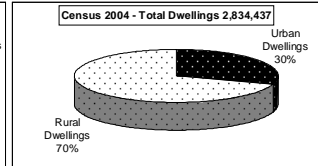
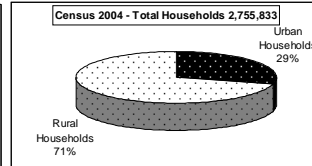
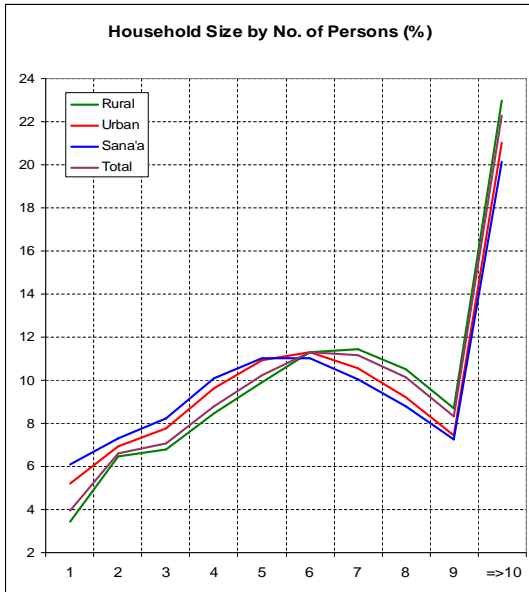


Water and Sanitation in the 2004 Population, Housing & Establishment Census

1. Introduction

According to the final census data, total population was 19,685,161 of which 5,637,756 (28.84%) urban and 14,047,405 (71.16%) rural. The census also registered 2,834,437 dwellings and 2,755,833 households; in average the dwelling occupation is 6.65 persons (urban) and 7.07 persons (rural), while the household size is 7.00 persons (urban) and 7.20 persons (rural). 30% of dwellings and 29% of households are considered urban. In both, about 7.6% of dwellings are vacant. It is interesting to observe that the structure of household sizes in rural and urban areas, even in the capital city, is not significantly different.

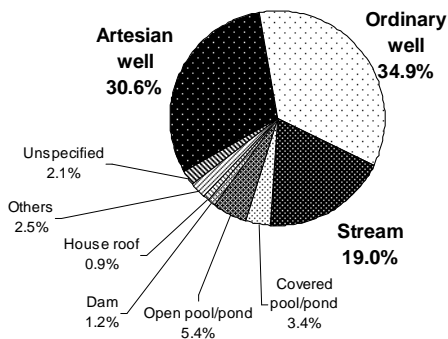


2. Water

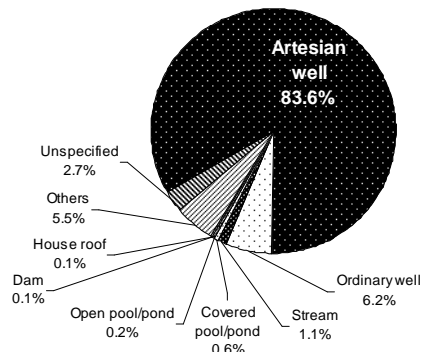
2.1 Water sources at national level (main sources)

For the sake of clarity, the water supply chapter distinguishes the sources and the supply system (conveyance). The water source scenario is the following:

