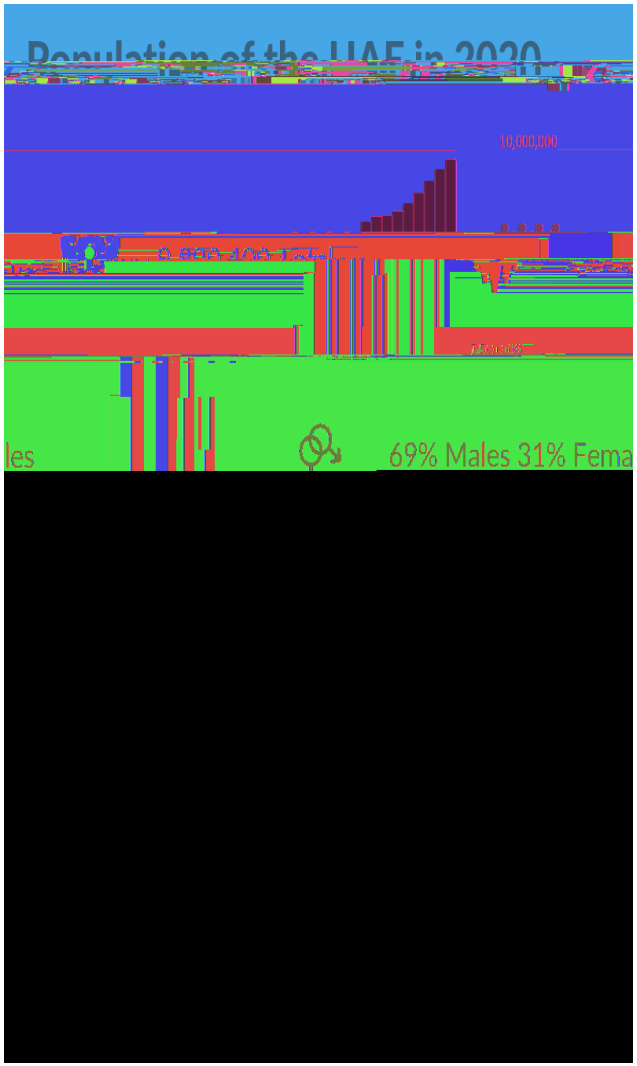
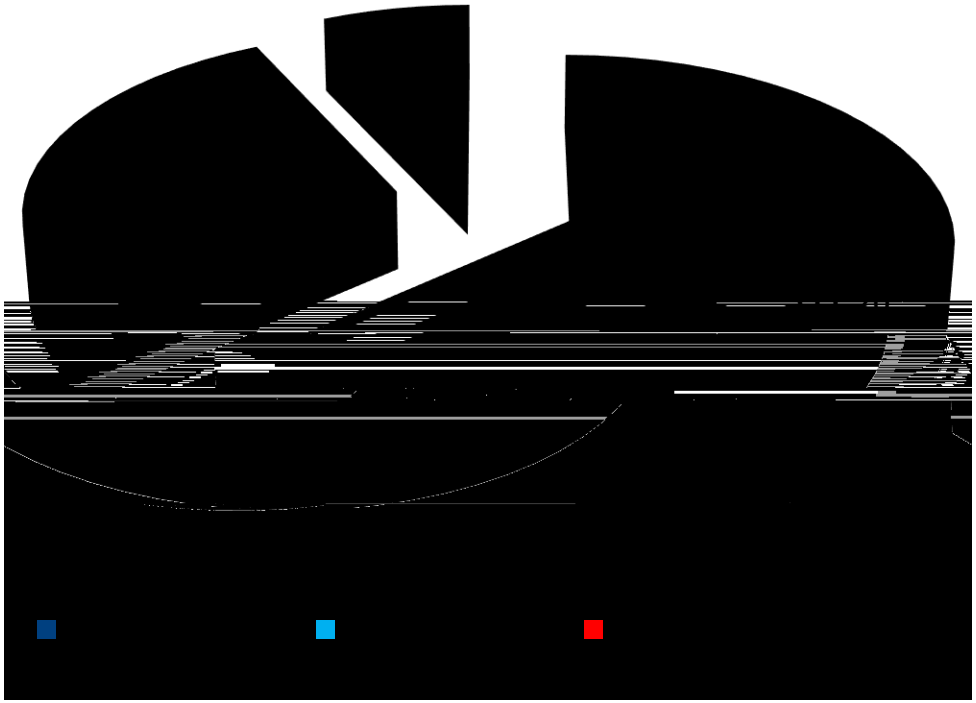
Powering Desalination through Solar Energy

