

Factors Affecting Compliance with Residential Standards in the City of Old Salt, Jordan

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Abstract

The aim of this paper is to examine the factors which impact on the extent to which urban housing complies with residential standards in the city of Old Salt based in Jordan. The research found that the level of compliance with residential standards is quite low and can vary from one standard to another and from one house to another due to differences in the socio-economic characteristics among people. The findings of multiple regression analysis reveal that there is a good level of public awareness of residential standards, but this does not result in complete compliance with residential standards. Factors, such as household income per month, household size, finance facilities, municipal administration culture, monitoring, enforcement and the uncertainty of residential standards have a significant impact on the extent of compliance with planning standards. Suggestions for improved urban planning practices which address these issues are summarised in the paper and include reassessed current residential standards through comprehensive legal framework, linking residential standards with urban design approaches, changing planning practices, developing information systems to produce effective monitoring systems of construction processes and enforcement mechanism, the development of local staff including planners, designers and environmental engineers, supported partnerships between private and public sectors, and the use of participatory planning and citizen involvement.

Author Keywords: Residential standards; Compliance; Urban planning; Jordan: City of Old Salt.

Introduction

The study of unauthorised housing falls within many different disciplines; planners (Rakodi, 2006, 2003, 2001; Kombe, 2005; Sliuzas, 2004; Pugh, 2000; Kamete, 2000; Zegarac, 1999), architects (Winayanti and Lang, 2004; Tipple, 2000; Fekade, 2000; Jie, 1997; Shakur and Madden, 1991; Turner, 1972), law-makers (Fernandes and Varley, 1998), geographers (Gough and Kellett, 2001; O'Hare et al. 1998; Gough, 1996; Main, 1994) and economists (e.g. Pillay and Naude, 2005) have all addressed the issue of unauthorised housing and its relationship with urban planning. A range of academic studies from different disciplines has resulted in different emphases and influences and various labels including unauthorised, uncontrolled, unplanned, unorganised, informal or illegal urban housing have been applied to describe housing outside normal regulations. All these labels share one characteristic - the non-compliance with planning standards and regulations. Compliance with planning standards can range from high (complete) compliance to medium, low and non-compliance (Arimah and Adeagbo, 2000). This research deals with unauthorised urban housing based on its level of compliance with residential standards, rather than taking unauthorised housing as a general concept.

A review of the unauthorised housing and urban planning literature emphasised the importance of compliance with planning standards as a fundamental element in housing development. Compliance with planning standards also reflects the ability of planning authorities in controlling and guiding the whole urban development process. Planning authorities are concerned with using planning standards to ensure proper

housing conditions and infrastructure. Despite the importance of planning standards to planning authorities and residents, this topic has been relatively less developed or investigated in the unauthorised housing literature. This has been criticised in the works of Rakodi (2001) and Fernandes and Varley (1998).

Until recently, the literature on unauthorised housing can be divided into two main areas: academic studies and technical studies (Walker, 2001). Academic studies emphasised two dimensions: the social and environmental cost resulting from housing without compliance with planning standards (e.g. Kamete, 2000); the use of alternative or intermediate technology to reduce the cost of building materials with respect to unauthorised housing (e.g. Gough, 1996). The technical studies are related to the structural issues and the technical manuals produced by building components producers, mostly cement manufacturers. These manuals generally do not differ greatly from the academic works aforementioned. Walker (2001) states “They identify problems of design and construction in self-built housing, and propose solutions to these, which generally rely upon proper training of the people involved. The difference lies in the nature of the solutions proposed, which tend to be more conventional than the other proposals, and to involve the use of building materials produced by the company in question.” (p.5)

This has led urban planning and unauthorised housing researchers (e.g. Kironde, 2006; Rakodi, 2006, 2001; Kombe, 2005; Walker, 2001; Fekade, 2000; Tipple, 2000; Post, 1996) to criticise the excessive concentration on the social and environmental costs of unauthorised housing, without taking into account the importance of factors affecting compliance with planning standards including socio-economic motives,

urban management practices and the uncertainty of planning standards. The link between these vital issues is a critical one in many developing countries and most commentators support the need for a clear role for improving the effectiveness of planning and management in situations of poverty. This emphasis is in keeping with the works of Rakodi (2003, 2001), Kironde, (2006), Sliuzas (2004), Arimah and Adeagbo (2000), UNCHS (1999), Zegarac (1999), Fernandes and Varley (1998), Jie (1997), Post (1996), who all argue that understanding unauthorised housing requires addressing three sets of factors including socio-economic motives; urban management practices; the uncertainty of planning standards, in order to be able to formulate planning interventions and the sustainable management of unauthorised housing.

This paper looks at how understanding three vital issues can improve the knowledge and understanding of unauthorised housing in order to produce effective planning strategies. In addition this research will enhance the ability of the planning authorities in developing countries, especially in Jordan, to benefit from empirical findings and it, therefore, has the potential to influence government policy on addressing unauthorised urban development.

Even though there has been a considerable number of studies relating to unauthorised housing, several factors provoked further research in this area. First, there is a need for more investigation to address the role of socio-economic factors, management practices and the uncertainty of planning standards in illegal housing (Rakodi, 2001). Second, many of the unauthorised urban housing studies have tended to be concerned with theoretical arguments. Third, very little attention has been given to unauthorised urban housing research in Jordan. It is therefore appropriate to investigate the

application of this approach within the Jordanian environment. Fourth, only a few empirical studies have investigated unauthorised housing using planning standards, even though researchers (e.g. Rakodi, 2005, 2001; Few et al., 2004; Tipple, 2000) have recommended conducting further unauthorised housing research.