Sources of Water for Rural Households



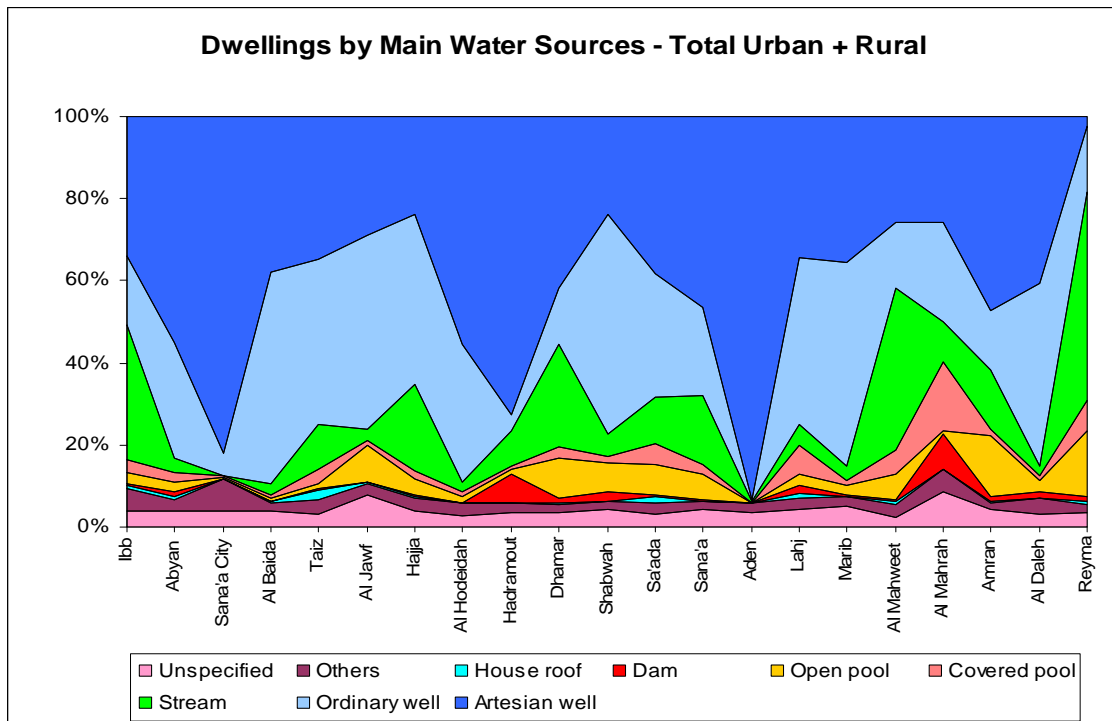
Sources of Water for Urban Households





It can be observed that in both urban and rural settings, the water sourcing through rainwater harvesting is not significant (rural = 10.9%; urban = 1.0%). Above all it can be stated that dams as source for domestic water are neglectable.

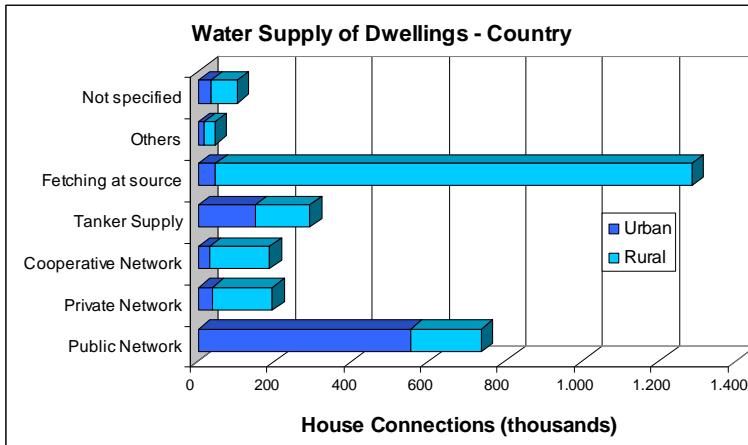
2.2 Water sourcing at governorate level



About 18.600 dwellings countrywide gather water from house roofs, and 25.600 get water from dams. Open (102,900) and covered (70,400) pools/ponds add to water harvesting structures, which are the main water source for only 217,500 of 2.8 million dwellings (7.7%). In addition, these dwellings very often have complementary water sources, as rainwater harvesting is usually not a full-year solution. High incidence of well water can be observed in the highly urbanized governorates (Sana'a City, Aden, Hadramout).

