The publishing framework is shaped around the forces which act on built environment, which maintain, change and transform it. The content consists of articles which deal with the issues in particular with responsive, self-sustaining and re-useable environments which have the capacity to respond to change, provide user choice and value for money.

The journal of an association of institutes and individuals concerned with housing, design and development in the built environment. Theories, tools and practice with special emphasis on the local scale.

Dr. Rehak Ahmed, RMIT University, Australia.
Dr. Zainab F. Ali, University of Damman, Saudi Arabia.
Dr. Robert Brown, University of Westminister, London, Great Britain.
Prof. M. Calzoletti, University of Rome, Italy.
Prof. D. S. Daud, University of Malaya, Malaysia.
Diane Dacquin, Building and Social Housing Foundation, Coevring, Great Britain.
Prof. Yusuf Durugorgu-Yusuf, Istanbul Technical University, Istanbul, Turkey.
Prof. Jin-Ho Park, University of Central Lancaster, UK.
Dr. Keith Hilton, Manchester, UK.
Prof. F. M. Daud, University of Malaya, Malaysia.
Prof. A. Friedman, McGill University, Montreal, Canada.
Dr. Ahmed Abu Al Halaj, Philadelphia University, Eng. & Arch. Dept., Jordan.
Prof. Keith Hilton, Manchester, France.
Dr. Karim Hadji, University of Central Lancaster, UK.

Aims

The Open House International Association (OHA) aims to communicate, disseminate and exchange housing and planning information. The focus of this exchange is on tools, methods and processes which enable the various professional disciplines to understand the dynamics of planning information. The focus of this exchange is on tools, methods and processes which enable the various professional disciplines to understand the dynamics of housing and so contribute more effectively to it. To achieve its aims, the OHA organizes and co-ordinates a number of activities which include the publication of a quarterly journal, and, in the near future, an international seminar and an annual competition.

Aims

The journal of an association of institutes and individuals concerned with housing, design and development in the built environment. Theories, tools and practice with special emphasis on the local scale.

Qatar University
Qatar University Library, Agriculture Department, Bilgait B13 / Office Room # 8154
P.O. Box 2713, Doha, Qatar. (Farokh Ghori) farokh@qula.edu.qa

BRAQ University
Department of Architecture, Dhaka, Bangladesh,
(Fauz H Mawali) fauz@braq.ac.bd

Universidad Del Rosario
Calle 14 No. 8-25, Bogota, Colombia, (Yajay Espitia) jespitia@urosario.edu.co www.urosario.edu.co

Birzeit University Main Library
Ramallah, West Bank, P.O. Box: “14”, Birzeit
Palestine (Naghmeh Shihadeh) tsouros@braq.ac.bd

Inha University
Department of Architecture, Inha University, Incheon, Korea. (Jin-Ho Park) jinpark@inha.ac.kr

www.openhouse-int.com

The Open House International Association (OHA) aims to communicate, disseminate and exchange housing and planning information. The focus of this exchange is on tools, methods and processes which enable the various professional disciplines to understand the dynamics of housing and so contribute more effectively to it. To achieve its aims, the OHA organizes and co-ordinates a number of activities which include the publication of a quarterly journal, and, in the near future, an international seminar and an annual competition.

Aims

The journal of an association of institutes and individuals concerned with housing, design and development in the built environment. Theories, tools and practice with special emphasis on the local scale.

Qatar University
Qatar University Library, Agriculture Department, Bilgait B13 / Office Room # 8154
P.O. Box 2713, Doha, Qatar. (Farokh Ghori) farokh@qula.edu.qa

BRAQ University
Department of Architecture, Dhaka, Bangladesh,
(Fauz H Mawali) fauz@braq.ac.bd

Universidad Del Rosario
Calle 14 No. 8-25, Bogota, Colombia, (Yajay Espitia) jespitia@urosario.edu.co www.urosario.edu.co

Birzeit University Main Library
Ramallah, West Bank, P.O. Box: “14”, Birzeit
Palestine (Naghmeh Shihadeh) tsouros@braq.ac.bd

Inha University
Department of Architecture, Inha University, Incheon, Korea. (Jin-Ho Park) jinpark@inha.ac.kr

www.openhouse-int.com

The Open House International Association (OHA) aims to communicate, disseminate and exchange housing and planning information. The focus of this exchange is on tools, methods and processes which enable the various professional disciplines to understand the dynamics of housing and so contribute more effectively to it. To achieve its aims, the OHA organizes and co-ordinates a number of activities which include the publication of a quarterly journal, and, in the near future, an international seminar and an annual competition.

Aims

The journal of an association of institutes and individuals concerned with housing, design and development in the built environment. Theories, tools and practice with special emphasis on the local scale.
Contents

open house international  december 2014  vol.39 no.4

OPEN ISSUE  covering Affordable Housing Schemes, Sustainable Buildings, Gentrification, Vertical Greenery System, Place Identity, Carob Warehouses, Incremental Housing Egypt, Digital Architecture Education.

Editors: Nicholas Wilkinson, RIBA, AA Dipl. Eastern Mediterranean University, Faculty of Architecture, Gazimagusa, Mersin 10, Turkey.
E-Mail: nicholas.wilkinson@emu.edu.tr

EDITORIAL:  4
Nicholas Wilkinson

AFFORDABLE HOUSING SCHEMES:  5
OVERCOMING HOMEOWNERSHIP PROBLEMS
Zafirah Al Sadat Zyed, Wan Nor Azriyati Wan Abd Aziz, Noor Rosly Hanif, Peter Aning Tedong

LIFECYCLE FRAMEWORK FOR SUSTAINABLE RESIDENTIAL BUILDINGS IN MALAYSIA  14
Mahdokht Ebrahimi, Hamzah Abdul Rahman, Faizul Azli Mohd-Rahim, Wang Chen

A COMPARATIVE STUDY ON CIHANGIR AND TARLABASI GENTRIFICATION PROCESSES  28
Mehmet Emin Şalgamcıoğlu, Alper Ünlü

VERTICAL GREENERY SYSTEM (VGS) IN URBAN TROPICS  42
Abdul-Rahman, Chen Wang, Azli Mohd Rahim, Siaw Chuing Loo, Nadzmi Miswan

PLACE IDENTITY: A THEORETICAL REFLECTION  53
Nur Farhana Azmi, Faizah Ahmad, Azlan Shah Ali

ADAPTIVE REUSE OF CAROB WAREHOUSES IN NORTHERN CYPRUS  65
Hulya Yuceer, Beser Oktay Vehbi

IMPLICATIONS FROM RECENT EXPERIENCE OF AN INCREMENTAL HOUSING PROJECT IN EGYPT  78
Ahmed M. Shalaby

IMPROVING COMMUNICATION AND CHANGING ATTITUDES IN ARCHITECTURAL PRACTICES: Digital architectural education tools for non-experts  91
Matevz Juvancic, Marjan Hocevar, Tadeja Zupancic

NEXT ISSUE: VOL. 40.NO.1 2015: OPEN ISSUE
Editor: Nicholas Wilkinson, RIBA, AA Dipl. Eastern Mediterranean University, Faculty of Architecture, Gazimagusa, Mersin 10, Turkey.
E-mail: nicholas.wilkinson@emu.edu.tr

Open House International has been selected for coverage by EBSCO Publishing, the ELSEVIER Bibliographic Database Scopus and all products of THOMSON ISI index bases: SSCI, A&HCI, CC/S&BS and CC/A&H. The journal is also listed on the following Architectural index lists: RIBA, ARCLIB, AVERY and EKISTICS. Open House International is online for subscribers and gives limited access for non-subscribers at www.openhouse-int.com
Vol. 39  No. 3 2014
OPEN HOUSE INTERNATIONAL
THEME ISSUE covering Temporary Villages, NGOs, Disaster Reconstruction, Socio-Ecological Systems, Building for Safety, Prefabricated Modular Structures and more.

Editorial: Ifte Ahmed and Esther Charlesworth

Linking Organisational Competency to Project Success in Post-Disaster Reconstruction. Jason von Meding, Lukumon Oyedele and John Bruen

Responsible Reconstruction: The Architect’s Role. Madeleine Jane Swete Kelly and Glenda Amayo Caldwell

Permanent Housing in Community Socio-Ecological Recovery: The Case of T. Vilufushi, Maldives. Peter M. Lawther

Global and Regional Paradigms of Reconstruction Housing in Banda Aceh. David O’Brien and Iftekhar Ahmed

Getting the Message Across for Safer Self-Recovery in Post-Disaster Shelter. Charles Parrack, Bill Flinn and Megan Passey

Time-Efficient Post-Disaster Housing Reconstruction with Prefabricated Modular Structures. Tharaka Gunawardena, Tuan Ngo, Priyan Mendis, Lu Aye and Robert Crawford

Reflections on Residential Rebuilding After the Victorian Black Saturday Bushfires. Greg Ireton, Iftekar Ahmed and Esther Charlesworth

Cordaid’s Post-Disaster Shelter Strategy in Haiti: Linking Relief and Development. Harmen Janse and Kees van der Flier

Private Sector Investments and Associated Risk Implications for Post-Disaster Housing Development in Dhaka. Huraera Jabeen

Vol. 39  No. 2 2014
OPEN HOUSE INTERNATIONAL

Editorial: Henk Visscher

Negotiating Green Retrofitting Standards in Danish Urban Renewal - The Case Of Copenhagen. Lars A. Engberg

Energy Costs, Residential Mobility, and Segregation in a Shrinking City. Großmann Katrin, Buchholz Johan, Buchmann Carsten, Hedtke Christoph, Höhnke Carolin, Schwarz Nina

‘Deal or No Deal?’ Assessing The UK’s New Green Deal. Louise Reid

Upgrading Energy Efficient Housing and Creating Jobs: It Works Both Ways. Frits Meijer, Henk Visscher

Energy Policy Developments in the Dutch Non-Profit Housing Sectors. Nico Nieboer, Ad Straub, Henk Visscher

Energy Efficiency in French Social Housing Renovations via Design-Build-Maintain. Iadeo Baldiri Salcedo Rahola, Ad Straub, Angela Ruiz Lázaro, Yves Gallegue

Analysis of Energy-Efficiency Improvements in Single-Family Dwellings in Concepcion, Chile. Rodrigo Garcia Alvarado, Jaime Soto, Cristian Munoz, Ariel Bobadilla, Rodrigo Herrera, Waldo Bustamante

Analysis of The Accuracy Of Individual Heat Metering and Charging. Simon Siggelsten, Birgitta Nordquist, Stefan Olander

Energy Saving Policies for Housing Based on Wrong Assumptions? Henk Visscher, Dasa Majcen and Laure Itard

Book Review: khan Gunce
Previous Issues

Vol. 39 No. 1 2014
OPEN HOUSE INTERNATIONAL
OPEN ISSUE

Editorial: Nicholas Wilkinson
Sustainable Urbanism: Moving Past Neo-Modernist & Neo-Traditionalist Housing Strategies. Alazar G Ejigu & Tigran Haas
Sustainable Architecture in Rural Yayla Settlements. Sıdıka Çetin, Ayse Betul Gokarslan
The Layered Dependency Structure Matrix for Managing Collaborative Design Processes. Şule Taşlı Pektaş
Comparative Study of Courtyard Housing using Feng Shui. Aret Çelik, Banu Terlikler Çavuşoğlu, Zehra Öngül
A Review of Lofts as Housing in Istanbul. Serpil Özker
Housing Cooperatives in the Palestinian Territories: Development and Current Practice. Shadi Sami Ghadban
Attitudes towards Urban Open Spaces: Equating Human Needs on Open Space Planning. Melasutra Md Dali, Saffah Muhammad Yusoff, Putei Haryati Ibrahim

Vol. 38 No. 4 2013
OPEN HOUSE INTERNATIONAL

Editorial: Ashraf M. Salama and Florian Wiedmann
Manufacturing The Image Of Doha: From the Public Face of Architecture to the Printed Media. Ashraf M. Salama
The Spatial Development Potentials of Business Districts In Doha: The Case of the West Bay. Velinsa Mirincheva, Florian Wiedmann and Ashraf M. Salama
Urban Reconfiguration and Revitalisation: Public Mega Projects in Doha’s Historic Centre. Florian Wiedmann, Velinsa Mirincheva and Ashraf M. Salama
Understanding Inhabitants’ Spatial Experience of the City Of Doha through Cognitive Mapping. Ashraf M. Salama, Ahood Al-Maimani, and Fatma Khalfani
Experiential Assessment of Urban Open Spaces in Doha. Ashraf M. Salama, Fatma Khalfani, and Ahood Al-Maimani
From Souqs to Emporiums: The Urban Transformation of Abu Dhabi. Yasser Elsheshawy
Urban Transformation in the City Of Riyadh: A Study of Plural Urban Identity. Masary A. Al Naim
Tracing the Evolution of Urbanism in Kuwait. Yasser Mahgoub
The Verticalization of Manama’s Urban Periphery. Florian Wiedmann
This issue has many manuscripts dealing with PLACE, GENTRIFICATION PROCESSES, HOME OWNERSHIP, VERTICAL GREENERY SYSTEMS, SUSTAINABLE PERFORMANCE OF BUILDINGS AND COMMUNICATION IN PRACTICES.

The general content runs accordingly from Affordable Housing Schemes, Sustainable Buildings, Housing Poverty, Housing Preferences, Place Identity, Carob Warehouses, Incremental Housing Egypt, and Digital Architectural Education.

The order of the articles are as follows: Affordable Housing Schemes, Sustainable Buildings, Gentrification Process, Vertical Greenery Systems, Place Identity, Carob Warehouses, Incremental Housing in Egypt, Digital Architectural Education and Kavalklidere - The formation of a residential district during the 1950’s.

Some twenty authors make up the number of writers for these nine manuscripts. It shows the diversity of authors for all Open House papers and in particular the focus and research components of the same.

Next year in 2015, the first issue will be the fortieth volume of the journal. It has generally been a smooth process till now with two theme issues each year and two open issues. At the moment we have a large influx of papers making the planning a little difficult and authors are somewhat troubled by the wait time for their publication date. However they should rest assured that everything will be resolved in due course. The issues are full through 2015 and 2016.

Finally I have pleasure to announce the forth coming CIB W 104 Open Building Implementation to be held in September 2015 at ETH Zurich, Switzerland. There will be a strong focus on Open Building implementation and other current issues surrounding the subject. Those who wish to participate should contact Stephen Kendall at his home address, 220 West Durand Street, Philadelphia PA 19119, USA.

The Editor and collaborating editor Dr. Ashraf Salama and Web Site manager Emmanuel Tibung Chenyi wish our readers a very Happy New Year for 2015.

Nicholas Wilkinson  AADipl RIBA
Eastern Mediterranean University,
Faculty of Architecture
Via Mersin 10
Turkey
AFFORDABLE HOUSING SCHEMES: OVERCOMING HOMEOWNERSHIP PROBLEMS

Zafirah Al Sadat Zyed, Wan Nor Azriyati Wan Abd Aziz, Noor Rosly Hanif, Peter Aning Tedong

Abstract
Homeownership is a problem among younger working households (YWH). This is a more serious problem with YWH working in urban areas. New housing schemes introduced by the government show that measures are being taken. This paper aims to determine homeownership problems among YWH in order to assess the new housing schemes towards helping YWH. The questions arise are what are the homeownership problems among YWH and to what extent does YWH perceive the new housing schemes to help them. The objectives are to ascertain homeownership problems among YWH and to explore the perceptions of YWH on the new housing schemes introduced. The study was conducted qualitatively through in-depth interviews with YWH. The findings showed that the main homeownership problem highlighted by the YWH is housing prices are high in urban area which resulted to the location of affordable houses inconvenient. From the assessment, majority of the YWH agree with the new housing schemes. However there are weaknesses such as high land prices and absence of financial literacy. In conclusion, housing schemes should also consider financial education as part of their aims. Nevertheless, the introduction of housing schemes is beneficial to address homeownership problems among YWH.

Keywords: Young Household, Homeownership problems, Housing schemes, Affordable housing, Housing affordability

1. Introduction
Owning a house is every household dream. With increasing house prices especially in urban areas, younger working households (YWH) find it difficult to enter homeownership. With qualifications and employment, YWH today are a subset of middle income group and are facing difficulties in purchasing their first house (Wan et al. 2010).

In Malaysia, the state holds a responsibility in providing houses for low income households while other income households depend on the private sector for housing (Tan 2012). Tan (2012) also added the private sector has concentrated on high end homes because of the substantial increase in house and land prices. Because of this, there is shortage in supply of affordable houses in urban areas (NAPIC 2012). Even so, the houses that are affordable are located far from the city centre and incur additional transportation cost.

Moreover, the trend of migration rate from rural to urban areas has increased from 11% in 1957 to 72% in 2010 (PRIM]A 2012). Due to this, demand in urban areas has increased substantially. With demand increase and insufficient supply, the house prices are perceived to be unaffordable among YWH. The need for state intervention is crucial to rebalance the housing situation.

New housing schemes which are, My First Home Scheme (MFHS) and 1Malaysia People’s Housing Scheme (PRIMA) were recently introduced. It shows that the state recognised the problem and is taking steps to address the homeownership problems. However, the schemes are relatively new and raises a question on how will the new housing schemes help YWH effectively. This paper aims to determine what the homeownership problems among YWH are in order to assess the new housing schemes towards helping YWH. The objectives are to ascertain homeownership problems among YWH and to explore the perceptions of YWH on the new housing schemes introduced.

2. LITERATURE REVIEW
2.1 Homeownership
According to Boehm and Schlottmann (1999), homeownership has four types of benefits. The benefits are in monetary value, positive impact on social being and improve neighbourhood quality
and stability. Apart from that, homeownership is also beneficial towards employment and income. Munch et al. (2008) investigated the impact of homeownership on individual job mobility and wages in Denmark. They discovered that homeownership has a negative impact on job-to-job mobility both in terms of transition into new local jobs and new jobs outside the local labour market and there is a clear negative effect of homeownership on the unemployment risk and positive impact on wages.

The promotion of homeownership has led to the perception that it is available to all working ages (Wan et al. 2010). Due to this, there is a significant increase in homeownership rates. This is made possible through mass privatisation of the housing sector (Phang 2009). However, the restriction to access the private housing market led to indications of homeownership problems (Wilcox 2007).

Based on a case study in Malaysia, Wan et al. (2010) discovered that middle income households find it difficult to enter homeownership in the private housing market that is accessible to their workplace. The major concern is when house prices have risen twice as fast as earnings in 20 years (case of UK) (Wilcox 2007). This problem is even more acute among YWH. Homeownership problems involve largely on financial capacity, which are on house price, household income and housing choice.

2.2 Understanding homeownership problems

2.2.1 House price

According to Phang (2009), housing regulation has a housing market implication that includes expansion of the targeted housing sector over time, the relative constancy of actual housing expenditure to income ratios for targeted household groups, income inelastic housing demand and price inelastic housing supply. He argued that these forces are what drives the house price changes and are not relatively due to population growth rates and construction costs.

In this paper, when YWH has the tendency to ‘leave the nest’, it means there is greater demand of housing (Stutz and Kartman, 1982). Apart from that, the availability of mortgage finance also increases demand in housing (Bredenoord and Verkoren, 2010). As house price is what determined the affordability of houses, housing supply is relatively house price inelastic (Phang, 2009). Supply side and demand side explanations for the decline of housing affordability are not mutually exclusive and does not lead to increase in house prices if housing demand is stable or declining (Matlack and Vigdor, 2008). However, Mak et al. (2007) disagreed and argued that demand and supply are interactive and tend to reinforce each other and while there is an increase in housing demand, the supply lags behind housing demand.

Rapid economic growth, increase in population, liberalisation of the housing market and inadequate supply of affordable housing are the main reason behind the increase in house prices (Mak et al., 2007). House prices have increased markedly in many industrialised countries in recent years, apparently backing the strength of households’ consumption in a context of otherwise weakening activity (Ayuso and Restoy, 2006). It is also the problem of inadequate cash flow in the short run that present an issue for in relation to house prices (Stutz and Kartman, 1982). In general, there is a relationship between house prices and income. The theoretical model by Davidoff (2006) revealed that consumers with mean-variance preferences optimally purchase less housing as the covariance between labour income and increasing house price.

Apart from that, Ayuso and Restoy (2006) viewed that overvaluation is attributable to the sluggishness of housing supply in the presence of large demand shocks. The root cause of overvaluation is that a house value is towards its location (Kiel and Zabel, 2008). As Stutz and Kartman (1982) argued that housing is not homogenous, Kiel and Zabel (2008) agreed and claimed housing as an unusual good in three dimensions which are heterogeneity, durability and immobility. The immobility determines the value of the house because of location. They further concluded that there are other characteristics that influence house value which is the general upkeep of the neighbourhood, neighbourhood characteristics and amenities.

Apart from that, Lee (2009) discovered that the volatility of house price is subjected to rise in response to bad news and inflation is a determinant in housing price volatility. The housing price volatility also led to price discrimination in housing. Ihlanfeldt and Mayock (2009) showed evidence that housing price discrimination exists in the housing market.

There has been evidence of households in the lower tail of the income distribution is now less able to afford a house than they were a decade ago (Bajari et al., 2005; Matlack and Vigdor, 2008). With YWH considerably to be at the lower tail of the income distribution, it questions if time would eventually decrease the housing affordability for the younger cohorts or otherwise. This is
because when income growth is not in tandem with housing affordability (increase inflation), it increases in house price is good for homeowners who are selling their house but bad for households who are in the market to purchase a house (Stutz and Kartman, 1982; Bajari et al., 2005).

As discussed, there are factors that enacted house price as a homeownership problem. Similarly, the common influence of changes in house price is rapid economic growth, increase in population and cost (Case and Shiller, 1989; Mak et al., 2007) but, Phang (2009) rejected these influences and argued that house price changes are less dependent on population growth rates and construction costs because a house is a need.

### 2.2.2 Household income

In general, the affordability to purchase a house is concerned with the relationship between housing costs and household income (Henman and Jones, 2012). The perception of income is not enough to cover housing costs and non-housing expenditures are major homeownership problems. Maclellan and Williams (1990) suggested that affordability implies where the price of the house does not impose ‘an unreasonable burden’ on household income. In similar view, Stone (2006) argued that affordability is a challenge each household faced in balancing the housing costs and non-housing expenditures within the constraints of their income.

The perception of imbalance of housing cost and non-housing expenditures clearly pose a problem that is related to households’ income.

Apart from that, inequality in the distribution of income is a common problem in entering homeownership. Matlack and Vigdor (2008) suggested that income increases at the high end of the distribution and can raise house prices paid by those at the low end of the income distribution. They further explained as income inequality grows the residual income of households’ declines and crowding increases significantly. YWH are considered to be between the low and middle end of the income distribution. This is because there are relatively young in the labour force market and earns a smaller scale in salary before gaining more working experiences. Bramley (2012) agreed with the problems to be more common with YWH due to lower incomes earlier in their work careers and limited asset accumulation and also their greater reliance on the private rented sector.

When the real required payments associated with homeownership increased rapidly over time, the financial challenge of purchasing housing is perceived to be more difficult (Rappaport, 2008). The uncertain income future posed a major limitation towards the ability to become home owners as well the subjectivity of economic success. Even more, what draws attention is whether housing cost or household income is the problem to enter homeownership (Burke, 2007). Apart from that, housing choice is also a probability in homeownership problems.

### 2.2.3 Housing choice

Public houses are perceived for low income households and YWH are more likely to participate in private housing market (Fu et al., 2000). The quality of local public goods influence house price and this indicate that households care for the general upkeep of the neighbourhood as well as the distant of schools and town centres (Kiel and Zabel, 2008). This influence the housing choice as well where YWH are looking for a similar neighbourhood setting that is similar to where they grew up.

Apart from that, Addae-Dapaah (1999) claimed that a house is more than a shelter with all the requisite amenities and represents an important status symbol and personal investment (cited in Tu et al., 2005). Additionally, when YWH desire to own a beautiful house that is larger in size and at prime location, they may choose to infringe residual income where they will risk material hardship (Bramley, 2012). Moreover, if housing choice does not meet with the desire, the household may live with others such as family and a large group of friends (Andrew et al. 2006).

According to Alexiu et al. (2010), there is a negative relationship between employment choice and housing preferences or affordability. This resulted to time consuming to travel to work place (see also Munch et al. 2008). This relationship shows that housing choice does not depend on work place and employment choice, rather due to other factors such as neighbourhood characteristics as Kiel and Zabel (2008) claimed.

### 2.3 Affordable housing schemes

One of the mechanisms of state’s intervention in overcoming homeownership problem is through affordable housing schemes. In Malaysia, the state has introduced two affordable housing schemes that will help households to enter homeownership. These schemes are considered new as the implementation of the schemes is less than three years (as of 2013). However, the housing schemes are highly important in overcoming homeownership problems, especially, among YWH. This section will elaborate on the eligibility and key benefits of the housing schemes, which are, My First Home...
My First Home Scheme

My First Home Scheme is a new scheme introduced by the government in 2011. It targets to help young households who have just started working to own a house. The younger generation are able to get a 100 per cent loan from associated banks to purchase their first house. The purchaser has to meet the qualifying criteria (see Table 1) in order to apply this scheme.

1Malaysia People’s Housing Scheme

The Prime Minister introduced the 1Malaysia people’s housing project (PR1MA) to focus on affordable housing. To date PR1MA has launched affordable housing in two locations which are Putrajaya and Seremban. The eligibility criteria are as of Table 2.

3. METHODOLOGY

Qualitative methodology is adopted in this paper. Qualitative research involves empirical materials such as case study, personal experience, life story, interview, observational, historical, interactive and visual texts which will describe the research situation and the meaning in an individual’s life (Taylor, 2005). Qualitative research also involves careful planning, respectful engagement, conscientious analysis and deliberate presentation (Luton, 2010). In this paper, the empirical materials are from in-depth interviews. The main concern of qualitative approach in this paper is to gain a deeper insight on the homeownership problems. The perspective of the problems is from YWH and state representatives that are the promoters of the housing schemes. The in-depth interview was conducted on the month of February 2013. The limited number of YWH interviewed might be bias with personal views and might not represent the population of YWH. This applies to state representatives as well. But, the innate perceptions of YWH and state representatives qualitatively are reckoned to be suitable to achieve the paper’s aim.

3.1 Respondents of the study

A total of fifteen (N=15) respondents are interviewed. Eight (n=8) of the respondents are YWH. The respondents are selected through purposive sampling. According to Wilcox (2007), YWH are perceived as those age between 20 till 39 years old. The respondents have to work in Greater Kuala Lumpur (GKL) and are not homeowners. To ensure YWH are represented appropriately, the age group was divided into four (4) subgroups, which are, 20 to 24 years old, 25 to 29 years old, 30 to 34 years old and 35 to 39 years old. Each subgroup is represented by two respondents, one (1) female and one (1) male.

The in-depth interview also involves seven (n=7) respondents which are state representatives who are the promoters of the housing schemes. The state representatives were selected based on their influence in promoting the housing schemes in Malaysia. As for the selection of representatives, the respondents chosen are based on who the state decided is best to represent them in this case. It should be noted that, the respondents for this in-depth interview are from the state and its affiliations involve in promoting the housing schemes. Therefore, the in-depth interviews are considered to be fitting and eliminate the element of bias.

3.2 Interview questions

In line with the aim to obtain detailed information on homeownership problems and perceptions towards the housing scheme, open-ended ques-
Questions were formed in a set of interview questions. It comprises of 6 questions to gain viewpoints on the homeownership problems. There are additional questions for YWH to assess the housing schemes if it is agreeable to them or otherwise. The questions are on what are their views on current homeownership problems, what are the causes of the homeownership problems, what are their views on affordability for housing among YWH, how can the mechanism (housing schemes) help YWH, what are their views on the housing schemes and recommendations to address homeownership problems.