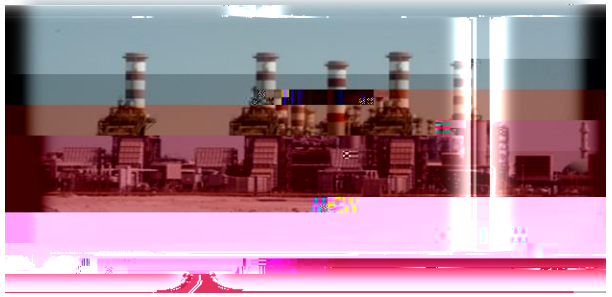
Dr Mohamed Dawoud

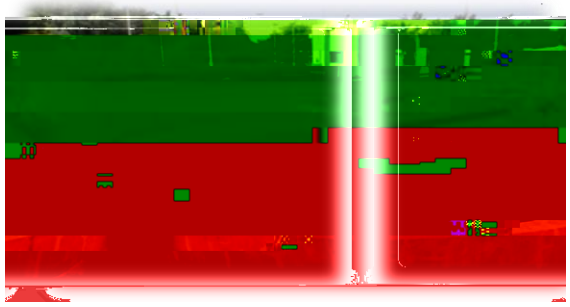
AN AMAZING DEVELOPMENT STORY (ABU DHABI)



