

Smart Solutions for Aqaba's Climate Challenges

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Abstract: Aqaba's rare southern winds **Azyab** – الأريب carry industrial pollutants from its developing economic zone, causing respiratory distress and disrupting residents' lives. To address this, the proposal advocates for an electronic platform integrating ASEZA's existing environmental monitoring stations. This real-time dashboard would alert authorities to harmful wind shifts, enabling swift decisions to temporarily reduce factory operations. The goal is to proactively balance industrial growth with public health and environmental sustainability, protecting visitors and residents like Mohammad's family.



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The sun was dipping below the horizon, painting the sky in fiery tints of orange and pink. Mohammad smiled, watching his children, Layla and Omar, splash with delight in the gentle waves of the Gulf of Aqaba. His wife, Salma, laughed, pointing out a beautiful seashell Omar had just discovered. It was a perfect evening on Aqaba's south beach – the air warm and soft, a light, familiar breeze



accompanying the sound of the lapping waves. This was their city, their home, a place they valued not just for its stunning natural beauty and its usually peaceful climate, but also for the promising future heralded by the establishment of the Aqaba Special Economic Zone Authority (ASEZA) and the expansion of the industrial zone in the far south. Like

many residents, Mohammad had watched this development with pride and admiration; it truly reflected the potential being bound in Aqaba's vision.

Aqaba's atmosphere is familiar to its people, characterized by moderate humidity, heat, and



moderately fast northern winds throughout the summer and spring, and warm, mild weather in autumn and winter. It's as if there's a shared secret between the city and its residents, even when the wind direction and speed fluctuate.



But then, a sudden shift in the air. A different kind of wind began to stir. Not the usual pleasant northern winds they were used to. This was the **Azyab** – الأزيب the southern winds. At first, it was just a change in direction, a gentle whisper from the south. But swiftly, the sea turned turbulent, and a strong, unpleasantly strong marine odor began to gust through the air, mixing with something far more concerning. Mohammad's youngest, four-year-old Layla, started to cough, her playful loud tweets replaced by a concerning moment. Omar, usually oblivious in his sandcastle construction, rubbed his nose and looked up, confused. Salma frowned, pulling Layla closer, her eyes scanning the horizon with a growing unease. "It's those smells again," she murmured, her voice filled with worry, recognizing the unwelcome indicator. The joyful, peaceful evening they had anticipated was rapidly dissolving.

As they always say, everything comes with a price. When those southern weather fluctuations happen – a disharmony that disrupts Aqaba's peaceful melody – factory pollutants and harmful chemical odors spread throughout our city. These are more than just unpleasant odors; they cause minor harm, especially to individuals suffering from respiratory problems and sensitivities to these pollutants and smells, preventing them from carrying out their activities and living their lives normally. For families like Mohammad's, these winds bring a tangible threat to their well-being, disrupting their ability to simply breathe freely and enjoy their trip. Fortunately, these conditions are very rare throughout the year, but their impact is undeniable when they occur.

A Proactive Solution for a Resilient City



This is a moment for meaningful action. It's worth mentioning that the ASEZA has paid great attention to monitoring environmental elements and making

Aqaba a suitable environment for attracting investments in various sectors such as tourism, trade, and services. ASEZA has invested significant funds to develop the city and make it a model for modern and resilient cities with high distinction and royal patronage. This includes establishing continuous monitoring stations on land and sea as one of the development areas that the ASEZA has provided, developed, and worked to sustain in pursuit of achieving its desired goals.

From this foundation, the idea arose to create an electronic platform that connects all components of these continuous monitoring systems. Imagine a system where, as soon as the **Azyab** – الأُزَيْب winds pick up and environmental data shifts, decision-makers are immediately alerted. This online dashboard, fed by real-time information from those land and sea monitoring stations, would display prevailing weather conditions and any changes that may occur and affect the health of Aqaba's residents and visitors.

With this crucial information at their fingertips, authorities could swiftly make informed choices – quickly making decisions to reduce the production capacity of factories or begin to halt industrial operations until the southern weather fluctuations are over.

I firmly believe that this idea aligns perfectly with the ongoing efforts of the ASEZA to make Aqaba a modern and sustainable city. It's not just about technical innovation; it's a valuable and proactive step towards achieving a vital balance between industrial development and the preservation of the environment and public health. It's about the very real impact of SDGs localization in daily life – protecting Mohammad's family and every other family and visitors in Aqaba, ensuring their joyful evenings aren't disturbed by preventable environmental hazards.

Finally, I hope to contribute to realizing this ambitious vision to serve my city, ensuring that development enhances, rather than detracts from, the well-being of Aqaba's beloved residents and visitors.



Suggested Reading:

How Smart Cities Are Using Data to Fight Air Pollution – World Economic Forum

How Smart Cities Are Addressing Air Pollution Through Monitoring and Alerting – Airly

Smart city research: A holistic and state-of-the-art literature review

State-of-the-art review of resilient smart cities: Progress and challenges