To simplify the transcribing process, respondents were coded as YWH for younger working households (YWH1 till YWH8) and RS for state representatives (RS1 till RS7). The statements are quoted and reported in a narrative way according to themes. The field notes of text are grouped into similarities of answers and later coded as the most frequent answers. The data from the in-depth interview was analysed qualitatively by transcribing, assessing and categorising relevant transcript.

4. Results and Discussion

4.1 Homeownership problem

Majority of the respondents generally perceived houses in the private housing market are not affordable. Those interviewed explained that income of a university graduate who works in an urban area is not enough to afford a house in the private housing market. This shows that YWH has difficulty in terms of income for housing because they are considered to be at the lower tail of the income distribution as argued by Bajari et al. (2005) and Matlack and Vigdor (2008). Furthermore, this supports Bramley’s (2011) claim that the homeownership problems are more common among YWH due to lower incomes and limited asset accumulation. Those interviewed explained that there are difficulties to access home financing. Comments from YWH and state representatives included the following:

“The only problem for me would be the required 10% down-payment to purchase a house.”

Code: YWH2

“I have a problem with access to housing mortgage as getting the logical loan tenure and rate of financing seems impossible. The challenge I faced is coming up with the 10% down payment when purchasing a sub sale unit and financing options”

Code: YWH8

Apart from that, another concern raised is on the inflation rate between house price and household income. It was argued that household income of YWH is lower and there is a challenge to balance housing costs and non-housing expenditures (Stone 2006). One of the respondents highlighted that,

“Inflation rate between current household income and property prices is a major problem. A working family do not make enough to afford a decent landed property in urban areas. Living expenses are also getting higher and causes more percentage of the household income is used for it.”

Code: YWH5

However, there is evidence of affordable housing supply in the private housing market (Wan et al. 2010). But, due to increasing land prices, affordable houses are located outside of urban areas that will require YWH to purchase own transportation to commute. One of the respondents disagreed and explained,

“I disagree with the problems of houses being not affordable. Based from the data collected by NAPIC, since 5 years ago, the average house price in Malaysia increases about 25.5% that is in the year 2007 the average house price is RM 182, 127 whereas as in the year 2011 the average house price has risen to RM 228,091... [...] housing affordability is where a household has the financial capacity to pay all the costs involved in purchasing a house and at the same time has enough residual income to sustain living cost. [...] the housing market has various types of houses to choose from and it depends on the type of house and location.”

Code: RS1

Based on the quotation, the state seems to consider affordable housing only on house price and type of house. The location factor is important for a house as argued by Kiel and Zabel (2008) and this is not considered by the state in the average house price as respondent RS1 reflected. Due to this,
those interviewed especially YWH, stressed that even though there are affordable houses in the private housing market, the location of the houses has restricted access to transportation options. The respondents made the following comment,

“Location is a problem as most affordable houses are in suburban areas and not accessible by public transport”
Code: YWH5

“Housing that is affordable are poorly located which is far or no public transportation and has a crime perception as well. Buying a house is already consuming a large sum of money and with the location far away from my work place, it will increase my living cost due to the petrol and maintenance to my car and it will take me a long time to travel too”
Code: YWH8

Furthermore, the subject of income escalated in the interviews that led to the discussion of financial literacy. Those interviewed explained YWH are not able to manage their finance well and this affects their perceptions on affordability of houses in the market.

Having established the homeownership problems, it can be argued that the main concern in homeownership problems is housing affordability. Apart from that, lack of financial literacy is also a problem among YWH that alters their perception on affordable house prices.

4.2 Cause of homeownership problems

Phang (2009) argued that house price is the deciding factor for housing affordability. Majority agreed that exuberant house price\(^1\) in urban area is the cause of homeownership problems. This is attributable towards expensive land prices. From the perspective of state, land prices are expensive and are reflected in the house prices. Those interviewed explained,

“In a survey that we did, 60% of the demography is young people… […] finding a strategic land to build houses for the young population is what needs to be emphasised”
Code: RS7

“To us, YWH has no opportunity to purchase a house in urban areas … […] this is due to expensive land prices and there is a problem to provide affordable houses when the land is own privately hence it is difficult to build according to what is needed”
Code: RS3

“We have plans to supply affordable houses but the problem that we have is we have no land”
Code: RS4

However, two of the respondents disagreed and explained house prices are seen expensive because “we use quite a big percentage of our salary towards logistical issues like owning cars because of unreliable public transports” (Code: YWH7) and “the reason why YWH perceived it [house price] to be expensive because of unnecessary fear created collectively by property speculators and depressed housing supply” (Code: YWH8). The insufficient income to acquire both a house and a car will caused unreasonable burden on household income (Maclennan and Williams 1990; Stone 2006).

As discussed previously in section 4.1, lack of financial literacy is what caused the houses to be perceived as unaffordable. One of the respondents (Code: YWH2) agreed that everyone is not fully aware of appropriate financial management and mostly it is due to the styles of upbringing and education that one has experienced. Those interviewed have similar views with this and explained,

“The issue in YWH is basic needs are already provided… […] But today’s young household are different.. they have no problem if they quit their job and then look for another after quitting because they have their parents especially for those parents who lives in urban areas… […] it is a social impact today where the young generation is not worry if they do not have enough money due to the support from the family… this is why other needs come first such as purchasing their first car”
Code: RS2

“It is difficult when your lifestyle drove you to a point that you cultural needs have overcome your basic needs.[…] young households spends more than they earn … […] they have to realise their basic needs are much more important than their cultural needs… […] but understanding this has come from themselves and cannot be taught”
Code: RS7

“There is still much more to learn…. this is possibly due to lack of exposure and lack of interest in the individuals itself”
Code: YWH3

---

\(^1\) According to NAPIC (2012) house prices have increase in from Q3 in 2011 to Q3 in 2012
Moreover, one of the respondents has a unique answer to what caused the homeownership problems among YWH,

“We have to look into financial institutions as well… […] they offer housing loan until you are 60 years old with high interest rate… […] this will burden YWH the most”
Code: RS6

The perception of expensive house price because of land prices contributes to the cause of the homeownership problems. Apart from that, insufficient income is also one of the causes due to two factors. Firstly, it is due to lack of financial management skills and second, on the high interest rate of housing loan.

4.3 Housing schemes

MFHS and PR1MA are both relatively new. Generally, YWH agreed with the housing schemes. However, there are a few disagreements. One of the disagreements is the age restriction, which contradicts with their own benefits of having the exclusive rights to the housing schemes. Those disagreed explained that,

“Even though the age restriction is a good implementation, some cannot afford to buy a house until later and it is not fair if this is not available for them.”
Code: YWH3

Apart from that, one of the respondents argued,

“Gross income of RM 5,000 per month is insufficient to buy a property in larger cities… if owners are forced to buy properties in suburbs or their hometown, then they should not be forced to stay in their property… […] cost of travel to work would be high”
Code: YWH7

Similarly, those interviewed disagreed with the eligible range of property value and the owner-occupied policy,

“I do not think it is fair for the applicant to reside in the property because the house may not be that convenient to live in terms of location… in the case of changing work place this will pose a problem for the applicant.”
Code: YWH1

As financing was a problem for YWH as previously discussed (section 4.1), the criterion on financing tenure not exceeding 40 years or until the applicant is 65 years old was not unanimously agreed. Those interviewed explained that with a longer financing term, the loan amount quantum could be greater.

Those interviewed also explain that additional guidelines will produce imbalance of policy implementation across the country. One of the respondents further explained,

“If state is given jurisdiction and authority to add additional guidelines… it can be used as a political tool”
Code: YWH7

Furthermore, the selection of house units by the balloting sequence was disputed. The respondents shared the same view that some of the balloting sequence might end up with bad units and therefore has no choice and is unfair. Even though, this is a fair process, this prevents YWH to choose the house of their choice. Housing choice is considered as one of the problem as discussed by Alexiu et al. (2010) and Kiel and Zabel (2008).

As of September 2012, 431 successful applicants and a total of RM65.5 million of housing loans had been given out through MFHS (Code: RS1). However, there are problems identified as the weakness of the housing schemes. Among the problems are the schemes has no bank to build affordable houses, increasing building cost and lack awareness on financial literacy among YWH. One of the respondents (Code: RS6) explained that the state should provide land for free to build affordable houses. It is unfair for private developers to borne the responsibility to build affordable houses while the state only implement and impose regulations on building affordable houses. Conversely, those interviewed made the following comments,

“Because land prices are expensive and large land banks are owned by private developers, we have to offer developers a joint partnership… […] private developers should find our proposal a win-win situation”
Code: RS7
“With increasing price of building materials it is difficult to build affordable houses because of the small profit margin”
Code: RS6

Underpinning the issue of insufficient income, most of the respondents agreed that YWH should prioritise spending on their basic needs such as food, housing, transport, healthcare, childcare and recreational (PRIMA 2012). However, one of the causes of homeownership problems is lack of financial literacy. Lack of financial literacy led to poor management of household’s income. Those interviewed explained that the state has to propose a budget for their income. They added YWH should be equipped with enough knowledge when they want to purchase a house.

Nevertheless, those interviewed agreed that YWH has the final decision on purchasing a house. They explained that YWH has to arrange their priorities with their income because “the state can only do so much for them but it will eventually be their own decision when it comes to housing” (Code: RS1). The identified weaknesses of the housing schemes are useful in improving the present housing schemes and also future housing schemes.

5. conclusion

The main concern of the homeownership problems is affordability. The issue of unaffordable house prices and inadequate income are the challenges among YWH to enter homeownership. With the introduction of housing schemes, the problems that were identified are addressed. However, there are a number of weaknesses of the housing schemes.

These weaknesses such as expensive land prices that the state does not control and lands are privately owned will make it difficult to provide affordable houses. The role of state should enhance beyond regulatory board to develop affordable houses. Additionally, YWH also plays a role in this problem. The problem of not prioritising their basic needs has resulted into homeownership problems. The role of housing schemes should also undertake financial education before YWH purchase a house.

In conclusion, housing schemes should also consider financial education as part of their aims. As the availability of mortgage finance increases demand in housing (Bredenoord and Verkoren 2010), financial literacy has significant effect in addressing homeownership problems (Alexiu et al. 2010). Nevertheless, the introduction of housing schemes is beneficial to address homeownership problems among YWH.

REFERENCES


LUTON, L. S. 2010, Qualitative research approaches for public administration: ME Sharpe.


PRIMA. 2012, Challenges in designing and building affordable homes in Malaysian cities, Sepang, Selangor


SANI, N. M. 2012, Homeownership of low-cost house in Melaka, Malaysia, Advances in Applied Science Research, 3:5, 3387-3389.

STONE, M. 2006, What is housing affordability? The case for the residual income approach, Housing policy debate, 17:1, 151-184.


WILCOX, S. 2003, Can work - Can't buy Local measures of the ability of working households to become home owners, UK: Joseph Rowntree Foundation.

WILCOX, S. 2007, Can't Buy: Can Rent The affordability of private housing in Great Britain - summary report. UK.

Author(s):

Zafirah Al Sadat Zyed
Department of Estate Management, Faculty of Built Environment, University of Malaya,50603 Kuala Lumpur, Malaysia.
Email: zafirahzyed@um.edu.my

Wan Nor Azriyati Wan Abd Aziz
Department of Estate Management, Faculty of Built Environment, University of Malaya,50603 Kuala Lumpur, Malaysia.

Noor Rasy Hanif
Department of Estate Management, Faculty of Built Environment, University of Malaya,50603 Kuala Lumpur, Malaysia.

Peter Aning Tedong
Department of Estate Management, Faculty of Built Environment, University of Malaya,50603 Kuala Lumpur, Malaysia.
Email: peteraning@um.edu.my
LIFECYCLE FRAMEWORK FOR SUSTAINABLE RESIDENTIAL BUILDINGS IN MALAYSIA.

Mahdokht Ebrahimi, Hamzah Abdul Rahman, Faizul Azli Mohd-Rahim, Wang Chen

Abstract
In Malaysia, there are a few numbers of frameworks and checklists in order to evaluate the sustainable performance of buildings. In addition, most of these assessment frameworks or checklists focus on environmental sustainability disregarding social and economic pillars. The research in social and economic sustainability in the construction industry is pushing forward, albeit at a slow pace. In addition, the growing number of sustainable criteria in the literature highlights the importance of a systematic framework for construction initiatives. This research aims to propose a comprehensive framework based on three pillars of sustainability, and, additionally, to categorize them in a manner that is applicable for all relevant stakeholders based on their level of involvement and needs. Finally, it identifies the relation between each criterion and stage of the construction lifecycle with the assistance of an expert panel. This research produces a framework that is useful for Malaysian construction stakeholders to reinforce their approach towards sustainability through social and economic aspects that are currently underestimated in the construction industry.

Keywords: Environmental Sustainability, Social Sustainability, Economic Sustainability, Building Lifecycle, Construction Industry.

Introduction
In the Brundtland commission, sustainable development is described as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Sustainable development comprises a couple of substantial elements: first, fine-tuning the quality of life. Second, looking at fellow citizens and future generation needs (Lützkendorf and Lorenz, 2005). The conception of sustainability in the construction industry has mostly concentrated on the restricted resources, primarily energy and the minimization of impact on the natural surroundings with the reflection of technical concerns; for instance, materials and construction technologies. Additionally, the recognition of non-technical concerns (soft issues) has become well-known in terms of social and also economic sustainability (Abidin, 2009).

In developing countries which are mostly at the beginning of their way towards sustainable development, comprehension of non-technical elements such as social, economic and cultural sustainability needs to be persuaded and practiced due to the fact that the contradictions between these elements are the main causes of their environmental issues (Du Plessis, 2002)

Although the Malaysian developers, as the policy makers of a developing country, are conscious about the importance of sustainability and its impact on the construction industry, little effort has been made in order to increase the applicability of sustainability practices. In Malaysia, sustainable projects are at early stages and policy makers should try to improve sustainable practices and catch up with the present achievements that have been occurring in more advanced countries (Abidin, 2009, Idris and Ismail, 2011).

Promoting sustainability needs a great deal of alteration in mindset, innovation, ingenuity and research along with assistance of involved stakeholders (Hamid and Kamar, 2012). Apart from technologies and tools for supporting sustainability, complete commitment by governmental and public stakeholders towards sustainability is needed (Ismail et al., 2012).

Based on Abidin’s (2009) survey, majority of the construction developers in Malaysia appreciate sustainability concept as the preservation of the environment and minority of them have adequate knowledge about social and economic pillars of sustainability. Sustainable buildings mainly address environmental issues and that not enough attention is given to social sustainability (Zuo et al., 2012). For example, prospective residents have rarely been involved in the designing of buildings and also formulating sustainable measures. Moreover, there is...
a lack of transferring knowledge from experts to occupants in order to utilize the low energy houses more efficiently (Jensen et al., 2012). In Malaysia, the economic aspects of sustainability have also received less attention compared to the environmental aspects of sustainability (Abidin, 2009). Traditional building design has mainly concentrated on technical feasibility along with the financial viability of the capital investment. However, the conversion to sustainable structures and also urban communities ought to satisfy the complications posed by a variety of further environmental as well as socio-economic concerns (Georgiadou et al., 2012).

Green building Index (GBI) was developed as a rating system for sustainable buildings in Malaysia. However, this rating system mostly highlights environmental criteria. To improve the sustainability in the construction industry, it is necessary to develop a comprehensive framework as a guideline for relevant stakeholders in order to practice sustainability in a way that all three pillars of sustainability - environmental, social and economic - will be satisfied (Shen et al., 2007). Moreover, a building’s effects on the environment, society and economy are not limited to a certain stage of its lifecycle such as the construction stage. Its impact tends to continue even after the demolition stage. In order to improve sustainable performance, a lifecycle approach is necessary. Based on Sev (2009), to be able to achieve a high-performance together with a low environmental impact structure, it is essential to integrate sustainability principles at the commencement of a project. A design approach is assumed to be logical and acceptable in the event that it complies with the performance requirements in its lifecycle (Trinius and Sjöström, 2005). Lifecycle considerations represent the broader philosophy of thinking about solutions over a building’s whole lifecycle and also cover a range of feasible design methods and assessment methods (Georgiadou et al., 2012). The majority of the existing environmental performance assessment methods for buildings have been developed upon diverse principles and evaluation items. Nevertheless, a minority of them have pointed out lifetime parameters (Maria and Stella, 2006).

In Malaysia, housing had a rise of 3.2% in the second quarter of 2010 in comparison with the earlier quarter. Moreover, the take-up rate of lately launched residential buildings increased to 19.5% (January-June 2009: 12.3%). The Malaysia My Second Home (MM2H) programme also resulted in the growth of residential building construction (MGCC, 2012). However, in the current literature, the lack of a comprehensive evaluation system in all three aspects of sustainability for the lifecycle of residential buildings in Malaysia is clear. In addition, there is a lack of methodology to help all the project participants to work in a consistent and cooperative environment towards the same goal to achieve better project sustainability performance (Zhang et al., 2006). This study aims to improve the sustainable performance of Malaysian residential buildings in their lifecycle by proposing a comprehensive framework that includes all the relevant sustainability criteria. The main objectives of this research are: first, to propose a comprehensive framework based on three pillars of sustainability. This framework can be applied as an evaluation framework or as a guideline for stakeholders. Second, to categorize sustainable criteria in a manner that is applicable for all relevant stakeholders based on their level of involvement and needs. Some stakeholders just need general criteria, while some of them need more detailed criteria based on their level of involvement and responsibility, third, to identify the relation between each criterion and stage of the construction lifecycle in order to increase the applicability of the proposed criteria.

Research Methodology

A comprehensive literature review was conducted to identify the sustainability performance indicators. In the next step, this pool of criteria was structured by the typology method. The indicators were categorized based on their similarities regarding their aim and nature. The output of this process was a hierarchical structure of indicators. Then an expert panel, which included six members with recognized research and practice in the construction was formed, of whom three were academicians and three were practitioners. In the next stage, the hierarchy of sustainable criteria was discussed with the panel members and its adequacy and consistency improved based on their comments. Finally, the last level of the hierarchy, the detail level, was mapped on the building lifecycle stages through interviews with the aforementioned expert panel to identify the relation between each criterion and the stage of the construction lifecycle.

Relevant sustainable criteria

This section of the paper outlines sustainable criteria in three different categories: environmental, social and economic. Each of them is further classified towards more detailed levels by the use of the typology method. These hierarchical models can be used as guidelines or assessment tools to improve the sustainability practices in the construction industr-
try. The proposed hierarchical models are depicted in figures 1 to 3.

3.1. Environmental criteria

The proposed environmental criteria framework is composed of six major groups (Fig.1). Each criterion is classified into more detailed sub-criteria, which will be discussed in the following paragraphs.

3.1.1. Sustainable Site Considerations

The first sub-criterion of sustainable site considerations is land sensitivity considerations, which are all about preventing, wherever possible, the unrecoverable impacts on the natural environment from executing a project (GBI, 2010, LEED, 2002). The second sub-criterion is pollution reduction considerations, which relates to using land efficiently along with the actions taken to preventing land pollution (Kim et al., 2005, LEED, 2002). The third sub-criterion is developing damaged areas, which deals with re-establishment of damaged and affected areas to produce habitats and also increase biodiversity (GBI, 2010, Lützkendorf and Lorenz, 2005). The fourth sub-criterion of this category is ecosystem preservation, within which possible ecological risks as well as positive aspects connected with the suggested project should be investigated (IGBC Green Homes, 2009, Kim et al., 2005, LEED, 2002).

3.1.2. Water Efficiency Considerations

The first sub-criterion of this group is the reduction of potable water consumption, which deals with minimizing or even eradicating the utilization of potable water for the landscaping and irrigation purposes, and also the reduction of water consumption by maximizing water efficient fittings, water recycling and water metering (IGBC Green Homes, 2009, LEED, 2002). The second sub-criterion is the reduction of the loss and waste, which is all about trying to minimise the amount of water loss and waste by implementing treated grey water.
for flushing requirements, irrigation, and landscaping and also innovative wastewater technologies (GBI, 2010). The third sub-criterion of this category is implementation of alternative resources, which focuses on making available rainwater harvesting systems in order to trap roof water produced from the roof area to take advantage of it in landscape irrigation or even indoor water utilization (LEED, 2002).

3.1.3. Energy and Atmosphere Considerations

The first sub-criterion of energy and atmosphere considerations is the commissioning of building systems. This concentrates on checking and making sure that the essential building elements and also systems are designed, set up and calibrated to function as expected (LEED, 2002). The second sub-criterion of this group is energy performance considerations, which relates to developing the lowest possible level of energy efficiency for the base building and systems, and, afterwards, trying to attain increasing levels of energy performance above the required standard to be able to reduce the environmental effects related to significant energy use (IGBC Green Homes, 2009, LEED, 2002). Within the third sub-criterion, the reduction of non-renewable energy, dwindling environmental effects linked to fossil fuel energy utilization by promoting on-site renewable energy self-supply development is supported (GBI, 2010, Shen et al., 2007). The fourth sub-category is ozone protection, within which preventing the use of such type of refrigerants as well as ozone layer depleting gases that have an unfavourable effect on the environment should be taken into consideration (LEED, 2002).

3.1.4. Materials and Resources Considerations

The first sub-criterion is waste management, which focuses on the waste decrease programme evaluation. In order to escalate the amount of waste recycled, materials ought to be accumulated separately as a way to prevent the blending of diverse waste materials. In addition, reducing on-site waste by utilizing off-site fabrication is crucial (GBI, 2010, IGBC Green Homes, 2009). The next sub-criterion is resource depletion considerations. The main concern in this category is reusing building materials and also products as a way to restrict the call for virgin materials (Ding, 2005, LEED, 2002). The third sub-criterion is properties of materials in which the attributes of the materials, such as degree of processing required, maintainability, resistance to potential damage or decay, technical performance of material and so forth should be considered (Pearce et al., 1995). The fourth sub-criterion is implementation of regional materials, which focuses on increasing the desire for building materials as well as products that are extracted and manufactured within the region. By doing so, it contributes to the regional economy and reduces the harmful environmental effects derived from transportation (IGBC Green Homes, 2009, LEED, 2002).

3.1.5. Indoor Environmental Quality

Thermal comfort is the first sub-criterion of this category. Thermal comfort standards need to be established and utilized in order to assist construction designers to provide an indoor climate in which building occupants feel thermally comfortable (LEED, 2002, Nicol and Humphreys, 2002). The consideration of thermal comfort principles in design leads to energy saving. The second sub-criterion is indoor air quality, within which effective ventilation, construction IAQ management plan, Environmental tobacco Smoke (ETS) control, monitoring and reduction of CO2 emissions and other pollutants, indoor chemical and pollutant source control, controllability of systems (thermal, ventilation and lighting systems) by occupants, and daylight and views should all be in place to ensure high quality indoor air for occupants (GBI, 2010, Lai et al., 2009). The third sub-criterion is visual comfort, which focuses on optimizing and balancing both visual comfort and low energy consumption (Ochoa et al., 2012). Aural comfort is the fourth sub-criterion of indoor environmental quality. Making sure that the building walls as well as the floor systems are designed with sufficient sound absorption attributes to sustain suitable acoustic quality for occupants and neighbours is the main concern of this sub-criterion (GBI, 2010, Kim et al., 2005, Lai et al., 2009).

3.1.6. Innovation and Design process Considerations

The first sub-criterion is innovation in design, which offers design teams as well as project participants the chance to be awarded for outstanding performance above the requirements (LEED, 2002). Georgiadou (2012) claims “eco-innovation does not necessarily mean expensive solutions, but rather ones that are technically robust, socially responsible and financially viable”. The second sub-criterion is environmental design, which will be satisfied if knowledgeable designers regarding environmental design are selected. The other important criteria that are helpful to reach high quality environmental design are as follows:.lifecycle...
3.2. Social criteria

In this section, relevant social sustainability criteria from the literature review were found and classified into six major sub-criteria (Fig. 2). They will be discussed in the following paragraphs.

3.2.1. Site and Equipment Considerations

The first sub-criterion is quality of infrastructure, which includes access to public transportation, quality of leisure and recreation infrastructure, improvement of infrastructure, and finally infrastructure burden, which means “Demand for water, road, energy, services and space for implementing the project” (Moro, 2011, Shen et al., 2007). The second sub-criterion is the security of the site. Protection of entry points, monitoring devices, and natural access control can be extremely helpful in order to provide security for residents, which leads to their well-being (Buys et al., 2005, Maria and Stella, 2006, Moro, 2011). The third sub-criterion is quality of facilities, which is defined as “Provision of community amenities for the harmonization of new settlements and local communities” (Shen et al., 2007). The fourth sub-criterion is barrier-free built environment considerations. The main concern in this category relates to considerations over access for physically handicapped persons and protection against slipping and stumbling (Maria and Stella, 2006, Moro, 2011). The final sub-criterion is land use considerations. The main focus is the land choice for the project site in a way that preserves cropland and also natural resources. The provision of property upon the end of project demolition to allow developing new projects in accordance with the requirements of local community is another concern of this sub-criterion (Shen et al., 2005, Shen et al., 2007).

3.2.2. Health and Comfort Considerations

The first sub-criterion is thermal quality. In order to assess thermal comfort, several items, such as operative temperature, asymmetry of radiation temperature and flooring temperature, humidity and vertical thermal gradient should be considered (DGNB, 2009, Moro, 2011). The second sub-criterion is visual comfort. Visual ease and comfort can be attained by well-balanced illumination without remarkable interference, such as direct and also reflected glare, an adequate lighting level as well as the possibility to alter illumination personal-
ly to the specific requirements (DGNB, 2009). The third sub-criterion is acoustic comfort. The purpose of acoustic comfort is to attain a low level disturbance and also background noise to prevent affecting the use, health as well as the ability of the occupants (DGNB, 2009, Mötzl and Fellner, 2011). The fourth sub-criterion is indoor air quality, which is all about the prevention of an increase in large particulate concentrations within a home, such as indoor tobacco smoking and operation of gas stoves for cooking, VOC pollutants and so forth (Lee et al., 2002, Sahely et al., 2005, Šijanec Zavrl et al., 2009). The fifth sub-criterion of health and comfort considerations is daylight and exposure to sunlight. The appropriate day lighting of a building will definitely improve productivity and reduce sick time. Daylight offers huge psychological advantages to the building users, which could be a primary purpose of daylighting instead of the simple cutback of electrical lighting demands (Maria and Stella, 2006, Moro, 2011, Robertson, 2005). The sixth and final sub-criterion of this group is indoor hygiene in order to eliminate the adverse effects on the user’s health condition. Indoor hygiene also includes several sub-criteria, such as refuse disposal, water supply, pest control and cleaning (DGNB, 2009).

3.2.3. Job Opportunities

The first sub-criterion of job opportunities is direct employment, the main object of which is the arrangements for the working possibilities of the local labour market for performing the project (Shen et al., 2007). The second sub-criterion of job opportunities is indirect employment, which is defined by Shen et al. (2007) as “Employment generated by the up-and-down stream industries and services to construction”.

3.2.4. Safety Issues

The first sub-criterion is design considerations towards safety, which entails architectural features (height and disposition, Means of escape, Means of access and Amenities), building services (fire service installations, electrical installations and fuel supply), and, finally, external environment (proximity to special hazards and proximity to fire station) (Ho et al., 2008). The second sub-criterion is management considerations towards safety, which includes operations and maintenance issues (structural condition, building services condition, exit routes condition and fire compartmentation) and management approaches (owners’ duties, documentation, emergency preparedness, and, finally, financial arrangement) (Ho et al., 2008).