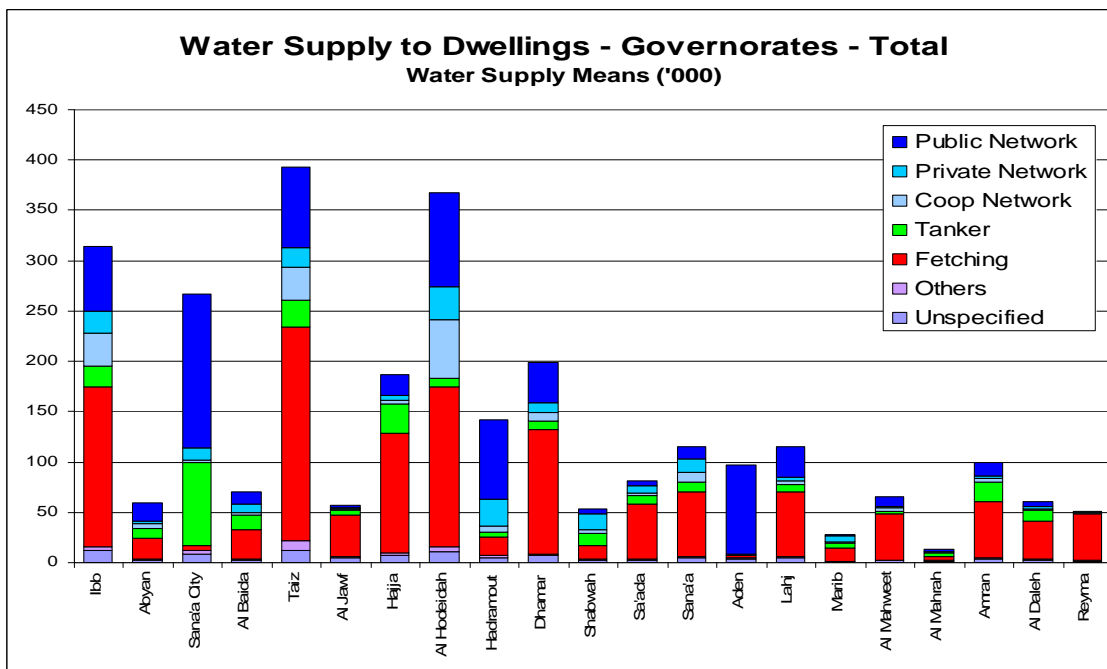


2.3 Water supply at national level



Countrywide and almost exclusively in the rural area, 1.285 million households still had to fetch water from sources away from their houses. 290,000 made use of water tankers, evenly distributed between urban and rural settings. Network supply of water covers 1.113 million (39.1%) households (73.2% in urban, 25.0% in rural areas).

2.4 Water supply at governorate levels

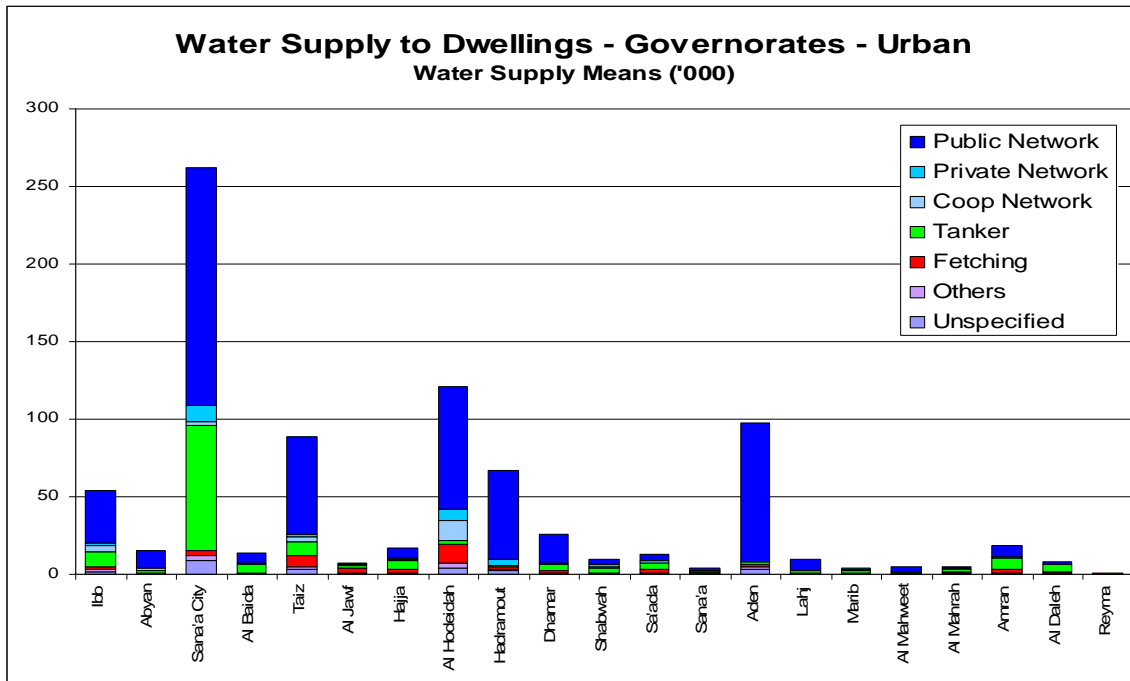
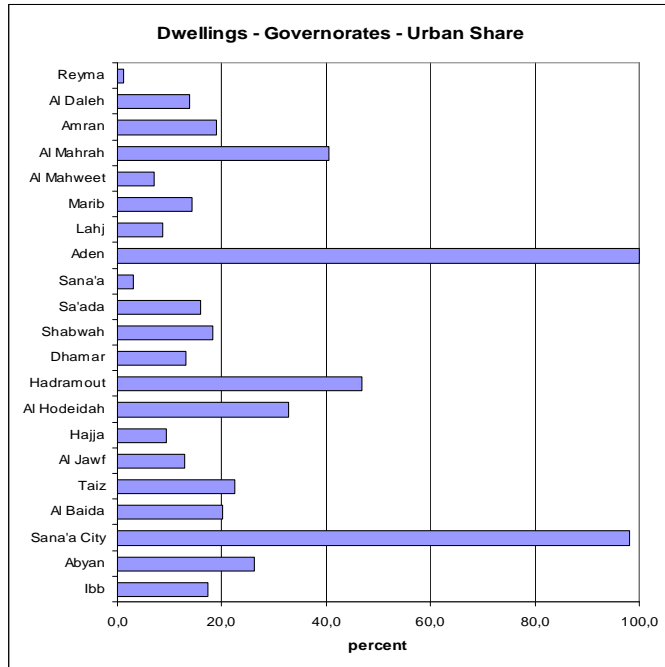


