YEMEN: CDR

Building Block

Qat

by

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YEMEN: CDR Qat

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Executive Summary

Qat is chewed by almost everyone in Yemen and has become part of the Yemeni way of life. As a crop, qat is much appreciated for its high profitability, its hardiness and drought resistance, and the few husbandry problems associated with it. Farmers also like the fact that qat can be brought to harvest during most months of the year, that it can be harvested in small or large quantities according to the farmer's need for money, and that it brings cash in on the very day of harvest.

From the economic viewpoint qat creates a regular and large transfer of money from town to country. It pays high returns to water, but is the major user of the nation's rapidly depleting groundwater. Marketing is well organized and efficient, without any big concentrations.

Past attempts at regulation proved ineffectual, and only a very small fraction of the qat tax is collected.

The qat habit has grown very rapidly over the last few years and there is little opposition to it. The medical evidence does not prove any substantial harmful effect.

Qat has become a very large part of the economy - some estimate as much as 25% of GDP, 16% of employment and 30% of water use. Government has had no explicit policy on the drug, and implicit policies are ambiguous; development programs exclude it, yet qat is a prominent part of public life.

Recently, Government has begun to take actions to curb the growth of the qat habit, and proposes to hold a national conference in 2000 to try to work out an agenda for moderating the negative impacts of the drug on the economy and on society.

The present paper looks at the issues and makes some tentative assessment of how Government may achieve its goals.

Part I Brief Overview of Key Indicators and trends

"This drug has had a profound effect on the history of Yemen... there is no individual Yemeni whose life is not affected in profound ways by qat...."
(Kennedy)

A. Origins of qat in Yemen

There is a Yemeni legend that Alexander the Great brought qat to Yemen, and one scholar has identified qat with the sacred laurel of Delphi, leaves of which Alexander the Great was reputed to have sent to Ethiopia to cure an epidemic of melancholy.

What evidence there is suggests qat was introduced to Yemen from Ethiopia in about 1300. It first came to notice at the same time as coffee at the end of the Rasulid era in Ta'iz.

Qat's original use seems to have been as a tea amongst the sufis. By the sixteenth century, it was sufficiently prevalent to merit a scholarly treatment of whether it was licit or not. The conclusion was that it was undesirable, but that it cannot be classed with hashish and cannot be declared ***haram***.

Qat came to the Zaydi highlands from the southern uplands much later but was common there by the eighteenth century. It was first recorded for science by the Danish disciple of Linnaeus, Per Forsskal, who was a member of Niebuhr's pioneering expedition in the 1760s.

By the nineteenth century, Yemen's coastal cities were regularly supplied with qat. In 1889 it was reported that "the sole city of Aden receives each year more than 1000 camel loads of qat".

Since the 1920's travellers have basically called the qat habit "universal" in Yemen.

B. The Farming of Qat

Qat Agronomy

Of the *cathula edulis* species, which is the qat consumed in Yemen, there are four cultivars, commonly called white, red, black and blue.

Edulis grows in two major forms. In mountainous areas, its form is generally a slender white tree between 2-4 meters in height. In areas of frost, it is kept pruned down and takes the form of a small shrub. All of the top quality "premium" qats come from the tree form.

Qat is a hardy plant, and drought resistant. Although an evergreen, it can go dormant under water stress. It is long lived - farmers in Wadi Dahr show trees said to be 80 years old.

Qat Husbandry

Qat cultivation extends in a rough quadrilateral throughout the highlands. It is an altitude crop, rare below 1500m. It grows in areas of rainfall of 500 - 1000mm or under irrigation.

The easiest way of propagation is by root cuttings and suckers.

Qat is usually cultivated on terraces with a slight slope. Qat plants are set between one and one and a half metres apart. The qat field needs three to four hoeings each year for weed control and aeration.

Qat may be pruned low either against frost or to prevent wind damage. It can be intercropped, particularly when young.

Fertilization and Plant Protection

Qat suffers from few pests - the main plant protection problem is a discolouring fungus. Against this, farmers throw a clay dust that may contain some sulphur. It is an all-purpose treatment – fertiliser and pesticide. Each year the trees may be dusted three to four times. When farmers prepare the trees for harvest, chemical pesticides are usually applied. A plot may be sprayed with chemical pesticides 3-5 times during the year.

Even though most farmers apply chemical fertilizers and use pesticides for qat, they try to deny it as much as possible, perhaps because they see the use of chemicals as unnatural. In almost all of the qat producing areas of the Sanaa basin, both chemical fertilizers and pesticides are widely used.

On average, farmers use about 100 kg of fertilizer per hectare. Some farmers also use manure especially in the first year of plantation.

Farmers select their pesticides and the application method on a trial and error basis. Agricultural extension programs do not provide qat farmers with any assistance on this (or on any thing else to do with qat). Generally, no precautions are taken when handling these chemicals, and there is widespread evidence of pesticide residues.

Crop Characteristics

Large scale qat plantations are not common due to land fragmentation and the need for planting on sheltered slopes. It is best cultivated at 1500 - 2400m. Where the mean average temperature is below 17^0, growth is inhibited. The plant performs best where the mean is around 19^0.

The main risk is frost, particularly where this is combined with high humidity. It is for this reason that farmers in the Sanaa area stop irrigating qat during the winter months. Nevertheless, qat plots in protected areas from cold winds are watered and thus harvested during the winter and are highly profitable.