3.2.5. Stakeholders’ Relationship

The first sub-criterion of stakeholders’ relationship is communication to the public. This criterion emphasises increasing public awareness towards project construction as well as project demolition and their possible effects on the public (Shen et al., 2007). The second sub-criterion is public participation. Communicate specialists’ expertise to the public to generate more intelligent decisions on complicated challenges regarding risks to well-being, health, as well as the environment (Kasemir, 2003, Sahely et al., 2005).

3.2.6. Architectural Issues

The first sub-criterion is architectural heritage considerations - focuses on the prevention of the impact of project development on any kind of cultural heritage (Ding, 2005, Shen et al., 2007). The second sub-criterion is architectural functionality and flexibility considerations (Šijanec Zavrl et al., 2009). Buildings should provide proper functionality to their residents and have the potential to be altered based on the residents’ needs.

Economic criteria

In this part, proper economic sustainable criteria have been classified into four major sub-criteria (Fig.3). They will be discussed in the following paragraphs.

3.3.1. Expenditure

The first sub-criterion of the expenditure criteria is capital costs. Capital costs are the expenses to the construction client. Capital costs include the construction costs along with associated legal and design fees. In addition, property acquiring and also site preparation expenditure, VAT (Value Added Tax), as well as financing costs should be considered as capital costs (Mohamed et al., 2002). The second sub-criterion is lifecycle costs, which are costs to the owners and building users after the completion of the building. Lifecycle costs include maintenance or facilities management costs along with operational costs and the replacement and disposal costs (Mohamed et al., 2002, Quigley et al., 2007). The third sub-criterion is environmental costs. Environmental costs are those costs which are imposed on the community in the form of pollution, concrete production or other harmful materials that are the consequence of construction (Quigley et al., 2007). In a sustainable approach, all three types of cost should receive appropriate attention.
3.3.2. Revenue

The first sub-criterion of revenue is value stability. A building intended for sustainability should be able to be effortlessly modified to altering needs. An excellent level of flexibility and adaptability of buildings under the aim of sustainability occurs in the event that the changes could be achieved with a few resources (DGNB, 2009). The second sub-criterion is lifecycle profit. Profit assessment should not be emphasized on stage or even sectional earnings and profits, but should include total revenue and profit from operating a building project across its whole lifecycle (Shen et al., 2007). The final sub-criterion is distribution of project income, which is defined by Shen et al. (2007) as “reinvestment, dividends, and paybacks”.

3.3.3. Investment in innovation, research and development

The first sub-criterion is expenditure on research and development (Sahely et al., 2005). This criterion indicates the amount of investment allocated to R&D activities towards sustainability. The next criterion is reserved funds (Sahely et al., 2005). The sustainable construction companies need to make sure of accessible reserve funds in order to be able to survive for the purpose of sustainable development.

3.3.4. Improvement of local economic environment

The first sub-criterion is local material choice (Shen et al., 2005, Shen et al., 2007). Choosing the local material for construction projects, as much as possible, is the main concern of this sub-criterion. The second sub-criterion is utilization of the local infrastructure. A project needs to assist the local economy by taking advantage of the infrastructure in order to produce economic profits (Shen et al., 2005, Shen et al., 2007). The third sub-criterion is the improvement of local labour market. This criterion highlights the importance of recruiting local labourers in different stages of the building lifecycle. According to Pulselli et al. (2006) the local authority ought to look for the involvement of citizens, local institutions and also private companies to be able to put into action the notion of the Conference of Rio “thinking globally, acting locally” (Pulselli et al., 2006).
The fourth sub-criterion is improvement of local business. In this item, consideration should be given to business opportunities for local suppliers, contractors and consultants. This trend will improve the economic development locally.

4. Lifecycle criteria

Considering a building in its lifecycle is a key point in order to promote its sustainable performance (Trinius and Sjöström, 2005). In this section, the proposed sub-criteria are classified under five stages of a building’s lifecycle. The lifecycle stages are adopted from Shen et al. (2007) because this classification is very precise and each criterion can be simply put under at least one special category. The construction lifecycle stages are inception stage, design stage, construction stage, operation stage, and, finally demolition stage. The main concern in the inception stage of a construction project is feasibility studies over implementing projects. In this stage, the project clients decide whether they should proceed forward or not. The feasibility study is a primary factor before starting project design and then construction. The efficacy of the feasibility analysis will certainly influence the success of the project (Shen et al., 2010).

The design stage has a considerable impact on sustainability performance. This stage provides the opportunity to take into consideration the sustainability principles in choosing the design layout, suitable materials and the building structure. The next stage is the construction stage. Actions throughout the construction period have substantial environmental effects, such as waste generation and also pollution. In addition, excellent operation of the construction product has a considerable impact on the sustainability performance of the project. For instance, the sustainable performance of buildings flourishes remarkably by enhancing the operational efficacy, improving the services, enhancing the social as well as economic merits, and also reducing the eco-environmental effects. Moreover, the demolition stage has a substantial effect on the sustainable performance of buildings. More appropriate management for reducing waste and pollution generation and also decreasing damaging effects on the environment and society leads to more efficient sustainable performance of buildings. By classifying each sub-criterion in a building’s lifecycle, the relevant stakeholders become better acquainted with their responsibility towards improving sustainable performance as depicted in Table 1 to Table 3.

<table>
<thead>
<tr>
<th>Environmental criteria</th>
<th>Inception</th>
<th>Design</th>
<th>Construction</th>
<th>Operation</th>
<th>Demolition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land sensitivity considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution reduction considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing damaged areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecosystem preservation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of potable water consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of loss and waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of alternative resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commissioning of building systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of non-renewable energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ozone protection considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource depletion considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Properties of materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of regional materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor air quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aural comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation in design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Environmental criteria in building lifecycle.
Based on expert panel opinion, three environmental criteria, Land sensitivity considerations, pollution reduction considerations and ecosystem preservation, should be considered in all stages of building lifecycle. They asserted that land sensitivity considerations should be taken into account in the inception stage. The feasibility of the execution of project without unrecoverable effects on natural environment, green fields and the habitats are the items which should be analyzed. In addition, design layout, construction and demolition ways should also preserve natural environment and ecosystem. In the operation stage, dumping, maintenance and any kind of operational activities should not have any adverse effects on the natural environment.

Possible air, water and noise pollution along with waste generation from the suggested project and its effect on the local climate needs to be examined in the inception stage (Shen et al., 2007). In design stage, designers should consider passive measures in order to offer heating, cooling, ventilation and lighting. In addition, the application of materials which are durable, non-toxics, and need low maintenance leads to less pollution generation (Kibert, 1994). In the construction and demolition stage, the land should be used effectively and the appropriate actions should be taken in order to avoid land pollution (Shen et al., 2007).

Ecosystem preservation criterion should be also taken into the consideration in whole lifecycle of buildings. The location of site and its impact on the ecosystems, the design and construction provisions in order to prevent any negative impact on ecosystems, “Negative impacts from project operations to flora, fauna, and ecosystems” (Shen et al., 2007) and finally in the demolition stage the prevention of adversarial effects of demolition on local ecosystems.

According to the expert panel opinion, the quality of infrastructure should be scrutinized in the inception stage and design stage. The site location near the recreation infrastructure, transportation

<table>
<thead>
<tr>
<th>Social criteria</th>
<th>Inception</th>
<th>Design</th>
<th>Construction</th>
<th>Operation</th>
<th>Demolition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of infrastructure</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security of the Site</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of facilities</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrier-free built environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>land use considerations</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Visual comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Acoustic comfort</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor air quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Daylight and exposure to sunlight</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor hygiene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Direct employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Indirect employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Design considerations towards safety</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>towards safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication to the public</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Public participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Architectural heritage</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural functionality and</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>flexibility considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Social criteria in building lifecycle.
infrastructure and so forth can fulfil the occupants’ well-being. In the design stage, architects and designers should consider the most appropriate access to infrastructures.

Expert panel highlights the importance of providing security of the site in the design, construction, operation and demolition stages. Designers should take appropriate measures in order to fulfil security of occupants; for example, the natural access control is an important measure which should be considered. The security of neighbouring properties is essential both in the construction and demolition stages. In addition, in these two stages, the provision of security is crucial for preserving site equipments. In the operation stage, maintenance of security devices, fences and protection of entry points provide security for residents.

The consideration of quality of facilities is essential in the inception, design and operation stages. In the inception stage, the site access to nearby activities, schools, shopping centers and so forth should be analyzed in order to assure the appropriate location of site. In the design stage, designers should provide sport facilities, health clubs, green spaces and the other amenities for well being of occupants. In the operation stage, the maintenance and development of facilities are crucial.

The barrier-free built environment should be considered in the design and operation stages. Architects should provide easy access for handicapped people. In the operation stage, the measures should be taken into place in order to prevent slipping. The panel also make it clear that land use considerations, as a social criterion, have to be highlighted in the inception stage. The choice of project site should preserve croplands and also natural resources for both present and future generations.

The four criteria; thermal comfort, visual comfort, acoustic comfort and indoor quality should receive attention in the design and operation stages. In the design stage, designers and architects should offer a design, within which the appropriate level of temperature, humidity, well-balanced illumination, low level disturbance and background noise and prevention of an increase in large particulate concentration are highlighted. In the operation stage, the aforementioned criteria should regularly be assessed. In addition, daylight and exposure to sunlight should be considered in the design stage by offering a building layout which provides appropriate day lighting.

Indoor hygiene can be improved in two stages; design stage and operation stage. Designers should consider appropriate measures for pest control, refuse disposal systems and so forth. In the operation stage, the cleanness of spaces is very important.

Direct employment criterion has to be considered from the design stage to the end of the construction life cycle. In the design stage, local architects and engineers should receive privileges. In the construction, operation and demolition stages, the local labours and contractors should be given a preference.

Majority of experts claimed that design considerations towards safety and Management considerations towards safety are among the most important social criteria in order to improve the social sustainability in Malaysian construction industry. Their claim is in accordance with the other studies in developing countries such as a study which was conducted in South Africa (Ugwu and Haupt, 2007). Design considerations towards safety should be regarded in the inception stage and design stage. In the conception stage, external environment of the project should be scrutinized to make sure that the site is not adjacent to special hazards. In the design stage, architectural features for improvement of safety should be considered. Management considerations towards safety are important in the construction, operation and demolition stages.

Expert panel claimed that communication to the public is important in the inception, construction and demolition stages. They asserted that public should be aware of the impacts of a building construction and demolition and they should have the opportunity to express their objections and their reasons for executing the project. Public participation criterion can be fulfilled in the design and operation stages. Public can produce positive design solutions based on their requirements. In addition, they can play important role in the operation stage of a building to improve the sustainability of a building by their actions, which are in compliance with the sustainability requirements. For instance, a 118-storey building named the Warisan Merdeka (Independence Heritage), which worth’s USD 1.62 billion has been the subject of controversy. This project includes a mall, residential units, office spaces, retail units, conference rooms and parking spaces. “Owners of properties next to the proposed 118-storey Warisan Merdeka project are concerned about the likely impact of the project on their properties, many of which are heritage sites” the sun daily (a local newspaper) reports (Joon, 2013). Many people have been sent in their objections against the initiation of the project and claim that planning application for Warisan Merdeka would change the status of the project site - wherein a couple of historical locations are placed as land for commercial use. The govern-
ment asserts Warisan Merdeka will increase the awareness of Merdeka Stadium and Stadium Negara instead of destroy the heritage value of both of these landmarks (Nan, 2013). If the communication to the public criterion received appropriate attention in the inception stage, this issue would not happen in the construction stage.

Architectural heritage considerations criterion should be regarded in the conception, design and demolition stages. In the conception stage, this question should be asked that whether the project has any negative impacts on the architectural heritage, which is near the project. If so, the project should not proceed. In some cases, that the termination of the project is impossible, the architects and designers should take a design approach, which protects the architectural heritage. In the demolition stage, all measures should be in place in order to protect the architectural heritage. The aforementioned example shows that social criteria must be included in decision making processes regarding the initiation of construction projects.

The last social criterion, Architectural functionality and flexibility considerations, should be considered by architects and designers in the design stage.

Next criterion, construction costs (capital, lifecycle and environmental costs), should be estimated in the inception stage in order to investigate the project feasibility and funding requirements. Capital costs should be assessed in the design stage. In this stage, capital costs are in the form of design fees. It also should be included in the construction and demolition stages in the form of construction and demolition costs and associated legal fees. The lifecycle costs are incurred in the operation stage. Lifecycle costs include maintenance or facilities management costs. Expert panel asserted that environmental costs criterion should be considered in all stages of a sustainable building. It is due to the fact that environmental costs can occur in each stage of the lifecycle of a building in the form of pollution and damage to the environment.

Value stability criterion should be considered in two stages; conception and design stages. The project committee should consider the alteration possibility for building usage. In the design stage, designers should regard design considerations to enhance adaptability and flexibility of the buildings by tenants or users.

To improve productivity and competitiveness for the sustainable construction industry, research and development is essential. R&D supports the development of novel knowledge and initiatives, suggests more suitable materials, less expensive design and construction techniques, and labor-saving equipment (Wong, 2010). Most of the experts declared that one of the most significant economic criteria in order to promote sustainability in Malaysia is expenditure on the research and development criterion.

Local material choice can improve the local economic environment and designers should try to propose local material for buildings as much as possible. The experts asserted that utilization of local infrastructure should be considered in the inception, construction and demolition stages. In the conception stage, the availability of infrastructures to the project site should be analysed. In the construction and demolition stages, utilization of local infrastructure can assist the improvement of local economic environment. In addition, by recruiting local labours in the design, construction, operation and demolition stages, the economic environment will be improved locally. In the conception stage, it should be asked whether the ex-

<table>
<thead>
<tr>
<th>Economic criteria</th>
<th>Inception</th>
<th>Design</th>
<th>Construction</th>
<th>Operation</th>
<th>Demolition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital costs</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifecycle costs</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental costs</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value stability</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Lifecycle profit</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution of project income</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Expenditure on research and</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserve funds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local material choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilization of local infrastructure</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Improvement of local labour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvement of local businesses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Economic criteria in building lifecycle.
duction of the project has any positive effects on the improvement of local business, if so, the project can proceed.

5. Conclusion

In most of the previous research, environmental criteria have received more attention than the other criteria, especially, in Malaysia. Very few social and economic criteria are found in the relevant sustainable assessment tools and guidelines. Although there are different checklists, guidelines and assessment tools for sustainable criteria, none of them classify these criteria in detail. In this research, the most appropriate environmental, social and economic sustainable criteria were selected and classified in a manner that is applicable for all relevant stakeholders. These criteria have been classified in three levels, which is useful for the relevant parties according to their level of involvement and responsibility. The question is whether all the outlined criteria in a sustainable trend can receive equal considerations in order to optimize sustainability achievement or not. The answer is straightforward: considering all the sustainability criteria is not only impossible but also impractical. The best way for implementing sustainability principles and criteria can be achieved through the agreement of the involved parties and affected stakeholders. They should make decisions concerning the importance of the sustainability principles.

With the assistance of the expert panel, the relevant stage or stages of each criterion in the residential building lifecycle have been identified. This trend can facilitate the application of the sustainable criteria for construction practitioners. For instance, as mentioned earlier, one of the impediments to achieving sustainability is related to the lack of occupants’ involvement in the designing of buildings and also formulating sustainable measures. Experts can use Table 2 in order to determine the stages of a building’s lifecycle in which the public participation has the most effect on the sustainability improvement. Further research to prioritize the proposed criteria can make a meaningful contribution to the construction industry due to the facilitation of decision making towards allocating appropriate resources, budget, time and other knowledge areas of construction projects.

REFERENCES


DU PLESSIS, C. 2002, Agenda 21 for sustainable construction in developing countries. CSIR Report BOU E 204.


ISMAIL, Z., et al. 2012, Comparative analysis on the policies in promoting sustainable construction in developed Asian countries. IEEE Symposium on Business, Engineering and Industrial Applications (ISBEIA), Bundung.


JOON, W. S. 2013, July 8, Heritage site owners fear impact of Warisan Merdeka project, the Sun Daily, [online] Available at: www.thesundaily.my.


Acknowledgement
Some part of this work was supported by the grant, Function of Life Cycle Costing in enhancing value of projects, RG133/11SUS.

Author(s):

Mahdokht Ebrahimi,
Faculty of Built Environment
University of Malaya, 50603 Kuala Lumpur

Hamzah Abdul-Rahman,
Faculty of Built Environment
University of Malaya, 50603 Kuala Lumpur

Faizul Azli Mohd Rahim,
Faculty of Built Environment
University of Malaya, 50603 Kuala Lumpur

Chen Wang-Broglie,
Faculty of Built Environment
University of Malaya, 50603 Kuala Lumpur
A COMPARATIVE STUDY OF PLANNED AND SPONTANEOUS GENTRIFICATION PROCESSES

Mehmet Emin Şalgamcioğlu, Alper Ünlü

Abstract
This study compared the gentrification processes in Cihangir and Tarlabasi. The dynamics of the gentrification process in Cihangir is compared with the vastly different gentrification process in Tarlabasi. Interpretations of gentrification are also included in this paper.

The study analyzed the dynamics of the gentrification process in Cihangir, Istanbul (Turkey) to determine the extent of change during the process. Characterization of the Cihangir neighborhood, which distinguishes Cihangir from other gentrified urban areas, is another aspect of this study. The transformation of Cihangir is currently underway; it involves the revolution and renovation of land and buildings, which is known as gentrification. The gentrification process in Cihangir is affected by socio-economic and socio-cultural transformations. This paper examines gentrification in the Cihangir neighborhood, which has occurred spontaneously and supports the perpetuation of social diversity, which occurs in many urban areas. Although Istanbul’s Tarlabasi region exhibits geophysical characteristics that resemble the geophysical characteristics of Cihangir, Tarlabasi is affected by a completely different gentrification process, which is known as planned gentrification.

In the context of this study, scholars question whether gentrification is “erasing the social geography of urban land and unique architectural pattern,” or if gentrification represents “the upgrading and renaissance of the urban land.” (Smith, 1996)

Keywords: Gentrification, Urban Transformation, Urban Development, Rent Gap, Socioeconomic Upgrading.

1 Introduction
“Politics is the ability to foretell what is going to happen tomorrow, next week, next month and next year. And to have the ability afterwards to explain why it didn’t happen” (Petrie, 2012). This quotation from the well-known English statesman Sir Winston Leonard Spencer Churchill (1874-1965) is a salient explanation of the nature of politics. The politics of gentrification has remained unchanged for decades. That is, urban land authorities continue to resemble the leading actors in a play and residents of the gentrified urban areas continue to resemble the supporting actors in a play. However, several exceptions to urban gentrification exist, in which local residents have participated as leading stakeholders. Gentrification can substantially contribute to the resolution of numerous social or economic urban problems. However, the politics of gentrification may disregard the rights and the daily socio-economic realities of residents.

This study describes the gentrification process in two urban settings: the neighborhoods of Cihangir and Tarlabasi in Istanbul. Although the primary focus is Cihangir, the gentrification dynamics of Tarlabasi over the last decade, which differ from the gentrification dynamics of Cihangir, are also examined. Although Tarlabasi possesses a geographic, social and economic history that resembles the history of Cihangir, it has undergone a completely different gentrification process.
during the second half of the 18th century in Cihangir. The European population increased rapidly in the Pera and Beyoğlu districts, including Cihangir and Tarlabası, from the 1850s to the end of World War I, due to the increasing number of embassies and the commercial activities in these districts. The increasing influx of non-Ottoman European minorities in Istanbul stimulated construction activity and increased real estate prices in the area and the nearby Pera district. This influx
decreased due to the effect of the political structure in the 1930s after the foundation of The Republic of Turkey in 1923. Minorities, including Greeks, left Istanbul after the riots on September 6–7, 1955.

These circumstances were caused by the slow economic growth and the nationalist politics of Turkey’s ruling party. In Cihangir, this breakdown continued until the 1980s and 1990s and continues today in Tarlabasi. The Cihangir and Tarlabasi neighborhoods have historically experienced frequent episodes of progress and decline, which is crucial to the gentrification process. A study of Cihangir and Tarlabasi demands an extensive perspective and understanding of social, cultural, and historical issues. Cihangir reflects the east-west dialog in Istanbul during the period of stability between the Ottoman Empire and Europe, which remains a gateway to the east. The loss of this unique mixture of cultures requires remediation. The gentrification of these areas will benefit not only the historical and cultural continuity of Istanbul but also the historical and cultural continuity of Europe.

This paper also addresses the following primary discussion: “How does gentrification occur with respect to the similarities and differences in the dynamics of the two urban neighborhoods of Cihangir and Tarlabasi?” It also examines “primary theories, previous research and a discussion of gentrification that applies to this study”.

Gentrification theories, two gentrified neighborhoods, various global gentrification strategies, and the Cihangir case study are discussed in this paper. The Cihangir case study encompasses the Cihangir development process and the results of a survey of Cihangir residents. The conclusions comprise a comparison of the final interpretations of this study with existing gentrification theories.

2 Gentrification Theories

Gentrification, i.e., the transformation, revolution, and renovation of urban areas, can be considered from different perspectives. The definition of “gentrify” is to restore and improve a house or an area to make it suitable for middle-class residents (Cowie, 1989). The term originates in urban transformations of the middle class in England. Gentrification is the migration of middle-class residents into a run-down or recently renewed area of a city (Anon, 1989; Ley, 1996). This study examines gentrification from a basic understanding of theories such as the “filtering theory”, the “rent gap theory”, and the “logic of urban development” (Smith, 1996).

The “filtering theory” proposes that real estate prices and the physical conditions of inhabit-
stated that “the modifications in the socio-cultural structure mean displacement of the original occupants that are low-income workers, immigrants and those generally marginalized of a rehabilitated settlement. Members of the middle-class, working in the city center, want to live in the inner city in order to be closer to their offices and socio-cultural activities and also want to be closer to those similar to themselves”. Establishing and maintaining a lifestyle at a certain standard are important factors.

Lees, Slater and Wyl (Lees et al., 2008, 2010) performed current research on gentrification. “Gentrification” (Lees et al., 2008) and “The Gentrification Reader” (Lees et al., 2010) present comprehensive accounts that include a range of issues from gentrification theories to state-led policies and community resistance to state-led policies. “The gentrification of urban areas has accelerated across the globe to become a central force in urban development” (Lees et al., 2008). “Gentrification” (Lees et al., 2008) is also the first extensive interdisciplinary study on gentrification and is particularly interesting for researchers of housing and urban studies. “It demonstrates how gentrification has grown from a small scale urban process, pioneered by a liberal new middle class, to become a mass-produced gentrification blueprint around the world” (Lees et al., 2008). Various types of gentrification from their initial development to their current implementation (Hill, 1994, Dorling, 1995 and Lees, 1996) have been scrutinized in certain studies. Thompson’s “Gentrification and the Enterprise Culture: Britain, 1780-1980” (Thompson, 2001) discusses the history of gentrification through entrepreneurship and developing middle-class relations. The role of developers and investors in the “politics of gentrification” can be addressed using the theory of Thompson (2001), which is crucial for understanding the comparison presented in this paper. The speculative dynamics of gentrification, which are linked with rent gap and filtering theories that are also influenced by free-market dynamics, should also be considered.

Current articles that address the nature of “new-build gentrification” with direct and indirect displacement discuss the current debate on gentrification and analyze patterns of gentrification through physical and socio-economic dimensions (Davidson and Lees, 2010) (Haase et al, 2010) (Inzulza-Contardo, 2012).

3 Gentrified Neighborhoods: Cihangir and Tarlabasi.

A Spontaneous Gentrification Process: Cihangir

The name Cihangir can be traced to 1561, especially during the westernization period from the 18th century to the 19th century, when immigrants of various nations and religions moved to the Beyoglu district, including Cihangir. At the end of the 19th century, Italian and Greek architects constructed art nouveau buildings in Pera and Cihangir (Figure 2). Stone and brick houses that were constructed at the end of the 19th century and the beginning of the 20th century increased the area’s housing density and population, which was primarily occupied by non-Muslims. Cihangir is located on a hill that slopes south to Bosphorus (Figure 3) on the European side of Istanbul. In the 1920s, Cihangir began to be affected by the cultural, art, and entertainment facilities located in its north and west regions. The southern part of the neighborhood features an impressive Bosphorus panorama; the area’s uneven topography has prevented elaborate construction (Anon, 1993; Anon, 2003).

The recession in Istanbul in the 1930s and 1940s and immigration from the Anatolian section of Turkey beginning in the 1950s negatively affected the social and physical circumstances of Cihangir’s. Due to a wealth tax law, which was imposed on non-Muslims in 1943, and the events of September 6–7, 1955, many non-Muslims were forced to sell or rent their properties for low prices and leave the country. Cihangir’s relationship with the upper-middle classes and intellectuals became important in the late 1960s and early 1970s,
whereas Cihangir’s physical and social conditions deteriorated until the early 1990s. Since the late 1990s, Cihangir has experienced a “liberalized gentrification” that did not result from government policy but was affected by the influx of economic investments. The discussion in this section concerns whether gentrification erases the social geography of urban environments and distorts their unique architectural patterns or constitutes an extreme upgrading. Regional fluctuations in real estate prices due to political change in Turkey and changes in the economic conditions of the residents have affected the physical and social conditions in Cihangir. Since the 1980s, inhabitants have improved the physical appearance of Cihangir. However, over the past decade, the change has been particularly substantial. Despite the sharp downturns in Istanbul’s real estate market during the past two decades, residents have continued to rehabilitate the neighborhood. A substantial amount of literature is available on the gentrification of Cihangir, such as Uzun’s research (2000). Cihangir is unique with respect to the gentrified downtown urban areas throughout the world. The gentrification of Cihangir is one of the few spontaneous processes that is led by locally accommodating stakeholders in a downtown location. Local or global policy makers did not force the gentrification of Cihangir. No attempt was made by any authority to effect change or relocate the residents of the neighborhood. It comprises a freely developing process that occurred over thirty years ago beginning in the 1980s, after Cihangir experienced a socio-economic trough. The dynamics of Cihangir’s gentrification originate in the neighborhood’s self-sustaining and self-developing urban life cycles, which are related to the daily activities and behaviors of the neighborhood’s residents. Trade and cultural and entertainment activities, which are key factors in the improvement of the socio-economic conditions of the area and life cycles, are supported by local residents and nongovernmental organizations; they are the outcome of local dynamics. Residents such as intellectuals and academics are the “gentrifiers”, including the new middle class and non-Muslim minorities.

The heterogeneous social characteristics of Cihangir, which date to the early history of Istanbul, currently exist and continue to demonstrate the potential for urban transformation and revitalization.

A brief discussion on other strategies and processes of gentrification in Turkey and throughout the world is proposed to grasp the uniqueness of Cihangir. Ley (1992; 1996) discussed social change in six Canadian inner-cities; Fillion (1991) described social change in Toronto; Blomley (2004) addressed the interrelation of city, politics and property; Van Kempen and Van Weesep (1994) discussed social change in Utrecht; Ergun addressed social change in Balat in Istanbul (2004).
and Unlu detailed the gentrification of Tarlabasi (2004). They all suggested “modifications in the socio-cultural structure and residential policies”, which differ from the gentrification process in Cihangir. Cihangir is unique due to its process within the core of Istanbul, which sustained its socio-cultural structure through support by NGOs and local residents without government influence. The defined “unique” position of Cihangir, which predominantly derives from the combination of two important parameters, the “liberalized process” and the “location of the neighborhood in the core of the city”, is striking. Other gentrification processes that are not directly influenced by the government policy, such as Kuzguncuk (Uzun 2000; 2001; 2002) and Ortakoy (Aklan, 2003) (Karduz, 2002) (Isozen, 1992), have been implemented in Istanbul. Bosphorus Villages are another example; however, they are located far from downtown.