Over the last three decades, Jordan has experienced an accelerated growth of urbanisation. In 1970s, the urbanisation rate was 65% (Jordanian Statistical Yearbook, 1975). At present, over 80% of the population live in urban areas (Jordanian Statistical Yearbook, 2005). The main drives of rapid urbanisation are the surge of Palestinian refugees into Jordan and the immigration from rural into urban areas. This urbanisation rate with a back drop of poverty, low incomes, limited economic capabilities and lack of development control has resulted in various spatial and environmental problems. These include increased illegal housing in urban areas which do not fully comply with residential standards, traffic congestion, residential overcrowding, air and water pollution (Meaton & Alnsour, 2006).

It is clear that Jordan needs effective urban planning instruments but these have to be based on available resources and should reflect the local socio-spatial context.

In the past Jordanian building standards¹ were developed using input from foreign consultants from the UK and local experts and professionals (Zagha, 2003). This resulted in building standards being based largely on engineering and did not take into account economic problems and environmental challenges. For example, a number of issues related to urban housing design such as, windows, tiling and the space required

¹ Building standards stipulate how the settlement should look like in terms of quality, while building regulations are rules that allow or disallow activities on the plot or in an area; or prescribe the way the plot can be developed or used. They include zoning controls.

for each house were not considered. The resulting freedom in the design of houses has resulted in, amongst other things, increased energy consumption and environmental problems, such as air pollution (Meaton and Alnsour, 2006).

Residential Building Standards in Old Salt

The city of Salt was once the capital of Jordan. It lies north-east of Amman with a population of around 110,000 inhabitants (Jordan Census, 2004) and comprises 80 square kilometres (Figure. 2.1). It is a relatively short journey from Amman along 30 kilometres of motorway and takes less than fourteen minutes by car or bus. It consists of twelve areas (Figure. 2.2).

Figure 1

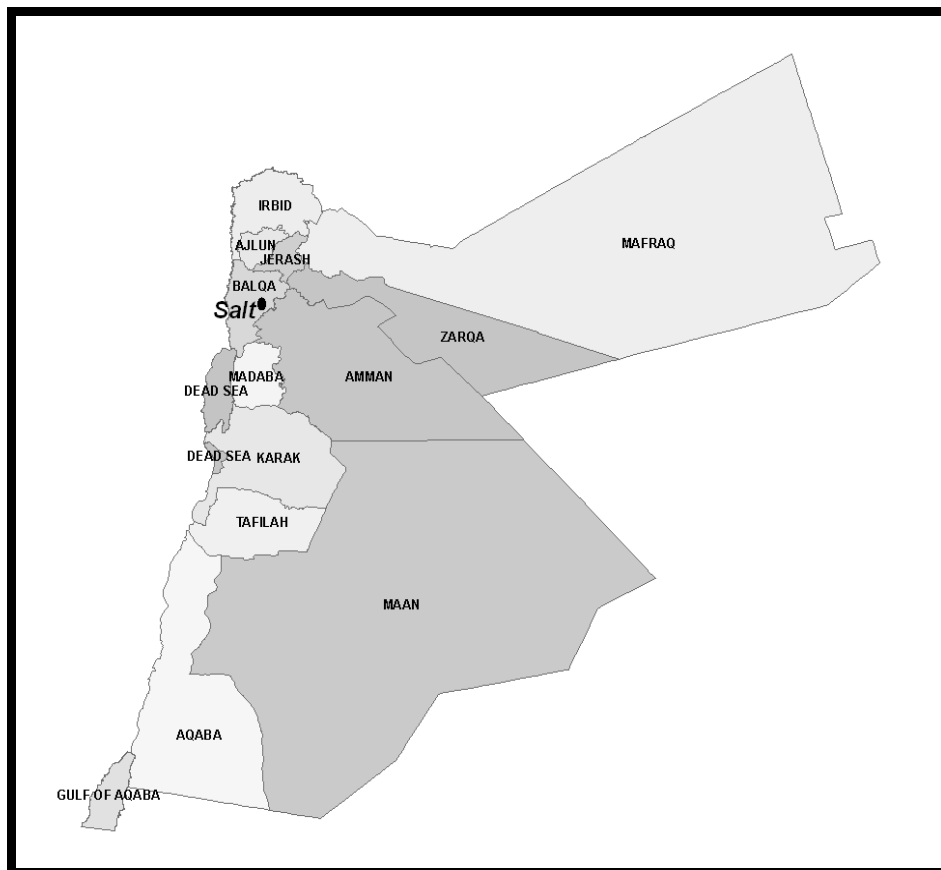
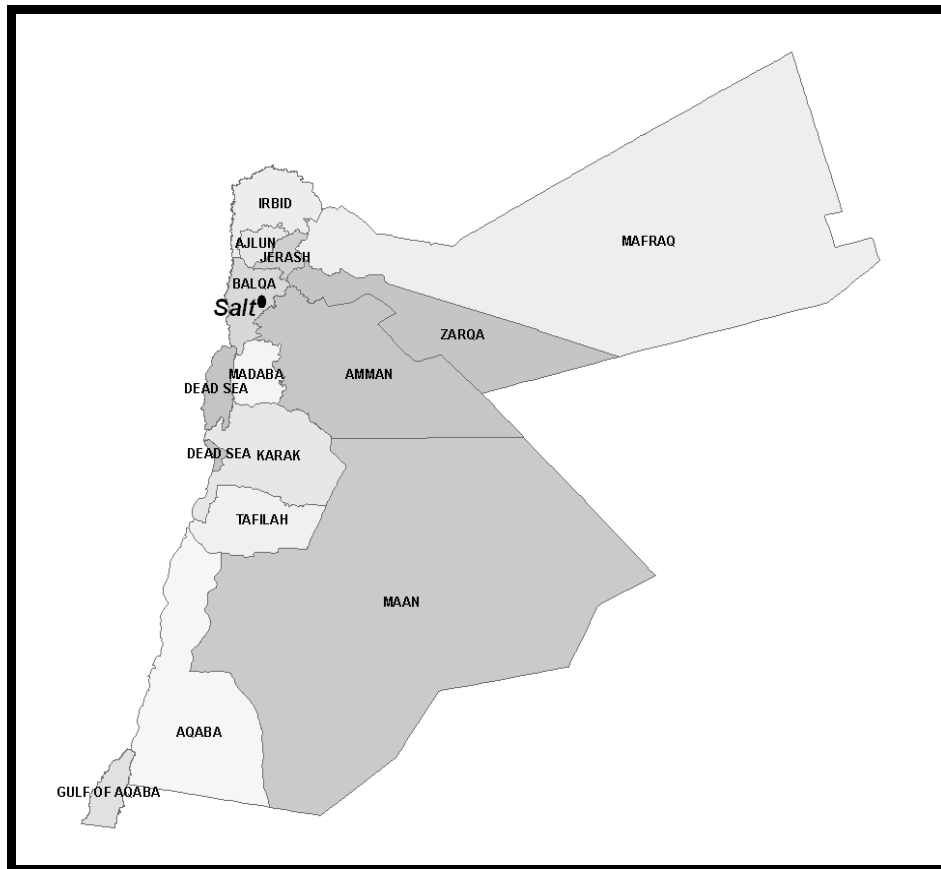
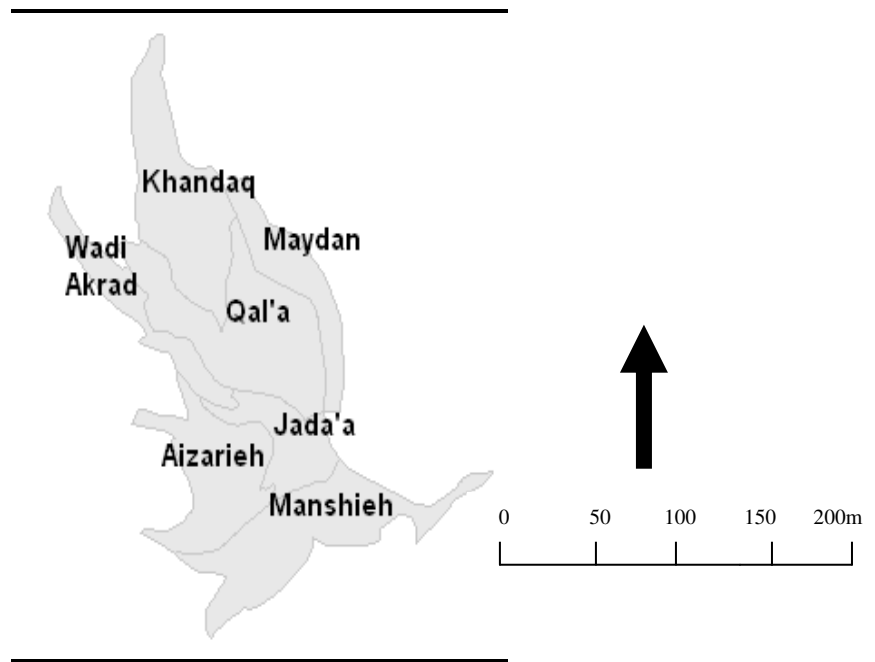