THREE RESOURCES







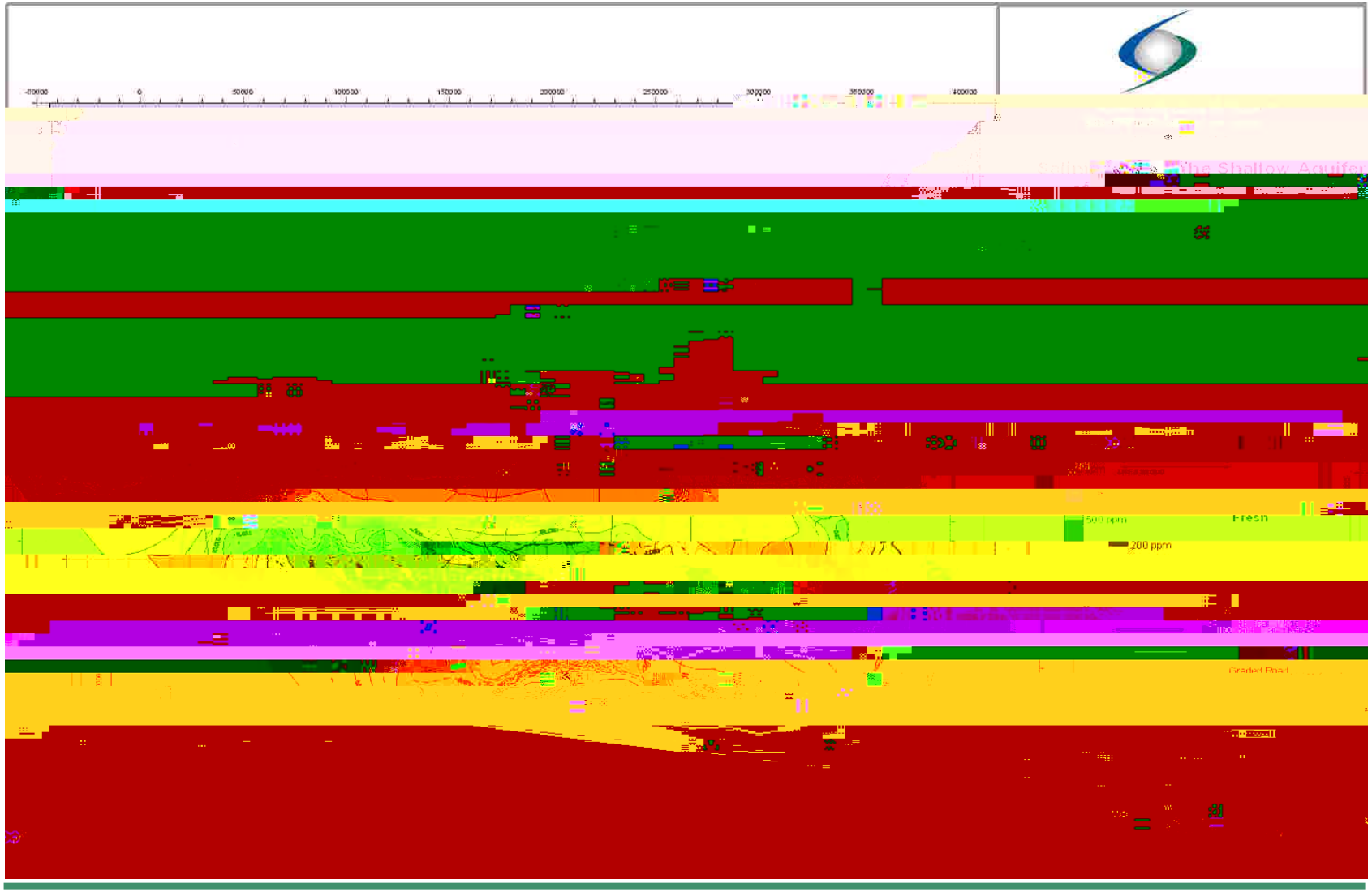
WATER DEMAND IN ABU DHABI EMIRATE

Source: SCAD (2014) Abu Dhabi Statistical yearbook; EAA& RTI (2009): International, Demand-Side Management for Electricity and Water Use in Abu Dhabi; RSB (2013): Supporting ADEV2030,
Note: Groundwater is estimated based on 2011 data. The data about groundwater for the year 2012 is under methodological review by EAD due to concerns about the accuracy of data resulting from the lack of a reliable metering system in the wells. For the time

CHALLENGES AND THREATS

- Aridity and Scarcity
- Institutional and Legal Fragmentations
- External Threats
- Internal Threats
- Climate Change

