all.

ICBA's culturally diverse team understands the needs of beneficiaries and partners. We support them with our experience and technical expertise to co-create solutions with legacy, enabling governments and others to support their own farming communities into the future.

Our work directly impacts some of the most vulnerable rural communities around the world. We transform advanced agricultural systems and technologies into low-cost, accessible formats for widespread use by

farming communities. Through this work, ICBA helps to improve food security, agricultural productivity and livelihoods. ICBA is "GLOCAL", recognizing the world's interconnectedness and understanding that global challenges impact local contexts.

ICBA's regional work is focused on salinity in the harsh climates of the following regions: Middle East, North Africa, sub-Saharan Africa, Central Asia, the Caucasus, South and South-East Asia.

Our resource-efficient interventions, climate-smart solutions and resilient crops come from scientific collaborations between our diverse research team, regional partners and global institutions.

Our location also provides first-hand experience in conducting research on salinity in one of the world's most arid environments. ICBA has established connections with partners in regions in which it works and can provide leadership and policy support to foster cross-border cooperation on global challenges. We develop and adapt technical innovations in genetics, water and land management, as well as working on the policy settings, market drivers and local capacity required for holistic, locally embedded solutions with impact.







## Vision

To be a world-class center for agricultural research, development and innovation for saline and arid environments

We will work to prevent, manage and recover from salinity in agricultural lands for improved agricultural productivity that underpins rural economies and livelihoods.

We are the partner to turn to when the traditional practices and crops struggle in environments of increasing extremes. Our solutions focus on saline and arid environments with the goal of reducing poverty, hunger and inequality and improving water quality and availability for people and the environment.



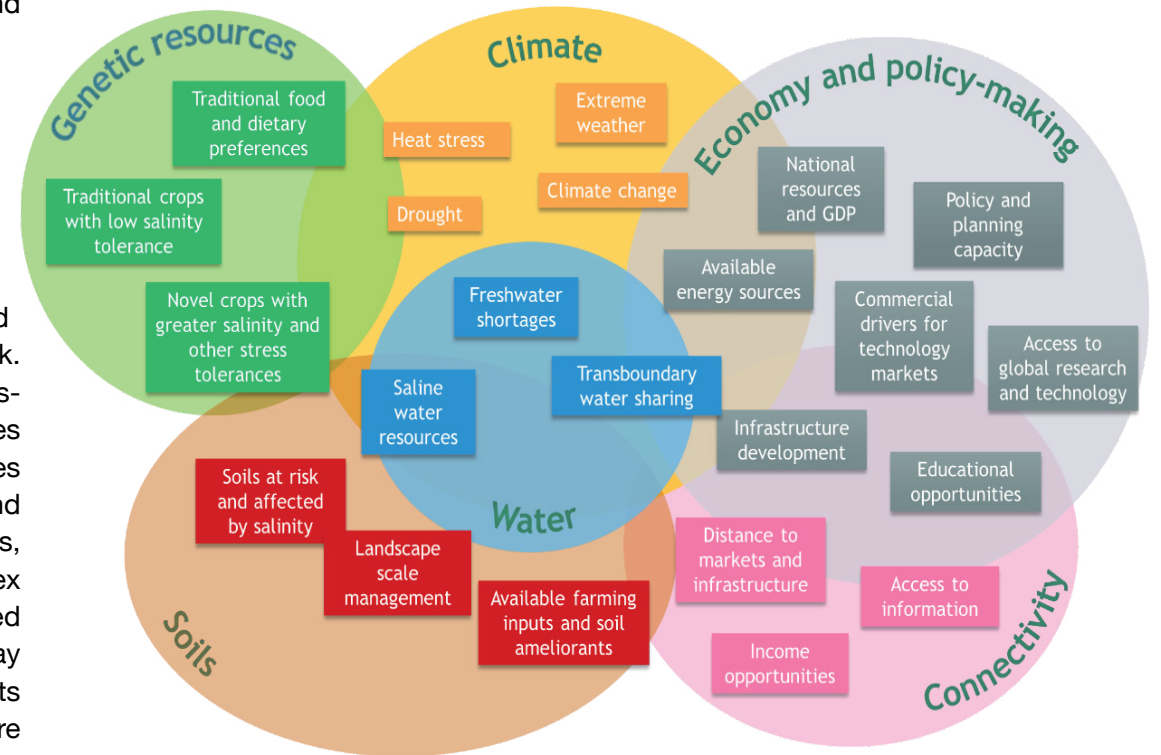
## Mission

*To pioneer the design and deployment of accessible and integrated science-based biosaline solutions through partnership and collaboration*

We will achieve our vision by bringing together local communities, scientific expertise and partners to leverage advanced technologies into accessible innovations supported by enabling regional and local capacity and embedded into policy and market settings.