Figure 2



Old Salt developed around the spring in the Akrad valley (*Wadi* in the Arabic language), on three hills including Al-Qal'a, Al-Jada'a and As-Salalem, separated by the flood plains of Wadi-Akrad and Wadi-Es-Salt. At present Old Salt represents seven small areas (Figure: 2.3).

Figure 3: The map of Old Salt. Source: Greater Salt Municipality (2005)



In Jordan, the core of residential standards is the zoning approach, where land is classified into planned and unplanned, and then the planned land is divided into residential zones by master plans (Zagha, 2003). As this paper discusses unauthorised housing on planned land, the argument will focus on residential standards related to planned land.

In Jordan, residential planning standards relating to planned land specified minimum levels for plot area, the amount of ventilation space around the house, and the amount of frontage to the plot. The number of storeys, the occupancy ratio to the plot and building height were specified at maximum level.

Residential zones

In Salt planned residential land is divided into five residential zones, namely; “A”, “B”, “C”, “D” and “E”. The logic behind these subdivisions is closely related to

income level, population density, infrastructure and services. Residential zones “A” and “B” are allocated to high income people, zone “C” to middle income people, zone “D” to both middle and low income people and “E” zone to low income people.

The zoning process is highly political and may be used by one class of citizens to the disadvantage of another, i.e. by manipulating zoning regulations in “A” through “D”, to exclude families of lower income from moving into one zone or the other.

Land subdivisions

Based on the residential zones, land should be divided into plots. The size of plots varies from one zone to another. Table 2.1 shows the minimum plot area specified by Building Regulations Ordinance of 1979, No. 67. Land subdivisions provide the essential characteristics of land uses, street patterns and public utilities.

Table 2.1: Land subdivisions by residential categories in Salt

Residential category	Minimum plot area
A	1000 M ²
B	750 M ²
C	500 M ²
D	250 M ²
E	170 M ²

The main purpose of these subdivisions is to enable all income categories to access land. Yet in all Jordanian urban areas more land is planned for A and B residential uses than for other uses. Because demand has been higher than supply unauthorised housing sprawl has occurred. Planning authorities continue to provide larger plots despite the fact that

economic conditions have increased the number of urban poor and masterplans have failed to respond to the changing needs of the market. The National Housing Strategy has recommended increasing the number of available small plots affordable to the poor through changing the zoning of some “A” and “B” zones to the lower categories “C”, “D” and “E”.