GROUNDWATER DERTIORATION



WATER, FOOD AND ENERGY NEXUS

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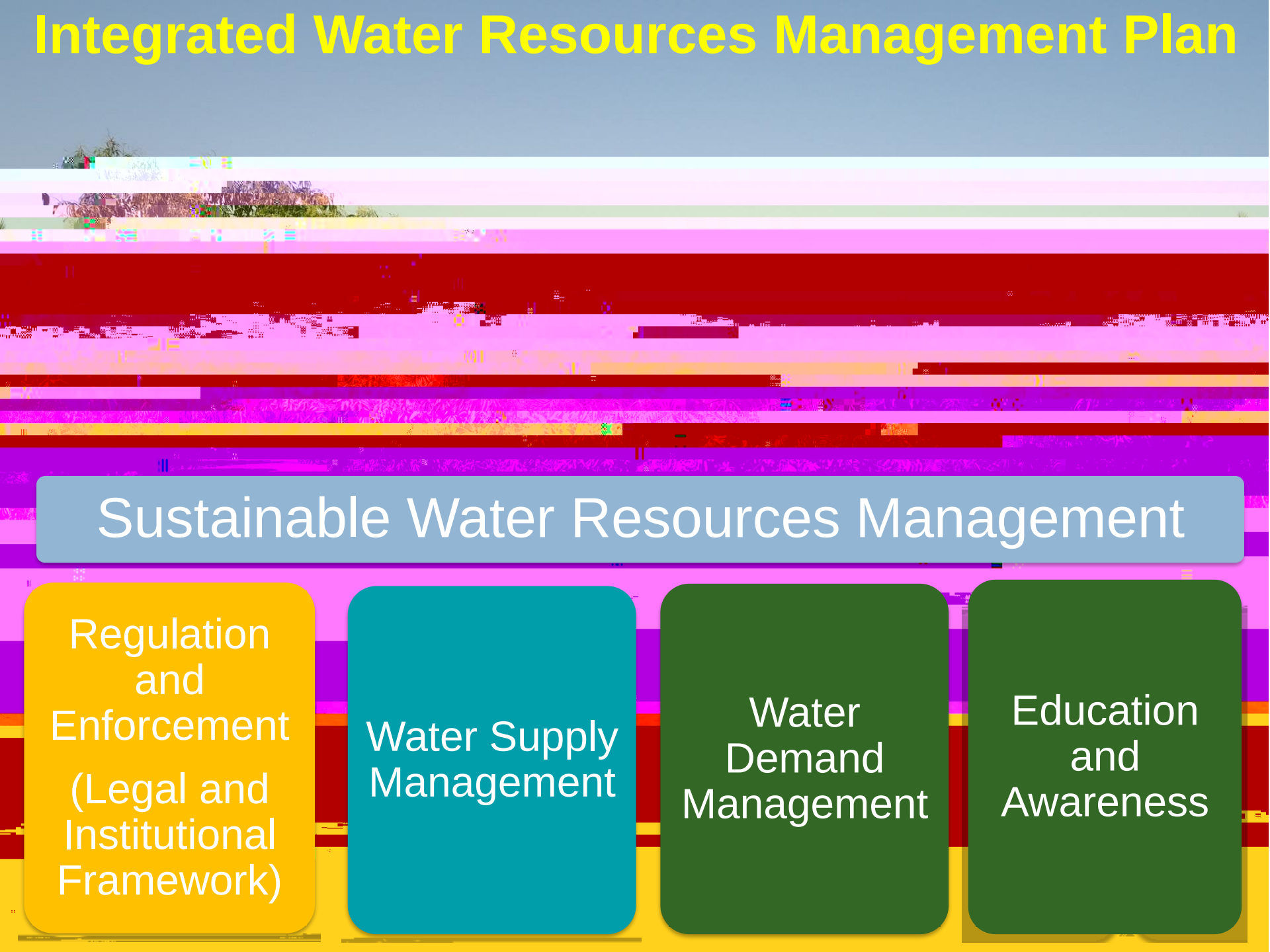
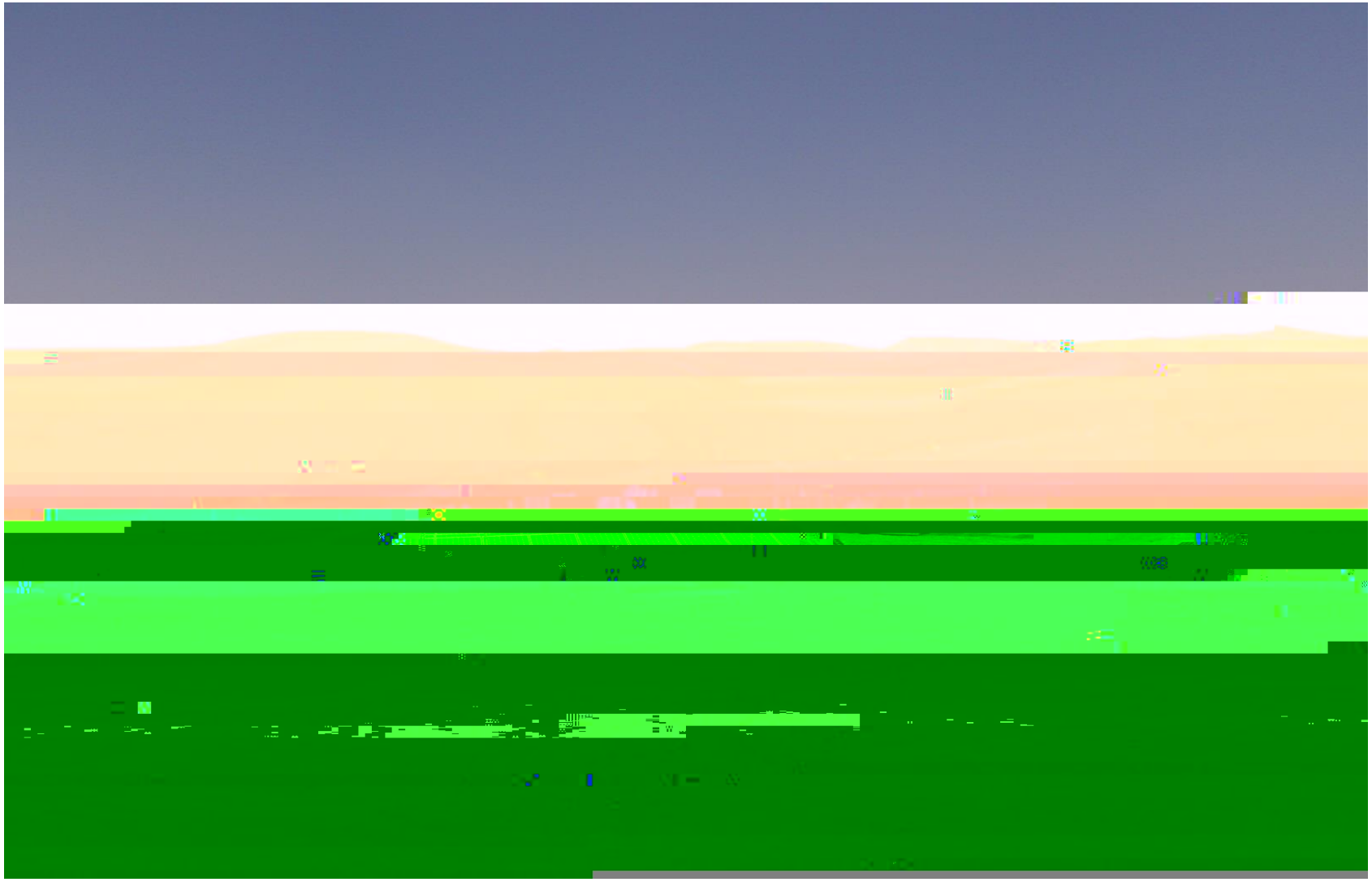
Integrated Water Resources Management Plan