Census data suggest that public network coverage is quite diverse. Almost complete coverage is attained in the highly urbanized governorate of Aden, while the capital city of Sana'a has still a substantial share of tanker supply. With exception of the urbanized areas, fetching water from sources outside the houses is still very frequent and in many cases the single most common means of water supply to the dwellings.

2.5 Urban water supply



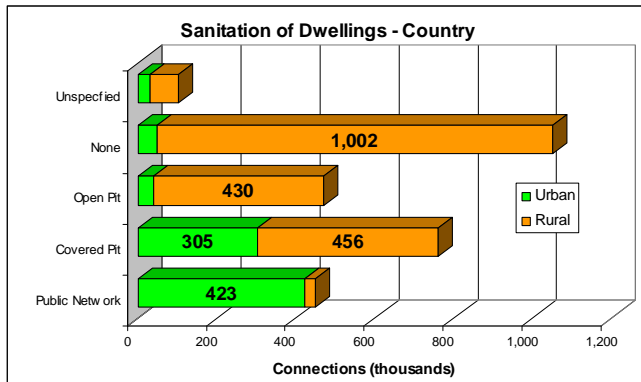
As the graph on the right shows, the urbanization rate of Yemen's governorates is quite diverse. Aden and the capital city of Sana'a are almost exclusively urban. Other governorates, although having large urban centers such as Taiz (22.6%) and Hodeidah (32.9%), are characterized by rather small urban shares.



In the case of urban areas, the coverage of network supply is quite advanced; however, the capital city of Sana'a, with the largest agglomeration of urban population, is still far behind. In the rural governorates, the more "informal" means of water supply are still widely in existence.