An analysis of the investments that support gentrification in city centers indicates that the private sector and land developers are usually involved in processes in the USA, whereas individual entrepreneurs are more effective in England (Ergun, 2004). Private and public sectors in France utilized the participation of NGOs (White and Winchester, 1991) (Gelb and Lyons, 1993) (Lees, 1994) (Carpenter and Lees, 1995). Research has been conducted on gentrification processes in Eastern European countries (Sykora, 1996 and Sykora, 1999) and other regions of the world, such as Mexico (Jones and Varley, 1999), Latin America (Ward, 1993), Turkey (Uzun, 2000; Uzun, 2001; Uzun, 2002; Meray-Enlil, 2000) and Israel (Gonen, 2002). Porter and Shaw (2013) explore 21 cities, including Melbourne, Toronto, Johannesburg and Istanbul, which are shaped by government policies to attract investment and the middle-class to their city centers. Gentrification has been understood as both “destroyer and savior” (Ergun, 2004) in these processes. Although positive and negative approaches to gentrification have been presented (Atkinson, 2000), the gentrification process in Cihangir demonstrates that a predominantly “positive process” “in the core of the city” can be achieved.

**A Planned Gentrification Process: Tarlabasi**

Despite the success and benefits of the rehabilitation of Cihangir, specific gentrification strategies have not been developed for Tarlabasi. The Cihangir neighborhood has been substantially

![Aerial photo of the nine city blocks of the Tarlabasi project.](image-url)
upgraded and is physically superior to the nearby dilapidated Tarlabasi neighborhood. The municipal government has established a specific policy for improving Tarlabasi and is attempting to displace occupants by forcing their movement to the newly built houses on the outskirts of Istanbul. The Tarlabasi gentrification project received substantial scholarly attention due to aggressive “state-led gentrification”, which caused the displacement of the majority of the marginalized groups in the city, such as gypsies, ethnic Kurds and travesties, and collective mobilized resistance (Unsal and Kuyucu, 2010). Physical and social sustainability is likely to fail in Tarlabasi, as in many similar examples of forced gentrification.

Unlu et al (2004, 2005) identified the “dilapidation of historical areas”, “increased crime” and “difficulties in preserving the architectural and cultural heritage” in previous studies about Tarlabasi. Unlu et al (2004) presented an approach to Tarlabasi’s urban rehabilitation that emphasizes Tarlabasi’s historical importance and explores the neighborhood’s recent physical and social changes. The research (Unlu et al., 2004) addressed the social structure of the rehabilitation, including socio-demographic, socio-cultural and socio-economic perspectives, and performed a crime analysis. Unlu et al (2004, 2005) investigated infrastructure and superstructures, including their function, size, age, structural and facade characteristics, and historical registration, risk-management systems, and strategies for continuity of ownership without excluding or evicting tenants.

Previous studies (Unlu et al, 2000, 2004) that integrate the physical and social conditions in Tarlabasi through social planning and on-site design surveys should be conducted. Current topics concerning the improvement of Tarlabasi, which are crucial for social analysis, include gentrification, migration, urban assimilation, urban adaptation, and mobility. The inhabitants of this central and historical area include recent migrants and squatters, who reside in the outskirts of the city. Their approaches to adaptation to the urban environment and the circumstances with which they can be mobilized are important. This information will help identify the needs of these individuals and strategies for social rehabilitation of the area, which should be addressed in any proposed plan. Under these conditions, the 2008 Beyoglu municipal project for Tarlabasi focused on nine randomly selected city blocks of different sizes (Figures 4 and 5); all are located near Tarlabasi Boulevard, which is the main thoroughfare in the area.

This urban transformation project is the result of a gradual process that began after the Turkish Parliament passed Law 5366 (Anon, 2005), which was designed to protect and renew irreplaceable historical and cultural resources (Anon, 2005). The law also contained a directive for the

Figure 5. Hybrid map of nine city blocks (existing).
transformation of cultural sites located in the city center, which facilitated the implementation of the project. The municipal authority opened planning and design bidding for Tarlabasi. Small lots, parking problems, the need for a unified renovation effort, high costs, difficulties in negotiations with owners and tenants, and legal problems pertaining to the site substantiate the support of the project by the municipality.

The new Tarlabasi project illustrates how gentrification can be manipulated depending on how “rehabilitation” is defined and whether gentrification is pursued altruistically or for political or monetary gain. Although Tarlabasi remains vibrant, it is perceived as a dilapidated area. The rehabilitation should not be based on a law or on arbitrary decision-making by the municipality. The problems of this area can be addressed by local administrative strategies with collaborative efforts and the participation of all stakeholders, as occurred in Cihangir. Although Unlu (2010) mentioned the importance of participation in a neighborhood such as Tarlabasi to perform a sustainable rehabilitation process, the new law discriminates against urban populations and the new project places a high degree of pressure on the neighborhood’s inhabitants, who may participate reluctantly or choose to leave the area. This proposed project will negatively influence Tarlabasi’s future by destroying the region’s valuable cultural and historical elements and existing social structure (Figures 4 and 5).

Under the banner of urban rehabilitation, the sustainability of the land and community is at risk and the existing urban pattern is not being protected (Figures 5 and 6; Figures 7 and 8). Solutions that accommodate the rights of owners and tenants are problematic. Strategies for maintaining a sustainable environment in Tarlabasi should be examined, and the law, which awards excessive power to local authorities for transformation of an area and the destruction of their uniqueness, should be revised. As discussed previously with regard to the theories of gentrification, “modifications in the socio-cultural structure” and “displacement of the original occupants” will continue in Tarlabasi.

4 The Cihangir Case Study

A survey was administered to 47 nondistinguished Cihangir residents to define the gentrification
process in Cihangir. The methods unique to Cihangir or different from the Tarlabası process were examined. The purpose of the survey was to generalize a sample of 47 Cihangir residents to a population of approximately 5000 residents with respect to the characteristics, attitude, and behavior of the neighborhood’s residents. The survey was cross-sectional, and the data were collected using self-administered questionnaires. The sampling of 47 Cihangir residents was multistage, which is termed clustering (Babbie, 1990; Creswell, 2003). Because it was impossible to compile a list of all Cihangir’s residents, the names and addresses of residents registered with the non-governmental organizations (NGOs) in Cihangir were collected. One or 2 residents from each street in Cihangir was randomly selected according to the list collected from the NGOs. A total of 47 residents were selected as a result of the multistage sampling. The prepared questionnaire comprised 39 questions, the majority of which consisted of closed-ended questions. Any additional comments to closed-ended...
questions were elicited using open-ended questions. However, few additional comments were received. Therefore, the final interpretations were based on the answers to the closed-ended questions.

Of the 47 sample residents, 20 were female and 27 were male; 20 were renters and 27 were homeowners. All sample residents were Turkish citizens; 27 possessed university degrees and the remaining residents were high-school graduates. With respect to age, 25 residents were between 36 and 52 years old, 12 residents were between 53 and 70 years old, 7 residents were between 18 and 35 years old and 3 residents were over the age of 70. A total of 24 residents were married and 26 residents had children. None of the respondents shared a house with a family member other than his or her spouse and children.

“As the number of middle and upper-middle class residents in the neighborhood has increased over the past decade, social solidarity has also improved” is a result of the survey. Here, the increasing number of middle- and upper-middle class residents was determined by questions regarding, for example, “the income levels, the education levels and the level of expenditures on entertainment and travel during different periods (Table 2); when they moved to their current house in Cihangir; and where they were living prior to moving to their current house”. Improvement in social solidarity was evaluated by questions regarding the interactions among individuals, the number of individuals registered with neighborhood-based NGOs, such as the Beautification of Cihangir Organization (BCO), and donations to neighborhood-based charities (Table 1). The findings on developing relations and the increasing number of organizations among residents were critical to the assessment of the topic of “improving social solidarity” in Cihangir. Nongovernmental organizations, such as the BCO, play active roles in the gentrification process.

Cihangir’s unique position on “social solidarity” is also salient because the neighborhood is located in the city center. Current middle- and upper-middle class residents and residents that arrived within the last decade are included in this group; thus, the phenomenon of “social solidarity” emerges. No one is excluded and the mechanisms for the formation of solidarity originated in NGOs and meetings in local cafes. The displacement of residents has occurred slowly compared with the physical upgrading (Table 3), which did not harm the socio-cultural patterns.

The socio-economic level of Cihangir’s residents has improved as real estate ownership and the physical conditions of the buildings have changed (Table 3). The high number of legally constructed and licensed buildings, its central location, and the protection of historical buildings have made Cihangir a desirable residential location. In addition to these qualities, the high transformation rate of Cihangir’s socio-economic class over the past decade (Table 4) demonstrates that the urban regeneration process parallels the influx of members of a higher socio-economic class.

Upgrades to shopping and entertainment facilities paralleled the gentrification process (Table 3). Shopping centers and entertainment facilities have been substantially upgraded during the last ten to fifteen years. The development of local shops, affordable local restaurants and entertainment facilities has supported enhanced life cycles.

The renovations of buildings and facades have also increased (Table 3), which is evidence of physical upgrading and a major element in gentri-
fication. During these renovations, certain investors have altered the unique characteristics of certain buildings. Although few buildings have been altered significantly, this alteration may negatively affect sustainability. This scenario is an illustration of how gentrification can occur inappropriately.

The increase in the presence of young residents, immigrants and intellectuals, who moved to Cihangir, had a positive effect on gentrification (Table 4). In this context, authorities only developed projects for new residents of the middle or upper-middle classes in Tarlabasi. However, the process that was developed locally and spontaneously supports the social diversity in Cihangir.

The goal of the survey was to understand the dynamics of the gentrification of Cihangir; it provided valuable information for interpretation.

5 Conclusion

Cihangir’s historical and geographical significance has influenced its primarily independent gentrification process, in which the real estate market has changed spontaneously or naturally without government policy, because Turkey’s economy and politics have changed. Cihangir’s historical social cosmopolitanism, physical characteristics, Bosphorus panorama, and close relationships with the historical peninsula and the city center have positively affected its urban transformation after difficult historical periods. Although Tarlabasi possessed the majority of these features, urban and transportation projects developed by the authorities made a striking difference between the gentrification processes in Cihangir and Tarlabasi.

Both Cihangir and Tarlabasi are unique products of European and Greek architects of the late Ottoman era. The gentrification of these areas will benefit not only the historical and cultural continuity of Istanbul but also the historical and cultural continuity of Europe. Cihangir has been predominantly renovated and sustained, whereas new projects are erasing traces of the past in Tarlabasi (Figure 6, 7 and 8).

In terms of “the logic of urban development” theory, renovations began along the borders of the neighborhood, which are integrated with the city and the Bosphorus Panorama, and subsequently expanded to a central location in Cihangir. The new urban project of Tarlabasi may be a starting point based on this approach.

Both the “rent gap” and “filtering” theories are valid for Cihangir’s gentrification. The increase in the income levels of residents is a strong indication that gentrification is underway (Table 2). Similarly, the increase in real estate prices, which has predominantly resulted from current renovations, is another example of the process.

The gap between current and previous rent prices increased in Cihangir in the last decade; this finding supports the “rent gap” theory. The upward urban transformation began 15 years ago, and the rent prices increased 150% to 200% during the last decade.

According to the filtering theory, when social and physical conditions attain low levels, development restarts. The events of 1955, when Greek and Armenian minorities were forced out of the area, combined with the decrease in neighborhood relations over the last 25 years, have helped prepare Cihangir for gentrification by lowering current social and physical conditions. These events were considered turning points because a negative effect in one area typically causes problems in other areas (Capra, 1983, 1996). The filtering theory, which considers individuals from higher socio-economic classes who move downward rather than upward by renovating and restoring old and rundown properties, is supported by this study. The high transformation rate of Cihangir’s socio-economic class and the increased renovation of buildings are effective in the process.

Forcing lower-income residents from their neighborhoods is not a viable approach for improving an urban environment. This approach, which is underway in Tarlabasi, demonstrates how gentrification can be manipulated and employed for political or financial gain. Renovation of physical structures or building facades does not necessarily involve the alteration of the unique historical features of buildings. Although the process of gentrification inevitably involves changes to an area’s physical and social dynamics, the goal of maximizing profit is a barrier to maintaining the sustainability and social diversity of an urban environment.

The state may have intervened in the gentrification of Tarlabasi because its gentrification was not possible under free-market dynamics. Under state intervention, large developers were brought into the area as the prime agents of gentrification and rent extraction. As in Cihangir, free-market dynamics may produce a more liberalized result for Tarlabasi that does not modify its socio-cultural history.

Gentrification should not involve the creation of new real estate markets for specific social groups in urban areas. The Tarlabasi project is a typical example of a real estate market that was intentionally created in a rich and historical residential area. To prevent this type of intentionally created mechanisms, all gentrification mechanisms should be structured in accordance with all layers of the existing social system and should consider...
income levels, social values, and property characteristics. There is sufficient time to protect livable historic city centers, such as the Tarlabasi neighborhood, and “liberalized gentrification”, which is a freely developing gentrification process without direct government influence, is possible as in the case of Cihangir.

Tarlabasi’s weak NGO structure and participation negatively affected the sustainability of its socio-cultural and physical characteristics. Conversely, Cihangir’s strong NGO structuring and high level of participation produced freely developing and sustainable result through its gentrification. The following question remains: Does gentrification obliterate urban history and architecture due to its planned structure, such as in Tarlabasi, or does it serve to upgrade and encourage the renaissance of local and global urban areas with its spontaneous processes, such as in Cihangir?

REFERENCES

AKLAŞ E. 2003, Ortadaki köy; Ortaköy, düşlerin parlayıp son-dugu bir yer (The village in the middle; Ortaköy; A place where the dreams shine and extinct). 4.Boyt İletişim Toplum Kultur Dergisi, Istanbul University, No: 3.


SMITH N. 1987, Of yuppies and housing: Gentrification, social restructuring and the urban dream, Environment and Planning D - Society and Space, 5:2, 151-172.


SYKORA L. 1999, Change in the internal spatial structure of post-Communist Prague. GeoJournal, 49 (1999), pp. 79–89.


UZUN C. N. 2001, Gentrification in İstanbul: A Diagnostic Study. Utrecht, KNAG/Faculty of Ruimtelijke Wetenschappen Universiteit Utrecht (Netherlands Geographical Studies, No. 285).


Author(s):

Mehmet Emin Şalgamcıoğlu, (MSc., Phd.)
(CORRESPONDING AUTHOR)
emin@umich.edu, salgamcioglu@itu.edu.tr, salgamcioglu@gmail.com
Research & Teaching Assistant, Faculty of Architecture, Architecture Department, Istanbul Technical University, Taşköprü Taksim 34437 Istanbul, Turkey. +90 212 293 1300 – 2257 phone / +90 212 632 0058 fax
Visiting Scholar, A.Alfred Taubman College of Architecture and Urban Planning, University of Michigan, 2000 Bonisteel Boulevard, Ann Arbor, MI 48109-2069 USA. +1 734 764 1300 main, +1 734 763 2322 fax

Alper Ünlü (MSc., Phd.)
Professor, Faculty of Architecture, Architecture Department, Istanbul Technical University, Taşköprü Taksim 34437 İstanbul, Turkey / Phone +90 212 293 1300 – 2257 / Fax +90 212 632 00 58 /
1. Introduction

For the past 40 years, the green building concept has been in practice and is still on the move (Ismail, 2013). The initiation of green building began much further than the 1970’s when world’s energy crisis broke out (Mao et al., 2011). The green building concept today revolves on a structure which is built with both environmental responsibility and resource efficiency throughout a building’s life-cycle from sitting to design, construction, operation, maintenance, renovation, and demolition (Na et al., 2013). McGraw-Hill Construction’s (2008) survey reported that green building strategies reduce building operating costs by 8-9 percent, increase building value by 7.5 percent, realise a 6.6 percent return on investment, increase occupancy ratio by 3.5 percent, and increase rent ratios by 3 percent. Hence, 61 percent of corporate leaders surveyed indicated that sustainability and green building commitment improves financial performance, competitive positioning and market differentiation.

In the late 80s, green space in an urban area was replaced with asphalt, concrete and other structures that absorb rather than reflect solar radiation heat (Oke, 1987). Sustainable or green buildings in the tropical climate region have become a major concern nowadays (Davidson, 2013; Susorova et al., 2013). The zone of tropical region enclosed about 1/3 of the world’s landmass. Constant growth population in this zone has already accounted to 1/3 of the world population. Most of the countries in the zone have become industrialized countries and this will result in an increase of energy consumption (Larr & Grimme, 2002). To address this problem, there are many ways to reduce energy consumption in the tropical zone countries using the green building concept, for instance, shading, day lighting, and natural ventilation.

With the increasing urban temperature, one of the measures to mitigate this is planting of vegetation. Greenery has the capacities to reduce the urban heat island (UHI) effect (Wong et al., 2007). Wong et al. (2007) found that buildings nearby or surrounded by greenery have lower ambient temperature than those away from the greenery. This was proven back in the 1990s that planting of vegetation is one of the main strategies to mitigate UHI effect with just a single tree planted, the temperature can be reduced (Jauregui, 1990). Besides, greenery is not limited to wall but also roof. Previous studies (Brad, 2002; Hien & Yu, 2006) revealed that temperature of the building roofs and surroundings was significantly reduced with the green roofs installed. This study would like to look at the end users perception of vertical greenery system (VGS), which is one of the said methods that enhance the building performance whilst reducing environmental impact (Koyama et al., 2013).

However, the VGS implementation is still new to the tropical climate region particularly in Malaysia. VGS is not widely used by the construction practitioners when attempting for the Green Building Index (GBI) rating. Malaysia’s first green rating tool- GBI was launched in 2009. For a build-
Vertical greenery system (VGS) is a green building concept that deliberately grows vegetation on the otherwise unexploited vertical exterior walls or buildings. This concept is not new in the industry for it can be traced back to the 7th Century B.C., where the Hanging Gardens of Babylon was built (Dinsdale, Pearen, & Wilson, 2006). Traces of VGS were also found since the Roman Empire (Farrar, 1996). The term VGS is used interchangeably with Vertical Garden (Blanc, 2008), Green Wall (Alexandri & Jones, 2009), Bio-Facade (Köhler, 2008), Green Facades (Köehler, 2008), Green Wall (Alexandri & Jones, 2008), Vertical Garden (Blanc, 2008), Bio Façade (Laopanitchakul, Sunakorn, & Srisutapan, 2008), and Vertical Greenery (Chiang & Tan, 2009).

VGS symbolized a new proportion of greenery related infrastructure, where plants are combined within the vertical walls. Commonly, VGS involves the climbing type of plants with adventitious and self clings roots growing vertically on vertical surfaces. Recent years, many of new modern systems have been developed for the VGS. There are 3 basic components of VGS: 1) plants, 2) system and medium, and 3) irrigation (Cities, 2008).

Firstly, the plant selection must be based on a few characteristics for the VGS to be a success. The plants should be suitable for the planting conditions, concepts, budget, environmental factors, and level of expected maintenance expected (National Parks Board, 2012). For example, the plants selected for external wall should be able to withstand daytime high temperature, intense light radiation and low moisture environment.

Next, efficiency factor, weight and suitability of the system and medium must be taken into consideration for the VGS to be successful. VGS consisted of 2 systems (Rahman, Yeok, & Atikah, 2011): support systems and carrier systems. Support systems are designed to guide the plant up on the vertical surface, while carrier systems act to contain the media for planting on the vertical surface. The selection of the system usually is based on the type of the plants. Support system is also known as green façade, hosting climbing plants on a special made support structure. Meanwhile, the carrier systems are capable of hosting a greater diversity of plants. It is also known as living walls.

Lastly, the decision on irrigation system depended on the local rainfall, hydroponic systems and modular systems. The water can either be recycled or grey water (Stav & Lawson, 2012). However, in tropical country like Malaysia, local rainfall is abundant and recycled water or grey water is not necessary.

2. Vertical Greenery System

Vertical greenery system (VGS) is a green building concept that deliberately grows vegetation on the otherwise unexploited vertical exterior walls or buildings. This concept is not new in the industry for it can be traced back to the 7th Century B.C., where the Hanging Gardens of Babylon was built (Dinsdale, Pearen, & Wilson, 2006). Traces of VGS were also found since the Roman Empire (Farrar, 1996). The term VGS is used interchangeably with Vertical Garden (Blanc, 2008), Green Wall (Alexandri & Jones, 2009), Vertical Garden (Blanc, 2008), Bio Façade (Laopanitchakul, Sunakorn, & Srisutapan, 2008), and Vertical Greenery (Chiang & Tan, 2009).

VGS symbolized a new proportion of greenery related infrastructure, where plants are combined within the vertical walls. Commonly, VGS involves the climbing type of plants with adventitious and self clings roots growing vertically on vertical surfaces. Recent years, many of new modern systems have been developed for the VGS. There are 3 basic components of VGS: 1) plants, 2) system and medium, and 3) irrigation (Cities, 2008).

Firstly, the plant selection must be based on a few characteristics for the VGS to be a success. The plants should be suitable for the planting conditions, concepts, budget, environmental factors, and level of expected maintenance expected (National Parks Board, 2012). For example, the plants selected for external wall should be able to withstand daytime high temperature, intense light radiation and low moisture environment.

Next, efficiency factor, weight and suitability of the system and medium must be taken into consideration for the VGS to be successful. VGS consisted of 2 systems (Rahman, Yeok, & Atikah, 2011): support systems and carrier systems. Support systems are designed to guide the plant up on the vertical surface, while carrier systems act to contain the media for planting on the vertical surface. The selection of the system usually is based on the type of the plants. Support system is also known as green façade, hosting climbing plants on a special made support structure. Meanwhile, the carrier systems are capable of hosting a greater diversity of plants. It is also known as living walls.

Lastly, the decision on irrigation system depended on the local rainfall, hydroponic systems and modular systems. The water can either be recycled or grey water (Stav & Lawson, 2012). However, in tropical country like Malaysia, local rainfall is abundant and recycled water or grey water is not necessary.

2.1 Types of Vertical Greenery System

There are 3 types of VGS: climbing support, self clinging plant, and vertical wall panels as shown in Table 1. VGS is an excellent solution to improve urban spaces with vegetation, mainly those where planting trees are impossible due to the lack of spaces (Bodart and Evrard, 2011). Vegetation is important for us as it provides the oxygen and function as a medium for natural cooler on this earth. Furthermore, Uffelen (2011) emphasized that the integration of nature into a building is an important aspect in balancing the environment.

The advantages of VGS are: a) reducing thermal heat (Yeang, 2006; Barrio, 1998; Bodart & Evrard, 2011); b) reducing the effect of urban heat islands (Landsberg, 1981; Banting & Missios, 2005; Dam, Walke, & Wilson, 2000), c) aesthetic improvement of a building (Blanc, 2008; Beriato & Brebbia, 2011); d) increasing indoor air quality (Wong, 2008; Blanc, 2008; Uffelen, 2011); e) reducing energy usage (Booth et al., 2012; Wong, 2008; Holewa, 2012; Booth et al., 2012); and f)

However, there are always pros and cons in every system. In this research paper, a few disadvantages of the VGS are identified: a) maintenance difficulties (Bodart & Evrard, 2011; Calkins, 2011); b) attract undesirable animals (Bodart & Evrard, 2011; Frost, 2012); c) damaging building (Valesan, Fedrizzi, & Sattler, 2011); and d) lack of expertise (Hopkins & Goodwin, 2011; Liu, 2004).

2.2 Previous Studies on Vertical Greenery System

VGS is seen to be a promising measure to improve the urban environment quality. Wong et al. (2010a) carried out an experiment to observe the thermal benefits of the VGS. They found the use of VGS to cool ambient temperature in building canyons in tropical environment to be effective. The cooler ambient temperature yields savings in the energy cooling loads for the air intake of the air conditioner are of lower temperature.

Besides thermal evaluation, Wong et al. (2010b) also evaluated the acoustics of the VGS where the study found that not all VGS were good noise reduction. They concluded that even though some of the VGS could be a good noise reduction measure, the concern is the high cost of VGS as compared to other options.

Perini et al. (2011) further measured the air flow and temperature of VGS on building envelope. They compared the efficiencies of direct, indirect and living wall system in terms of the air flow and temperature. When tested the air flow and temperature of the three types of wall system, the direct green façade and living wall system are found to be more effective than the indirect green wall system.

Much of the studies on VGS are concerned on the VGS’s effect on the UHI (Wong et al., 2010a; Jaafar et al., 2011; Chong & GhaffarianHossein, 2012; Perini & Rasasco, 2013; Koyama et al., 2013). Jaafar et al. (2011) reviewed that VGS could reduce heat and increase the cooling effect especially the UHI effect through shadings, reduce heat emitted and evapo-transpiration for a cooler temperature. Chong and GhaffarianHossein (2012) furthered that VGS is not

<table>
<thead>
<tr>
<th>Types of Vertical Greenery System</th>
<th>Descriptions</th>
<th>Authors</th>
</tr>
</thead>
</table>
| Climbing support                 | - Use a third parties support system, enables the plant foliage to climb or trail in a controlled manner.  
- More economic to be installed and designed.  
- Plants need to be selected according to their climbing capabilities (usually climb up until 20-30m).  
- Modern climbing supports very different from the traditional wooden trellis used in gardens.  
- Most plants used in this VGS are twiners or use tendrils to help them climb (usually mesh screens or cabling systems).  
- The structures are extensive in area but lightweight and relatively cheap. | Dunnet & Kingsbury, 2004 |
| Self-clinging plants             | - The easiest method and traditional way of growing plants on walls.  
- Suitable plant must be chosen to adapt and grow naturally along the building environment.  
- The vegetation must be planted where it get sufficient light to grow naturally.  
- Do not require any supporting network.  
- Suitable for large blank walls of a firm material for instance concrete, especially north facing.  
- Potential damage to the building fabric, research showed chances to happen is much less often than commonly believed. | Dunnet & Kingsbury, 2004; Blanc, 2008 |
| Vertical walls panel             | - Most sophisticated and costly VGS (requires own planting substrate and irrigation systems on its frame structure).  
- Requires use of vertical growing medium placed upon the wall surface.  
- Do not use climbing type of plants.  
- Hydroponic and irrigation system needed to be built within the structure. | Rahman, Yuok, & Atikah, 2011 |

Table 1. Types of Vertical Greenery System.
popular in Malaysia and it is worthy to expose the
building occupants to the benefits of VGS for the
future of sustainable urban living.

Recently, Koyama et al. (2013) studied the
key plant traits suitable for the VGS, a green façade
that reduces the surface temperature of buildings.
They conducted experiments on the plant traits of
several wall plants and discovered that the vine
length determined percentage coverage that direct-
ly reduces wall surface temperature. The selection
of plants for the VGS has to be stringent to suit the
climate of the region for the growth coverage and
maintenance. Since the cost of maintaining the
VGS is such a concern, Perini and Rosasco (2013)
explored the cost benefit analysis for the VGS and
found that some VGS are economically sustain-
able.