Qat can be induced to bud under irrigation anytime except the two coldest months of the year. This allows the harvest to be staggered, and under irrigation a crop can be brought on almost at will to catch suitable market opportunities. The converse of this is that qat is a crop that can withstand thirst. In principle there is no distinctive irrigation season; farmers may choose to leave their qat dormant and then irrigate when they want to prepare the trees for harvest.

Harvest

The branches with new growth are harvested, and the whole art of qat growing is to try to get this "flush" of new growth at a time when prices are high. Farmers will invest in a tanker of water at the end of the dry season to get this flush - and then pray it does not rain as this would bring on everyone else's qat too.

Depending on the region, qat can be harvested between one and three times a year. In the Sanaa basin, two harvests per year is the maximum. A new trend is to pick the small chewable leaves.

If the shoots are not harvested in summer, the winter harvest is more plentiful.

Labour Requirement

Although absorbing substantial labour at certain times, qat is less labour intensive than cereals, vegetables or fruits. Moreover, since harvest time for qat can be delayed (within the summer months), labour demand is flexible.

Qat cultivation employs many outside labourers (from other regions). Many qat farmers only supervise and do not work in the fields themselves.

C. Qat and Farming Systems

Area planted to qat

The estimated area planted to qat in 1981 was 40-45,000 ha. By the mid-1980s the area was estimated at 60-85,000 ha.

In the 1990s, the area planted to qat is thought to have reached 90,000 ha. New terraces, sometimes almost Cyclopean earth and stoneworks, are constructed, as qat's profitability persists and justifies the heavy investment involved.

The official statistics are notoriously unreliable, but the following series is published:

Table 1. Cultivated Area of Grapes, Coffee and Qat 1970-1995 (000'ha)

Crop/Year	1970	1975	1980	1985	1988	1989	1990	1991	1992	1993	1994	1995
Grapes	10	10	12	13	15	14	17	18	19	19	21	21
Coffee	7	8	8	17	20	22	25	23	24	25	25	27
Qat	8	35	45	56	64	72	77	80	83	85	87	89

Source: Statistical Year Books, and unpublished data

In some areas qat is the dominant crop. In the Sanaa basin, at least 5% of the area is planted to qat. In Wadi Dahr, home of the "champagne qat", more than 80% of the area is planted to qat. (1.134)

Production Volumes

The production statistics again have to be treated with suspicion, but the numbers are:

Table 2. Production of grapes, coffee and qat during 1970-1995[1]

Crop/Year	1970	1975	1980	1985	1988	1989	1990	1991	1992	1993	1994	1995
Grapes (000'ton)	n.a.	n.a.	56	81	133	135	142	139	145	144	146	151
Coffee(000'ton)	5	4	5	5	6	7	7	5	8	9	8	9
Qat(mil. bundle)	35	145	352	387	440	484	516	536	556	570	583	596

Source: Agricultural Statistics Office

If these figures are to be believed, then <u>all</u> these cash crops have expanded their area and increased their production. But it is the cultivation of qat that has grown explosively. Probably these figures are no more than orders of magnitude - but they serve to show that qat is a <u>huge</u> phenomenon.

In fact the numbers do more or less match up with reported yields and hectarages (see tables below). And the numbers, when calculated, are enormous - $ 2 billion a year is an extra 30% on GDP. Even $ 640 million is two thirds of the rest of agriculture put together (agriculture value added in 1995 was $1,053 million)

[1] The rubtah (bundle) weight varied from one place to another depending on the type of Qat. For example, the weight of one bundle of Al-Udee or Al-Dalee types is in the range of 25-100 grams, while the weight of one bundle of Al-Sahbani or Al-Muktari types is in the range of 250-750 grams.

Calculation 1: qat value assuming 596 million bundles in 1995 (MAI data)

- 5 million users twice a week = 10 million bundles a week
- 10 million x 52 weeks = 520 million bundles a year (roughly matches 596 million bundles)
- 520 million bundles @ $4 per bundle = $2 billion a year retail value of qat

Calculation 2: qat value assuming 89,000ha of qat grown in 1995 (MAI data)

- 89,000ha @ 7,200 bundles/ha = 640 million bundles (roughly matches 520/596 million bundles
- 640 million bundles @ Rls 100 per bundle = $640 million a year farm gate value of qat

Farmers' Perceptions of qat

In general, qat is appreciated by farmers as a crop with a very high market value, relatively low water requirements drought resistance, , low labour demand, tolerance of interplanting, and its excellent marketing system.

It needs little capital to start, and provides a decent income to many people. The relatively small variation in price reduces farmers' risks, and the fact that - with a little water - it can be brought to harvest and market in most months of the year makes it a ready source of cash. Also, farmers with some controlled water source can harvest as much or as little as they need to for budget purposes, and leave the rest for later.

This appreciation is reflected in behaviour. A study of 25 villages in Hajja and Hudeida in 1980 showed that villages growing qat had the lowest migration rates, the highest wages for workers, and the most village capital, as evidenced by road building equipment.

Disadvantages of qat are relatively few. In Razeh, Weir reports only fear of theft and insecurity of land tenure.

Has qat Displaced Other Crops?

Qat has different requirements and characteristics from other crops and does not perfectly substitute for any crop. Some coffee has been displaced, but qat can be a less demanding alternative as coffee needs more shade, more water and more labour. In addition, coffee does not grow well above 1700m and does not bear water stress well.