Setbacks

Setbacks² are another standard for controlling housing construction. Setback specifications are supposed to ensure adequate ventilation space between houses in order to protect public health.. Table 2.2 shows these minimum standards of ventilation space.

Table 2.2: Setbacks specified by building regulations in Salt

Residential zone	Minimum Setbacks in M		
	Forward	Sidewards	Backward
Zone A	5	4	4
Zone B	4	3	4
Zone C	3	2.5	3
Zone D	3	2	2.5
Zone H	2	1.5	1.5

The table shows that the minimum setbacks are comparatively high in zones A and B. Although the idea is to achieve consistency between the lot size area and the setbacks area (Zagha, 2003) plots in the lower graded zones lose more space for ventilation purposes than plots in top graded zones. For example, the overall setbacks that should be made by residents in zone “A” must be 73m on a plot equals 1000m², and in the zone “H”, 12m on a

² The term ‘setbacks’ refers to the ventilation space between houses specified by law and the space between the house and adjacent road specified by law.

plot equals 170m². This suggests that high income people in zone “A” would leave 7.5% of their plots for ventilation space, while low income people in zone “E” would leave 12.35% of their plots for ventilation space.

Plot frontage

Plot frontage is another standard for controlling housing construction. The main reason for specifying minimum frontage by planning regulations is to reduce infrastructure cost (Zagha, 2003) as a longer length of frontage implies higher infrastructure cost. Table 2.3 shows the minimum frontage required for each plot type in the Greater Salt Municipality.

Table 2.3: The minimum of frontage to the plot

Residential zones	Minimum of plot frontage
Zone A	25 m
Zone B	20m
Zone C	18 m
Zone D	15 m
Zone H	12 m

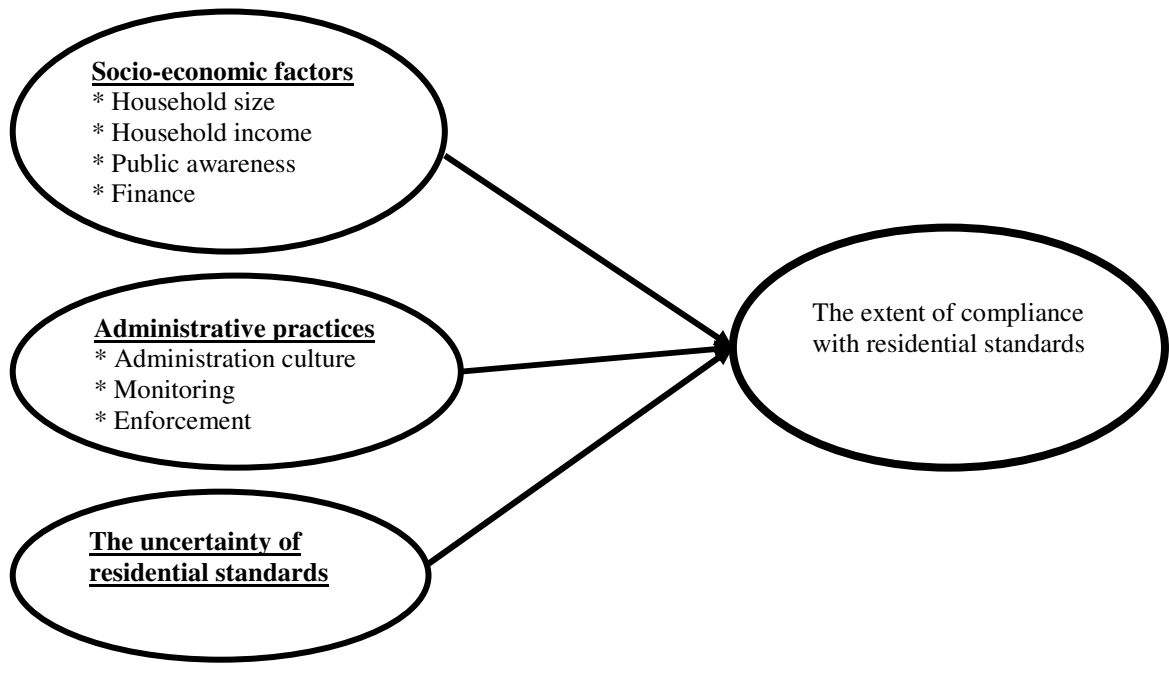
Research Framework

Figure 2.1 illustrates the framework for exploring how compliance with residential standards is influenced by three groups of factors:

- socio-economic factors

- administrative practices
- uncertainty of residential standards

Figure 4: Research Framework



These groups of factors are now explored in more detail.

Compliance with Residential Standards

The dependent variable, compliance with residential standards was defined as the planning standards specified at the minimum level for the residential zone D (according to Building Regulations Ordinance No. 67, 1979). These relate to minimum plot size, minimum residential setbacks and minimum frontage to the plot.

In Salt plots generally range from 170m² (zone H) to 1000m² (zone A) but for the study area (i.e. Old Salt or zone “D”) minimum plot size was specified as 250m².

Minimum residential setbacks were determined in Old Salt as:

- backward setbacks 2.5m
- forward setbacks 3m
- right setbacks 2m
- left setbacks 2m

Minimum frontage to the plot specified in planning regulations ranges between 12m in zone “H” to 25m in zone “A”. In zone “D” minimum frontage to the plot is specified as 15m.