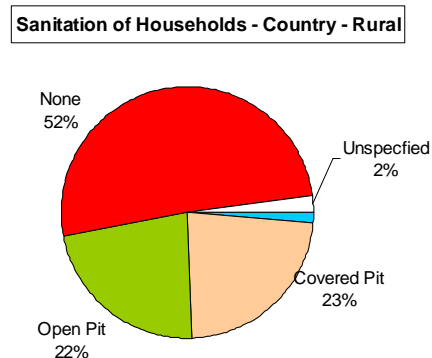
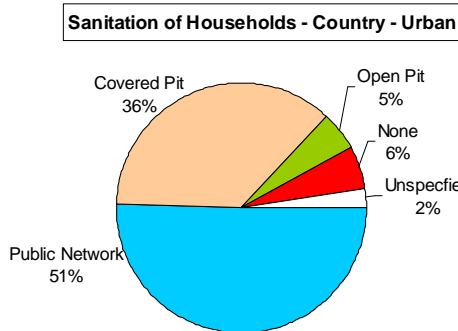
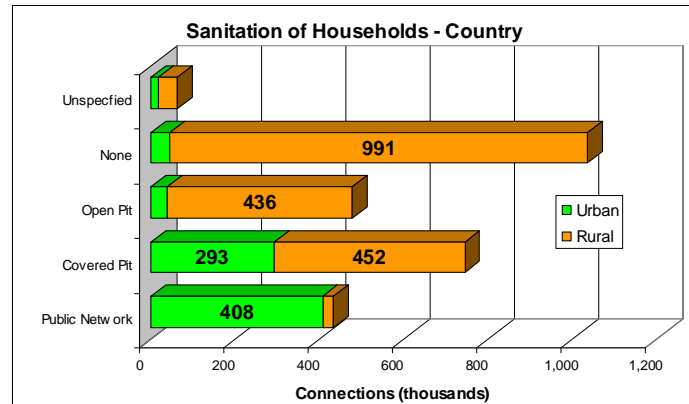
### 3. Sanitation

#### 3.1 Sanitation at national level

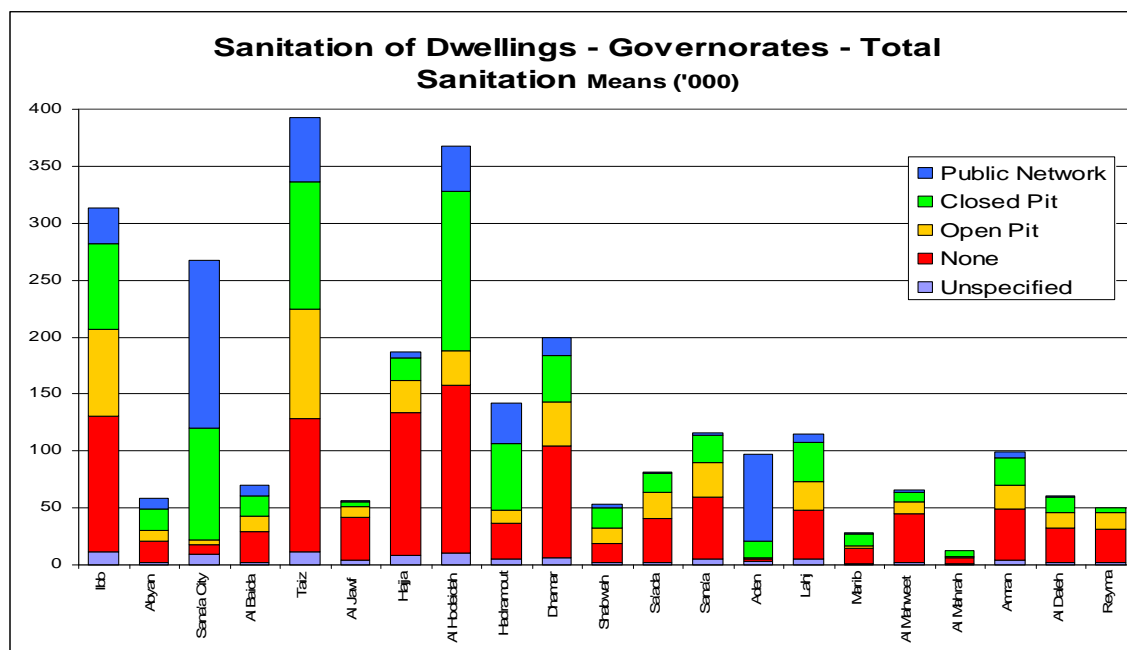


Census data reveal that the vast majority of rural dwellings do not dispose of access to sanitation at all. Considering that also open pits can not be considered a safe sanitation option, almost three quarters of houses are in hygienically questionable condition. Network sewerage and covered pits are basically a feature of urban areas.

The situation of households is quite similar (the difference to dwellings is due to cases of shared facilities). In rural settings the existence of sewerage networks is neglectable. Altogether, with the stated 51% public network coverage for urban areas, the census data would practically coincide with the 2009 NWSSIP target.



### 3.2 Sanitation at governorate level



Across the board, public sewerage networks are a rare occurrence and are basically confined to larger urban centers. The prevalence of open pits or no sanitation installations at all points at poor hygienic conditions in most of the country.