Where irrigation is available, some cereals have certainly been replaced by qat, but qat's water requirement is at least 600mm, so it cannot replace the great majority of cereal terraces which have less effective rainfall available to them than that.

In some areas, qat has supplanted grapes and this process is continuing in the Sanaa basin today. For many farmers, qat is superior to grapes because grapes are less hardy than qat, and vines need more care - up to 15 "dustings", for example.

In general, qat becomes highly profitable only when it has access to a reliable water source. Therefore, it can be concluded that qat may have replaced coffee and cereals only in areas where a reliable irrigation water source is available.

D. Qat Markets

Supply and Demand

In the past qat consumption, and thus cultivation, were limited. Qat was only cultivated in areas with access to reliable irrigation water sources like permanent springs or in areas of high rainfall. Demand for qat increased over the last thirty years as a result of rising incomes. This rising demand, coupled with improved transport and relatively cheap access to a reliable water source (groundwater), triggered an explosion in qat cultivation.

Qat supply and demand is usually quite a local affair. This is largely because of the deterioration of the crop if transported over time and distance. For example, around Sana'a the rapid growth of the city (annual growth rate of 8%) stoked demand over the last twenty years and led farmers in areas around the city to expand qat cultivation. Nevertheless, sometimes qat is also brought from far away areas like Saadah in the north and Dhamar in the south.

Although production is restricted in many areas to the summer months, different climatic conditions in the different regions of the country generate sufficient overall supply throughout the year. Relatively lower qat prices and better quality during the summer indicate an over supply, while higher prices and lower quality during the winter reflect supply shortages.

Demand for qat as a whole is inelastic, but quality classifications are quite income elastic. In other words, a person with increasing income would change to "better", more expensive qat, and a person with declining income would nor stop or reduce the amount chewed, but would rather change to a less expensive, lower quality qat.

Marketing Systems

Qat marketing is distinguished by the need to get the product to market fresh, and hence by rapid speed of transport - from field to consumer is regularly less than 12 hours.

There are four principle marketing channels:

1) Selling directly to consumers
2) Selling at rural markets

3) Selling to brokers called ***muqawatun***, who usually have transport. They will visit qat farms to make deals with producers
4) Selling through middlemen called ***museleh.*** The ***museleh*** works on commission and does nor bear any risk.

On the whole, whether the qat is sold by farmers or professional dealers, trading units are small, because qat is highly perishable, and price fluctuations are large. The strategy of most qat traders is to buy and sell in small quantities in order to avoid losses. Qat does not therefore lend itself to market concentration or monopoly tendencies. Nonetheless, there are some "big" qat merchants - e.g. in Wadi Mawr, where the "big" merchants buy qat in the mountains and transfer it daily in fleets of trucks to Hodeida.

In general, the following three main factors determine prices of qat: (1) location and reputation; (2) appearance; and (3) time of year - qat in general is more expensive during the winter months.

Prices of Qat have increased during the last two decades. A bundle of qat in 1975 was worth 6 riyals. The same bundle was selling for 50 riyals in 1980, and increased to about 200-350 riyals in 1995.

Qat leaves are mostly chewed fresh (same day harvested) and sellers usually keep pruned branches covered with wet cloth to ensure freshness up to the last minute. Stored qat to the next day usually drops in price drastically.

Qat markets in Yemen have reached a high level of maturity in balancing the supply with the varying demand, for example, the higher demand on Thursdays and holidays.

One author suggest that telephones and refrigerated trucks could considerably improve market efficiency.

Grades and Quality

White (really green) or blue (really grey) qats are better than red ones.

The mark of a "good" qat is that : (1) it is not too bitter; (2) it creates ***kayf*** *('high')*; and (3) it has no after-effects, like spermatorrhea etc.

Imports and Exports

After the air route was set up across the Red Sea in 1949, large quantities of qat were imported from Ethiopia to Aden. YAR exported to PDRY until the trade was banned in 1971.

An attempt to "open" up the Yemeni qat market to cheaper imports from Ethiopia was made in the 1970s but was apparently frustrated when armed bands prevented the first plane from landing.

Small quantities of qat are exported to Europe and America by air to meet demand from Yemeni émigré communities.

Qat Around the World

In Southern Africa, qat is found in the Eastern Cape, growing as an evergreen tree up to 25 metres. It is known as Bushman's Tea, and is used for poles and furniture wood (durable with a "beautiful yellowish lustre), for small household articles like pots, and as a windbreak. Preparations made from leaves and roots are used to treat influenza, coughs, asthma. The root is used for stomach troubles and as a tea for boils and infertility in men. Chewing or smoking the leaves as a stimulant is not documented in southern Africa.

Source: Venture: Making the Most of Indigenous Trees of South Africa

Part II Role of the Block in Yemen's Broader Development

A. Qat and Water

Crop Water Requirements

As in most aspects of qat, the crop water requirement is not very clear. The most recent calculations suggest a requirement 700-1380 mm, depending on local conditions.

Qat and the National Water Budget

In the 1970s, most qat was rainfed or irrigated by run-off water but much more qat is now pump irrigated.

Within the Sanaa basin, it is estimated that qat consumes around 40% (=80Mm^3) of the yearly groundwater extraction for agriculture. This is considerably more than the water consumption of the city of Sanaa.