Socio-economic factors

Challenges, such as large family size, low income levels, poor public awareness of planning and building regulations and lack of housing finance facilities, are accompanied by an increasing demand for housing. Accelerated demand for housing under these socio-economic conditions provides opportunities to build with low levels of compliance with planning standards.

According to the Jordan Census (2004), household size can be defined as those persons who are living together in the same housing unit, or a household may consist of one person or more than one who may or not be related to the others. Family size is

an important factor behind the rising demand for space (Tipple, 2000). Several studies have confirmed the importance of this variable (e.g. Tipple, 2000 and Fekade, 2000).

Household income is defined as gross income from all sources, including wages, salaries, incomes from businesses or informal sector activities, investment income and, where information is available, income in kind such as consumption of agricultural products which might have been sold (Jordan Census, 2004). Household income often directly links to most components that contribute to the construction process, such as area of house, design and quality (Fekade, 2000). Compliance with residential standards generally incurs greater building costs. In Jordan, like many other developing countries, incomes are often low. Therefore, it is expected that the level of income is positively related to the extent of compliance with residential standards.

According to Erbas and Nothaft (2005), home finance facilities can be defined as the ability of an individual to obtain loans by lower monthly payments and lower interest rates over a long period of time in order to build a house. These facilities can be formally provided by government or commercial banks. Financial facilities of home construction should be seen as stimulations to comply with residential standards. On the other hand, the lack of financial facilities often leads to poor design and poor quality of dwelling. Thus, residential financial facilities have an important role in influencing the extent of compliance with residential standards. The increase in residential financial facilities is thought to lead to an increase in the levels of compliance with residential standards.

Public awareness is defined as generic information provided to the broader public to raise awareness about planning standards. This may include information on the ways to reduce the risk of property damage, how to maintain a house value and to protect the urban environment

If people are unaware of building standards it follows that they will be unlikely to comply with them. This research aimed to explore this, and hypothesised that an increase in the level of public awareness would lead to an increase in compliance with building standards.

Administrative practices

Primary responsibility for the application of residential standards rests with local management and national government. Administration culture, enforcement and monitoring are important for managing and controlling housing development. The relationship between municipal management practices and poor compliance with planning standards suggests that the practices of municipal management may contribute to poor compliance with residential standards (UNCHS, 1999).

A municipal management culture can influence, by positive or negative rewards, the behaviours and values of its individual members, while the organisation itself is constrained in what it can achieve by those same individuals. Culture is a symbiosis of inherited ideas, beliefs, values and knowledge which constitute the shared bases for social actions. The culture of municipal management arises through the development of norms and values that help it to control and manage urban development in local environment. Post (1996) argues that municipal culture is an important factor for

managing and controlling urban development. The challenge for managers is the enforcement of residential standards. The ambivalence of monitoring systems and planning enforcement oscillates between attempts to control and efforts to maintain kinship and friendship ties and special interests. Such ambivalence provides the potential of construction with low levels of compliance with residential standards. This suggests that current practices of municipal management will increase the spread of illegal housing. Therefore, it is expected that a positive relationship between municipal culture and the level of compliance with residential standards will be found.

Monitoring is defined as the periodic oversight of the construction process, or the implementation of an activity, which seeks to establish the extent to which construction actions are made soundly according to planning standards, so that timely action can be taken to secure and correct the deficiencies detected (Jordanian Building Regulations Ordinance, No. 67, of 1979). Evidence indicates that the level of compliance with planning standards is closely related to the monitoring systems of construction processes by local management (Arimah and Adeagbo, 2000). Thus, effective monitoring should result in more compliance with residential standards. Effective monitoring requires the removal of personal interests and good finance and information systems. Financial and administrative problems that face the municipal sector in Jordan include over-centralisation, lack of budget, lack of information and unskilled and untrained human resources in the municipalities. It is therefore expected that the monitoring system will be ineffective. This paper measures municipal monitoring for construction processes based on the definition in the Jordanian Building Regulations Ordinance, No. 67, of 1979.

According to the Building Regulations Ordinance No. 67, of 1979, planning enforcement can be defined as an instrument carrying out enforcement action where building work does not comply with the planning standards. The Building Regulations Ordinance, No. 67, of 1979 allows a notice to be served requiring the owner: (a) to remove any work contravening the planning standards or (b) to bring the work into compliance with the residential standards. Formal enforcement action is usually taken as a last resort. Enforcement is one of the basic instruments used in controlling urban development (Cullingworth and Nadin, 1994). Local planning authorities have the power to enforce planning regulations. Enforcement requires changes in administration culture and monitoring systems. Therefore, it is reasonable to consider that the enforcement of planning regulations is positively related to the level of compliance with residential standards.

The uncertainty of residential standards

Multiple definitions of uncertainty have been offered in the literature, including: lack of knowledge for decision making (Rakodi, 2001); ambiguity (Ogu, 1999); complexity (Kironde, 2006). The relationship between the uncertainty of planning standards and poor compliance with planning standards suggests that planning standards are unclear (UNCHS, 1999). Uncertainty is expected to be high with people, managers and even planners being confused. Hence, the uncertainty surrounding planning standards doesn't help people comply with residential standards and, at the same time, it doesn't help municipal management to control housing development. Thus, the certainty of planning standards has a positive impact on the extent of compliance with residential standards.

Methodology

The research population in this study is the city of Old Salt in Jordan. Old Salt represents residential zone “D” itself (i.e. housing units that are subject to planning standards of zone “D” according to the Building Regulation Ordinance No. 67, of 1979). It was targeted because no previous research has been conducted in this field. Residential zone “D” was targeted because it includes both middle and low income people, which will enhance the research. Residential zone “D” includes over 5482 housing units. These housing units are divided into seven small areas, the largest one, comprising of 1273 housing units, was selected for this study to insure greater representative.