These are the previous studies purported
for the building owners and construction players to
understand the benefits of VGS mostly on reducing
the UHI effect, plant traits for VGS, and cost bene-
fit analysis for VGS. To the best of the author’s
knowledge, little has been done to understand the
end user or occupant perception. The end user
demand would determine the supply; hence it is
worthy to study the end user perception on VGS.
Increasing the awareness of VGS for a quality envi-
ronment and understanding the dissatisfaction of
current VGS implemented in the urban tropics
would first require the perception of the end user.

3. Research Methodology

Quantitative research method was employed in this
study to achieve the objectives, which include ques-
tionnaire design, data collection, and targeted
green buildings. Prior to carrying out the question-
naire survey among the end users of 3 targeted
green buildings, the respective building manage-
ment consents for the survey were sought.

Questionnaire Design

The survey questionnaire was designed to deter-
mine the current end users’ perception on the VGS
integrated in Malaysian green buildings. Statistical
analysis approaches were subsequently carried out
through Statistical Package for Social Sciences
(SPSS) software to obtain the results of the survey.
A total of 100 questionnaires were posted to the end
users working or living in the targeted green build-
ing. A total of 40 respondents took part in the
quantitative questionnaire survey which reflects a
response rate of 40.0%. Table 2 contains the pro-
portion of the respondents’ demographic details for
each category. The details for the respondents were
classified into five categories, namely: Gender, age
group, education level, type of end user, and num-
ber of years living/working in the green building.

Data Collection

This survey was targeted on the end users of three
different buildings in Klang Valley, an area in
Malaysia comprising its suburbs and adjoining
cities and towns in the state of Selangor. The ques-
tionnaires were distributed to the targeted buildings
for management approval to conduct the study.
Having obtained the approval, face-to-face ques-
tionnaire survey was conducted with the random
respondents/end users in the targeted buildings.
This ensured the validity and reliability of the
respondents’ feedback- whether the respondents
are the tenants of the buildings and avoid misun-
derstanding on the confused terms used in ques-
tionnaire. Respondents were also encouraged to
elaborate and comment on the VGS to be record-
ed in this study.

Targeted Green Building

Since this survey was to obtain information about
the satisfaction degree of VGS from the end users,
three different buildings that employed this system
in Klang Valley were selected. The three buildings
were:

1) Digi Technology Operation Centre
(Figure 1)

Location: Subang High Tech Park, Shah Alam,
Selangor
No. of storey: 4-storey
Green Building Index: GBI Gold rating
Plant type: Climbers species
Plant age: 4 years
Plant condition: Well grown and wrapped around building’s envelope (covering thickness +/-20 cm)
Orientation: Surrounding building
Building façade material: Plaster and paint with groove line

2) Jamnah View Condominium (Figure 2)
Location: Luxury condominium at Damansara Height
No. of storey: 23-storey
Plant type: Bougainvillea
Plant age: 19 years
Plant condition: Well grown in planter boxes and not completely covered façade
Orientation: Northwest
Building façade material: Plaster and paint

3) Platinum Sentral (Figure 3)
Location: Kuala Lumpur Sentral Park @ Lot E
No. of storey: 7-storey
Plant type: Climbers species
Plant age: 2 years
Plant condition: Well grown and not completely covered façade (covering thickness +/-10 cm)
Orientation: Surrounding building
Building façade material: Plaster and paint

4. Data Analysis and Results
From this survey, the outcome revealed the benefits of VGS, the barriers to implement VGS, and the application of VGS in Malaysia. The face-to-face survey was targeted at end users at Digi Technology Operation Centre, Jamnah View Condominium, and Platinum Sentral. The end users surveyed comprised of both residential and office occupants. The response rate is 40% and the overall respondent from the three buildings are summarized in Table 3.

Table 3. Summary of response from each targeted building.

Table 4. Degree of satisfaction of Vertical Greenery System perceived by end users.

Table 5. Degree of difficulties of Vertical Greenery System perceived by end users.

Perception of End Users on VGS
The respondents were solicited on their perceptions of VGS. Among the 40 respondents, only 9 of them answered that the VGS did not exist in their living or working environment since they started to live or work there. Most people related VGS to nature (37.5%), followed by beauty (20%), thermal comfort (17.5%), energy saving (17.5%), and lastly psychological positive response (7.5%). Table 4 and 5 depict the end users’ degree of satisfaction and difficulties of VGS implemented. Based on the given scale of 1 to 5, the mean of the degree of satisfaction and difficulties was then calculated.

As illustrated in Table 4, the respondents perceived that VGS can improve the visual quality of a building (4.34). However, a few respondents emphasized that the application of VGS must not be overdone. Bringing nature harmony is the second highest ranked benefit for the degree of satisfaction at 4.33. Some respondents claimed that flowers and greenery attract birds and they were entertained by the birds’ singing every morning. Then, a medium to release stress is considered the third highest ranked of the VGS’s benefits among the end users (4.18). Respondents felt the importance to have the vegetation in parts of the building to reduce the stress of urban hectic routine and traffic jams. It is then followed by the reducing urban heat island effect (UHI) and improving the thermal comfort of the building, which shared the same degree of satisfaction of 3.98 each. Among all, fire prevention has the least degree of satisfaction among end users (2.78). Most respondents thought that VGS acts slightly or does not act as fire prevention. Besides fire prevention, the benefit of improving indoor air quality is also among the lowest ranked. The respondents felt that VGS did not help in improving the indoor air quality. However, plants and vegetation installed to the wall will constantly help filtering contaminates in the air (Chong & Ghaffarianhossein, 2012). This indicated that the respondents were not aware of the benefit of VGS in improving indoor air quality.

Table 5 depicts the degree of difficulties for the application of VGS perceived by end users. With the highest degree of difficulties at 3.45, maintenance for the VGS is the most problematic. This is followed by the problem of water infiltration (3.35). Some respondents experienced water from
the plants spilt to the corridor and pavement. This problem can be countered by using the modern watering system for the plant for example, using capillary system for self-watering and recycling rain water. All respondents agreed that VGS is suitable to be applied in a climate, which is hot and humid throughout the year, like Malaysia. Generally, in the tropical climate region like Malaysia, it is very suitable for vegetation to grow. A few respondents suggested with the right type of plant selection, it will ease maintenance.

The third ranked difficulty for VGS was again the roots problem (3.30). Respondents felt that aged plants with their strong roots caused the hairline crack in the support system be it the wall or planter box. This further emphasized on the plant selection. Tiny insects were attracted (3.23) but were not much of nuisance according to the respondents. The other difficulties were at a mean value of below 3.00. The difficulties of VGS like fire hazards and attract bigger animals like snakes, rats, etc scored a mean value of 2.85 and 2.70, respectively.

**Relationship between Reducing Urban Heat Island (UHI) Effect and Benefits of VGS**

In the tropical region, reducing UHI effect is one of the biggest concerns and VGS happens to be a viable and sustainable measure (Wong et al., 2010a; Jaafar et al., 2011; Chong & GhaffarianHossein, 2012). The urban heat island effects in Malaysia, particularly in Kuala Lumpur have been noticed compare to the other rural area around the city (Tso, 1992). Hence, the application of VGS can be a means in reducing this problem. Climate Protection Partnership Division (n.d.) quoted that the incorporation of vegetation in buildings contributes not only to better air quality, but also to reduce urban heat island effects in densely built area. Therefore, it is necessary to identify the relationship between reducing urban heat island (UHI) effect and the benefits of VGS perceived by end users.

The relationship between the benefit of reducing UHI effect was tested with other benefits of VGS to check the significance between the benefits. One-Way Analysis of Variance (ANOVA) was used to test the benefits significant to the benefit of reducing UHI effect. Based on the result in Table 6, 10 out of 14 benefits have statistically significant relationships with the reducing UHI effect with ANOVA test result of significance level of less than 0.05.

There was a significant relationship of the benefit of Reducing UHI effect on the benefit of

- Make the area lively with activities at the p<0.05 level for the three buildings \[F(2,37) = 5.525, p = 0.008\]
- Reduce air pollution at the p<0.05 level for the three buildings \[F(2,37) = 3.912, p = 0.029\]
- Provide habitats for flora and fauna at the p<0.05 level for the three buildings \[F(2,37) = 3.409, p = 0.044\]
- Improves air ventilation at the p<0.05 level for the three buildings \[F(2,37) = 4.735, p = 0.015\]
- Increase indoor air quality at the p<0.05 level for the three buildings \[F(2,37) = 5.514, p = 0.005\]
- Improve thermal comfort at the p<0.05 level for the three buildings \[F(2,37) = 11.434, p = 0.000\]
- Reduce sound pollution at the p<0.05 level for the three buildings \[F(2,37) = 6.705, p = 0.003\]
- Acts as fire prevention at the p<0.05 level for the three buildings \[F(2,37) = 5.882, p = 0.005\]
- Acts as insulation and energy efficiency at the p<0.05 level for the three buildings \[F(2,37) = 9.233, p = 0.001\]
- Increases property values at the p<0.05 level for the three buildings \[F(2,37) = 15.320, p = 0.000\]

As shaded in Table 6, 4 VGS benefits do not have statistically significant relationship with the benefit of reducing UHI effect (significant level > 0.05). They only influence the benefit of reducing UHI by very little means or maybe no influence at all. These benefits are enhance the visual quality of an area, reduce stress by providing sense of nature in urban area, release the positive energy towards the user and bring nature harmony.

**Relationship between the Benefits of VGS Perceived by End Users**

Table 7 displays the correlation matrix between the benefits of VGS as rated by the respondents. Four strongest positive correlations, also known as strong relationships, were found between bring nature harmony and reduce stress by providing sense of nature in urban area (r = 0.633), reduce urban heat island effect in urban area and improve thermal comfort (r = 0.645), and enhance the visual quality of an area correlated with make the area lively with activities (r = 0.644) and increases property value (r = 0.625), all with the p-value estimated at less than 1% level of significance.

To reinforce the findings of the ANOVA test on the VGS benefits significant to the benefit of reducing UHI effect in urban area, this correlation matrix also shows similar results. Among the correlations of the benefit of reducing UHI effect in urban area and the remaining VGS benefits, there were four correlations with no relationship. They were
<table>
<thead>
<tr>
<th>Advantages of VGS</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve visual quality of an area</td>
<td>1.51</td>
<td>2</td>
<td>0.755</td>
<td>1.562</td>
<td>0.269</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15.624</td>
<td>37</td>
<td>0.422</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16.775</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make the area lively with activities</td>
<td>6.756</td>
<td>2</td>
<td>3.378</td>
<td>5.525</td>
<td>0.008</td>
</tr>
<tr>
<td>Within Groups</td>
<td>22.619</td>
<td>37</td>
<td>0.611</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.375</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing stress by producing sense of</td>
<td>1.002</td>
<td>2</td>
<td>0.501</td>
<td>0.748</td>
<td>0.480</td>
</tr>
<tr>
<td>nature</td>
<td>24.773</td>
<td>37</td>
<td>0.670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>25.775</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26.775</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release positive energy towards the sun</td>
<td>1.894</td>
<td>2</td>
<td>0.947</td>
<td>1.602</td>
<td>0.215</td>
</tr>
<tr>
<td>Within Groups</td>
<td>21.881</td>
<td>37</td>
<td>0.591</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.775</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bring nature harmony</td>
<td>1.662</td>
<td>2</td>
<td>0.801</td>
<td>1.955</td>
<td>0.156</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15.173</td>
<td>37</td>
<td>0.410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16.775</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce air pollution</td>
<td>4.119</td>
<td>2</td>
<td>2.066</td>
<td>3.912</td>
<td>0.039</td>
</tr>
<tr>
<td>Within Groups</td>
<td>19.481</td>
<td>37</td>
<td>0.527</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.600</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide habitats for flora and fauna</td>
<td>4.044</td>
<td>2</td>
<td>2.472</td>
<td>3.409</td>
<td>0.044</td>
</tr>
<tr>
<td>Within Groups</td>
<td>26.831</td>
<td>37</td>
<td>0.725</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30.775</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improves air ventilation</td>
<td>7.806</td>
<td>2</td>
<td>3.913</td>
<td>4.735</td>
<td>0.015</td>
</tr>
<tr>
<td>Within Groups</td>
<td>30.574</td>
<td>37</td>
<td>0.836</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>38.380</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase indoor air quality</td>
<td>11.016</td>
<td>2</td>
<td>5.508</td>
<td>5.514</td>
<td>0.005</td>
</tr>
<tr>
<td>Within Groups</td>
<td>36.959</td>
<td>37</td>
<td>0.999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47.975</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase thermal comfort</td>
<td>7.248</td>
<td>2</td>
<td>3.624</td>
<td>11.434</td>
<td>0.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>11.727</td>
<td>37</td>
<td>0.317</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18.975</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce sound pollution</td>
<td>9.869</td>
<td>2</td>
<td>4.932</td>
<td>6.705</td>
<td>0.003</td>
</tr>
<tr>
<td>Within Groups</td>
<td>27.231</td>
<td>37</td>
<td>0.736</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>37.097</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acts as fire prevention</td>
<td>9.402</td>
<td>2</td>
<td>4.705</td>
<td>5.388</td>
<td>0.002</td>
</tr>
<tr>
<td>Within Groups</td>
<td>20.573</td>
<td>37</td>
<td>0.729</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.975</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acts as insulation and energy efficiency</td>
<td>4.158</td>
<td>2</td>
<td>2.579</td>
<td>9.233</td>
<td>0.001</td>
</tr>
<tr>
<td>Within Groups</td>
<td>14.342</td>
<td>37</td>
<td>0.388</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18.495</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increases property values</td>
<td>19.648</td>
<td>2</td>
<td>9.824</td>
<td>15.320</td>
<td>0.000</td>
</tr>
<tr>
<td>Total</td>
<td>23.721</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43.372</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6. ANOVA test between the benefit of reducing UHI effect with other benefits.

| Perceptions on VGS                          | Pearson correlation coefficient | N | M | M | M | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Enhance the visual quality of an area       |                                  | 0.800         | M | M | M | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Bring nature harmony                        |                                  | 0.864         | N | N | N | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Reduce stress by providing sense of nature  |                                  | 0.622         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Improve thermal comfort                     |                                  | 0.531         | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Reduce air pollution                        |                                  | 0.305         | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Provide habitats for flora and fauna within |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Reduce the positive energy sources use      |                                  | 0.259         | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Act as insulation and energy efficiency     |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Improve air ventilation                     |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Make the area lively with activities        |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Increase property values                   |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Increase indoor air quality                |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Reduce sound pollution                      |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Act as fire prevention                     |                                  | 0.311         | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |

Table 7. Correlation matrix between the end user perceptions on VGS.
reduce the UHI effect in urban area with enhance the visual quality of an area, bring nature harmony, reduce stress by providing sense of nature in urban area, and release the positive energy towards user.

While the remaining VGS benefits’ correlations with benefit of reduce UHI effect in urban area were low, there were two moderate correlations or relationships. Those with low relationships with reduce UHI effect in urban area were reduce air pollution \((r = 0.203)\), provide habitats for flora and fauna within urban area \((r = 0.213)\), improve air ventilation \((r = 0.212)\), make the area lively with activities \((r = 0.218)\), increases property value \((r = 0.222)\), reduce sound pollution \((r = 0.233)\), and act as fire prevention \((r = 0.210)\), all with the p-value estimated at less than 5% level of significance.

The said two moderate relationships were between reduce the UHI effect in urban area and acts as insulation and energy efficiency \((r = 0.411)\) and increases indoor air quality \((r = 0.343)\), both with the p-value estimated at less than 1% level of significance.

5. Discussion on Findings

VGS is not very new in Malaysia, for instance, Jamnah View Condominium incorporated VGS since it began to be occupied about 23 years ago while the applications of VGS in Digi Technology Operation Centre and Platinum Sentral started in the year 2009 and 2011 respectively. Even though the concept is not new, the number of Malaysian buildings incorporating VGS is still very few. Findings showed none of the respondents noticed other buildings besides the buildings they work or live in implemented VGS. This suggested that the application of VGS in Malaysia is quite insufficient despite all the benefits towards the environment and end users.

The top three satisfactions of VGS perceived by end users were enhance the visual quality of an area, bring nature harmony, and reduce stress by providing sense of nature in urban area. Other than visual and senses benefits, the benefits related to enhanced quality environment were unnoticeable. This suggested the awareness on the sustainable effect of VGS for a quality environment could be further developed.

The top ranked difficulties or problems of VGS perceived by end users were difficult to maintain, water infiltration, and roots problem. According to the analysis, these problems were mostly faced by end users of older buildings with outdated watering system and poor plant selection. Little difficulties involved in newer buildings with newer VGS techniques and careful selection of plant species. In short, the difficulties could be resolved.

Findings from survey also showed the contradictory results between the top ranked benefits perceived by end users and the actual relationship with reducing Urban Heat Island effect in urban area. The top ranked benefits perceived by the end users were enhance the visual quality of an area, bring nature harmony, and reduce stress by providing sense of nature in urban area, which were also those of insignificant relationships with the benefit of reducing UHI effect in urban area the ANOVA and correlation tests. This indicated the end users perceived little benefits from the VGS other than visual and senses benefits.

This would mean the vast room of publicity on the benefits and implementation of VGS for the benefits of the end users and a sustainable environment in Malaysia. Many ways to instill the awareness, for instance, government can support in creating government policies on incorporating VGS green concepts for construction players, exposures and educations of VGS and greenery to public via mass media, research and development on conducting cost analysis for incorporation of VGS, and providing findings on efficient ways to maintain VGS.

5. Conclusion

The survey was conducted to determine the perception of VGS implemented at the end users’ workplace or home in Klang Valley, Malaysia. The research reviewed the opinions of end users from the three buildings: Digi Technology Operation Centre, Jamnah View Condominium, and Platinum Sentral. It was found that the top three satisfaction degrees of VGS are enhancement on the visual quality, bring nature harmony, and reduce stress by providing sense of nature in urban area. This contradicts with the significant benefits found from the ANOVA test of relationship between reducing Urban Heat Island (UHI) effect and other benefits of VGS. Hence, the needs of instilling awareness of VGS among the public and efforts from the government and research and development are necessary. This paper gave a clear vision about the benefits of VGS perceived by end users in Malaysia.

This research does provide avenues for future researches to analyze problems of VGS in tropical regions. Furthermore, this study has indicated and confirmed the acceptance of the end users towards VGS and the lack of awareness on the benefits of VGS towards sustainable and quality environment. As such, future studies can be car-
ried out to application of VGS in particular for tropical regions like determine the barriers and problems to implement the VGS in Malaysia, the life cycle cost analysis of VGS application, and selection criteria for plants and building structures for VGS.

REFERENCES


BERIATOS, C., BREBBIA, E. 2011, Sustainable development and planning V. WIT Press, NY.


DINSDALE, S., PEAREN, B., WILSON, C. 2006, Feasibility Study for Green Roof Application on Queen’s University Campus. Queen’s University, UK.


FARRAR, L. 1996, Gardens of Italy and the Western Provinces of the Roman Empire from the 4th Century BC to the 4th Century AD. BAR International Series.


JAAFAR, B., SAID, I., RASIDI, M. H. 2011, Evaluating the impact of vertical greenery system on cooling effect on high rise buildings and surroundings: A Review. 12th Senvar.


LIU, K. 2004, Engineering Performance For Rooftop Gardens Through Field Evaluation. Roof Consultants Institute , 4-12.


UFFELEN, C.V. 2011, Facade greenery contemporary landscaping. Braun Publishing AG.


WONG, E. 2008, Reducing Urban Heat Islands: Compendium of Strategies. USA.


Author(s):

Abdul-Rahman
University of Malaya, 50603 Kuala Lumpur, Malaysia.

Chen Wang,
Department of Quantity Surveying, Faculty of Built Environment, University of Malaya, 50603 Kuala Lumpur, Malaysia.

Azli Mohd Rahim
University of Malaya, 50603 Kuala Lumpur, Malaysia.

Siaw Chuing Loo
University of Malaya, 50603 Kuala Lumpur, Malaysia.

Nadzmi Miswan.
University of Malaya, 50603 Kuala Lumpur, Malaysia.
PLACE IDENTITY: A THEORETICAL REFLECTION.

Nur Farhana Azmi, Faizah Ahmad, Azlan Shah Ali

Abstract
Each place possesses characteristics that confer on it a sense of place and identity through the meanings and values that they provide. The role of the physical built environment in place and identity development has not received adequate attention in built environment literature. This paper attempts to identify the unique and exceptional characteristics of places which create a unique environment and make a continuing contribution to the overall sense of the place. A preliminary survey was conducted in Kuala Kubu Bharu (KKB), a small town in the northern part of the Malaysian state of Selangor; to examine the characteristics of the place that influence and contribute to the identity of the town. The survey results demonstrate that the cultural heritage of the physical built environment acts as an important trigger for the town’s identity. While it is undeniable that cultural heritage is indeed greatly the product of non-visual sources; subjective meanings, experiences, beliefs, ideology and past history of the place, this paper highlights the significance of the physical built environment in influencing the very individuality of the place.

Keywords: Place identity, Place, Small town, Built heritage, Kuala Kubu Bharu.

1.0 Introduction

Over the eight decades of its existence, the small town of Kuala Kubu Bharu (or KKB as it is commonly known) has remained largely untouched by development and thus retained many of the remnants and traces from the second World War, such as bombed buildings. Many Garden City design elements including the green belts and playgrounds introduced by Malaya’s first town planner, Charles Crompton Reade, are also still in place. As stated by Yuksel & Iclal (2005), it is the small towns where the original historical heritage is protected. The potential importance of this heritage does not lie only in the intrinsic beauty of what is being preserved, the immediate revenue it may bring from tourism based in history, but above all in the identity conferred. The inherent architectural, historical, and cultural significance of the buildings are what makes them unique and subsequently connotes the very individuality of a place from other places in the world (Noor Suzaini 2007). Apart from these factors, functional qualities of the buildings also serve as one of the critical elements in constructing a city’s image and identity (Tiesdell et al. 1996). Therefore, historic urban features are a salient source for both local and national identity (Goad & Ngiom 2007; Mansfield 2008).

The role in identity development of historic buildings, the physical built environment or more generally a place has not received adequate attention in built environment literature. Furthermore, it has largely been neglected in psychology literature that has dominated the debate on place identity (Hauge 2007). According to Graham et al. (2009), there is a promising tie between historic building and the place identity. Hauge (2007) and Twigger-Ross & Uzzell (1996) argued that discussions related to identity are, generally concerned with, and accompanied by, place reference.

Therefore, this paper attempts to identify the unique and exceptional characteristics of places which create unique environments and contribute to the overall sense of place. To achieve this aim, this paper briefly examines the theory and concepts of place, place identity, and the fundamental elements of the identity of places. Based on the theoretical characteristics, the paper further attempts to identify unique built heritage and other physical elements; which in the researcher’s view are prominent in relation to a study area selected through a preliminary field survey.

2.0 Conceptual foundation of place and place identity

2.1 Place

A place is distinguished from the associated con-
cept of space by the former being endowed with meaning and value (Puren et al. 2008; Relph 1976; Tuan 1977). As argued by Harner (2001) and Shuhana (2011), it is human experience that confers meaning to places. In Relph’s (1976:29) term, place is seen as a multifaceted phenomenon of personal experiences rather than entities that can be defined simply in terms of their location or appearance. While developed, understood and experienced differently among different people, one single place may have a range of meanings and values at a particular time (Australia ICOMOS 2000; Harner 2001; Hubbard et al. 2004). Although ‘place’ is often characterized by meanings and intentions people associate with a particular setting, the importance of physical characteristics whether of buildings or natural features in describing a place is undeniable.

Pearson & Sullivan (1995) for example, describe place as the area of concentration of in situ cultural material or region of land where past human activity is manifested physically in the form of structures or buildings. Norberg-Schulz (1980) in his discussion of the theory of identity and place, emphasized concrete things with material substance, shape, texture and colour in defining place. Moreover, place definition also includes any fixed part of an historic environment with a distinctive identity (English Heritage 2008). The extent of place in building identity can be found by considering the place as whole entities or fusions of physical features, and activities to which people have deep emotional and psychological ties (Relph 1976). The following notion of place by Donat (1967) reflect the concept of identity:

“Places occur at all levels of identity; my place, your place, street, community, town, city, county, region, country and continent, but places never conform to the tidy hierarchies of classification. They all overlap and interpenetrate one another and are wide open to a variety of interpretation”.

The combination of physical setting, activities and meanings as constituent elements of place is central for identity formation, and this will be discussed in the following section.

2.2 Place identity

The term place identity has its roots in the association between place and the concept of identity (Hauge 2007; Twigger-Ross & Uzzell 1996). Despite the lack of attention to the influence of the physical built environment on identity, the concept of place identity has been discussed implicitly, if not explicitly in various academic research. Place identity has many interpretations (Lewicka 2008; Lynch 1960; Marcouyeux & Fleury-Bahi 2011; Tavakoli 2010; Twigger-Ross & Uzzell 1996). For example, Lewicka (2008) defined place identity as “a set of place features that guarantee the place’s distinctiveness and continuity in time”. Within the context of urban sustainability, identity is defined by Tavakoli (2010) as the physical structure of a city that is unique and subsequently increases recognition of that city. Similarly, Lynch (1960) conceptualized the identity of a place as that which provides its individuality, oneness or distinction from other places, and thus is intrinsic to its recognition as a separable entity. On the other hand, place identity also focuses on how people see or define themselves with reference to the physical environment (Marcouyeux & Fleury-Bahi 2011). Using the Breakwell’s identity process model, Twigger-Ross & Uzzell (1996) demonstrated the use of place in gaining positive distinctiveness over people in other settlements as well as in providing and maintaining individual’s continuity, self-esteem and self-efficacy.

Collectively, place identity can be defined differently by either the ways people expressed identifications with reference to the physical environment or the distinctiveness of the environment itself. However the most important part of identity according to Shuhana (2011:18), relates to “…distinctiveness of the physical environment and the ability for it to be recognized and recalled vividly by the observer”. For the purpose of this paper, place identity is confined to the unique or distinct character of a place.

Regardless of size, every city or town has beauty, unique and distinct characteristics of its own. Nevertheless, despite having rich historical and architectural reserves, towns of a small scale in South-East Asian countries including Malaysia have been relatively overlooked (Jackson 1973). According to Yuksel & Iclal (2005), they are now subject to the triple threat of dilapidation, exhaustion and disappearance. In Malaysia, this problem is further exacerbated by the absence of specific legislation that deals directly with the development and conservation of small historic towns. However, this does not necessarily imply that the town has no significance (English Heritage 2008). In places where the overall significance and importance is unclear and poorly understood, detailed study and analysis involving assessment of cultural significance should be undertaken. This should lead to preparation of a statement of significance establishing the particular value of the place (Australia ICOMOS 2000). The former particularly entails the determination of the elements that made the places
identifiable together with the values they hold (Pearson & Sullivan 1995).

These discussions of place identity raise the question of what are the contributing elements of the identity of a place. Relph (1976) and Shuhana & Norsidah (2008) identified the physical setting, the activities, and the meanings given by intentions as three fundamental components that constitute the very individuality of places. This notion is also supported by Hauge (2007) who emphasized the importance of place in identity development by means of physical settings, as well as social, psychological and cultural meanings attached to it.

2.2.1 Elements of place identity

2.2.1.1 Physical elements and activities

One of the most significant elements influencing the identity of places is the physical form of human works. According to Oktay (2002:261) cities, like individuals, should have character and distinctions; like individuals, this flavor is made up of numerous characteristics, or identifiable elements. As supported by Shuhana (2011), distinct elements present in a place are the qualities that one should consider when describing identity. For Stubbs (2004), these may include familiar landmarks and neighbourhoods. The Ministry of Housing and Local Government (2010) provides some examples of the former, such as natural features of outstanding beauty, iconic buildings, activity nodes, heritage routes with rich memories and gathering places people can easily identify and be proud of.

