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A Dangerous Addiction: *Qat* and its Draining of Yemen's Water, Economy, and People

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Yemen is an extremely poor, underdeveloped, and volatile country. Along with political instability, the state faces environmental, economic, and social crises. Q*at* is a crop whose large scale cultivation and local consumption threatens Yemen's future and vitality. *Qat's* role in Yemen is both far-reaching and multi-faceted, negatively affecting environmental sustainability and economic and societal well-being. While *qat* is not the sole cause of Yemen's malaise, it is clearly a significant and detrimental factor whose effects exacerbate existing structural problems within the country.

Any serious discussion of qat must take into account Yemen's demography and economy. Home to approximately 24 million people, in 2012 Yemen had a large youth component with 43 percent of the population under the age of 14 and a further 23 percent aged 15 to 24. With a population expected to reach 60 million by 2035, in 2012, Yemen's 2.5 percent population growth outpaced that of its 0.1 percent GDP growth and its young and fast-growing youth population faces bleak economic prospects illustrated by Yemen's 35 percent unemployment rate. Meanwhile, the state's GDP/per capita ranked 188th out of 229 countries, and fell 11.5 percent from $2,600 in 2009 to $2,300 in 2012, as its economic health deteriorated.

During the past decade, Yemen's economic growth has been driven primarily by oil revenues rather than from the state generated domestic labor opportunities, infrastructure projects, or investment, which are necessary conditions for long term sustainable growth. Oil, Yemen's main source of revenue, is drying up. Production, which peaked at 450,000 barrels a day (b/d)in 2001, decreased to 207,700 b/day in 2009. Yemen's shrinking oil reserves account for roughly 25 percent of Yemen's GDP and 70 percent of government revenues,

figures likely to drop as its oil dries-up. Unless the government diversifies its economy, it will have increasingly less revenue available, increasing the difficulty of addressing pressing concerns such as the *qat* crisis.

Qat users chew on the plant's leaves that produce an intoxicating effect. The *qat* plant can be found across East Africa and the southern part of the Arabian Peninsula and is thought to have originally been brought to Yemen in 1424. The plant grows at altitudes of 1,500 to 2,000 meters above sea level and has been traditionally cultivated on hillside terraces. Able to survive for 75 to 100 years, *qat* is a hardy, drought-resistant crop with few husbandry problems and can be grown in large or small holdings and harvested for most of the year. *Qat's* market price is relatively stable and at least five times more profitable than other crops. These higher market prices, along with *qat*'s resistance to climate extremes, ensure farmers prefer to cultivate *qat* rather than traditional food crops.

Qat is produced primarily for its recreational and intoxicating effects. Fresh *qat* leaves contain the active ingredient cathinone, whose pharmacological effects are similar to those of amphetamines. Cathinone is considered a Schedule I drug by the U.S. government, which has made it illegal there and classified as a controlled substance. Using *qat* produces positive sensations of euphoria, energy, confidence, loquaciousness, and sometimes hyperactivity. It also generates undesirable effects, however, including sleeplessness, loss of appetite, mild paranoia and, in extreme cases, psychosis. While *qat* consumption does not lead to physical addiction, the habit may bring about psychological dependence. Although *qat* produces only limited immediate harm to individual health, its most dangerous consequences are to Yemen's water resources, which damages the economy and tears at the social fabric of Yemeni society.

Qat cultivation is expanding across Yemen, consuming precious arable land, and draining Yemen's meager water resources. With only 3 percent arable land, Yemen is mostly desert. Water scarcity, exacerbated by unsustainable *qat* production, limits options to expand the amount of arable land. Yemeni farmers rushing to produce *qat* have used vast amounts of the country's modest water resources and seriously endangered the state's water supply. Today, Yemen is facing one of the world's most severe water crises. Yemen's subterranean aquifers holding rain water are rapidly diminishing.

Traditionally, Yemeni farmers carefully conserved water by collecting rain in shallow wells in terraced hills in a process that ensured a balance between supply and demand. However, such practices fell by the wayside in the 1960s when cheap foreign grain priced local Yemeni farmers out of the market causing them to shift production to *qat*, which was more lucrative but also consumes five times as much water as traditional crops. Previously, cultivating *qat* was limited

because it demanded so much water, but the proliferation of motorized drills that were able to pump water from previously unavailable aquifers allowed farmers to drastically and unsustainably expand cultivation.

For instance, between 1970 and 2000, the amount of land used to cultivate *qat* expanded thirteen-fold from 8,000 to 103,000 hectares and it continues expanding at a rate of 12 percent a year. The central government has been unable to regulate how farmers use water to produce *qat* crops. Farmers access groundwater from between 52,000 to 55,000 wells using mechanized pumps, of which nearly 99 percent are unlicensed. Furthermore, government fuel subsidies have indirectly encouraged water-drilling by lowering the cost of operating these pumps

Today, Yemen consumes water at 2.5 times its natural replenishment rate. The country's water table is falling by 1.83 meters a year and underground aquifers cannot naturally renew their supplies at rates that meet the needs of the country's population, which has been growing at 2.5 percent a year. Aided by mechanized pumps, *qat* consumes most of Yemen's underground water, accounting for 33.3 percent of Yemen's current water consumption. As Yemen's *qat* production expands, greater demands are placed on the country's diminishing water resources.