The FAO 1993 annual report estimated the total nation-wide yearly water consumption for qat cultivation to be 800 Mm^3 to produce a total harvest of 25,000 tons.

Despite the low cost of groundwater, the water shortage has led many farmers, especially around Sana'a to invest in piped conveyance systems.

B. Qat in Yemeni Life

The Explosive Growth of the Qat Phenomenon

From the earliest times in the southern uplands, qat had the "stamp of approval of the ruling class". It was at once noble and prestigious, and touched with religious associations.

This was not, however, the case in the Zaidi highlands, where even today there is some resistance to the "tree of the devil" (shajarat iblis).

Qat remained, however, the relaxation only of the elite in most areas until quite recently.

However, in the town of Taiz in the period 1955-1967, 60% of men and 35% of women described themselves as "frequent users".

The big change seems to have been in the 1970s. The main factors in the growth of qat use in the 1970s and 1980s were: the rise in incomes during that period (per capita incomes went up from $62 in 1964 to $528 in 1982); the increased profitability of production for farmers; the ease with which controlled irrigation could be developed from groundwater once the technology and capital for tubewells were available; the rapid improvements in the rural and main road networks in the 1970s, so that many more producing areas were in reach of the rich urban market; and the economic independence and leisure of those who returned from working overseas.

Other explanations of the rise of qat look into the changing structure of Yemeni life. One author explains the meteoric rise in qat consumption as due to social mobility and the search for a new identity. He sees qat as "distinctively Yemeni".

Certainly, the qat boom was at a time when a new phenomenon appeared for most Yemenis - wage employment. Wage employment assured more economic security and provided a steady flow of cash, rather than intermittent proceeds of farming.

Women, too began enjoying qat on a larger scale. They had more leisure, being somewhat released from chores by machines.

Many new areas came into production, as qat expanded in the fertile Western Highlands which had the high rainfall to grow the crop, and in the more arid plateau region of the Central Highlands, where it had previously been rarer but where tubewells now provided the water.

Frequency of Use

Over the last thirty years, qat has moved from " leisure" to everyday use. By the late 1970s, regular consumption was common for the first time among both sexes and in all sections and classes of the urban and rural population throughout the country.

A study makes the "guess" that by the mid-1980s, 80-85% of men chewed more than once a week, and that 50-60% of women chewed more than once a week.

Social Function of Qat

The objective of all chewers is to achieve ***al kayf*** (mood, high). It is a sociable occasion, without aggression.

Qat chewing has replaced almost all other forms of relaxation and socialising, especially dancing. People used to dance in the afternoons - now they go to qat parties.

A phenomenon as strange and as pervasive as qat, and its uniqueness to Yemen, plainly demand a sociological and anthropological explanation. The role of the qat party in Yemeni life has been variously analysed as: an emblem of social interaction; a group communion; a manifestation of commitment and conformity; a display of reciprocity; an opportunity for conspicuous consumption; and a venue for social competition (with the poor excluded, the middle income able to participate, but to a lesser extent than the rich). Wear summarises: people go to qat parties under "the push of personal ambition and the pull of social pressure".

Qat parties are nowadays the central social ritual of everyday life and they are the stage on which much social change is played out. Money is driving this social change - specifically the admission of the new rich to the social elite - and qat parties, made possible by new money, help that social change to happen.

The generalisation and "institutionalisation" of qat use is a probably irreversible fact of Yemeni life. Qat is legal, and its nearly universal use, surrounded by custom and etiquette, pervades the whole economic, social and psychological fabric of the country.

Attitudes to Qat

Producer attitudes are ambivalent, often defensive. One extreme can be summed up by what one Wadi Dahr farmer was reported as saying when the Prime Minister, Mohsen Al Aini, was trying to stop the qat business: "People need qat...if anyone, even the Prime Minister, tries to take even one tree of mine, I will kill him. I am willing to die under one tree!".

Consumer attitudes are similarly ambivalent. Everybody does it, whether gladly or reluctantly. But in answer to a survey question 'Do you want your children to chew qat', the answer was a resounding NO!

There is some negative reporting in the media. Certainly, there is a slight shamefacedness about the habit in some circles, but in general the habit is now seen as quite banal.

Some slight change may be occurring now, with the development of some 'anti' qat' activities and the renunciation of the habit by some highly placed people.

Qat and Women

Unlikely many agriculture products, qat is a man's crop: all the work on production and on marketing is done by the man. The only exception seems to be the role of women in the marketing of qat on Jebel Sabr in Taiz.

Chewing is not a family habit at all. Men and women always chew separately, but sharing is common. Many men bring qat home for themselves and their wives.

C. Qat and Health

Traditional Views of Qat's Workings

Yemenis have traditionally seen the body in terms of a precarious balance between the four humours of ancient Greek medicine: blood, phlegm, yellow bile and black bile.

Qat acts on the black bile, and its character is thus dry and cold. Because qat is dry, the qat chewer drinks a lot. Because it is cold, the prudent chewer will first, before a chew, make himself hot by a special lunch. In the past, many chewers used to take exercise before chewing in order to get hot. The Imam Yahya is said to have run up Jebel Nuqum, the tall mountain above the old city of Sanaa. Such practices seem rare nowadays, but chewers will keep the windows tight shut for fear of the chill.

