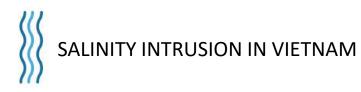**Asia Water Forum 2022**
8–11 August 2022 • Online

Focus Area 3: _Productive water in agriculture and the economy_____

Session Title: Water-by-Wind project to tackle salinity intrusion problem at the delta basin in Southern Vietnam

Schedule: 09 August 2022 (Tue) | 3:00pm-4-30pm. (GMT+8)

ADB

SALINITY INTRUSION IN VIETNAM

Causes of salinity intrusion in the Mekong Delta, Vietnam
- Increasing construction of upstream dams in China, Cambodia, Laos, Thailand
- Raising sea level

Year 2016 and 2020, this region has seen the highest salinity level in the river upto 100km inland

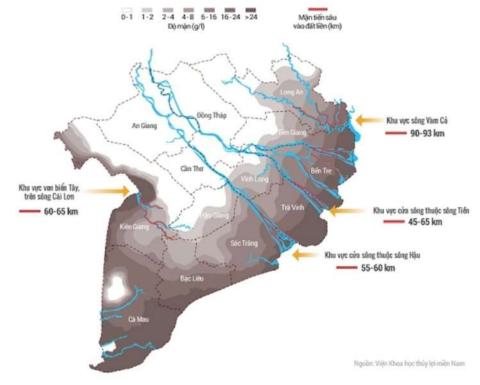Provinces affected the most are Ben Tre, Tra Vinh, Bac Lieu, Ca Mau

Figure 1: Saline intrusion map of the mekong delta, vietnam

SALINITY INTRUSION IN VIETNAM

Salinity intrusion affect domestic life of farmers. Freshwater needs to be transported by truck from over 100km inland but the cost has become too high (more than 10$/c.u.m

In Ben Tre in 2020, more than 57,000 household did not have freshwater

Salinity intrusion also limits the agriculture production activities, especially rice cultivation. The yield loss could go upto 50%, even when using saline tolerant varieties

Farmers are converting rice farms to shrimp ponds and fish ponds, which further damage the soil due to the excessive use of antibiotic and residual foods

Figure 2: Farmer struck by drought and the lack of freshwater

Figure 3: Water delivery by truck in Soc Trang

CONCEPT DESCRIPTION FOR PROJECT 2023

APPLICATION OF RENEWABLE ENERGY INTO DESALINATION

- **Windmill generator (other types of RE sources could be considered)**

Installation of the onshore wind turbine independent from the floating structure:

- Optimized RE source for local conditions
- Energy produced used 100% for water production
- Storage of the energy produced in containerized batteries on the barge for remote operation
- Excess energy to be injected back into the grid

VIET NAM 2023

FLEXIBILITY TO ADAPT TO REGIONAL DEMAND

- The barge moves on to storage basin(s) and provides water for irrigation and domestic water users

- Different areas can be served in a same mission

- Continuous production during travel due to batteries onboard

DEMONSTRATION SYSTEM IN NINH THUAN

Characteristics:
- Operation for 6 months in Ninh Thuan, Vietnam initially by grid power
- Smaller capacity of maximum 20m3/day
- Currently supplying drinking water for 10 households and 2000 m2 of fruits
- Self-propelled barge from Vietnam

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CURRENT RESULT OF THE DEMONSTRATION

- Product water is of suitable quality for domestic consumption

- Production can satisfy domestic demand

- Supply for irrigation water should be combined with good storage solution because the demand for irrigation fluctuates depending on the season.

- Renewable energy sources must be the main driver with the combination of grid energy

- The usage of a floating body depends on the location

OTHER CONSIDERATIONS FOR RENEWABLE ENERGY

- **Solar power**
- Huge potential in the south of Vietnam
- However require a large surface area

- **Tidal power**
- Dependent on the terrain and the depth of the river bed
- For locations as flat as the Mekong Delta of Vietnam, tidal, this application is impractical.
- However for remoted islands, this would be a good