Furthermore, Izuandi (2010) highlighted ten physical elements of townscapes that are critical in constructing identity for a town. These specifically refer to the enclosure, or outdoor room, gateways and changes of level, closed vistas, deflection, incident, punctuation, narrowing, fluctuation, projection or recession, and the public and private space of the town. Similarly, the value of townscape as opined by Feilden (2005) depends upon ensembles of buildings, the spaces they stand in, roads, public spaces, and the views from significant reference points and vistas. From a historical perspective, Shuhana (2011) offered some expansion of the concept by referring to an historic townscape as an area with historical significance, which enriches people’s sensory experience through many of its heritage buildings as well as the on-going traditional activities.

Relph (1976) argued that the physical environment provides the backdrop to activities of the people, yet the inverse is also true in which it is complemented and influenced by such activities. According to Norsidah (2010), attributes of physical environment in making places accessible, more readable, unique, and comfortable including physical, environmental and psychological comfort play a vital role in influencing the identity of a place.

Despite the plethora of notions on what constitutes place distinctiveness, many authors have referred to these vivid or unique characters of the historic buildings present in heritage places (Heritage of Malaysia Trust 2011; Mansfield 2008; Kamarul Syahril et al. 2008; Noor Suzaini 2007; Goad & Ngiom, 2007; Logan et al. 2002; Muhamad Khairuddin, 1996; Syed Zainol, 1996). Kamarul Syahril et al. (2008) and Syed Zainol (1996) for instance, argued that historic buildings are of immense architectural and historical value provide a sense of identity and continuity, especially in the face of globalization. Along with collective memory and social value, historic urban features are believed to be salient sources for both local and national identity (Goad & Ngiom 2007; Mansfield 2008). According to Logan (2002), cultural heritage has been used to create the sense of identity in several Asian countries such as China, Laos, Myanmar and Thailand. For a small town, Muhamad Khairuddin (1996) argued that the physical elements of the old historical buildings make the most significant contribution in conferring on such a town its unique image. Thus, it is evident that built heritage does not only contribute to national but also local distinctiveness (Heritage of Malaysia Trust 2011).

Therefore, the most enduring justification for considering historic buildings as physical indicators of place identity has been their conservation; in itself which is largely inspired by its role in instigating, preserving and promoting the identity of a place (Arazi et al. 2010; Kamarul Syahril et al. 2008; Lee & Lim 2010; Noor Amila et al. 2010; Suhana et al. 2011). While it is true that the architectural distinctiveness of historic buildings heightens the sense of place, it is the meaning or values embedded in places that bind people intimately and make ordinary places unique from elsewhere (Chang 2010; The Getty Conservation Institute 2000). The latter is discussed in the following section.

2.2.1.2 Meanings and values

The articulation of identity is also related to the feelings and perceptions developed through experiences people have with a place (Hauge 2007; Norsidah 2010; Relph 1976; Shuhana 2011). Arreola (1995) argued that the readiness and distinctiveness of physical structures are essential pre-
requisites for building identity but people’s perceptions or meanings always form the very basis for this construct. According to Harner (2001), identity building could be achieved through the process of hegemony, or to be more precise, creation of place identity when meaning of a place for the majority of its residents matches the ideological beliefs of those in power. However, it does not imply that those with power necessarily determine the meanings of a place as the process is about dominance obtained by consent rather than coercion or counter-hegemony.

As discussed in Section 2.2, meanings, physical form and intensity of activities constitute distinctiveness and uniqueness of a place. This distinctiveness in turn develops multiple experiences, meanings and emotions among people, which Puren et al. (2008) referred to as a sense of place. The term which is referred to as place attachment in other studies (Lewicka 2008; Marcouyeux & Fleury-Bahi 2011; Shuhana & Norsidah 2008) is commonly referred to as positive-affective bonds to a place.

Similarly, in discussing the concept in the historical context, Graham et al. (2009) advocated that the senses of place developed by heritage places are mostly positive. The significant role in creating the sense of place was noted as one of the inherent qualities of historic places (Pearson & Sullivan 1995; Rodwell 2007). For the Heritage Council of Western Australia (2012), local people’s positive sense of place and identity is developed when the place is felt significant by the inhabitants for social, cultural, educational or spiritual reasons. This implies that it is the cultural significance that makes places unique and valued by the community and society as a whole. Therefore, retaining the cultural significance of a place becomes the ultimate aim of conservation (Heritage of Malaysia Trust 2007; Australia ICOMOS 1999; Pearson & Sullivan 1995; the Getty Conservation Institute 2000).

The cultural heritage value of a place is not static, it is multi-faceted and dependent on human perceptions (Mason 2002; Pearson & Sullivan 1995). Diversity in interpretation of the values embedded in cultural property (as illustrated in Table 1) is therefore needed to simply establish some ground in finding agreement for these values. In most instances, there is a great overlap among the values devised among individuals from different disciplines and backgrounds. For instance, scientific or technological value outlined in Feilden’s (as an architect) typology of value is minimized in the category suggested by Mason (as preservationist) as it is seen to be derived from historical value.

Despite the diversity of notions of value, it is noted that they are largely based on the definition of cultural significance by the Australian ICOMOS’s Burra Charter 1999. The Charter stated that the terms aesthetic, historic, scientific and social can encompass all other values (Australia ICOMOS 2000). This statement can be seen from the real international practice for local heritage place assessment. As demonstrated in Table 2, the four values of the Burra Charter are essentially used as main criteria in assessing local heritage places across Australia and England.

Similarly in Malaysia, the criteria outlined under Section 67 of the National Heritage Act 2005 are also found to be consistent with the four generic values given in the interpretation of cultural significance in the Charter. Nevertheless, while being too broad to be used in real assessment practices in Malaysia, the criteria are only pertinent for assessing places at the national level and thus, not readily adapted for local use (Heritage of Malaysia Trust 2007). The absence of provision for their identification and protection in some cases causes the significance of locally significant places to be underestimated. Nevertheless, it is argued in this paper that the assessment of cultural significance and preparation of the statement of significance are the right steps to be undertaken in establishing value for these places. Therefore, comparing the value with existing criteria for assessment as has been devised in Australia and England, can make the process more efficient and hence be a bridge to value establishment.

Further to this, it is imperative to have some idea of what the criteria mean before the assessment takes place. The Burra Charter, as argued by Pearson & Sullivan (1995), is widely accepted and
therefore it is ‘…helpful, where appropriate, to use the terms and processes laid down there’. It is worth noting that the headings of the criteria below are also drawn from the Burra Charter 1999:

(i) **Aesthetic value**
A place with aesthetic value is important in demonstrating creative or design excellence, decoration or craftsmanship, and particular taste, style or technology. Therefore, it often exhibits landmark qualities and subsequently makes a contribution to important vistas and the overall quality of a setting. According to Mason (2002), this value may also be derived from the sensory experience (smell, sound, feeling, and sight) of a place.

(ii) **Historic value**
A place may have historic value if it is associated with past events, developments or cultural places that are significant to the place’s history, epitomizes technical or creative achievement from a particular period, or has strong association with the life or works of a person, group of persons or organization in shaping that place. The existences of physical evidence of such association do strengthen and contribute to the claimed historical significance.

(iii) **Scientific value**
A place of scientific value (also variously called research, archaeological or informational value) should demonstrate a likelihood of providing new or further substantial information that will contribute to an understanding of people regarding their past history, culture, environment, behaviour, earlier technology or architecture.

(iv) **Social value**
A place included under this criterion must be of importance in its association with a community or cultural group in a particular area for social, cultural, educational or spiritual reasons. For this reason, it tends to develop local’s positive sense of place and identity. In contrast with other values, social value is less dependent on the survival of physical fabric. While being the hardest criterion to identify, people often mistakenly believe that places are socially valuable for amenity reasons.

Of the four organizations reviewed in Table 2 above, only the Heritage Council of South Australia considers economic value as one of the criteria in assessing places that are important to their locality. Mason, (2002) argued that economic value is often taken for granted because it differs from other cultural values established in the traditional modes of the assessment process. Notwithstanding the fact, this paper tends to address economic value as one of the important criteria to be considered, especially in the face of globalization. As modernization or globalization brings about much strain on old historical reserves present in a particular place (Tung 2001), there must be an economic opportunity for these historical buildings to continue to be revered and preserved (Tiesdell et al. 1996).

Moreover, the term ‘valuable’ which often correlates to historical reserves itself holds these resources to be meaningful in economic globalization (Rypkema 2002). This is especially true when linking heritage conservation with tourism (Chang 2010; Henderson 2002; Rypkema 2001; 2002; Feilden 2005). This notion can be seen in Henderson’s (2002) work in which a majority of the principal urban heritage places found in the former colonial cities of Malacca and Penang in Malaysia and also Singapore are transformed into places for tourists to visit; though it might regard as a new form of imperialism. Clearly, it is wise to preserve the quality of irreplaceable historic resources while obtaining revenue from them.

### 3.0 Methodology
The methodology used in identifying the unique and exceptional characteristics of a place involves an extensive literature review on the concepts of place, place identity, and both physical and ideological components of the identity of places. Different kinds of materials used include the official documents published by government and private...
agencies, journals, theses, newspapers, and other mass media outputs. The in-depth literature review attempts to highlight exceptional characteristics of places which together act to create unique environments and make a continuing contribution to the overall sense of the place. This review is subsequently complemented by the preliminary survey of the small town of Kuala Kubu Bharu (KKB) in the Hulu Selangor district of Selangor, Malaysia. In this survey, a standardized survey form was used to ensure consistency of the information collected. As outlined in Section 2.2.1.2, places need to meet at least one of the pre-defined criteria drawn on guidelines published in Australia and England to be identified as locally significant places in the town. It is anticipated that questionnaire surveys of how local and non-local residents perceive these places and interviews with various stakeholders regarding protection measures and established legislations impacting development of small Malaysian town will form the next stage of the study.

3.1 Background of case study

Kuala Kubu Bharu or KKB, an old town built during the colonial period is still very much a sleepy hollow. The name Kuala Kubu originated from Sungai Kubu which is one of the tributaries of Sungai Selangor. The town was well known as the second biggest town in the State of Selangor; and was famous for its tin mining activities during the mid-19th century. The old Kuala town was totally destroyed in the late 19th century, when a heavy downpour caused the dam over Sungai Selangor to burst and flood the town. That however was not the end of the town, as it gave a noticeable impetus for the development of the new township of Kuala Kubu Baru (‘baru’ means new in the Malay language). The town is located in the northeastern part of the state of Selangor in sub-district of Ampang Pecah (Figure 1). Located at a very strategic location near the state border, KKB has become a key transit point for tourists who are heading to Fraser’s Hill in the state of Pahang, while also being a tourist destination in itself.

The town environment is a mixture of built and non-built land uses including institutional, residential, low-density commercial area, and green spaces. KKB was the first town in the Federated Malay States planned with a Garden City concept in 1930 by Malaya’s first town planner, Charles Crompton Reade. Through the concept, ample space was reserved in the town for a park belt separating the central shopping and trading areas from the main residential area. Specifically, this was achieved by having a strict grid-iron pattern of streets in laying out the shophouses. Thus the lay-out of the lush park belt and government housing areas give the town a spacious feeling. The former is found to be the unique feature of the town, as it cannot be found in either new or traditional towns of Malaya (Figure 2). Originally to cater for recreational purposes, the concept is also found to be
useful in precluding increased development and urban sprawl (Noriati 2000). This is presumably evident as the KKB town has sidestepped the mainstream of development and remained largely untouched by modern developments.

The built part of the town largely consists of old institutional, commercial and residential buildings. KKB is close not only to the hearts of local residents but also to the city dwellers of Kuala Lumpur, as for many years it has played host to them as a refuge from the hustle and bustle of city life. As discussed in Section 2.1, a place is not only characterized by physical characteristics but also meanings and feelings people have with a particular setting. This small town although looking a bit run down, still bears the vestiges of the pre-war era. It silently holds many untold stories of the past history, and thus needs to be studied and investigated further.

To date much of Reade’s original layout is still in place and so are the elements that make up the original concept. These include the striking features of the park belts and playgrounds, low density housing, visually attractive tree-planting treatment, separation of areas by use, and the natural landscape view. Overall, the importance of the physical or Garden City design elements in KKB, both natural and man-made, create a distinctive atmosphere for the town.

4.0 Results and discussions

KKB was dubbed after its Special Area Plan ‘Garden City Heritage’. As the name suggests, historical reserves of the town can also be considered as one of the significant components that shape the identity and character of the town. The distribution of the 145 heritage buildings surveyed in KKB town is summarized in Table 3, based on the criteria established in Section 2.2.1.2. Also, their location is shown by red shading in Figure 4. Categorization of the buildings in Table 3 is based on the Heritage of Malaysia Trust’s (1990) analytical framework for recording and documenting historically important buildings in Malaysia.

<table>
<thead>
<tr>
<th>Use of property</th>
<th>Number</th>
<th>Aesthetic</th>
<th>Historic</th>
<th>Scientific</th>
<th>Social</th>
<th>Economic</th>
<th>Political</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>16</td>
<td>12</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Commercial</td>
<td>99</td>
<td>98</td>
<td>98</td>
<td>-</td>
<td>2</td>
<td>90</td>
<td>-</td>
</tr>
<tr>
<td>Educational</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Institutional</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Religious</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Social</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>14</td>
<td>15</td>
<td>-</td>
<td>1</td>
<td>91</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>145</td>
<td>134</td>
<td>141</td>
<td>0</td>
<td>12</td>
<td>91</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Author (2012)

Table 3. The values of heritage buildings in Kuala Kubu Bharu town.
The survey revealed that more than half of the buildings are used for commercial purposes (99 buildings). In particular, these are comprised shophouses which are mostly 80 years old, double-storey, and rich in contrasts. Apart from the variety of façades of different styles, the covered passage-way in front of the shophouses, commonly known as the five-foot-way or in the Malay language called kaki lima, gives the buildings their unique character and therefore can be both nostalgic and charming (Figure 3). Historically, these old shophouses were built from 1928 onwards and therefore are significant by association with the beginning of the new KKB, after the old ones were swept away by the massive flood. These pre-war buildings also continue to be valued for their economic role. Although the buildings have not been well-maintained in recent years, they still function as venues for different commercial activities; supporting local retail and improving the employment opportunities for the locals. While constantly drawing people into the area, these activities also support the liveliness and attraction of the town as a whole. In line with the criteria discussed in Section 2.2.1.2, the representation of British Neo-Classical style, association with early development of the town and the continuing traditional use of the buildings make major contribution to the claimed architectural, historical and economic significance of the shophouses.

The term ‘other’ in Table 3 incorporates buildings that are no longer in use or are simply abandoned, many of which are the single and semi-detached government quarters along Jalan Hospital and Jalan Syed Mashor. The old fire station located within the vicinity of the historic shophouses is also classified under this category (Figure 5). The building has recently been refurbished to be converted into a tourist visitor centre but as yet this has not been fully accomplished.

The very notion of heritage is deeply rooted in historical value. This is illustrated as almost all (141 buildings) surveyed buildings in KKB are found to be significant to the locality’s history. Fine examples of this value include the Al-Hidayah...
Mosque and the old police station. The former is believed to be the only surviving building from the original Kuala Kubu town and has played a major role in the contributing towards the well-being of the Muslim community in the town (Figure 6). The old police station or Balai Polis Lama, as it is commonly known by locals, is the first police station constructed in KKB town. This two storey pre-war building is an important place in the political history of the town, and is significant for its association with the opening of the new KKB after the old one was destroyed by the flood. Apart from its historic
value, the eclectic elements of its architectural design, such as the keystone shaped arch and the arcades on the ground floor, add to the aesthetic qualities of the building. The design concept of this police station which reflects the influence of Malay and European architecture essentially qualified the building as one of the unique and valuable landmarks in KKB town. Thus it meets the criteria i of aesthetic value outlined in Section 2.2.1.2.

5.0 Conclusion

Symbiosis between physical forms of environment and social meanings are central to the delineation of identity. The role of the physical form of the environment as one of the important indicators for identity is evident through the accessibility, imageability, and legibility qualities it provides. Forming part of the place’s charm and appeal, any historic building or group of buildings which contribute to place distinctiveness, and which embody the community’s experience and have meaning, need to be preserved and enhanced. Otherwise they are in danger of being overlooked, as has happened in many South-East Asian countries (including Malaysia) today. Sensitivity toward the care of these cultural built heritages should be developed, not only in large historical towns but also, and most importantly, in small towns where the original legacy of our great-grandparents may be protected but are being constantly undermined. The absence of statutory recognition for such places does not necessarily imply that they have no significance. Therefore, it is important to examine the meanings that people attach to them and the resources needed to preserve them. By bringing together best international practice, this paper offers a current set of criteria for the assessment of heritage places that would benefit from establishing and securing place identity.

6.0 REFERENCES


CHANG, T.C. 2010, Bungalows, mansions and shophouses: Encounters in architourism, Geoforum, 41, 963-971.


ENGLISH HERITAGE 2012, Good practice guide for local heritage listing.


HERITAGE COUNCIL OF WESTERN AUSTRALIA 2012, Criteria for the assessment of local heritage places and areas, East Perth Western Australia, Australia.

HERITAGE OF MALAYSIA TRUST 2007, Heritage matters: Promoting and protecting place, Kuala Lumpur, Malaysia.

HERITAGE OF MALAYSIA TRUST 2011, Comprehensive


LYNCH, K. 1960, The image of the city, Joint Center for Urban Studies, United States.


MINISTRY OF HOUSING AND LOCAL GOVERNMENT 2010, National Physical Plan 2, Kuala Lumpur, Malaysia.


MURZYN-KUPIZ, M. 2010, Sustainable approaches to natural environment and cultural heritage. Two sides of the same coin?, Economic and Environmental Studies, 10:4, 379-397.


RELPH, E. 1976, Place and placelessness, Pion Limited, Brondesbury Park, London, UK.


SHUHANA, S. 2011, Townscape revisited: Unravelling the character of the historic townscape in Malaysia, Universiti Teknologi Malaysia, Johor Bahru.


THE GETTY CONSERVATION INSTITUTE 2000, Values and heritage conservation, Los Angeles, California, US.

TIESDELL, S., Oc, T. and HEALTH, T. 1996, Revitalizing historic urban quarters, Butterworth-Heinemann, Massachusetts, USA.

TUAN, Y.F. 1977, Space and place: The perspective of experience, University of Minnesota Press, Minneapolis.

TUNG, A.M. 2001, Preserving the world’s great cities: The destruction and renewal of the historic metropolis, Clarkson Potter/ Publisher.


Author(s):

Nur Farhana Azmi
Ph.D Candidate, Faculty of Built Environment, University of Malaya, 50603 Kuala Lumpur, Malaysia
E-mail: farhanazmi@um.edu.my

Faizah Ahmad
Senior Lecturer, Faculty of Built Environment, University of Malaya, 50603 Kuala Lumpur, Malaysia
Email: faiz@um.edu.my

Azlan Shah Ali
Associate Professor, Faculty of Built Environment, University of Malaya, 50603 Kuala Lumpur, Malaysia
Email: asafab@um.edu.my
ADAPTIVE REUSE OF CAROB WAREHOUSES IN NORTHERN CYPRUS.

Hulya Yuceer, Beser Oktay Vehbi

Abstract
Scattered mainly along the coast of Cyprus, a series of modest stone built carob warehouses provide a historical legacy of the agricultural, social and economic life of the rural areas of Cyprus during the late 19th and early 20th century. They were constructed of local materials and employed local building techniques, and have become a largely unrecognized part of the local landscape. Most remain in a dilapidated condition through neglect and weathering throughout the years. It is suggested that this is largely due to a lack of understanding of their cultural significance, and a lack of vision as to how a holistic conservation approach could help to address wider strategic policy objectives in the areas of sustainable tourism/ place marketing, and rural economic development. More specifically it is suggested that a tourism path incorporating former carob collecting routes could support the adaptive re-use of the former warehouses based upon contemporary cultural needs and opportunities. The development of such an approach will require a multi-agency, cross-sectoral involvement that sees these buildings as a significant cultural resource.

Keywords: Adaptive Re-Use, Carob Warehouse, Cultural Heritage, Cultural Tourism.

1. Introduction

The way of life and economic growth of rural areas is shaped by the production, processing and sale of agricultural produce. The success of the industry can be considered as a major indicator of sustainable development in rural locations, and the buildings serving the industry as a historical legacy. Although the continued presence of local crops remains important, the depopulation of rural areas due to urban industrialisation has resulted in the degradation of not only these agricultural buildings, but of the landscape itself (Latham, 2000; Douglas, 2002; Ball, 2002). In many European countries, the sensitive adaptive re-use of industrial and agricultural buildings has been a significant contributor to the improvement of rural economies (Ely and Worthington, 1984; Agostini and Sangiorgi, 1996).

As stated by Timothy and Nyaupane (2009), cultural heritage provides much appeal for tourism in the less developed countries, where it can contribute to sustainable development. Built heritage is a non-renewable material and spiritual resource, and helps both local communities and visitors to appreciate cultural diversity (ICOMOS 1999). Although in the west, heritage management programmes are focused predominantly around the tourism sector, in the developing world, the dynamics present additional challenges from socio-economic, political, and historical perspectives (Winter, 2007). By examining these perspectives, creative local economies can be developed which are based upon creativity and local distinctiveness (Bianchini, 2009).

This article will focus on the opportunities for the adaptive re-use of carob warehouses in Northern Cyprus. Due to the region’s lack of international recognition, heritage tourism presents an opportunity to preserve an important aspect of cultural heritage, and in so doing also aid local economic growth (Timothy and Nyaupane, 2009; Timothy and Boyd, 2006).

The study has six main parts. Following the introduction, the second section provides a literature review on both adaptive reuse and cultural tourism. The third section explains the importance of stakeholders in adaptive reuse projects. The fourth section underlines the importance of carob warehouses, and focuses on the cultural significance and architectural characteristics of the warehouses in the rural areas of Northern Cyprus. The fifth section puts forwards adaptive reuse opportunities of carob warehouses together with their holistic conservation and also offers the possibility of the revitalisation of the old carob-way for tourism/ educational purposes. In conclusion, the study illuminates the importance of the conservation of the carob warehouses as fundamental features of the rural industrial heritage of Northern Cyprus and seeks to offer solutions for their recognition and for them to be experienced and enjoyed by local and international visitors.
2. Re-using built heritage and cultural tourism

This literature review presents discussions related to the adaptive reuse of historic buildings for tourism and local regeneration purposes. Since these two main topics are grounded on different disciplines the literature review is carried out on both adaptive reuse and cultural tourism.

2.1 Adaptive reuse of historic buildings

The Burra Charter of 1979 has been legitimised as a conservation process specifically for the adaption of obsolete historic buildings. Later in its revised form, the Charter describes an “adaptable function” of a building as one that respects cultural values (ICOMOS, 1999b). In article 7, it states that when the function has cultural importance it should be preserved, and that in such cases clear policies need to be established to preserve this cultural value, and define and set limits on its area(s) of use. (ICOMOS, 1999b). Many of the discussions on the re-use of historical buildings refer to the physical characteristics of the spaces, the compatibility of the new function with respect to the qualities of the existing space, and the evaluation of the potential of the new function (Altınoğlu, 1998; Douglas 2006; Gause, 1996; Latham, 2000). There are very few studies however that contribute to these discussions by focusing on the importance of the intangible values of buildings and places and how these elements come together to establish new uses which not only respect the integrity of the building, but also contribute to local economies, community cohesion and local distinctiveness.

In establishing effective criteria to determine appropriate functions, the values of a historic building, in terms of both its characteristics as an architectural product, and as a piece of cultural heritage should be identified (Orbaşlı, 2008). Therefore, the three interrelated objectives of adaptive reuse: physical, spatial, and social, need to be reconciled (Orbaşlı, 2000). Physically, it aims to improve old buildings and bring them into modern use. Spatially, it is viewing the townscape as a holistic entity, with its relationships between spaces and their use, as well as circulation and traffic. The third objective, and the one most neglected, is the involvement of local communities.

A building cannot therefore be perceived as independent from the environment it exists in, or even from changes taking place in the country where it is located. Rapid developments in methods of communication, transportation and information technologies help to spread globalisation and cultivate homogeneity among societies (Nasser, 2003). In this context, we can say that as cultural differences begin to diminish or even die out, there develops a counter movement that aims to protect those things which reflect and promote these indigenous cultures. The best indicator of this is the growth of the tourism industry in line with the increase in globalisation, and the large share of this industry that is attributed to cultural tourism (Chang, 1999).

2.2 Cultural Tourism

Currently the cultural heritage of places not only attracts tourism as an economic resource; it can also be characterised, on account of the information it signifies, as a cultural, social and political resource (Graham, 2002). The simplest instance of how we conceptually shape cultural heritage, interpreting and transforming it into an economic resource, lies in the idea of representation (Hall, 1997). When an object belonging to the past is identified today as cultural heritage, the thought arises of communicating the information it bears to the society concerned or other societies, and with it, the idea of representing it for this purpose (Sack, 1992). A common position is that cultural heritage as a knowledge resource should be transformed into capital through the medium of tourism (Sack, 1992; Castells, 1997; Hall, 1997; Agnew, 2000; Garrod and Fyall, 2000; MacLeod, 2000; Graham, 2002).

When tourism is administered purely in terms of economics, on the basis of surplus value, not only do the results not match the expectations, but it can potentially harm the authenticity that creates the spirit of historical sites (Russo, 2002; Nasser, 2003). Indeed, studies of the demand for cultural tourism and the attitudes underlying it show that the perceived quality of cultural tourism is associated with authenticity (Chhabra, Healy & Sills, 2003). Visitors who come to visit a place do not just want to see cultural assets; they want immerse themselves in that culture (Kerstetter, Confer & Brider, 1998). In other words, visitors go and visit a place first and foremost for its intangible qualities, for what it makes them feel.

The 12th ICOMOS (1999b) meeting organised to discuss these perceptions succeeded in identifying a set of international common principles for providing a more appropriate relationship between preservation and tourism. An outcome of this meeting was the “International Cultural Tourism Charter,” which in its first article defines a healthy preservation-tourism relationship: “Because cultural communication is one of the most effective tools...
for both local and international tourism, preservation should provide well-organized benefits for the host community, and priority should be given to visitors’ experience and understanding of the culture of the community in question and the heritage that represents it” (ICOMOS, 1999b). What is emphasised here is the relationship between visitors’ proper understanding of cultural heritage resources and communities’ participation in protecting their assets. Considering the cultural difference between the communities who created the heritage and the communities who now own it, it is stressed that today’s communities should understand the values of the heritage of the past and embrace them, while at the same time reflecting their own contemporary cultural values as they are.

3. The Role of Stakeholders

The above discussions imply a close and interdependent relationship between cultural heritage, conservation and tourism - an integrated conservation approach supported by Tiesdell et al (1996), Orbaşlı (2000). Integrated conservation physically, aims to improve old structures/environments and bring them into modern use. Spatially, it is viewing the townscape as a holistic entity, with its relationships between spaces and their use, as well as circulation and traffic. Socially, it concerns the users, local community (participation), and the urban population. Also existing laws and regulations and financial resources in such areas should be taken into consideration. As a result of such holistic approach, the outcome of the conservation projects will be long-life and help local communities to be aware about benefits and outcomes of such projects. This approach is suggested in this study that with the support of local communities the Carob Way project would have a better outcome. Thus, a range of stakeholders will need to be engaged to test the proposals, and a cultural round up carried out to establish local cultural resources and needs. Current economic drivers should also be identified as this may expose opportunities. For example, it will be suggested later that a local university may be interested in taking one on.