A cross-sectional survey methodology employing questionnaires was used as a method of data collection. This was complemented by a series of semi-structured, face-to-face interviews with top managers in the Greater Salt Municipality. 1273 questionnaires were distributed personally, 858 of which were considered as useable. External and internal validity were established in this paper. Reliability was tested through the “Alpha” test and all the scales in the questionnaire were considered reliable. Finally, multiple regression analysis was considered to be an appropriate technique to achieve the paper objectives.

Results and discussion

A reliability test was carried out using Cronbach’s alpha, which measures the internal consistency of a construct. The recommended minimum acceptable level of reliability “alpha” is 0.50 or more using Nunnally’s (1978) criterion. Table 5.1 shows that the results of Cronbach’s alpha have passed and outstripped the minimum level of this test.

Table 5.1: Results of reliability tests of the variables

Variables	No. of items	α – value
Dependent variable (Compliance with residential standards	7	0.868
Finance facilities	7	0.708
Public awareness	6	0.900
Certainty of planning standards	6	0.689
Administration culture	8	0.782
Monitoring	6	0.554
Enforcement	5	0.693

Table 5.1 presents the descriptive statistics for the research variables. The table includes the mean as a measure of central tendency, standard deviation as a measure of spread of distribution, minimum and maximum values, and skewness³ and kurtosis⁴ values to check for normality⁵ of each variable.

According to Hair et al. (1998) skewness values within the range of -1 to $+1$ and kurtosis values within -3 to $+3$ indicate an acceptable range for normality whereas values falling outside the range of skewness and kurtosis indicate a substantial departure from a normal distribution. Thus, table 5.2 shows that skewness and kurtosis values for all variables fall within the acceptable range.

³ Skewness is a measure of symmetry of a distribution. A positively skewed distribution has relatively few large values and tails off to the right, and a negatively skewed distribution has relatively few small values and tails off to the left (Hair et al. 1998, p. 38).

⁴ Kurtosis is a measure of the peakedness or flatness of a distribution when compared with a normal distribution. A positive value indicates a relatively peaked distribution, and a negative value indicates a relatively flat distribution (Hair et al. 1998, p. 37).

⁵ Normality refers to the degree to which the distribution of the sample data corresponds to a normal distribution. Where normal distribution is a theoretical probability distribution in which the horizontal axis represents possible values of a variable and the vertical axis represents the probability of those values occurring. The scores on the variable are clustered around the mean in a symmetrical, unimodal pattern known as the bell-shaped or normal curve (Hair et al. 1998, p. 38).

Table 5.2: Descriptive statistics for research variables (N = 858)

Research variables	Mean	Std. Dev	Min	Max	Skewness	Kurtosis
Compliance with planning standards	2.49	0.788	1	4.83	0.281	-0.462
Household size	5.63	1.923	1	9	0.107	-0.978
Household Income	361.25	117.07	150	850	0.700	0.478
Public awareness	2.523	0.927	1	5	0.226	-0.505
Finance	2.292	0.707	1.14	5	0.999	0.626
Administrative culture	2.433	0.725	1	4.25	0.592	-0.544
Monitoring	2.466	0.613	1	4.67	-0.027	-0.478
Enforcement	2.321	0.791	1	5	0.994	0.167
Certainty of planning standards	3.255	0.785	1	5	-0.122	0.139

Dealing with missing data has been identified in the literature. One of the methods to deal with missing values is proposed by Field (2005) in which the ignorance of these values by giving them a specific code. In this paper eight cases were identified with missing data and they given the code 999.

Table 5.3: Regression analysis for the independent variables influencing the extent of compliance with planning standards

Independent variables	Unstandarised coefficients		Standarised coefficients	t-value	Sig.	Tolerance	VIF
	B	Std. Error	Beta				

(Constant)	0.561	0.184	-	3.050	0.002	-	-
Household size	-0.072	0.013	-0.175	-5.623	0.000	0.742	1.347
Household Income	0.002	0.000	0.225	7.880	0.000	0.882	1.134
Public awareness	0.032	0.037	0.038	0.877	0.381	0.381	2.627
Finance	0.114	0.039	0.102	2.940	0.003	0.597	1.674
Administrative culture	0.190	0.049	0.175	3.854	0.000	0.348	2.876
Monitoring	0.193	0.043	0.150	4.450	0.000	0.629	1.590
Enforcement	0.085	0.035	0.086	2.404	0.016	0.566	1.766
Certainty	0.094	0.029	0.093	3.287	0.001	0.891	1.122
R = 0.629							
R² = 0.396							
Adjusted R² = 0.390							
F = 68.925 Sig. 0.000							

