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Review Article

Wealth in Water: A Blueprint for Sustainable Global Ocean Research

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Abstract

Pushing forward with leveraging water resources, promoting international cooperation, and ensuring transparency in deep-sea mining operations. There is also a concern about where to discharge the toxins of unpurified water. Artificial Intelligence has created a dominance in the applications field with a totally automated system.

Out of a thorough analysis completed with indicators, satellite radar, and A Journals, there are 30 years of research and 8 years of monitored testing to achieve accuracy and relevance. The patents in place are, Oceanic Mining System (4446636), Flexible Solar Skin in Combination with an Airplane (4768738), Cargo Torpedo (4421050), Oceanic seaplow system (4398362), and previous articles like "Is Extracting Lithium and deep-sea mining more sustainable?", "AI as a Means of Water Purification Protection", "Global Water Distribution", and "Can Deep Sea Water be Processed into Potable Water and Distributed into the Middle East'?

To report some ballpark numbers on the proposal and how we would navigate these projects, there will be an exact location of where the plant will be built as well as a water/salinity report of the water being treated. There are still issues with analyzing the cost of desalination compared to other alternatives. Deep Sea Water proves to be a higher quality water and the investment is well worth it. The surveys lean toward clients preferring the International Standards Operating Procedure. All recipients agree there should be a sense of urgency on water shortages. Currently, AI has proven to be a vital asset in eliminating biases and expenses.

More Information

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Keywords: Artificial intelligence; Synthetic intelligence; Computational intelligence; Sovereign wealth; Energy renewable oil & gas; Business development; Co-investment; Investor relations; Solar; Wind

Acronyms: MILCON: Military Construction; ECIP: Energy Conservation Investment Program; ECIP: Energy Conservation Investment Program; UESC: Utility Energy Service

Introduction

Managing resources and addressing water toxicity are crucial challenges amidst depleting sea levels. The need for sustainable solutions and responsible waste management is urgent.

Regarding Artificial Intelligence (AI), it is true it has made significant strides in various applications, enabling automation and efficiency gains. Consequently, it is essential to ensure AI systems are designed and developed responsibly, prioritizing human well-being, environmental sustainability, and ethical considerations.

The author hereby shares the proposal for the feasibility study on a water desalination plant in the Middle East region, Gulf States, and South Korea. This is for Phase 1, which focuses on identifying the top 2-3 locations within the region. Post which, we may go for Phase 2, which will cover a thorough deep-down analysis of these 3 locations focusing on intricate details and identifying possible supply chain partners and customers in the region.

Critical infrastructure with artificial Intelligence (AI) can eliminate expensive costs and turn complex systems into a simple one. Most, importantly it eliminates biases and opens opportunities.

The author proposes a PhD study globally which will share measures with Artificial Intelligence (AI) indicators. The study will include an engineering feasibility study for the conversion of saltwater to freshwater globally with AI. With the increasing demand for freshwater and the scarcity of natural resources, the engineering project could potentially have significant benefits in terms of profit and sustainability.

Facilities will be investigated to provide a reliable source of freshwater for the region and also create opportunities for the distribution and sale of valuable resources.

A specific problem lies in the commodity of water not reaching everyone. There are higher costs for water leakages.

The Feds fumble in billions of polyfluoroalkyl substances (PFAS) film-forming forms, causing water contamination. Biden contributes billions to Tribal bipartisan, and watershed logic and Operandi Modus (MO) are needed.

Purpose of the study

The study looks to improve water quality, and accurate and relevant information for making decisive decisions. Ensure collaboration for everyone to be included by sharing. Evaluate the ones writing the regulation within the industry and evaluate purchasing decisions and orchestration with transparency.

The study will evaluate costs as it is less expensive if the infrastructure takes place closer to the ocean or if the water is being shipped in etc.

Conceptual model

Independent variable – Artificial Intelligence (AI) taking a holistic approach.

Dependent variables

Scientific Ingenuity Over 350 years on, scientific articles have changed radically, yet they have retained this primary function of communicating science [1]. Digitally-born articles now include enriched links to datasets and bibliographical tools, which turn them into interactive experiences [1]. Development time spent on this platform has also directly contributed to improving the community [1].

Scientific Discovery Type of developments in science are cognitively progressive, such as are theory replaces and constitutes important [2]. Progress should be defined in terms of the potential cognitive states progress was one [2]. Mobilization Mass mobilization (MM) is an important driver for political change [3].

While some citizens organize in favor of more democratic institutions, others take to the streets to support an authoritarian status quo [3]. The data is used to compare regime change and changes throughout the region [3]. Stability Stable dynamical systems consist of dependent data [4]. Denote the myth state resulting from the initial state [4].

Status learning is an algorithm learning problem with a statistical perspective [4].