Such stakeholders might be categorised under hard (the construction industry and all related professions), soft, (community/civic groups) and financial (banks, developers, accountants) infrastructures (Table 1). It would include those involved in local production or carobs and related natural foods (olives, dates, grapes, honey etc) and local cultural providers and animateurs, (artists, poets, musicians, digital media, education providers, etc.), the media, political champions, school chil-

![Table 1. Stakeholder typology.](image)

<table>
<thead>
<tr>
<th>Hard (Physical)</th>
<th>Soft (Social)</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>Community groups, civic organisations</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>Local builders and craftsmen</td>
<td>Developers</td>
<td>B owners</td>
</tr>
<tr>
<td>Local authority representatives</td>
<td>Education, special interest groups</td>
<td>Developers</td>
</tr>
<tr>
<td>Developers</td>
<td>Schools, local celebrities, artists</td>
<td>Business leaders</td>
</tr>
</tbody>
</table>

4. Case Study: Carob warehouses in Northern Cyprus

Located in the eastern Mediterranean (Figure 1), the climate of Cyprus has offered a suitable environment for the natural growth of carob as a dry-land crop for centuries (Davies, 1970; Makhzoumi, 1997). The presence of carob trees and the importance of carob and its products are mentioned in the writings of many travellers in the past (Kitchener, 1879; Madon, 1930; Grivaud, 1990; Ohnefalsch, 1913; Pococke, 1745; Brown, 1879; Cobham, 1909).

In the past, carobs were the major agricul-

![Figure 1. Location of Cyprus.](image)
tural export of the island and for some villages the centre of agricultural activity and the main source of income (Figure 2). However, diseases spread by pets and rats led to the decline in carob yields and the rural population turned their attention to the development of citrus plantations (Davies, 1970). In time, the political changes, such as the island’s independence from British rule in 1960 and the conflict in 1974, played a major role in the decline of carob planting and export. In respect of what then became Northern Cyprus, the political embargos brought in after the division of the island made the export of any product impossible leading to a significant decrease in plantations and the dereliction of carob warehouses.

4.1. Carob Harvesting, Warehouses and the “Carob-Way”

The main region for carob cultivation in the northern part of the island stretches from Morphou in the east, to Kyrenia and the Karpas in the west. Most of the warehouses are located along this route. Traditionally, the juice of the carob pod, so called “carob honey”, “Black Gold”; or locally named as “betmez”, is still consumed as a substitute for bee-honey or jam and is used as flavouring for culinary purposes. It is processed in factories in Famagusta and also used for animal fodder.

Historically, the lack of roads, railways and harbours for use in the transportation of harvested carobs stands as a major reason for the construction of carob warehouses. Donkeys, camels and mules had been used to transport carobs from one place to another until the early British rule. When the island came under the British government in 1878, there were neither harbours nor railways and only one road connecting Larnaca and Nicosia (Orr, 1972). By 1906, the harbour was completed and the railway, which connected Famagusta, Nicosia and Morphou, was opened in 1907 (Turner, 1979, Ballantyne, 2007).

However, these developments were not sufficient to transport all the carobs, as many of the plantations were located on the northern coast separated by the Kyrenia Five Finger Mountain range lying parallel to the north coast. Thus, the British government needed to construct warehouses on the shore line where carobs could be stored and transferred to ships using jetties (Figure 3, 4). Although it is hard to establish exactly when the carob warehouses were constructed, there are some sources indicating their presence in early British rule. According to the superintendent of a British police notice dating 27 May 1898, harbours with carob warehouses were mentioned as Gemikonaği (Karavostasi), Karşıyaka (Vasilia), Girne (Kyrenia), Esentepe (Akanthou), Larnaca, Limassol, Paphos, Gazimagusa (Famagusta) (Bağışkan, 2012). In addition, the dates provided on some warehouses such as Kayalar (Orga) 1905, Kaplica (Davlos) 1909, Yenierenköy (Yialusa) 1930, can be considered as evidence of the construction of the carob warehouses during this same period (Figure 5).

Collectively, the warehouses on the coast offer traces of the carob-way: the routes of ships which collected and transported the carobs to the importing countries. In the British Admiralty Map (1936), the harbours suitable for trading ships around the island, the carob-way or stop points were marked as “Trading Stn.” (Trading station) for Karşıyaka (Vasilia), Tatlısu, Mersinlik, Kaplica, Yenierenköy in Northern Cyprus and Evdim and Pisuri in Southern Cyprus (Navari, 2003).

When the island gained independence
from British rule in 1960, changes in the collection and export of carobs affected the use of all the warehouses and by 1974 most were abandoned.

4.2. Location, Architectural Characteristics and Cultural Significance of Warehouses

The findings of this research are based on a two year study undertaken from 2010-2012. By examining the records of the Department of Antiquities and the field study carried out as part of this research, 53 carob warehouses were identified in the whole of Cyprus.

Following the division of the island in 1974, 34 of the warehouses remain in the northern part of the island and 19 in the southern part. In respect of those remaining in the north, 17 carob
warehouses, 2 of which are totally dilapidated, were found in rural areas (Table 2). The remains of the dilapidated warehouses are located in Kaplica (Davlos) and Kalecik (Gastria), and they are listed by the Department of Antiquities. The 17 carob warehouses which have been studied in this paper are dotted around the northern coast of Cyprus starting from the furthest western point at Kayalar and extending to the eastern tip of the island at Kalecik (Figure 6). Since the warehouses are either located along the old vehicular accesses or close to the sea shore, most of them are not visible from the main road. They are approximately 5-10 m from the sea shore except in Tatlısu, where one of three warehouses is located 1 km from the sea. Harvested carobs were deposited in the warehouses using the southern facade to the rear, and were then loaded onto ships from a wooden jetty via the main north facing facade.

Most of the warehouses are emblematic single storey rectangular buildings with thick stone masonry walls and numerous aligned windows to improve ventilation. The rural warehouses were constructed in various sizes as single or multiple

<table>
<thead>
<tr>
<th>No</th>
<th>Locality</th>
<th>Date or period</th>
<th>Physical condition</th>
<th>Legal Status/Current use</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kalecik / Gastria</td>
<td>British period</td>
<td>Totally destroyed</td>
<td>Cyprus Evkaf Foundation/ parcel listed</td>
<td>![Photo]</td>
</tr>
<tr>
<td>2</td>
<td>Solonec</td>
<td>1910 - British pr.</td>
<td>Good with major alterations during its former adaptive reuse</td>
<td>Rented to private use by Department of Antiquities/Listed / Not in use</td>
<td>![Photo]</td>
</tr>
<tr>
<td>3</td>
<td>Yatousa / Yenileren Köy</td>
<td>1930 - British pr.</td>
<td>Major damages with partially standing structural elements</td>
<td>Rented to private use by Department of Antiquities/Listed / Not in use</td>
<td>![Photo]</td>
</tr>
<tr>
<td>4</td>
<td>Davlos/ Kaplica 1</td>
<td>1900 - British pr.</td>
<td>Ruined</td>
<td>Department of Antiquities/Listed / Not in use</td>
<td>![Photo]</td>
</tr>
<tr>
<td>5</td>
<td>Davlos/ Kaplica 2</td>
<td>British period</td>
<td>Totally destroyed</td>
<td>Cyprus Evkaf Foundation/ parcel listed</td>
<td>![Photo]</td>
</tr>
<tr>
<td>6</td>
<td>Flamboudi/ Maradik 1</td>
<td>British period</td>
<td>Good with major alterations during its former adaptive reuse</td>
<td>Rented to private use by Cyprus Evkaf Foundation/Listed / Not in use</td>
<td>![Photo]</td>
</tr>
</tbody>
</table>

Table 2. Current conditions of the warehouses in Northern Cyprus.
One warehouse unit is approximately 9m wide and 13m long and 7-9m high. Where the warehouses are located on steeply sloping sites, the height may be 1.5-2m on its south side and 7-9m on its north side, facing the sea. The front facade of each unit has a square door opening — generally measuring 2mx2m — with a timber lintel and two small windows for ventilation. Two openings are located on the south facade, where the carobs arrive into the building. On the east and west facades, there are no window openings but small holes can be identified.

<table>
<thead>
<tr>
<th>No.</th>
<th>Location</th>
<th>Period</th>
<th>Condition</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Flamoudi/</td>
<td>British</td>
<td>Ruined</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td>Meraniáik</td>
<td>period</td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>8</td>
<td>Akanthou/</td>
<td>British</td>
<td>Ruined</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td>Tatlisu 1</td>
<td>period</td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>9</td>
<td>Akanthou/</td>
<td>British</td>
<td>Ruined</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td>Tatlisu 2</td>
<td>period</td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>10</td>
<td>Ayios</td>
<td>British</td>
<td>Major damages with</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td>Amoros/</td>
<td>period</td>
<td>partially standing</td>
<td>Not in use</td>
</tr>
<tr>
<td></td>
<td>Esentepe 1</td>
<td></td>
<td>structural elements</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Ayios</td>
<td>British</td>
<td>Good with minor</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td>Amoros/</td>
<td>period</td>
<td>damages in roof</td>
<td>Not in Use</td>
</tr>
<tr>
<td></td>
<td>Esentepe 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Kyrenia/</td>
<td>British</td>
<td>Good with minor</td>
<td>Rented to private use by</td>
</tr>
<tr>
<td></td>
<td>Girne</td>
<td>period</td>
<td>alterations during</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>its</td>
<td>Restaurant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>former adaptive</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>reuse</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Kyrenia/</td>
<td>British</td>
<td>Good with minor</td>
<td>Department of Antiquities/ Listed</td>
</tr>
<tr>
<td></td>
<td>Girne</td>
<td>period</td>
<td>alterations during</td>
<td>Listed Folklore Museum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>its</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>former adaptive</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>reuse</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Vasiáia/</td>
<td>British</td>
<td>Poor with major</td>
<td>Private/ Not Listed</td>
</tr>
<tr>
<td></td>
<td>Karşıyaka</td>
<td>Period</td>
<td>damages in structural</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>elements</td>
<td>Not in use</td>
</tr>
</tbody>
</table>

Table 2 cont. Current conditions of the warehouses in Northern Cyprus.
fied which prevent the build-up of moisture and humidity inside the building.

All of the warehouses are constructed using load-bearing local sandstone walls supported by buttresses at the base of the north east and west walls, most of which are still standing (Figure 8). Floors are either covered with cut stone or polished cement. The roofs are generally constructed using timber beams covered with rush mat and earth. In some warehouses iron beams or arches are used to support the roof. Since most of the sample buildings have been abandoned, their roofs have collapsed as a result of erosion caused by wind, sun, rain and salt conditions and the lack of maintenance. Water penetration and mould growth are evident, particularly on the north walls. Internally the walls of the buildings are also covered in vegetation as a result of the collapsed roof.

Table 2 cont. Current conditions of the warehouses in Northern Cyprus.

Figure 7. A carob warehouse in Mersinlik with additional units.
Due to their isolated location and original use, there are no service infrastructures. Re-use proposals would therefore need to consider the provision of electricity, water and sewage. It is suggested therefore that power generating devices would need to be incorporated into the re-use proposals.

Among the warehouses studied, 17 have been listed by the Department of Antiquities. Currently only two of them are in use. One of the challenges posed by this proposal is the challenges faced by the existing legislative and planning framework in Northern Cyprus.

4.3. The conservation of cultural heritage in North Cyprus

The cultural heritage of Northern Cyprus is facing some major challenges. The reasons for this are complex but are underpinned an inadequately resourced planning and legal framework. This has resulted in a lack of awareness of planning issues at community level, a lack of public participation, and an insufficient legislative basis from which to operate. International conservation principles are simply not adhered to.

With the exception of some of the larger European Union (EU) and United States Agencies for International Development (USAID) funded infrastructural projects, the architectural, social and economic values are not given sufficient emphasis by the authorities which can cause conservation or revitalisation studies to be short-term and piecemeal with a flawed methodology. The protection of cultural heritage focuses on preservation rather than conservation and this creates obstacles for effective revitalisation.

As Doratlı (2000) highlights, the planning practices with respect to conservation areas in Northern Cyprus do not have a long-term perspective because the physical condition of the building is given primacy over the broader social and economic problems of the context in which the building exists. At a community level, people are unaware of the importance of their built heritage and see it as ‘not their problem’.

The legislative framework provides the basis for the identification of historical, architectural, and cultural heritage/conervation areas including the cataloguing of buildings and sites, and the provision of some technical and financial assistance to the owners of registered buildings. It also provides for the preparation of conservation plans and development control policies in conservation areas. However, as a whole, it does not provide for the effective implementation of these plans. Both the Antiquities Law and the Town Planning Law are directly related to the conservation of buildings and sites but the action plans cannot be implemented due to the lack of a coordinated legislative framework (Doratlı, 2000). In addition there is no established local authority structure and this may vary with each new government. The Town Planning department, which should be working at a long term strategic level can be negatively affected by such variations.

Some of the challenges faced by cultural heritage in North Cyprus have been identified in the National Physical Plan (2012). Amongst these are lack of grant funding for improving cultural resources, a lack of resources to produce a register of cultural built heritage (especially those located in rural sites such as warehouses, olive oil buildings and industrial buildings), and the construction of poorly designed new buildings in these areas. A declining tourism sector was also highlighted as well as a lack of awareness about the importance of cultural heritage sites that can cause damage and obsolescence.

The Plan also promotes higher standards in new building designs, improving social and technical infrastructures and encourages promotional activities such as festivals that present traditional local foods, drinks and handicrafts. Promotion of local micro economies such as hotels, pensions, restaurants and cafes that will be operated by local villagers will all contribute to the economy. Within the area that most of the warehouses are located, the Plan aims to develop and diversify the economy, and focus more on the agriculture and tourism as follows:

Local micro and small enterprises that are related with tourism and agriculture will be supported and encouraged, Natural and cultural heritages will be conserved, developed and used.
Social and technical infrastructure will be developed and encouraged for increasing the quality of life in these areas.

Cultural tourism will be developed and encouraged for developing cultural and art activities in cultural heritage sites (NPP, 2012).

The above provides a robust policy framework for the Carob Way proposals. The 2 successful examples of adaptive re-use of these buildings are both in the prime tourist area of Kyrenia harbour - one of them is converted to cafe-bar and other to a folk museum (Figure 9). There are two other warehouses - one in Mersinlik and the other in Solonez that were rented to private owners by the Department of Antiquities but these are abandoned now. According to the laws and regulations, the restoration project and the new function of the building should be approved by the Department of Antiquities and they can then be rented for 49 years. In the Mersinlik case, a therapy centre was proposed and in the Solonez case a pension. The restoration proposals were approved by the Department of Antiquities and the works began. However although these were not in accordance with the approved drawings a lack of resources prevented enforcement action. These have now both been abandoned and are evidence of a lack of robust policy guidance and enforcement.

5. Reinventing the Former Carob Way

According to the National Physical Plan (2012), there is a presumption for tourism related uses which will help regenerate local villages and communities. It is our contention that some of the failures of past projects involving these warehouses were due to a lack of a collective vision from public authorities to see ‘the big picture’. The ‘Carob Way’ will link these buildings both conceptually and physically with a sea route. Since the access to some of them is difficult by land, sea transportation is essential to successfully revitalise these buildings (Figure 10). Tourism routes promise to bring together a variety of activities and attractions under a unified theme and thus stimulate entrepreneurial opportunities through the development of ancillary products and services (Greffe, 1994; Gunn, 1979; Fagence, 1991; Long et al. 1990).

It is suggested that the carob way tour could include up to 15 stops. Since the warehouses are scattered over different parts of the northern coast, there might be one long route (from the east) and one shorter route (from west). The long one could take 2 days and might be for those people who are interested in the conservation of these buildings, the carob harvesting process and its importance to the Island, and the shorter one is for presenting these buildings as examples of industrial heritage during the British colonial period. As some cannot be easily reached from the land, both a sea-way and a land-way could be developed. The silhouette of the Five Finger Mountain and carob trees can be experienced this way. The starting point of the main route could be from Selonez (in the east) and end in the main tourist harbour of Kyrenia which also houses two carob warehouses itself. The other route could start from Kayalar (in the west) and again culminates at the main harbour in Kyrenia. The proposed routes could be advertised through place marketing strategies. It could also be added to the European Route of Industrial Heritage, the tourism information network of industrial heritage in Europe.

The involvement of Stakeholders outlined...
above might identify possible uses for the buildings, as well as establish community needs and financing mechanisms. In line with the strategic planning policies that developed in National Physical Plan (2012) and the literature review, the following ideas could be tested:

• Carob ‘living’ museum making carob produce - but this could be linked to an agricultural technology and food sciences laboratory, researching indigenous crops (carobs, figs, olives, grapes, dates) and could be leased to a local university as a public private partnership (PPP) for a peppercorn rent in exchange for the long term maintenance and upkeep.
• Restored for short term holiday lets - spectacular location - isolated. Would make a great retreat for writers and artists.
• Flexible conversion for mixed educational uses
• Small pension
• Restaurant/ bar
• Music/ theatre venue

Although the above uses relate to specific warehouses, it is important to retain a conceptual link between the collective group as this reinforces a related narrative about authenticity and local distinctiveness. And yet the proposed uses reflect contemporary culture which of course includes valuing architectural heritage, and having a greater environmental awareness in any case, which, in the case of the Carob Way, will include arrangements for power generation.

The absence of a service infrastructure will necessitate power generation. It is suggested that sun, wind and sea be captured with photovoltaics, relatively small and commercially available wind generators and tidal power collectors, and that this will provide the needs of the converted warehouses. Foul waste can go to a septic/ tight tank for treating and recycling. As stated earlier, increasingly visitors are choosing to engage with ‘cultural tourism’ but at the same time reflect contemporary thoughts and concerns.

Experience in western Europe and elsewhere have demonstrated that small investments in soft (social) infrastructures at community level in addition to hard (physical) infrastructures has more long term benefit and is therefore more sustainable. In the UK and in other parts of western Europe local civic societies play a crucial role in the advocacy and management of cultural resources. Organisations such as the National Trust, the Landmark Trust and the Society for the Protection of Ancient Buildings (SPAB) provide excellent services in promoting and (in the case of the Landmark Trust) restoring important buildings for re-use as holiday destinations, and in so doing generate income to continue to carry on their work. These organisations are often constituted as Trusts financed in part by the government, and are supported by volunteers who take an active interest in their cultural heritage. The promotion of such civic societies in North Cyprus (where civic society is currently considered to be weak) could play a crucial advocacy role.

The establishment of a Tourism Investment Fund with clearly stated values and criteria could help to maintain existing rural micro-economies in addition to creating new ones. Moreover it is likely that external/ international funding agencies would be looking to invest only in projects that endorsed their own funding criteria which increasingly includes sustainability indicators. As suggested earlier, there is evidence to suggest that investment in authentic local industries and local people will in itself make North Cyprus more appealing for locals and visitors alike.

6. Conclusion

The general aim of this study is to bring a lesser known, authentic and appealing element of the Island’s history both for the Island’s tourism industry and locals, but in a way that will positively impact on a range of existing local micro-economies. In order for this to happen, effectively a range of stakeholders suggested to be engaged to test the proposals, and a cultural auditing exercise carried out to establish local cultural resources and needs. Cyprus is a unique place and this study could help to establish and promote local distinctiveness and a responsible vision for a sustainable future. If successful, it can become a benchmark for other similar projects in developing countries.

Such an approach would not only determine uses for the buildings along the way which were based on the needs and aspirations of the various stakeholders, but would also have great value in terms of local advocacy and support as well as presenting a range of funding possibilities. The implementation of this proposal will require vision and dedication but the benefits could be profound.
REFERENCES

AGNEW, J. A. 2000, From the political economy of regions to the regional political economy, Progress in Human Geography, 24, 101–110.


ALTINOLUK, Ü. 1998, Binaların Yeniden Kullanımı, YEM Yayınları, İstanbul.


BALLANTYNE, H. 2007, Cyprus Narrow Gauge, Middleton Press, Sussex, UK.


COBHAM, C.D. 1909, Excerpta Cyprus Nova: Volume Premier Voyageurs Occidentaux a Chypre au Xvéme Siecle, Cyprus Research Center, Nicosia.


LONG, P.T., PERDUE, R.R and ALLEN, L. 1990, Rural resident
tourism perceptions and attitudes by community level of tourism, Journal of Travel Research, 28:3, 3-9.


OHNEFALSCH-RICHTER, M. H. 1913, Griechische Sitten und Gebräuche auf Cypern, D. Reimer, Berlin, Germany.


POCOCKE, R. 1745, A Description of the East and Some Other Countries, W. Bowyer, London, UK.


Acknowledgements
The authors wish to thank Mukaddes Faslı, Resmiye Alpar and Emine Reis for their support during the site survey of this research.

List of Tables
Table 1: Stakeholder typology.
Table 2: Current conditions of the warehouses in Northern Cyprus.

List of Figures
Figure 1: Location of Cyprus.
Figure 2: A Carob tree and its fruits.
Figure 3: A warehouse and its jetty in Yalousa in 1950s (Yenierenkoy) (Gursoy, 1962).
Figure 4: A typical warehouse in Kaplica (Davlos).
Figure 5: Warehouses in Kayalar (1905).
Figure 6: Location of the carob warehouses-the villages-starting from Kayalar to Kalecik.
Figure 7: A carob warehouse in Mersinlik with additional units.
Figure 8: Buttresses on the facades- Warehouse in Esentepe.
Figure 9: The front facade of the Kyrenia museum.
Figure 10: Proposed tourist routes for warehouses.

Author(s):
Hulya YUCEER
Adana Science and Technology University, Turkey

Beseer OKTAY VEHBI
Eastern Mediterranean University, Northern Cyprus
IMPLICATIONS FROM RECENT EXPERIENCE OF AN INCREMENTAL HOUSING PROJECT IN EGYPT.

Ahmed M. Shalaby

Abstract
The urban population in the developing world will double by the year 2030 increasing the pressure in the housing sector that already suffers from the lack of adequate and affordable housing. Egypt, similar to most countries in the developing world, witnesses a huge deficit in the housing units needed for low-income groups. Since the mid Nineteen Seventies, the Egyptian government adopted and implemented a variety of low-cost housing development strategies including: site and services schemes, core housing projects, partially completed housing units in apartment blocks, and totally finished housing projects. The huge informal housing sector in Egypt has proved the ability of the low-income groups to build for their own-selves. Thus, the incremental housing approach was one of the approaches that were adopted by the Egyptian government to solve the housing problem. Ebny Baitak or “Build Your House” is an incremental housing approach and one of the approaches undertaken by the Ministry of Housing, Utilities, and Urban Development within the National Housing Program to solve the housing problems of low-income groups in Egypt. This paper discusses the recent Egyptian experience in encouraging the participation of low-income groups in the construction process of their own houses through an incremental housing program “Ebny Baitak project”. The paper also derives the implications that could be learned from this experience towards better application in the future.

Keywords: Incremental Housing, Housing Policies, Housing Problems in Egypt, Ebny Baitak Project, Sixth of October City.

1. Introduction
The urban population in the developing world will double by the year 2030, which means that we have less than 20 years to build as much urban housing as was built in the past 6,000 years (Goethert, 2010). During the World Urban Forum 6 (WUF-6) of Naples, Italy, the UN-Habitat announced that the organization is in the process of setting up a “Global Housing Strategy to the Year 2025” (GHS2025). According to the first information sheet circulated by the UN-Habitat, the GHS2025 will advance the Habitat Agenda theme of “adequate shelter for all” and prepare a new vision of housing through a global strategy document emerging from broad-based national, regional and global consultation processes. The inadequate public policies resulted in the lack of adequate and affordable housing, which in turn resulted in over 860 million people around the world living in slums and informal housing (UN-Habitat, 2012). Providing an adequate and affordable shelter for all is a global problem that needs to be addressed and discussed according to the lessons learned from the experiences of the different approaches that are applied all over the world. This paper discusses the recent Egyptian experience in encouraging the participation of low-income groups in the construction process of their own houses through an incremental housing program. The paper also derives the implications that could be learned from this experience towards better application in the future.

2. Housing Problem in Egypt
The provision of affordable housing units is one of the major problems that has been facing all sequential Egyptian governments since the mid of the twentieth century. This long period of dealing with this problem resulted in a huge deficit in the housing units needed for low-income groups. This deficit is estimated at about 3.5 million housing units (Rageh, 2007). This deficit is primarily caused by a steadily growing gap between demand and supply of housing units for lower income groups. The problem is further escalated by rapidly deteriorating housing stock, high rates of population growth, informal housing and slums expansion, regional imbalance, urbanization explosion, low productivity, deficient housing and construction industry, inappropriate formal housing policies and inadequate housing and development legislations (Abdel-Kader and Etouney, 2012).
In general, the provision of affordable housing in Egypt is characterized by several negative features that resulted in expanding the housing problem in Egypt rather than solving it. These negative features include (Ettouney, 1987; Ettouney and Abdel-Kader, 1989; Rageh, 2007; Sims, 2012):

- Inappropriate locations and settings of affordable housing projects mostly located according to land availability, and neither according to users’ needs nor availability of other urban amenities such as services, work locations, and transportation networks.
- The mismatch between the prices of the completed affordable housing units and the abilities of the targeted groups, which resulted in an expanding affordability gap.
- Exaggerated adopted building and sites standards of the recent completed formal affordable housing projects.

Since the mid Nineteen Seventies, the Egyptian government adopted and implemented a variety of low-cost housing development strategies including: site and services schemes, core housing projects, partially completed housing units in apartment blocks, and totally finished housing projects (Ettouney and Abdel-Kader, 2011). In most cases and for political reasons, the Egyptian government favored the strategy of the totally completed housing projects as these projects clearly reflect the efforts of the government in solving the housing problem. The government preferred to play the role of providing affordable housing units for low-income groups rather than facilitating the process and allowing others to play this role besides the government so that the gap could be closed. David Sims (2012) in his analysis of Greater Cairo region stated that although there is a much to say about how well Cairo houses itself on average, housing remains a pressing concerns for poor and newly forming households. In addition to those households, Sims mentioned that the percentage of families living in one room in Greater Cairo is about 6 percent, which translates to a total of 2008 population of some 230,000 families or almost one million persons (Sims, 2012). Taking into consideration that Greater Cairo represent about one fifth of the country’s population, housing problem in the country should address the needs of several million inhabitants.

3. Incremental Housing Approach

Incremental housing is an affordable way to provide housing solutions for many families at a minimum housing and services level by integrating the energy of families with the government policies (Goethert, 2010). It starts with a starter core shelter that may be a kitchen/bathroom unit or just a bare lot with utility connection potential. Owners control the expansion of their housing based on their needs and resources. Incremental housing projects are not new as they draw on the experiences of 1970s projects of “site and services” and “core house projects” (Goethert, 2010). Ettouney and Adel-Kader (2011) pointed out that the strategies of incremental housing development and construction are dependent on two key factors: dynamics of development and cost phasing. Goethert (2010) confirmed that the incremental housing approach is the key process of increasing housing stock and housing qualities in most cities. Wakely and Riley (2011) argue that there is a strong case for governments to initiate and support incremental housing strategies as a major component of low-cost housing programs. They pointed out that by encouraging the participation and engaging the householders in the production and management of their housing units and neighborhoods: far more legal and affordable housing units can be produced, cost of development will be shared by people with the government, partnerships that enhance the efficiency of urban management can be built, an integrated urban development strategy can be set, a system of good governance can be created, and finally local communities can be built and strengthened. In order to make incremental housing strategies sustainable and successful, several aspects should be addressed and integrated in conjunction with the others. These aspects include: land and location, finance, infrastructure and services, beneficiary selection, site planning and building controls, community organization and asset management, and citywide strategic planning (Wakely and Riley, 2011).