It can be seen from table 5.3 that the model causes R to change from zero to 0.629 and this change in the amount of variance explained gives rise to an *F-ratio* of 68.925, which is significant ($P < 0.05$). Multicollinearity causes a problem for multiple regression since it can affect the parameters of a regression model (Field, 2005). According to Hair et al. (1998, p.191) there are three recommended methods for assessing multicollinearity: (1) the presence of high correlation (generally 0.90 and above), (2) the tolerance values, (3) the variance inflation factor values. However, the three tests for multicollinearity (see table 8.3) showed no high correlation values, the variance inflation factor (VIF) showed no values that exceed the generally accepted maximum level of 10 (an indication of high levels of multicollinearity) and the tolerance values showed no values less than the maximum level of 0.2 (also an indication of high levels of multicollinearity). Thus, no support was found for the existence of multicollinearity problem. However, outliers in the model should be estimated. According to Field (2005), 95% of cases in an ordinary sample are expected to

have standardised residuals within ± 2 . Since the sample in this study used for the purposes of the multiple regression analysis is 858, it is reasonable to find 9 cases i.e. (1%) that are outside of these limits. In other words, these diagnostics give no real cause for concern. In addition, to check for the outliers to determine if the regression model was biased, standardised residuals and Cook's distance were used. The tests indicated that less than 5% of the sample has no standardised residuals with an absolute value more than 2, which is considered acceptable based on Field (2005). Cook's distance showed no values that exceed the accepted maximum level of 1 (an indication of high level of influential cases). Finally, the Durbin-Watson test was undertaken to test if the residuals were correlated. The test indicated a value of 1.596, which is considered between the acceptable levels (less than 1 or greater than 3 are deemed to be unacceptable) (Field, 2005). Therefore, this study's sample appears to conform what is expected for a fairly accurate model.

The degree of compliance with residential standards

There is considerable variation in the plot areas, ventilation spaces and the frontage to the plots of housing in Salt. In addition, there is substantial variation in housing design including building material, colours, windows, doors and entrances of houses. Empirical findings have revealed that the degree of compliance with planning standards is low. Importantly, the level of compliance with planning standards differs from one house to another and from one standard to another. Empirical findings have revealed that this variation can be linked to respondents' income, educational levels, household size, age and occupation.

Empirical findings also showed that ventilation spaces were breached more than any other standards. It was observed that there were very few ventilation spaces separating housing

units. In some cases, very limited ventilation space between houses existed, but these were under the legal limit specified by regulations. The poor compliance with the ventilation spaces more than other any standards may be due to the following reasons.

1. Ventilation space is the only standard which is influenced by other residential standards and does not affect them. For example, plot size and/or the frontage to the plot are determined ventilation spaces, but the latter is not determined by the plot size and/or the frontage to the plot
2. Building directly on to a neighbour's house reduces the cost of construction.

The extent of compliance with planning standards is quite low with almost all standards being flouted and housing development has taken place in an uncontrolled way. Such poor compliance with residential standards has created poor built environment with additional planning obstacles such as the numbering of these houses.

Findings from testing the overall hypotheses and interviews

The previous section has shown that the extent to which housing development complies with residential standards is low. This implies that residential standards in Jordan have not been effective. Different factors account for the poor compliance with these standards. These factors relate to interaction between three sets of factors including socio-economic factors, municipal management practices and the uncertainty of planning standards. Factors contributing to the low level of compliance were formulated as hypotheses. Multiple regression analysis was utilised to test these

hypotheses. A summary of these hypotheses and their results is presented in table 5.3. These results suggest that these independent variables have different effects on the extent of compliance with residential standards. Moreover, the researchers conducted semi-structured, face-to-face interviews with top managers based in Greater Salt Municipality in order to gain a better understanding of illegal housing.

Table 5.3 shows that, despite people being aware of residential standards, they do not comply with them. It would seem that the problem of poor compliance with residential standards is strongly related to structural challenges in Jordanian economy and prevailing cultural attitudes. Unfortunately, these issues were not taken into account when residential standards were formulated.

Table 5.3 also shows that household size has a direct negative impact on the extent of compliance with residential standards. Large family size has led to an increased demand for space. In order to accommodate large families people tend to build without adherence to regulations.

The findings show that household income level is quite low and has the most important significant impact on the extent of compliance with residential standards. Poor wages have made it impossible for incomes to keep up with the rising cost of building materials and plot prices. This result suggests that the minimum plot size stipulated in the regulations (250m² minimum) is not consistent with people's income (i.e. the cost of compliance with residential standards is higher than actual people income levels). As a result, the link between economic reality, cultural norms and residential standards was not made when these standards were developed.

Another feature confirming that residential standards are out of touch with local economic conditions and cultural norms is the inability of government to provide finance facilities, especially for low income people. It was argued that financial shortages play an important role in continuing unauthorised housing. The research results revealed that lack of finance has a significant impact on the extent of compliance with residential standards. Economically, poor finance stems from the unavailability of loans from formal financial institutions for constructing housing to meet stipulated planning standards. High mortgage interest rates, short-run repayment loans and inappropriate minimum down payments in Jordanian banks are indicative of hard problems in the economy. Culturally, many people who live in Jordan are Muslim and Islamic rules forbid borrowing from commercial banks due to the interest (*Rebha*). This reflects the fact that planning standards were specified without taking into account the financial situation and the affect of religious and cultural norms in the community.

The findings show that one of the most important factors contributing to poor compliance with residential standards is the current municipal management culture. It was argued that urban management in most developing countries suffers from several negative manifestations such as favouritism, nepotism and corruption. These manifestations were found to provide opportunities for people to build illegally. The poor relationship between local administration and centralised government has aggravated these manifestations.

Research findings reveal that residential standards were not supported by any effective monitoring system. Table 5.3 shows that municipal monitoring of construction processes has a positive impact on the extent of compliance with planning standards. The results of

interviews with top managers illustrate that the municipal monitoring system is outdated and traditional. This is because of a lack of financial capabilities, unavailable information and databases and unqualified human resources. However, these challenges hinder the ability of municipal management to cope with the problems of ensuring sustainable development. The most serious of these problems is the absence of any clear physical strategy for the city, as it is developing without any planning strategy. Thus, urban planning has lost its basic role in the city.

Enforcement machinery has not been put in place. It has been shown that enforcement of residential standards has a positive impact on the extent of compliance with planning standards. Besides poor budgets and lack of information, the interview results have revealed that lack of enforcement is also related to the following socio-cultural factors.