The Drug Effect

A US team conducted extensive research into qat in the 1980s. They noted that use of amphetamines was spreading in the USA, and they considered that "Yemen presents a natural experiment of a similar drug over a period of generations". The team found little evidence of harmful effects of qat.

In the WHO typology of "drug dependence", there are two major types of dependence isolated: physical dependence and psychic dependence. The US team found no evidence of physical dependence (no withdrawal symptoms or inevitable tolerance). Therefore, they class qat as provoking only psychic dependence. They found that qat brings relief from pain and positive pleasure. In general, they 'found little evidence of harmful effects". They did, however, find that 35% of male users experience hallucinatory effects frequently.

They found that qat chewing is a social norm in Yemeni life, with social and cultural components beyond the drug aspect. They call qat "a social institution where people get rewards from drug use (experiencing pleasurable reality) but also are entertained and can expose themselves in a

relatively uninhibited and spontaneous manner". Qat basically played a role in promoting natural sociability.

Health Impacts

Regarding health impacts, the US team argued that qat should be seen in the context of "the appalling picture of Yemeni health in general". This situation persists, with amongst the highest maternal and infant mortality rates in the world. Certainly, few Yemenis believe qat is a threat to health. Data suggest some negative effects: gastrointestinal problems; slightly greater prevalence of urinary problems among users, particularly women. The short-lived anorectic effect is seen by some as a counter-balance to the sedentary nature of qat chewing, in combating weight problems. The temporary tachycardia has not yet been linked to long-term heart disease. Haemorrhoids are also common (60% of chewers). Impairment of male sexuality has been verified, but evidently has had little effect on reproduction rates. The biggest problems are thought to be somewhat higher rates of liver and urinary problems amongst chewers, and low birth weights and gastric problems with women users.

On the positive side, qat seems to clean the teeth (although it may contribute to mouth cancer); and the use of qat may contribute to low incidence of diabetes. In addition, qat has a high Vitamin C content.

Effects on mental health are likewise mixed. A wide range of euphoric and spiritual effects is reported, balanced by insomnia and nervousness. Heavy use can lead to psychopathic disorders, particularly within the family after chewing. However, these effects are held to be short-lived.

Associated ill-effects include the vast quantities of sweet drinks and tobacco ingested during sessions; and the pesticide residue problem.

The Ministry of Health considers qat chewing to be harmful. It forbids chewing in medical facilities and tries to provide the public with information on the harmful effects of qat. There are plans for tv spots and for cooperation in public awareness with NGOs.

Pharmacology

Qat behaves like amphetamines in increasing locomotor activity, oxygen consumption and other central nervous system functions.

D. Economics

Profitability

Producer margins are good - the total of cost of production and taxes is usually no more than 30-50% of sales proceeds. Under varying husbandry systems, gross margins are reported at

between Rls. 400,000 ($3,100) and Rls. 600,000 ($4,700) per hectare. Returns to water are estimated at Rls. 30-40/m^3, and returns to family labour at Rls. 2,300-2,500/day.

For producers around the large conurbation of Sana'a, the profitability seems to be higher. One study found that an average of 90% of the sales as net profits was typical for the Sanaa area. On this basis, net profits range from Rls 400,000to 1,800,000[3] per hectare ($3,100 - $12,000).

"Qat is like a safe, whenever I want some money all I have to do is irrigate several times, spray some pesticide and within two weeks it is ready for harvest". This is what a farmer in the Sanaa basin told Al Hamdi about qat. Several plastic bags of chewable qat leaves *gadal* picked from a number of trees can be sold to cover a day's expenses for a typical rural household.

Economics of water use for qat

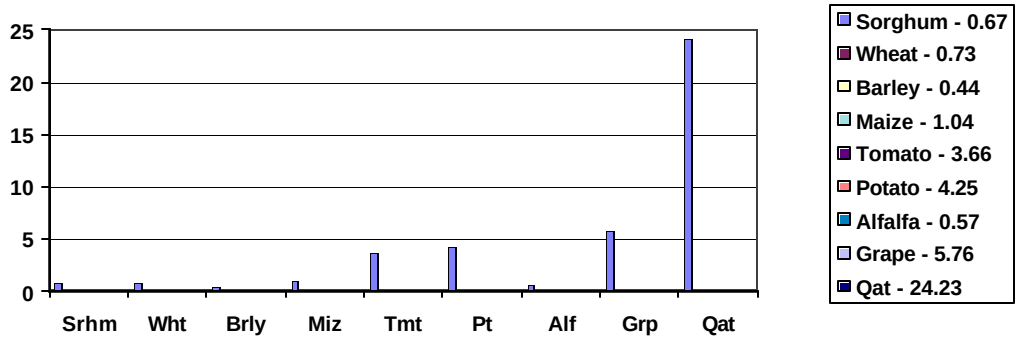
The economics and environmental impact of qat are very different between rainfed/water harvesting systems and ones which are primarily dependent on groundwater. In rainfed areas, qat is an ideal crop because of its high value and favourable environmental characteristics.

Qat is so profitable a crop that it can justify supplementary irrigation - typically a week or so before harvest in a dry period when prices are very high - at prices of $1 per m^3 of water and up. One author mentions water being trucked **20 kilometres** to the qat fields.