Sustainable Water Resources Management

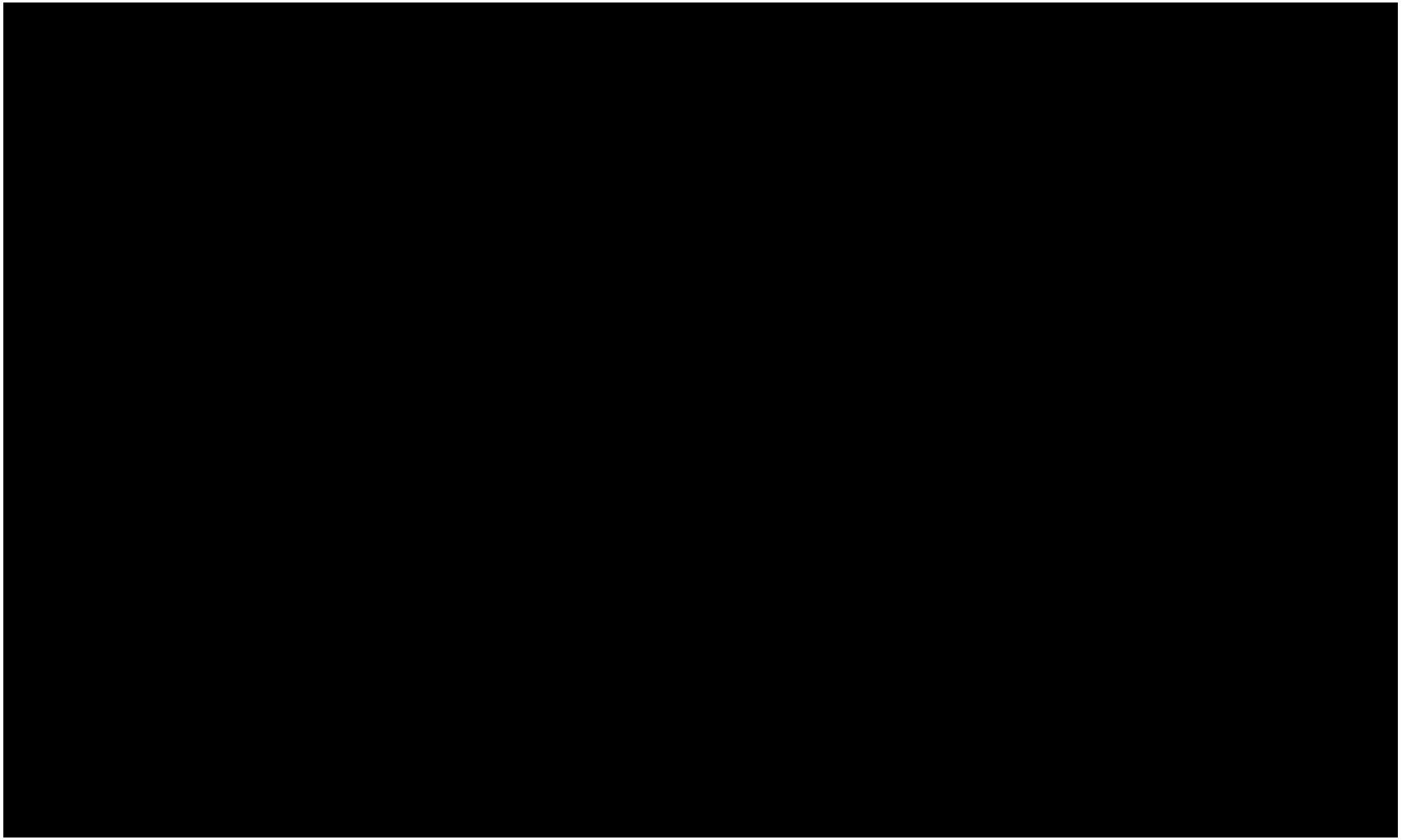
- Regulation and Enforcement (Legal and Institutional Framework)
- Water Supply Management
- Water Demand Management
- Education and Awareness

ENVIRONMENT AGENCY ABU DHABI PILOT PROJECT



ENVIRONMENT AGENCY ABU DHABI PILOT PROJECT

MASDAR PILOT PROJECT AT GHANTOUT



NEW 200MIGD RO PROJECT AT TAWEELAH

200 MIGD Reverse Osmosis (RO) at Taweelah with 41MW of Solar (PV on rooftops and land surrounding the plant)
Independent Water Project (IWP); the world s largest RO plant.
Enable :

- Decoupling water from power generation
- Reduce consumption of marginal gas cost (especially during winter)
- Enhancing security of supply (especially in winter),
- contribution to CO2 reduction

Construction by Abengoa (Spain) and SEPCO III (China)

FROM THERMAL DESALINATION TO MEMBRANE DESALINATION