The harm wrought by *qat* on Yemen's water table has repercussions for the country's environment and the well-being of its citizens. The excessive water pumping, in combination with a low aquifer rate of replenishment, has allowed saltwater to enter underground aquifers, contaminating Yemen's groundwater. Excluding climate change, the World Bank predicts that reductions in groundwater reserves will reduce Yemen's agricultural output by up to 40 percent during the next two to three decades, as well as increase desertification, which is already threatening 17 percent of Yemen's agricultural land.

Water scarcity is not limited to rural areas but also affects Yemen's urban areas. Yemen's capital, Sana'a, may become the first capital city in the world to run out of water. Sana'a's population of 2 million includes a large number of "water migrants" fleeing dried-up regions of the country and contributing to the city's 7 percent annual population growth. Authorities are holding serious discussions to determine whether to relocate the capital to the coast in order to take greater advantage of desalination opportunities. As Sana'a lies more than 2000 meters above sea level, plans to deliver desalinated water 250 kilometers from the Red Sea coast would be prohibitively expensive and lead to prices of $10 per cubic meter of water in a country where half its citizens live on less than $2 a day.

At the individual level, water and food insecurity, both exacerbated by *qat,* present serious challenges to Yemeni citizens. Already, the country's per-capita availability of water stands at 10 percent of the regional average and 2 percent of the world average. A typical Yemeni survives on one-fifth of what the World Health Organization considers an adequate amount of water. In many urban areas, the government supplies water only four times a week, and in much of the country there is no public water supply at all. Due to water scarcity and prioritization, largely as a result of *qat* cultivation, the price of water has increased limiting people's access to potable water. For example, in 2011, the price of water increased 50 percent in two months. Households located in areas where there was no reliable supply of public water were sold water from the back of a truck at prices three times the going rate. A lack of access to water often means the absence of proper sanitary facilities enabling the spread of many diseases such as *schistosomiasias*, a parasite contracted through contact with untreated water and currently affecting 3.5 million Yemenis.

The appropriation of limited resources for *qat's* cultivation also drives food insecurity and hunger. According to a 2010 World Food Program study, 32 percent of the population (6.8 million) were found to be food insecure. Of this group, 2.5 million people were considered severely food insecure. The United Nations reports that adequate food consumption has dropped from 76 percent in 2006 to 40 percent in 2008, with inadequate food consumption increasing from 9 percent to 24 percent. In one *Gallup* survey, 45 percent of respondents spoke of being unable to afford food for their families at various times during the past year. In 2012, exacerbated by political and violent conflict, 5 million Yemenis faced severe hunger, which was double the amount in 2009. With 43 percent of the population under the age of 14, it is children who are the most exposed and vulnerable to food insecurity. Malnourishment can impede proper physical and mental development in youth, and the repercussions are carried through to adulthood. Additionally, Yemen has little subsistence agriculture to provide people with sources of "resilience," meaning that if it were not for food imports, paid for by diminishing oil revenues, millions of people would go from "food insecure" to starving.

In recent decades the Yemeni economy has demonstrated its dependence on two commodities: oil and *qat*. Each of these products has been mismanaged in different ways that have negatively affected the national economy. Yemen's modest oil reserves have provided the government with easy revenue that it has spent importing consumer goods rather than focusing on developing its own economy. While on the other hand, *qat* cultivation has come to dominate the local economy, squeezing out less profitable agriculture and investment in production of other essential goods.

As oil production diminishes, *qat* has taken on an increasingly prominent role in Yemen's economy. In 2005, *qat's* contribution to Yemen's GDP was equivalent to two-thirds of the contribution of oil, and, today, *qat* contributes close to 10 percent of Yemen's GDP. In terms of work force, one in seven Yemenis is employed in the production and distribution of *qat*, which is more than the number of people employed by Yemen's largest employer –the government. In today's Yemen, *qat* cultivation is a core feature of the national economy.

Addiction to *qat* affects Yemen's productivity. *Qat* is chewed at informal social gatherings in homes or salons and involves a particular social etiquette. These types of gatherings, called *majlis al-qat*, are known to last anywhere between two and twelve hours. Productivity suffers, with up to 25 percent of working hours devoted to *qat* consumption. While *qat* is produced primarily for domestic consumption, a large portion of income earned from its cultivation is recycled back into the economy to buy *qat* for personal consumption. The average Yemeni household spends 10 percent of its budget on *qat*, which is one of the main reasons the World Bank identified *qat* as a key catalyst of poverty in Yemen. Money otherwise spent on basic food and medicine is used for *qat* instead, contributing to malnourishment. The "*Qat* Debt Trap" leads many families without means into a circle of debt that demands constant borrowing to purchase *qat*. Nearly 20 percent of all Yemeni families fall into debt in order to finance their *qat* habit.

Until the 1960s, *qat* chewing was an occasional pastime limited mostly to the rich. Today, 72 percent of males and 33 of females are reported to be using q*at.* It has been suggested that there are more than 10 million daily *qat* users in Yemen, including a growing proportion of women who had previously been culturally excluded. *Qat* consumption usually begins at an early age; 15 to 20 percent of children under the age 12 are considered daily users. As Yemen confronts the repercussions of its own "Arab Spring," the country faces the daunting challenges of a young, poor, and fast growing population, and environmental and resource degradation. Inextricably linked to these challenges is the phenomenon of *qat* cultivation and consumption. Both Yemen's people and its economy are addicted to *qat*, and its unsustainable production and consumption threaten Yemen's water resources, agriculture, economic development, and its citizen's physical and financial well-being. While not the only reason for Yemen's malaise, the country's unsustainable relationship with *qat* may jeopardize the future health and development of Yemen.

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