Profit

Different methods are being implemented for converting saltwater to freshwater and providing renewable energy to operate a conversion facility, including the means to store the energy and renewable sources of energy when not available.

Theoretical framework

Methods: The chosen searches are indexed with Title Searches, Articles, Research Documents, and A Journals, ProQuest. Publons, Google Scholar, Royal Society, Stanford, Elsevier SSRN, Research ID, Crossley, Research Gate, Scilit, Mendeley, Academia, Middle Eastern Studies, Middle East Journal of Applied Science & Technology, Journal of Civil Engineering Research and Technology, Research American Society of Civil Engineers are used.

The first method implemented is a high-frequency Russian customs dataset and, embargo, G7 price cap [5]. As sanctions on Russian energy were only implemented towards the end of 2022 and as global prices for oil and gas soared- Russia's goods exports reached a record $532 billion in 2022, resulting in an all-time high trade surplus of $316 billion [5]. The US Federal government cannot be undermined in compliance for humanitarian reasons.

Decision-making spills over into the domestic refining industry [5]. When considering AI the wealth of the nation must be considered. The case with Russia proposes there is a large issue with the sanctions on Russia with price cap-related restrictions on shipping, maritime insurance, and other services [5].

Russia reached a record-high trade surplus of $316 billion in 2022 through the Congress embargo (Babina et al, 2023). Extremely high energy prices and a collapse in imports were the key drivers [5]. Russia has the power to sustain the hits with new buyers establishing their presence [5].

Blue Ocean – A new value enables them to achieve excellence, in the banking industry and away from competitors, the current research focused on how to strengthen the strategy of the Blue Ocean in the banking industry by adopting the technology of marketing intelligence [6]. The business world today is very competitive and its decision-maker has to change its strategy to achieve sustainability in a knowledge-based economy [6]. Strategy for banking institutions with superior capabilities to adopt the techniques of marketing intelligence to deal with such competitive environments where the only profit is the new value [6].Out-of-the-box mindset.

AI	
Designing Zones	
Extensive Zone	Infrastructure
Investing	Satellites
Networking	ArcGIS
Partnerships	Lining Atlas
Top Engineers	
Institutions	
Protect against sea water threats	
Simplify complex situations	

Definitions

Ecological indicators and probability risk characterization methods were rarely applied in past urban ecological risk assessments because of the differences and the deviation of theoretical probability distribution and identity [7].

Epistemology- A problem of growth with knowledge [8]. The growth of knowledge is studied best by studying the growth of scientific knowledge [8].

Holistic – The holistic approach is a comprehensible model that is believed to be the heart of science [9]. The philosophy behind holistic care is based on the idea of holism which emphasizes human beings the whole is greater than the sum of its parts and that mind and spirit affect the body [9]. Providers of holistic care consider a patient as a whole within his/her environment and realize that a patient is made up of a body mind and spirit [9].

Modus Operandi (MO) - way of operating

Twin Water – Smart Water Grid (SWG) plays a critical role in sustaining cities' economic and social development, but challenges remain in fully realizing the benefits of SWG [10]. While Digital Twin (DT) has been discussed in some literature for possible SWG applications, there has been limited, or no technical framework developed to facilitate SWG operation and management [10]. One important application of digital Twin augmented Intelligence is illustrated to timely detect any localized anomaly events, which may include, pipe bursts and unauthorized water usage [10].

Philosophy - There is no method peculiar to philosophy (Philosophy, 2004, pg3).

Language analysis – the problem of philosophy if there is one is linguistic usage, or the meaning of the words [8].

Assumptions

It is the cognitive attitudes of the world around us that dictate the outcome. The outcome has already been decided we are merely acting in a play. Watershed morphometry is a crucial factor in determining the impact of tectonic processes on the landscape [11].

By analyzing the shape and geometry of watersheds at a regional scale, we can identify the relative significance of tectonic deformation versus erosion in landscape evolution [11]. Through a quantitative assessment of watershed development in relation to regional tectonics, we can better understand the morpotectonic situations and their implications for the broader landscape [11]. Limitations lie in the time, organization, engineering firms selected, and financial lending.

Bipartisan infrastructure law

Case Study Federal policy supports the resolution of disputes regarding Indian water rights through negotiated settlements [12]. The Bipartisan Infrastructure Law insists more than $13 billion in Tribal communities across the country [12].

Saudi Arabia's water demand

The total water demand in the Kingdom of Saudi Arabia increased from 19.2 BCM to 24.6 BCM between 2011 and 2015 (Fanack 2021). The average annual growth of water demand is 7%. The water demand was 17.4 BCM in 2019, of which 20% was for urban (domestic and commercial) purposes, 8% for industrial purposes, and 72% for agricultural purposes (Fanack 2021). A comparison between the sectoral water demands over the period 2010-2019 was conducted, as shown in (Fanack 2021).