### 4. Comparison between Census 2004 and NWSSIP – JAR 2005

The 3<sup>rd</sup> Five-Year Plan (DPPR) with regard to service coverage has based its water and sanitation chapters on preliminary census information as follows:

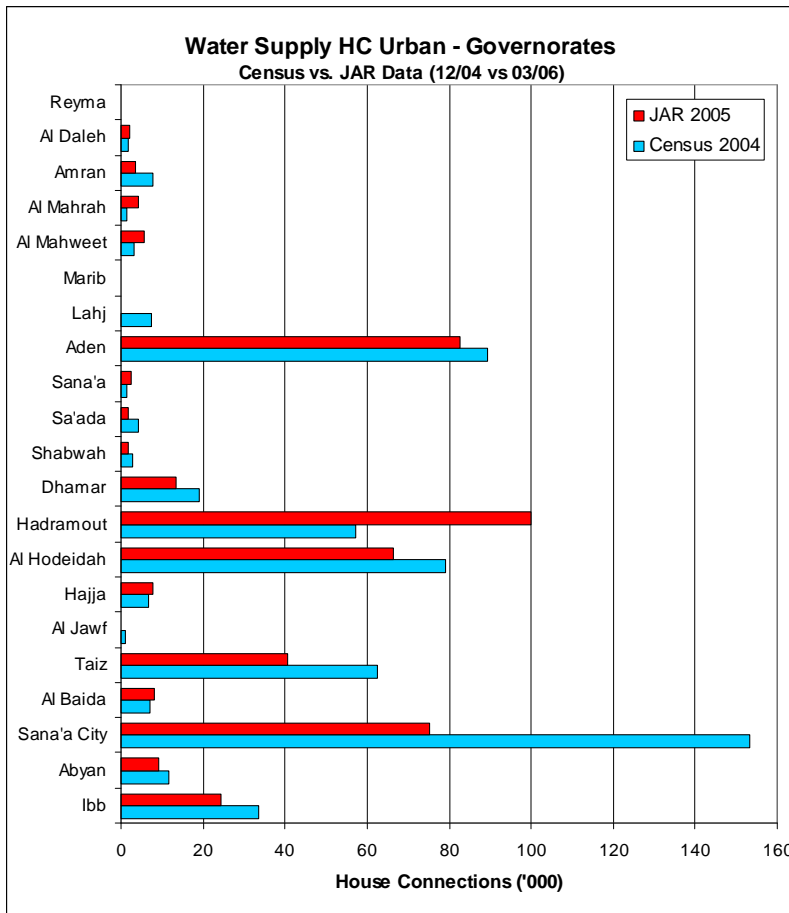
Services	Census 2004				NWSSIP 2009				NWSSIP JAR 2005			
	Urban		Rural		Urban		Rural		Urban		Rural	
	Public Networks	All Buildings	Public Networks	All Buildings	Public Networks	All Buildings	Public Networks	All Buildings	Public Networks	All Buildings	Public Networks	All Buildings
Safe water	60.3%	73.7%	7.4%	27.9%	71.0%	na	47.0%	na	58.0%	na	37.5%	na
Sanitation	36.8%	82.8%	0.7%	25.7%	52.0%	na	37.0%	na	32.0%	na	na	na

This already shows a world of difference which in the final census information stands partly corrected.

#### 4.1 Water supply

In general terms, the used coverage data is substantially deviating from NWSSIP's targets for 2009: for urban water, network coverage (NWSSIP does not distinguish between public, private and cooperative networks) is projected to reach 71%, while in rural areas the NWSSIP target is 47%. If the census data were correct, urban water network supply would already be over achieving the NWSSIP 2009 target, while rural water network supply would be far behind. It can be argued that the NWSSIP projections were based on rather weak baseline data; nonetheless, if read against the 2005 NWSSIP JAR results (urban = 58%, rural = 37.5%

network coverage), the deviation remains significant. It is not easy to point at the correct source: the JAR data were also found quite incomplete in a number of cases, and thus the conclusion is simply that a review needs to take place in case of the most significant contradictions.