A large-scale uptake of solutions is needed to generate impact and legacy for our work. This means taking an integrated systems-based approach, working across disciplines to design solutions, adapting technologies to available capacity and resources, and influencing policy and markets. At times, solutions may be looking across this complex system, and at other times a more focused investigation of one part of the system may be required. The key system components that can influence solution success are shown in Figure 2.

Figure 2. System components that can influence solution success.





## Strategic Framework

Toward 2034, ICBA will decidedly and strategically pursue the fulfilment of its vision by focusing on eight priorities reflecting the integrated systems-based approach needed to address the impacts of salinity in harsh climates. The resulting innovative solutions will meet the needs of targeted beneficiaries and be ready for uptake, be co-designed with stakeholders and beneficiaries, and have the support of local leaders and governments.

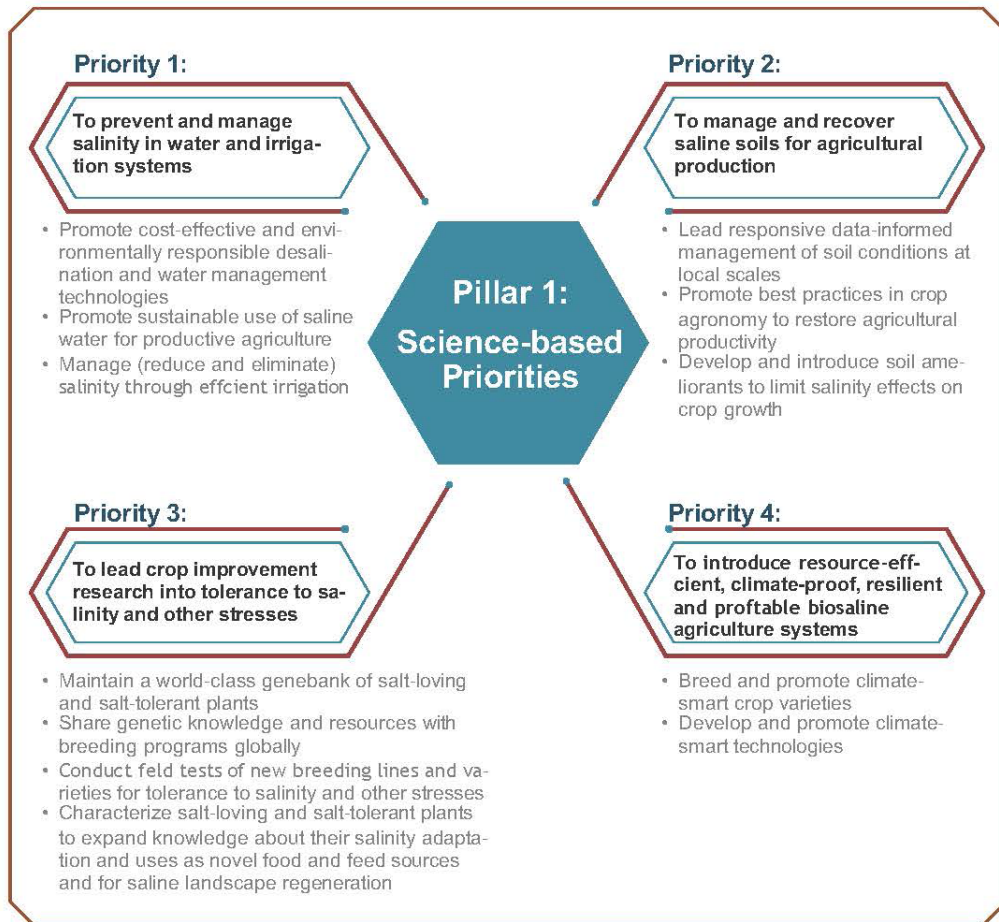


# Objectives:

Become a global go-to hub for agricultural data intelligence for saline and arid environments, driven by multidisciplinary research and development.

Leverage partnerships to provide practical on-the-ground support to diverse stakeholders.

Create a lasting impact at social, economic and agricultural levels.



# INTERNATIONAL CENTER FOR BIOSALINE AGRICULTURE

“Agriculture for Tomorrow”.

Prevent, manage and recover from salinity in agroecosystems

## ICBA Headquarters

Al Ruwayyah 2, Academic City  
P.O. Box 14660, Dubai,  
United Arab Emirates  
Email: [icba@biosaline.org.ae](mailto:icba@biosaline.org.ae)  
Phone: +971 4 304 63 00

## ICBA Regional Representative Office

Central Asia and South Caucasus  
6 Osiyo Street, P.O. Box 4375  
Tashkent, 100083 Uzbekistan  
Email: [icba@biosaline.org.ae](mailto:icba@biosaline.org.ae)  
Phone: +998 71 237 21 69

[www.biosaline.org](http://www.biosaline.org)

     ICBA Agriculture