Contribution of current projects

Conversion of 1,000,000 L of water per day into freshwater. East Western 5 engineers completed similar projects in the past and are familiar with the Middle East and publicly traded.

According to the research methodology map in **Appendix A**

Test validity and reliability:

1. What do you plan to use the treated water for?

   The Parliament of Western Australia is honored to be situated on the ancestral lands of the Whadjuk Noongar people [13]. The Parliament acknowledges the First Australians as the traditional owners of the lands we represent and pays respects to their Elders both past and present [13].

2. What is the average cost, per kiloliter… for the Perth Seawater Desalination Plant [13,14]?

   The total unit cost, taking into consideration construction costs and conveyance infrastructure, makes the total cost of desalinated water to be approximately $2-$3/kL [13].

3. What is the average cost, per kilolitre, for the Southern Seawater Desalination plant for the following years [13].

   The operating costs are estimated to be $1.01/kL the total cost, taking into consideration construction costs and conveyance infrastructure, making the total cost of desalinated water to be approximately $2-$3/kL [13].

The total project costs were AUS$387m, with annual running costs of under $20m-less than one dollar per week per household (The Motley Fool, 2023). The anticipated water cost had been estimated at $1.17/kl (The Motley Fool, 2023). $142m to further augment supply capacity (The Motley Fool, 2023).

Electricity for the desalination plant which has an overall 24MW requirement and a production demand of 4.0kWh/kl to 6.0kWh/kl comes from the new 80MW Emu Downs Wind Farm, which consists of 48 wind turbines located 39km east of Cervantes (The Motley Fool, 2023).

Perth seawater desalination plant

Plant type: SWRO (The Motley Fool, 2023).

Capacity: 140,000m3/d (The Motley Fool, 2023).

Design expansion capacity: 250,000m3/d

Annual output: 45GL. (The Motley Fool, 2023) 25-year contract (The Motley Fool, 2023)

Zones: Clarion Clipperton Zone (CCZ)

Noise propagation model

Industries served were Steel, Water, Artificial Intelligence, Textile, and Oil & Gas.

The cost of building a desalination plant is $87 MM was spent on Kay Bailey Hutchison brackish groundwater desalination plant in Texas [15]. The 2010 biennial report on seawater desalination projected that it will cost approximately $32MM to build a 2.6MGD seawater desalination plan and approximately $658 million to build a 100 MGD seawater desalination plant in Texas [15]. Brackish water can range from $1.25 to $2.60 per 1,000 gallons, whereas desalinated water may cost anywhere from $3.60 to $5.80 per 1000 gallons [15].

In Texas, there are municipal capacity of 142 million gallons per day which includes 85 million gallons per day, 54 million gallons per day, and 2.5 [15]. There are 325 brackish groundwater desalination plants in the United States [15]. There are 18,426 desalination facilities located in 150 countries worldwide with a total capacity of 22.9 Billion US gallons [15].

9.2 MM gallons of water per day can compensate 4,500 to 100,000. Residents [16]. Floating plants if at least 50 MW capacity would be required for the industrialized nations [16].

The cost of building a desalination plant is 50,000,000 USD, with an output of 1,000,000, and an annual water output of 365,000,000 liters. The number of people to be served is 1,000,000; the daily use of water by all sources is 100 liters; water needed per day is 100,000,000 liters; annual water use is 36,500,000,000 liters; and the output/use is 3.65 years. The total revenue generated was 912,500,000 USD; the cost of building a desalination plant was 50,000,000 USD, and maintenance was 2,000,000 USD.

Plants in Japan

1) **Capacity:** 68,766 m3/day for industry and 61,119 m3/day for living, a total of 129,885 m3/day with the largest RO 40,000 m3/day plant of the Okinawa water supply system [17].

2) **Use:** 53% for industry including power generation and 47% for water supply systems (GOTO, 2023) [16].

3) **Feed:** For water supply systems, mostly seawater with some brackish where the ED process is applied. For industry, seawater, brackish, and sometimes groundwater are used [17].

4) **Process:** 88% of RO, 6.5% of ED for brackish, 3.5% of MSF, and 1.8% of ME.

5) **Plant supplier:** Almost all are domestic with some exceptions of US suppliers in the 1970s [17].

Conclusion

There is nothing necessary to the man of science than its history and the logic of discovery in the way error is dictated, the use of hypothesis, imagination, the model testing [8]. In this study, it is recommended for construction to integrate higher quality production and lower energy. The strategy is expected to increase profit, contribute opportunities and better quality public image, and eliminate biases. It can be concluded that increasing international partners, sovereign wealth funds serving capital markets, and private investors will lift smart infrastructure. Some future frameworks are joint ventures, strategic partnerships, Build-Operate-Transfer (BOT), Build-Operate-Own (BOO), Engineering Procurement -Services Support (EPS), and Private Finance Imitative (PFI) [18].

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