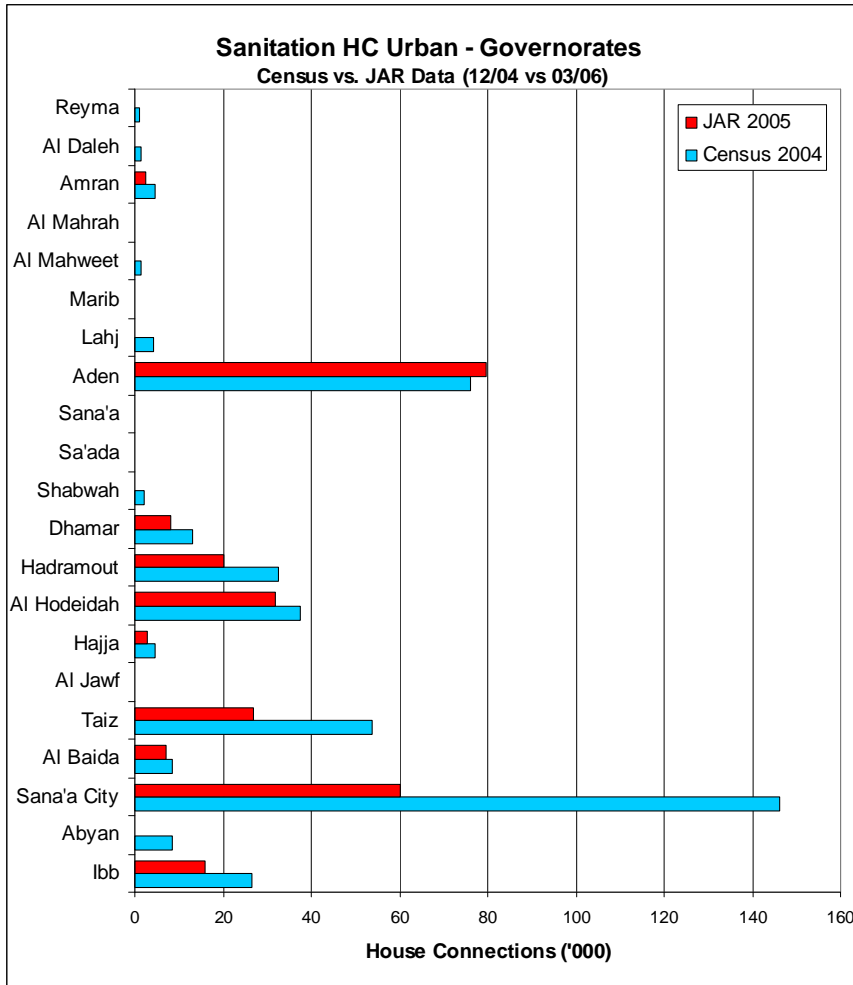


In a case by case comparison of local corporations with rather well known service coverage data, the deviations are really impressive: the Sana'a Local Corporation, whose service area is almost exclusively the Capital Secretariat, the management reported 75.143 house connections to public water network, while in the census it is amounting to 153,235, i.e. basically the double. This deviation is really hard to explain. There are other cases of partly significant incongruities (Taiz: 40,488 vs. 62,555; Hadramout: 99,924 vs. 57,252; Hodeidah: 66,550 vs. 79,180; etc).

The JAR concluded that the urban utilities need a more comprehensive investigation into their service area and present coverage, verifying census terminologies, acceptable technological choices for the defined targets, and a clear delimitation of the geographical extensions of urban vs. rural areas. Without this clarification, and achievement of NWSSIP targets as well MDGs will be based more on best guesses than on serious and prioritized sector planning.

#### 4.2 Sanitation

Notably, the information given for Aden practically coincides with the JAR 2005 values, while the public network coverage in Sana'a City is grossly overstated. Likewise, most other larger urban centers have a census public network coverage much in excess of the JAR 2005 assessment. As in the case of water supply, the JAR concluded that all urban utilities need a more comprehensive investigation into their service area and present coverage, verifying census terminologies, and acceptable technological choices for safe sanitation. Such choice indicators would then be incorporated in the NWSSIP targets.



Above chart demonstrated the Census/JAR deviations. 51% public network coverage in urban areas (interestingly, the preliminary information of 36.8% is closer to the JAR result) would practically coincide with the 2009 NWSSIP target, while the JAR revealed that coverage is more in the range of 32% and that the 2009 target of 52% is not achievable and has thus been reduced to 42%.