In the Sanaa basin, most qat is irrigated with groundwater via more than 4000 drilled tube-wells. The uncontrolled spread of private agricultural wells has led groundwater levels in the Sanaa area to decline at a rate of 3-6 m a year. This phenomenon has been driven by the richness of the capital qat market.

Figure 1. shows the income generating value of water use for cash crops (qat and grapes) and cereals in the Sanaa area in 1990. Based on collected field data, Al Hamdi in 1997 calculated the return on groundwater use for qat irrigation at between 50 and 90 US cents/m^3. Returns for grapes, the second most profitable crop in the Sanaa area, were in the range 30-50 US cents/m^3.

Figure 1: Returns of Different Crops to Water (Rls/m^3)
as calculated by the High Water Council



Qat and the Rural Economy

In the 1970s and 1980s, traditional cereals terraces were being abandoned because of high labour costs and low grain prices. Qat was planted on some of those terraces, thereby saving them. The income effects of that qat effectively saved many of the rural communities too.

Already in 1982, USAID recorded the downside of this explosion of qat cultivation:

'Qat is driven by profits, and it is driving tubewell irrigation by providing the capital and the profits. Qat is obviously financing most of Yemen's groundwater development."

Qat is a powerful agent for transferring cash back from urban to rural areas. One study estimates that qat directly benefits some 170,000 families (about one million people).

Political Economy - Who benefits

In such a wealthy system, it is clear that qat creates fortunes, and with it vested interests. These are, however, not really documented.

Anecdotal evidence of vested interest behaviour can be gathered from incidents like the frustration of the qat import idea, and the highly effective opposition to the Al Aini initiatives.

It could be guessed that qat farmers, qat traders and the officials connected with qat taxation have a strong interest in preserving the current laissez-faire, and that any business worth such a large share of GDP will have excellent connections within the establishment.

Qat and Income

The cost of qat has been falling in terms of purchasing power. In 1970, a bundle of qat cost the equivalent of the daily unskilled wage, but by 1980, the cost was equivalent to only half the unskilled wage. In 1998, qat could be purchased for Rls. 100-400 (low grade, depending on season) against unskilled wages of Rls. 400-800 a day

The proportion of income spent on qat is a subject of great speculation. One 1972 study on the old city of Sanaa suggested that 10% of income was spent on qat. The 1992 Household Survey shows that in almost all except the desert governorates, qat consumption ranked second only to animal products (meat, eggs, dairy, fish) in household budgets. The same holds true for both rural and urban populations, and for all income level except the very highest. Qat occupies 5-10% of total household expenditure at each income level.

Qat and Wealth

Qat is an item of conspicuous consumption. As one author says, 'people pay not as little as they can but as much as they can afford'.

Certainly, qat consumption is a useful indicator of disposable income. Everyone inspects the new arrival at the qat party and appraises the virtue and cost of his qat. By extension, qat consumption is a means of judging and reporting on character. The man of whom it is said "he doesn't chew" is unsociable. The man who buys qat beyond his means is a spendthrift, and not a good family man. Wear calls this aspect of qat "a metaphor for excess behaviour".

Economic Importance

Qat production and marketing is a huge industry. Although not recognised anywhere in official statistics, qat is estimated to contribute 25% of GDP, 16% of employment - and to account for 30% of water use. The profitability of qat can justify irrigation by tankered water [at a cost of over US$1/m^3]. Qat thus plays a dominant part in the economy. While qat can have harmful social and health impacts, for the farmer it can also represent the same motor of the rural economy that another mild stimulant, coffee, represented in the seventeenth century.

The explosion in qat demand, and its profitability, have increased the incentives to use water, and much qat is grown on mined groundwater, using up the nation's water capital. The profitability of qat is increased by government's general promotion of irrigated agriculture and by the import ban on qat.

Some economic work has been done. One study shows the following favourable economic characteristics of the crop:

- up to 80% of qat revenues can remain in the local community
- qat production and trading units are usually small (i.e. no "qat barons")
- qat does not usually displace coffee, but rather grain crops
- qat producing areas can buy in their food from surrounding areas, thus stimulating agriculture in areas that produce grain and fruit but not qat
- qat has helped to sustain the terrace system with beneficial effects on watershed management; that qat revenues finance other rural development (e.g. opening roads, electrification)....

The study summarises: "In qat producing areas, the crop has performed a holding operation - it has kept alive the agricultural potential and kept the people on the land, tied socially and economically to their small rural communities".

However, the above is based on micro level research in a rainfed area. There is a total lack of reliable information at the macro level, and the official statistics are highly dubious. Qat needs to be better documented before problems can be properly identified and recommendations made.

Fiscal Aspects

In the past there was a 'field tax' of 10% on qat assessed by inspectors, but the yield was only 2-5% of what was due and the tax was abandoned. Now there is a tax on qat moved from production to consumption areas.

Qat tax is regulated by Law No. 70/90 (Taxes on Production, Consumption and Services). Chapter (3) of this law is devoted to Qat Consumption Tax. The law provides for punishments for evasion and incentives for collectors - 10% of the revenue increase which they can achieve over the previous six-month period.
implement the law.

The Qat Taxation Department of the Ministry of Finance and its local branches are responsible for collection of the qat tax.

The qat tax is, by law, 20%. Practically, however, staff of the taxation department estimate that the government collects no more than 1% of this rate (i.e. 1/20 = 5% of what it should get). Furthermore, they estimate that what the government actually gets is only 5% of the total collection. As one commentator says, 'Everyone knows that those who collect the tax on qat receive qat to assure a reasonable tax assessment'.