1. Legal gaps exist in planning regulations such as penalties against encroachment. Such gaps were utilised by municipal staff to maintain kinship ties and personal interests.
2. Municipal elections have led to a lack of compliance with residential standards. The Municipalities Law of 1955 allows anyone to be a candidate for the municipal election. As the main objective of any municipality is managing the city to ensure sustainable development, the candidates should be qualified, but a municipal election is based on kinship ties and tribal relationships in the city and these hinder elected members from enforcing planning regulations. Therefore, kinship ties affect the level of enforcement of residential standards.

3. Decision makers often live with a conflict between their religious ideology and the enforcement of residential standards. In addition, some of them believe that the demolition of illegal housing is undesirable within Islamic religion. As a result, many people have benefited from this conflict by building illegally.
4. Employees who are concerned with enforcing are, sometimes, at risk if they want to enforce the residential standards.

It was argued that urban planning approaches, standards and regulations were developed in the Europe and the US. The research results reveal that the uncertainty of these standards has led to low levels of compliance with residential standards. This suggests that residential standards are complicated when people try to apply them. Urban planning and residential standards in Jordan relied upon the principles of British and American planning systems.

The importing of planning systems from abroad has resulted in the uncertainty of residential standards, where they are not consistent with the local socio-economic context. However, many of these imported planning systems and acts in relation to development control were reassessed and amended in the exported countries and were found to be more rigid and unable to deal with urban changes in Jordan. While Jordan adopted a centralisation approach, it is difficult to organise the economic, social and physical aspects of developing planning under centralisation norms. The British and American planning models rely extensively upon free economics and local autonomy in decision making, which are not found in Jordan. Thus, these translated or imported systems have created a wide range of uncertainty in planning.

The model of illegal housing in Jordan is similar to many other Arab countries, where they are similar to each other in political aspects of illegal housing. Both of them were subjected to European colonisation and, therefore, many Arab countries have failed in managing illegal housing. They are unable to develop a real political planning system and public participation to control housing and they failed to link western planning systems with local cultural-physical context.

Despite political similarity, management of the illegal built environments may vary between them. This is because of the differences in physical, socio-economic and cultural context. In Egypt, managing illegal housing is largely linked to economic context of informal settlements themselves and, therefore, Egyptian model focuses on the generation of income from these settlements and reducing the social and environmental costs and building materials of illegal housing.

Managing illegal housing, in Jordan, has extensively linked to cultural-political context, and, therefore, it tended to focus on a partnership approach to urban governance to incorporate the new and changing role of components of civil society. Decentralisation and democratisation are considered as key tools to reduce the size and power of the central government and to improve accountability of development planning and participation at the local level.

Implications

This paper suggests a number of implications for planning and managerial practices.

- Planning authorities should reassess current residential standards and consider whether these standards should be more relaxed. Reassessment of such standards could contribute to better understanding and could remove any ambiguity. New insights identified by this research should make these standards more appropriate for socio-economic conditions. For instance, the current plot size specified in regulations, which is 250m² in residential zone “D”, is not suitable for low income people. Reducing the standard would allow low income people to access plots legally. In addition, current residential standards are specified at minimum level and not maximum level. This does not contribute to regular urban form.

- The construction process is implemented without controls in terms of time, space and design. Construction time and space should be specified by each developer to the planning authorities. At present, each house differs from the next in terms of space, windows, entrances, colour, etc. Since Jordan is a poor country, with limited resources in terms of water and energy, the construction processes should be dependent on urban designs which take into account economic considerations and limited resources. Residential standards without design approaches generate development but without form. Thus, it is important to produce design approaches and integrate them with residential standards to ensure sustainable development.

- Municipal election law should be revised to ensure that any candidate for municipal election is qualified in terms of planning and management.

- The local planning authorities are just executive organisations for planning functions in general. Their activities would be better facilitated if the over-centralisation is

removed. It is also essential for local planning authorities to participate in formulating strategies at both regional and central levels to improve their performance. Unnecessary decisions from top to bottom-level based on legal backing should be addressed. However, a separation of centralised government from local administration, under proper law, may be better.

- Local authority planning needs to create effective monitoring and enforcement systems based on operational tools such as GIS. Thus, local authorities need adequate resources with professionals and with decent budgets. This will enhance their efficiency. The need for capacity building and actual performance should also be addressed. This will enable planners and managers to understand better the complexity of the urban process and acquire modern instruments to improve their productivity.
- Government should play an effective role in funding housing construction, with more facilities for people on low incomes. Restrictions of commercial banks on credits for low income people should be addressed. There is also a need to search for new finance channels consistent with Islamic rules. In fact, finance remains one of the best options for overcoming the housing needs of low income households and raising the level of compliance with residential standards.
- Current planning schools at Jordanian universities can play an important role in the planning process, through addressing planning and built environment problems such as illegal urban development, inappropriate current urban design models, different environmental challenges in urban areas and urban poverty.

- Supporting public participation and encouraging the private sector to get involved in the planning process are important steps to control housing development. This can be aided by different tools such as the establishment of a forum for planning, where citizens, academics, planners and managers can discuss planning problems from different perspectives. This will enhance the planning process in Jordan.

- Research centres for planning purposes should be established, focused on planning relating to Jordan. Such new research centres could provide extensive knowledge for improving the planning process.

- Finally, establishing an urban strategy at regional level that regards the residential zone as an important nucleus affecting city, region and state as a whole. This strategy should be characterised by flexibility and comprehensiveness to ensure tackling essential problems such as illegal housing, infrastructure and services, land use and population densities.

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