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From Waste to Wealth:

A **Sustainable** Solution for **Climate Change** in Yemen

Once in a gargantuan Yemeni fish market purchasing fish for the family with the sunbeam beating down on like a relentless drum, pounding the market with its heat, a quick question arose in my brain which had me perplexed all day. What happens to the mountains of fish waste generated daily in Yemen's bustling fish markets was a question that had my mind blanked, making me forget the purpose of my presence in that market. The question crossed my mind when witnessing a huge amount of waste thrown away with no endeavor to strategize a hasty utilization plan to trace all the waste and place it in the right place. When investigating the matter, I found shocking facts about the dilemma, caused by fish waste and its disastrous consequences on not only the environment but also the figures of the community. In addition, I came to know that this mismanagement of fish waste has burdened the shoulders of the Yemeni environment, causing a tremendous environmental crisis.

Yemen's ecosystem is to encounter a significant multitude of threats ranging from pollution, habitat degradation, and the potential loss of biodiversity if this hassle is not dealt with judiciously. When digging to familiarize ourselves with the confluence of factors, causing those threats, the disrupted infrastructure, mainly creating waste management systems, has led to the accumulation of fish waste seen in the markets. Adding to that, traditional fishing practices used by fishers manifest not only a lack of proper waste disposal protocols but also a lack of awareness and education regarding sustainable fishing practices.

Later, I held myself accountable for searching for how the Yemeni youth is juggling with this disaster, and whether or not, entities have moved swiftly to rescue our climate change. In 2013, I found, that the landscape of Shabwah, Beir Ali witnessed an innovative solution to the fish waste challenge. Local farmers, faced with the limitations of conventional farming methods, turned to a unique approach to fertilizing their crops. By creating holes in the desert, they created makeshift composting pits where fish waste was deposited. Over time, this organic matter was used to enrich the soil and provide essential nutrients to crops. This ingenious method not only improved soil fertility but also reduced environmental pollution, demonstrating the captivating creativity of the local community.

When searching more, I happened to find more on that; a developmental project named the SFISH project implemented by SMEPS, in partnership with the UNDP and funded by the World Bank, came to revive this notion through its sustainable interventions. The SFISH project aims to improve

productivity and resilience in the fish value chain to create job opportunities and improve livelihoods food security, and household nutrition. This will be done by providing direct technical and financial support to MSMEs, business cooperative associations, and lead firms in critical fisheries sectors to sustain their impact in sustaining demand for products and services in the sector through technical support, institutional strengthening, risk management, financial and administrative support, business advisory and consultancy services, business continuity management and asset transfers.

SMEPS with the SFISH project initiated an initiative in Yemen to transform a potential environmental problem into a valuable resource. As fish waste accumulated in markets and sites, the SMEPS project identified an opportunity to repurpose this organic material. In Taiz Mocha, three large pits were dug to accommodate over 350 kilograms of fish waste.

To clarify the process more, fish waste and remains are collected from local fish markets and transported to a designated preparation site. Upon arrival, the waste is layered with animal manure in a composting pit, ensuring a balanced nutrient mix. The mixture is regularly moistened to facilitate decomposition. After a minimum of three months, the mature compost is extracted, dried, and packaged into various sizes for distribution to farmers. This sustainable process not only addresses the environmental issue of fish waste but also provides a valuable organic fertilizer for agricultural purposes. This is a preliminary experiment and it is expected that approximately (300-500) kilograms will be produced per pit.

To facilitate this process more, SMEPS consultants connected farmers with fish waste transporters. These farmers were provided with guidance on handling and utilizing fish waste effectively. The process involves collecting fish waste from local markets and transporting it to designated composting sites. There, it is combined with organic matter like plant debris or animal manure and left to decompose. This natural process creates a nutrient-rich compost that can significantly enhance agricultural productivity.

This sustainable approach offers numerous benefits. By diverting fish waste, it significantly reduces pollution and greenhouse gas emissions, safeguarding the environment. The organic fertilizer derived from fish waste improves soil structure, nutrient content, and water retention capacity, leading to healthier soils. As a result, crops fertilized with this organic compost often exhibit increased growth and higher yields, boosting agricultural productivity. Additionally, the project reduces reliance on chemical fertilizers, contributing to economic growth and environmental sustainability. The results of what the project did will be harvested soon, showing how this initiative can change lives and save our green planet.

The implementation of this innovative project has faced several challenges. Logistical constraints, such as a lack of suitable transportation infrastructure, have hindered the efficient collection and transport of fish waste. Financial limitations have restricted the project's growth and prevented the acquisition of necessary equipment. Furthermore, a shortage of essential resources, including labor and expertise, has impeded the project's progress. To overcome these challenges, it is crucial to seek grants and partnerships, invest in infrastructure, conduct research and development, and scale up the project to other areas. This way, the project can maximize its potential and contribute to a more sustainable future.

As I was done with my search, I came to a wondering conclusion that answered the question I stated earlier and, nonetheless, obliged me to ask further questions. What will happen if all the mountains of fish waste generated daily in Yemen's bustling fish markets are utilized properly? Coming to think of it could this untapped resource be the key to unlocking a sustainable future, where the very waste that threatens our environment becomes the nourishment for our land?

Pictures for The Real Initiative

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