In 1994, revenue from the qat tax totalled Rls. 665 million or 3.1 percent of non-oil tax revenue.

Data for the first half of 1995 indicate that the Government's estimate of qat tax was about Rls 650 million (Rls 1.3 billion, say $10 million). The actual collection for the semester amounted to about Rls 427 million.

Qat tax is collected only at entrances to main cities and in public markets. For example, in Sanaa, a qat tax check point can usually be found on the Wadi Dahr, Amran and Marib roads.

The Ministry of Finance believes that the revenue is unacceptably low in view of the widespread use which has been growing, both in the number of users and frequency of use in recent years. Based on the daily consumption of qat, they estimate that the annual revenue to be generated from this source could be in the range of Rls 3 billion.

In 1986 an IMF mission reviewed the problems associated with taxing qat and made a number of recommendations for controlling distribution and marketing in order to collect the excise taxes due. The main problems confronting an efficient taxation of qat stem from the fact that qat must be sold within a few hours of being cut. Because of the widespread cultivation and distribution, taxpayers must be taxed on the way to market and on a daily basis, The qat tax has to be **assessed and collected daily**. What is not assessed on the spot is completely lost.

The principal control measures recommended by the 1986 IMF mission included:

(1) formalizing and strengthening the roadside system of checkpoints; (2) strengthening internal management controls by rotating collectors from one checkpoint to another; (3) establishing permanent checkpoints; (4) seizure of vehicles transporting qat on which the tax has not been paid; (5) increasing the number of collectors; and (6) implementing a financial incentive arrangement for collectors.

The Government adopted all of these recommendations but rather than improving the situation, the volume of daily sales has steadily risen with no proportional increase in revenue. A recent addition to the control measures has been the establishment, on an experimental basis, of a distribution centre outside Sanaa. Assessment and payment procedures have been streamlined. Penalties for failure to make declarations and pay the tax have been increased to 35 percent for the first infraction and 70 percent for the second plus the tax owing. Despite the penalties being severe, evasion runs rampant.

Most recently, Government has reverted to the age-old expedient of tax farming. Private collectors are now (June 1998) collecting the tax on qat entering the city of Ta'iz.

There are many obstacles to increasing the government's revenue from qat taxation. The most significant are:

- low salaries of tax collectors (average Rls 3,000 per month in 1995) and lack of incentives. Article 21 of the Tax Law which gives the collectors 10% of the revenue increases is not applied.
- lack of data on cultivated areas which makes it difficult to make good estimates of revenues.
- lack of governance and big "moral hazard"

There is no quick solution to the dilemma of taxing qat. Consumption of the product is widespread, and there is no social stigma associated with its use. It is not illegal, profits from the product are enormous, transportation of the product is simple; large quantities can be transported in cars and small trucks, and transportation routes to consumer centres are difficult to control due to their number.

Officials argue that if more effective controls are to be implemented there must be a large increase in the number of inspectors, they must be better trained and must have transport. Support from the police and/or military would be needed. It is also a possibility that if the tax

rate were lowered from 20 percent to 10 percent of the sale price, it may encourage a better level of compliance and thus increase revenue.

It is evident that any increase in tax yield, and any desire to use taxation as a means of moderating the qat phenomenon, will require a decisive political will from the top down.

Part III. Qat Policy

A. Current Thinking

Official Attitudes Towards Qat

Government's attitude is ambivalent. On one hand, government policy toward qat seems to be strict and negative, which can be seen from the following examples:

- official restriction of qat use in governmental offices
- exclusion of qat farmers from agricultural services, including research (until recently), extension, public credit and irrigation improvement projects
- high tax rate on qat

On the other hand:

- restrictions on the use of qat that had been effectively applied in the former PDRY in the south were rapidly eliminated after Unity in 1990 and qat use has grown very rapidly there
- many official governmental and parliamentary evening meetings and sessions are conducted during qat sessions
- if there were a negative official policy toward qat, it would be expected that there would be awareness programs against it, which is not the case.
- the President of the Republic praised qat in a recent television interview (Al-Jazira, April 1998).

Since 1999, there appears to have been a current of change in Government and civil society. A number of examples will illustrate this:

- The President announced that he was giving up qat and taking up computers and sport instead
- Several NGOs began awareness campaigns against qat, one with the support of an international NGO
- The governor of Ibb led a wide campaign against qat and established an NGO to combat it and provide alternative leisure activities
- Government introduced the five day week and longer working hours, a move that had long been advocated as away of fighting qat

- Police and soldiers were forbidden to chew on duty
- Qat markets were moved outside of the city centres

In mid-1999, Government decided to hold a national conference on qat in 2000 in order to set up a policy agenda. Several donors have been invited to participate in preparation, which are presently underway.

Foreigners' View of Qat

Early references to qat by westerners were not unfavourable. Later less relaxed views have been described as: "a tradition of mildly pompous condemnation (of qat)".

In 1980, the United Nations Division of Narcotic Drugs concluded that: 'qat use…..contributes to family instability because of the economic drain on family resources and the absence of the father from participation in family life. Work productivity is said to be reduced as a result of absenteeism, tardiness and depressed mood of qat chewers.'

More recent anthropological studies generally agree that qat is distinctively Yemeni, ineradicable and that the whole business is "thoroughly civilised".

In general, the donor community sees qat as a brake on development, both in terms of its consumption of mined water and as an economic and social cul-de-sac.

B. Towards an Agenda on *Qat*

The policy agenda on *qat* is a vexed one:

- as a ***crop***, qat has favourable characteristics. Well adapted to Yemen's tough conditions, it has beneficial impacts on the rural economy and ecology. However, its heavy drain on groundwater resources is obliging the nation to explore water saving possibilities.

- as a ***drug***, *qat* seems to be relatively mild in its effects and to present relatively little health risk.

- as a ***social phenomenon***, judgements are divided between two broad opinions: *qat* is seen either as a waste of time and money ("high opportunity cost" of the time devoted to chewing it, squandering of money on drugs by poor people who had better improve the diet of their family) or as a distinctively Yemeni choice of how to spend one's leisure time.

The following consideration are relevant:

(1) regulation of *qat* is unlikely to work. Government tried restrictions on *qat* in the early 1980s, and the Ministry of Finance implemented a series of IMF recommendations to increase the yield of the *qat* tax; these attempts failed.

(2) the unfavourable impact on groundwater resources of *qat* is ***obliges*** the nation to explore water saving possibilities in the *qat* business.

Because qat is the most important crop in Yemen and the country's greatest consumer of water, it cannot be ignored. Government should first decide whether it wishes to restrain *qat* consumption. The medium of the national conference seems an appropriate way to handle this. Therefore:

> **Action 1: conduct a national conference on qat to determine a national policy and strategy**

A key constraint in dealing with qat is the lack of information with which to base decisions. Therefore:

> **Action2: include qat in national statistics**
>
> **Action 3: make qat the object of agricultural research and extension in order to exploit water saving potential. This research should include economic aspects, to assess the place of qat in the rural economy, and to gauge welfare, economic and natural resource implications of influencing qat production or of allowing *qat* imports.**
>
> **Action 4: conduct a campaign to research and gather information on economic and social aspects of qat**

If, as is likely, Government wishes but is unwilling or unable to regulate or tax qat, the best approach would be to change hearts and minds as was done with smoking throughout the world over recent decades. Therefore:

> **Action 5: support a long-term education and public awareness campaign on qat. Ideally, an NGO should take the lead on public awareness on qat. The successful anti-smoking campaign in many countries over the last three decades should provide ideas**
>
> **Action 6: combine this with good socio-economic and medical research to gather some hard facts that could drive the campaign.**

Part IV. Assessment of prospects for reaching the goals

A. Positive Factors

There are several factors that may help form a positive policy towards qat.

Positive Government attitude towards doing something

The major change in recent months has been the emergence of strong leadership on the issue. There is hope that where the leaders take a position, the nation may follow. The recent re-election of the \President has lent impetus to this movement.

Civil society movements

NGOs and other civil society movements are relatively weak in Yemen. Therefore, the emergence of certain NGOs in a movement to fight qat is a strongly positive sign.

B. Negative Factors

Lack of religious ruling against qat.

In Saudi Arabia and other Muslim countries, qat has been declared haram by the religious establishment. In Yemen, qat has never been prohibited on religious grounds apart from a brief period in the sixteenth century.

General recognition and tolerance – and appreciation

Qat was considered eib (shameful) by some tribes in the east and north east - but these patterns have largely broken down.

Nowadays, Yemenis are satisfied with the qat habit - and modestly proud of its "Yemeni-ness" before foreigners. They see it as a social habit, not an addiction.

It has become so widespread that it is inconecivable that it could be eradicated.

Lack of any strong political constituency against qat

The Imam Yahya had eulogised qat in a famous poem, so for a brief period during the revolutionary struggle, qat became a focus of opposition. For example, the activist Zubayri wrote " the devil takes the shape of the qat tree". So, in the early repoublic there was a feeling thatb qat was anti-modern, inconsistent with the raopid developlment of the nations.

However, human nature and rapoid increase in wealth ran wildly counter to this attitude, and until very recently there was virually no discernible anti-qat constituency.

Now there are some anti-qat NGOs and some faint political moves against qat. But they remain very tentative, and no impact can yet be measured.

Failure of past attempts at control

This attitude took political shape in the campaign against qat mounted in 1972 by Mohsen Al Aini, Prime Minister under the modernising President Al Hamdi. Al Aini banned use of qat in public buildings, prohibited *qat* on *waqf* land, and initiated a propaganda campaign - radios, newspaper, poems, skits. Journals like *Al Yemen Al Jadid* devoted a whole issue to qat, arguing that it was bad for the health. Attention was galvanised by this campaign, but Al Aini left office within three months, and the experiment was abandoned.

Annex 1

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Annex 2

Table. Estimated Cost of Production for One Hectare of Qat Under Well Irrigation

Item	First Year	2-3 years	4-8 years
Total Gross Output (YR.)	0	48000	320000
Land Preparation (YR.)	18400	0	0
Seedlings (YR.)	13020	0	0
Irrigation cost (YR.)	30000	25000	25000
Fertilizers (YR.)		0	10850
Manure (YR.)	3200	0	2500
Protection (YR.)	0	2734	4340
Manual Labour (YR.)	15240	3810	19050
NET RETURNS (YR.)	-79860	16456	258260

(Source: Jabarin and Juneid, 1996)