Chavez (2009) examined three case studies of incremental housing programs that took place over three decades in Peru, Latin America in the 1970’s; Burkina Faso, Africa in the 1980’s; and Mauritania, North Africa in the 1990’s. This study demonstrated that incremental housing could work in different countries with different cultures and that it is a resilient approach in the face of economic and political change. Meanwhile, Chavez concluded that incremental housing approach give low-income groups the greatest freedom to build at their own pace and according to their own needs. On the other hand, the main shortcomings of this approach are the know-how of construction techniques, the availability of land, and the appearance of the project as it takes a long time to be com-
completed. Along with the incremental housing approach, other approaches such as upgrading of informal areas and prevention of the formulation of new informal areas must be addressed on a global scale to help solve the housing problems for low-income groups (Chavez, 2009).

The Egyptian experience in incremental housing projects started in the mid Nineteen Seventies with several site and services and core housing projects as shown in Table 1.

These projects did not achieve the desired results and faced several problems. These problems include (Samy, 2004; and Mohamed, 2009):

- The mismatch between the size of plots and built-up areas and the size of the families as cost was the major constraint. This situation resulted in unauthorized expansions to the units outside the building limits and sometimes outside the plots themselves.

- The mismatch between the cost of land and construction and the financial abilities of the low-income groups, which resulted in an expanding affordability gap.

- Designation of plots to middle income groups due to the absence of clear regulations and the manipulation of the designation authorities.

In 2005, the government adopted the National Housing Project to provide affordable housing units for low-income groups. This project incorporated several approaches for affordable housing provision that include the government as a provider for the units, real estate developers by providing them with large-scale plots to be developed according to certain conditions, and the users themselves by providing small plots to beneficiaries so that they can build their own housing units (Mohamed, 2009).

All units under the National Housing Program are either 63 sq.m. standard two-bedroom units or 35-40 sq.m. (al ula bel ri’aya) for the very poor through rentals (Sims, 2012). In general, this project follows the previous subsidized government housing projects in the total reliance on state land and the resulting remote and isolated locations far from existing urban agglomerations (Sims, 2012). Table 2 shows the main programs of the National Housing Project and the target number of units under each program.

The above table shows that Ebny Baitak Project was one of the major programs of the National Housing Project as it provided more than 90,000 plots that could accommodate 270,000 units.

4. Ebny Baitak Project

The huge informal housing sector in Egypt has proved the ability of the low-income groups to build for their own-selves. Therefore, Ebny Baitak Project...
or “Build Your House” approach is considered a tool to encourage the participation of low-income groups in the construction process of their own houses in a planned and controlled environment.

4.1. Project Background:

The project started in 2005 with the aim of providing more than 90,000 plots of an area of 150 sq.m. Each plot accommodates a small house that consists of ground plus two upper floors. Each floor has a residential unit of an area of 63 sq.m. in addition to a 12 sq.m. as a stair. The project accommodates a total number of about 270,000 units of an area of 63 sq.m. over the 90,000 plots. The target population of the whole project is more than one million inhabitants. This is why this project is considered a large-scale project especially when compared to the previous projects that were adopted by the government. The plots are distributed in 13 new cities all over the country as presented in figure1.

4.2. The Role of the Government:

The government plays an important role in the project by providing the following (Ministry of Housing, Utilities, and Urban Development 2008, and personal meetings with government officials):

- Land allocation and physical planning to determine the areas for the plots and other services and facilities.
- The main infrastructure (water, sanitary, electricity, roads networks,….) and the main services and facilities (schools, commercial services, medical services,…). Complete engineering drawings for housing prototypes so that the beneficiaries adhere to these prototypes in order to control the typology of the project.
- A conditioned financial support to each beneficiary for a total of 15,000 EGP (about $ 2,700 as of 2008 exchange rate) paid according to the progress of the construction.
- Financing options through banks and financial institutions.

4.3. The Beneficiary Selection Criteria:

The beneficiaries of the project are selected according to the following criteria (Ministry of Housing, Utilities, and Urban Development 2008, and personal meetings with government officials):

- Age: between 21 and 40.
• Income: a proven monthly income for single applicants of no less than 1,000 EGP (about $180 as of 2008) and a proven monthly income for married applicants of no less than 1,500 EGP (about $270 as of 2008).

• Residence: Applicant must be a resident of the same geographical zone of the city where he/she is applying for a plot.

• The applicant should not have benefitted from any previous governmental housing projects.

• The applicant and his family should not have gotten any plots in any of the cities developed by the Authority of New Urban Communities.

• If the number of applicants exceeds the number of plots, the beneficiaries are selected according to a public lottery.

4.4. The Beneficiary Obligations:

After being selected, the beneficiary should satisfy these obligations (Ministry of Housing, Utilities, and Urban Development 2008, and personal meetings with government officials):

• The land is priced at 70 EGP/sq.m. (about $13 as of 2008) for a total of 10,500 EGP (about $1900 as of 2008) per plot, although it costs the government about 215 EGP/sq.m. (about $39 as of 2008). On applying, the applicant pay 10% that is 1,050 EGP (about $190 as of 2008) and the other 90% is paid with no interest on seven equal annual installments, which start after one year of designation.

• The beneficiary is exempted from paying the rest of the land installments once the house is completely built and externally finished.

• The beneficiary should get the construction permit within a maximum of 4 months and pay a construction permit fee of 300 EGP (about $55 as of 2008).

• The beneficiary is allowed to build a house of ground and two upper floors according to certain prototypes on 50% of the plot area with a total area of 75 sqm. Each prototype offers two designs: one for attached units and the second for corner units. Plots are attached together in blocks. Each block consists of even number of plots with a maximum length for the block of 150 m. In addition, blocks are attached back to back for maximum utilization of infrastructure. The government provided several prototypes and then three prototypes were selected for all cities so that the beneficiaries can select their desired prototype. Figures 2, 3 and 4 show the three available prototypes for all cities.

4.5. Design Samples

The plots have equal area of about 150 sqm with similar dimensions of 8.6 m * 17.5 m. All the prototypes are designed at 50% of the plot area with a total area of 75 sqm. Each prototype offers two designs: one for attached units and the second for corner units. Plots are attached together in blocks. Each block consists of even number of plots with a maximum length for the block of 150 m. In addition, blocks are attached back to back for maximum utilization of infrastructure. The government provided several prototypes and then three prototypes were selected for all cities so that the beneficiaries can select their desired prototype. Figures 2, 3 and 4 show the three available prototypes for all cities.

4.6. Incremental Expansion Stages

This housing project adopts the vertical incremental expansion approach. The beneficiary has to build a two-bedroom unit of 63 sq.m. at each stage. In addition, the beneficiary has to complete the ground floor with external finishing in 9 months from getting the construction permit in order to benefit from the government subsidy of 15,000 EGP as shown before. Internal finishing is not an obligation at this stage and can be done at a later stage. Then, the beneficiary can build the first floor as a second stage and finally the third floor as the last stage. The beneficiary can use the upper floors for his own family expansion. Otherwise, he can sell or rent the units of the upper floors to other people and generate financial benefits while providing housing units for other people.
Each unit consists of:
1. Living Area 25.1 sq.m. – 2. Main Bedroom 10.1 sq.m. – 3. Bedroom 10.6 sq.m. – 4. Kitchen 5.25 sq.m. – 5. Bathroom 3.8 sq.m. – 6. Corridor 3 sq.m. – 7. Terrace 2.5 sq.m.

Each unit consists of:
1. Living Area 22.1 sq.m. – 2. Main Bedroom 10.6 sq.m. – 3. Bedroom 10.6 sq.m. – 4. Kitchen 5.25 sq.m. – 5. Bathroom 3.8 sq.m. – 6. Corridor 6 sq.m. – 7. Terrace 2.8 sq.m.

Figure 2. Ebny Baitak Prototype. **Source:** Ministry of Housing, Utilities, and Urban Development (2008)

Figure 3. Ebny Baitak Prototype **Source:** Ministry of Housing, Utilities, and Urban Development (2008).
5. Case Study - Sixth of October City

In 1979, the Egyptian government started the development of Sixth of October City as part of the new cities program to relieve of the over population problem in the Greater Cairo Region. The new city is located about 28 km to the west of Cairo and can be reached by the Cairo – Alexandria Desert Road or by the Cairo – El-Fayoum Desert Road. In addition, in 1998, the city had a new access through the 26th of July Axis, which connects the city with downtown Cairo in just a 15 minutes drive. Figure 6 shows the location of the new city and its relation with “Greater Cairo Region”.

Sixth of October City, considered one of the first generation of the Egyptian new cities, is one of the largest new cities in Egypt with an area of 500-squared kilometer, about 119,214 feddan. Its current population, according to the estimates of the Ministry of Housing, Utilities, and Urban Development, is about 1,177,079 inhabitants with a target population of 6 millions in 2027. (Ministry of Housing, Utilities, and Urban Development, 2012)

5.1. Ebny Baitak at Sixth of October

Sixth of October City is one of the major cities for Ebny Baitak project. This city alone accommodates about 42,000 plots that represent about 50% of the total plots assigned for the whole project all over the country. These plots are distributed in seven zones in the southern area of the city as shown in figure 7.

5.2. Current Status of the Project

In 2006, the government started the project by allocating the areas designated to the project to the infrastructure and roads contractors. In 2008, the government started delivering the plots to the beneficiaries and this process was completed in 2009. According to the current official reports, about 80%
Figure 5. Ebny Baitak Project Incremental Stages - Sixth of October City. Source: Ministry of Housing, Utilities, and Urban Development (2012).

Figure 6. Sixth of October City and Greater Cairo Region. Source: Ministry of Housing, Utilities, and Urban Communities (2000).
of the beneficiaries in Sixth of October City already completed the construction of the ground floor of their plots as of April 2012. The incentives and time constraints that the government provided to the beneficiaries encouraged them to move forward with the construction process. (Ministry of Housing, Utilities, and Urban Development 2012, personal meetings with government officials, and site visits)

On the other hand, the roads and infrastructure are not completed yet. Most of the water and sanitary major networks are completed. However, the electricity network is far behind. In addition, the roads network will be completed after all other networks are completed. The overall percentage of roads and infrastructure completed does not exceed 60%. This represents a major challenge for the success of the project. Houses are there, but people cannot live in them because of the absence of infrastructure. This situation will have a negative impact on any future phases of the project. Table 3 shows the status of roads and infrastructure works in the different zones of the project. (Ministry of Housing, Utilities, and Urban Development 2012, Personal Meetings with Government Officials, and Site Visits)

The following pictures show samples of the housing buildings at Ebny Baitak project at Sixth of October City.

The following pictures show samples of the services
buildings at Ebny Baitak project at Sixth of October City.
5.3. Problems of Application

The project encountered several problems that affected its progress and results. These problems can be summarized in the following points:

• The prototypes are almost standard in all different locations and do not reflect either the differences among these locations or the different needs of expected residents in each location.

• The selection of the beneficiaries based on their proven income only allowed people with higher unofficial income, which is common in Egypt, to apply for plots for investment purposes.

• The areas allocated to the project are not served by public transportation lines, which increased the delivery cost for labor and also for construction materials. This situation resulted in a general increase in the construction cost. In addition, this situation will make it difficult for the beneficiaries to use their units upon completion.

• The delay of the provision of the infrastructure to the extent that the residential buildings are built and the infrastructure is not available yet. As a result, the beneficiaries are not able to use their units.

• The absence of security in the areas of the project resulted in the dependence on certain families from the surrounding areas to provide security against monthly fees.

• The lack of accuracy in survey works, which resulted in some difficulties in defining the boundaries and areas of the allocated plots. Even the governmental works suffered from this problem as shown in figure 11.

• The government is managing the infrastructure works, while the beneficiaries are managing the construction works of their own plots. There is no project management body for the whole project. This situation resulted in destroying parts of the infrastructure networks during the excavation.
and foundation phases of the construction works

- Most of the financing is self provided, which makes it difficult for a large sector of low-income people to apply for the project. Conditions for available financing options do not match with the financial capabilities of targeted residents.

6. Implications for Future Projects

The preliminary results of the project along with the problems of application suggest some implications that will improve the outcome of similar. These implications can be summarized in the following points:

- Selecting the beneficiaries according to several criteria. The selection of the beneficiaries should review, besides their proven financial income, their unofficial income, and their social and educational levels to make sure that the project serves the targeted sector.
- Emphasizing the characteristics of expected residents and their requirements in the prototypes designs. The design of the prototype units should reflect the needs of the expected residents in size, finishing, privacy, and elevations elements.
- Emphasizing the identities and natural characteristics of the different locations in the prototypes designs.
- Adopting the approach of participatory planning. The role of the residents in the current project is limited to the construction of their units. Residents should be encouraged to participate in the process from its early stages to guarantee that the new development will meet their needs.
- Maintaining a multidimensional balance between the completion of the infrastructure with all its aspects and the delivery of the plots to the beneficiaries. This will help the beneficiaries control the cost of construction and expedite its process. In addition, this will help the beneficiaries use their units once built and finished.
- Providing effective housing finance mechanisms. Housing finance can be provided to the beneficiaries through the mortgage system by using the housing unit itself as a way of insuring the coverage of the loan.
- Providing effective transportation facilities. The area of the project should be served by public transportation system, which will help the beneficiaries during the construction period and also encourage them to live in the area after completing their houses.
- Providing a management body to manage the development of the area. This management body will facilitate the coordination between the infrastructure works and the construction of the units. It will also guide the beneficiaries through the whole process to guarantee better outcome.

7. Conclusion

Ebny Baitak project intended to provide an opportunity for low-income groups to build their own houses in an affordable manner. However, the cost of the land, even with the government subsidy, and the construction cost are far beyond the abilities of low-income groups. This resulted in unofficial sale transactions of the plots for other people mostly of the middle-income groups. Meanwhile, the government has not fulfilled its obligation yet, to provide the infrastructure to the plots so that the people can use their units. Thus, this approach seems more appropriate for providing housing units for a category of the middle-income groups giving that the government could cancel the subsidy and pro-
vide infrastructure in time. In conclusion, this project had a limited impact in solving the housing problems of the low-income groups in Egypt.

REFERENCES


ABDEL-KADER, NASSAMAT and ETTOUNEY, SAYED M. 2012, Decrying Sensible Housing Developments – Recapitulating Incremental, Partially Completed Low-Cost Housing, Egypt Decades Later, XVIII IAHS, World Congress on Housing, 16-19 April, Istanbul, Turkey.


MINISTRY OF HOUSING, UTILITIES, AND URBAN DEVELOPMENT, GENERAL ORGANIZATION FOR PHYSICAL PLANNING 2008, National Housing Project – Ebny Baitok, Ministry of Housing, Utilities, and Urban Development, Cairo, Egypt. (Arabic)

MINISTRY OF HOUSING, UTILITIES, AND URBAN COMMUNITIES, GENERAL ORGANIZATION FOR PHYSICAL PLANNING, CENTER FOR GREATER CAIRO REGION 2000, Greater Cairo Atlas, Ministry of Housing, Utilities, and Urban Communities, Cairo, Egypt. (Arabic)


RAGEH, ABU ZAED. 2007, El Omran El Misry - Egyptian Urbanism - Egypt 2020, Third World forum, Academic Bookshop Press, Volume 1, Cairo, Egypt. (Arabic)

SAMY, KHALID M. and NORELDIN, MOHAMED. 2004, The Evaluation of Site and Service Policy as One of the Approaches to Solve the Problem of Low-Income Housing in Egypt, High Commission for the Development of Arriyadh, Second Housing Symposium, Arriyadh, Saudi Arabia. (Arabic)

SIMS, DAVID. 2012, Understanding Cairo: The Logic of a City Out of Control, The American University in Cairo Press, Cairo, Egypt.


Author(s):

Ahmed M. Shalaby
Department of Architecture, Faculty of Engineering, Cairo University, Cairo, Egypt
IMPROVING COMMUNICATION AND CHANGING ATTITUDES IN ARCHITECTURAL PRACTICES: DIGITAL ARCHITECTURAL EDUCATION TOOLS FOR NON-EXPERTS.

Matevz Juvancic, Marjan Hocevar, Tadeja Zupancic

Abstract
The persistence of difficulties related to communication of the stakeholders in the architectural and urban design process is mainly due to the diversity of interests, different perspectives, representation problems and the abilities of visual communication. The paper delves extensively into communication abilities and divides between experts and non-experts, exploring their epistemological origins and possible solutions. One of them, education about spatial issues for general public, is argued for and supported by in the form of a digital education tool. It builds on the idea that non-expert public should be approached with both: adaptation to its abilities and with additional teaching to improve these abilities. The experiment puts the prototypical architectural educational interface to the test in primary schools and observes the effect the level of interactivity has on learning outcomes. The results show possible ways of enhancing the efficiency of such tools and help developers and designers evaluate and fine-tune them for the process of non-professional architectural learning. The communication and attitude-changing topics are discussed from the specific architectural and from broader social science point of view.

Keywords: Architecture; Digital Education Tools; Sustainable Spatial Development; Professionals; Non-Expert Public.

With regard to learning about spatial issues, and in particular about architecture and urban design, we detect problems in two directions. The first problem concerns the mutual understanding among professionals involved in spatial1 practices. For example; urban designer and sociologist may have the same goals, however the problem of different perspective persists. Their different views can be explained as a "translation" problem from visual to cognitive and vice versa (Kos 2005). Improved communication in this sense closes the gap between planning and architectural issues and social studies. Linguistic and visual uncertainties are crucial in communicating knowledge successfully among all actors involved (Kratochwil & Benedikt 2004). In order to operate, spatial professionals have to conceptualize space in a manner appropriate to their goals (lefebvre 2000). The 'reality of planning' has three interlinked constituents: 1) space can be seen, 2) space can be represented and, as a derivative of the first two, 3) space can be designed. To illustrate and formulate the problem of the conceptualization of space in spatial practices we can point at the difficulty of really understanding in what way the everyday events and details of spatial practices – gestures, voices, trajectories of walking, graffiti, temporary alterations, decay – partake in the production of public space.

The second problem concerns the understanding between professionals and non-experts2. This problem is more complex, since it concerns different demographic profiles of people (e.g. by age, education, etc.) and their abilities, motivations, interests, etc. We argue that the best way to improve the mutual understanding is through implementation of learning about architecture, planning and sustainable urban issues into the lifelong learning process as early as possible (support-

1In the paper we use spatial as an adjective that binds together architecture, urban design, urban planning and their associated fields that are dealing with (built) space and interventions in space. The research described has been focused mostly on architectural (the facades and buildings) and on urban design issues (e.g. placement of individual buildings into an existing urban environment, greenery around homes, placement of buildings into the surroundings, problematics of the dispersed building), but given the multiplicity of the phenomena it has also larger scale implications. Adjective architectural on the other hand is often perceived as dealing with a single building and its elements in an isolated manner, the connotation which we want to avoid, emphasizing especially the responsible acting in- and within- the given surroundings.

2It also includes general public which can be, for that matter, defined as non-expert public. For the purpose of this article we will consider general public, lay-public, non-expert and non-professional synonymously. Experts are defined by their formal knowledge in the field of ‘spatial sciences’ and their ability to at least read the whole spectra of messages in the planning process. Architects have often more specific (narrow) view of who the experts are in the planning process but in this paper we look at spatial science as at an integrated science (incorporating different experts) and we also maintain an integrated perspective when approaching the topics discussed.
Communication abilities and divides: (inter-) professional and non-expert perspective.

Architecture and urban design as professions have recently been dealing not only with planning but more and more frequently engaged in awareness raising and education about spatial values and sustainable practices as well. In these processes, different participants that act in existing social contexts, are addressed. Research to date has demonstrated the apparent differences in how architects, as experts and publics as non-experts perceive and understand visual representations (Bates Brkljac 2007). Any participation always brings to the surface the issues regarding the profile of the participants and what, if any, intersection of knowledge, (visual) communication skills, attitudes and values they share. Many previous studies (e.g. Ucelli, Conti & Klercker 1999; Mullins, Zupancic & Juvancic 2002; etc.) have been researching different technological solutions, understanding of visual messages and presentation techniques for different publics. The communication issues emerge most evidently during the face-offs of different publics in the planning process, where there is much interference on different levels in understanding of visual messages. This problem is most noticeable in contacts between non-expert and expert public. Visual representations as ‘artefacts of knowing’ are characterized by an ‘unfolding ontology’ (Knorr Cetina 2001) – they are constantly in flux, rather than fully formed. Their emergence and use give rise to a range of questions that demand communication, coordination and collaboration across domains of knowledge, among professionals themselves (e.g. architects and planners, social scientists and educators) as well as between professionals and different publics.

According to studies, the majority of all knowledge acquired (75%) comes to us visually3 (Peoples 1992); the percentage can vary according to individual sensory modality preferences, abilities and types. The rest is split between hearing and other senses: smell, taste, touch, etc (Fig. 1). Individual perception and cognition are influenced also by other factors, such as personal interests, motivation, previous experiences, etc.

The importance of visual inputs has grown with the spread of (visually oriented) mass media. The visual information perceived through such means is more valued (fashionable, creditable, etc., in the eyes of the perceiver) but also preferred as the messages are delivered faster and ‘read’ with less effort.

---

3Visual in this connotation includes written word (text) as well, while in paper in general when discussing visual messages we separate them from- and do not include- written word.
It can be argued that in visual societies the visualization is not only a preferred form of communication but rather demanded by the public and certain forms of messages are expected. However, the specifics of the flow of information in mass media and the specifics of feedback rely only on the abilities of the public to ‘read’ visual messages, not compose them themselves. Furthermore, the messages appeal to the overlapping referential knowledge fields to reach the widest public possible and the ‘reading’ issues can thus be set aside. Introducing special topics, such as architectural or spatial issues, and with them sometimes very specific visual messages (and contents), opens new questions on ‘reading’ and ‘writing’ of visual messages by different actors in the inclusive design process.

In terms of visual reading-writing abilities in the architectural planning process three groups can be discerned (Fig. 2): the group of experts who are able to read and write visual messages, but less able to express themselves in writing (architects, urban planners, designers, civil engineers, etc.) as compared to the next group of humanists, social scientist, etc., who express themselves primarily in writing but are also able to understand (‘read’), yet much less able to compose expert visualizations; the third largest group of non-experts who are very limited in reading and writing abilities when it comes to the specifics of architectural planning process, especially concerning visual messages.

Differences in reading-writing abilities and different knowledge sets among the two expert groups can be attributed to epistemological differences in professions, specifically: knowledge transmission, acquisition and ways of knowing.

In architectural professional education, emphasis is put on learning through examples, learning by doing and project based learning. There is much less factual and explicit knowledge transmitted than in social sciences. Glanville (2005) describes the dichotomy that could help explain differences in ways of learning and knowing. He distinguishes two kinds of knowledge: ‘knowledge for’ (action) and ‘knowledge of’ (what is) – learning in architecture is typical characterized by the first and second is the common basis for social sciences.

The whole architectural education process is primarily based on the exchange of visual messages (plans, drawings, schemes, photographs), while written and spoken word are the norm in social sciences (papers, books, seminar work). Cooperating in the same process makes architects active visual readers and writers, reaching for text only to support the visual messages. On the other hand, social scientists involved in the planning process, are active text readers and writers as well as passive readers of visual messages. In their case visual messages illustrate primarily worded expressions. The communication of experts in the process is thus hindered at least to some extent. Their different perspectives can be explained as a ‘translation’ deficit, from visual to cognitive and vice versa (more in Kos 2005; Mlinar 2009). Improved communication among those experts would bridge the gap.
between visual and cognitive, visual and linguistic and finally, between planning, architecture, architects, planners and social sciences as a whole.

The distinction between expert and non-expert groups can be drawn on the basis of formal knowledge. When it comes to architectural planning process, experts possess certain formal knowledge in the field, while non-experts can only rely on their informal and tacit knowledge. The same applies to their skills in perceiving and expressing themselves. “We can know more than we can tell” (Polanyi 1983: 4) is explaining one of the fundamental principles of human knowledge, where the subject gets to know the particulars without being able to identify them (Polanyi 1983), and that we can define as tacit knowledge. In similar notions Norman (1998) applies the tacit knowledge to human behaviour, claiming that precise behaviour can emerge from imprecise knowledge.

When incorporating non-experts into the planning process, one has to take into account their limited abilities to read expert visual messages, formulate their concerns and suggestions at an adequate level (from the expert point of view) in written or, even less probable, visual way.

Common to all actors in the design process is learning by acquiring formal or tacit knowledge through examples that are often analysed, modified and used in architecture. In social sciences an example is often used to illustrate theoretical definitions, while non-experts use them to get their ideas across.

The previous experiences of actors involved (especially non-experts) influence their abilities to actively read messages and can be used to define the preferred method of conveying information (written or graphic way)4.

The next factor influencing and distinguishing actors in architectural planning is their motivations that originate partly from their interests and personal involvement and to a certain extent from their professional background - the experiments with eye tracker (Keul, Hutzler, Frauscher and Voigt 2004) have shown experts (architects) pay more attention to different details in the picture representing the architectural theme than non-experts.

Communication problems between experts and non-experts are multidimensional, but as some observers have pointed out in the broader context of urban design, much of the difficulties are deriving from expert specific perception which leads to inappropriate design representation and information. “Architects necessarily edit reality when making drawings that represent the completed condition of building projects. Were they to include all of the information required for decision makers to be fully informed, they would have to present their proposals at a scale of 1:1. Technologies of representation, necessarily edit out of the picture some information so as to emphasize other information deemed more salient by the picture maker, the architect. This normative practice of architectural representation influences public choices about city making” (Moore and Webber 2008).

Differences between ‘words’ and ‘actions’ and motives for education of non-expert public

The proverbial lack of common visions regarding architecture, spatial interventions, sustainable and socio-cultural values does not arise merely from translation deficit, misunderstandings and visual expression disabilities. The national surveys in Slovenia (Tos et al 2004) along with some other researches on socio-spatial values (Hocevar et al 2005) indicate that there have been substantial differences between expert and general public values orientation regarding natural and built environmental issues, including those concerning building design. There is also inconsistency between values and actions among the general public; the results of actions, as traced in space, often contradict the declared values.

Communication of architecture and urban design aimed at the public should not be just a matter of a formal appearance of the built environment. Effective communication has to include other issues apart from aspects to do with built form and its realistic representation, and should be a good balance between ‘image’ and ‘content’ (Leao Neto 2006). In other words, such communication has to address social and cultural awareness of architectural design as an important civic issue and not merely address them as material artefact.

Lifelong learning process presents an opportunity to address wider spatial problems before they emerge, confronting non-experts at the stage when changing attitudes does not require as much effort as in later years. The public especially worth addressing is younger generations, still in the process of formal education, engaging in the future sustainable development that will consequently and most likely take part in shaping of the future built environment (Svetina et al 2011). Raising awareness in such an “audience” can also lead to the overspill of conveyed messages to their reference

---

4For example: worded denotation of a certain place is more concrete for the person who is familiar with it. In case somebody is not familiar with the place, the worded denotation is an unknown abstract notion, while the pictorial (or photographic) representation would be understandable and convey the meaning to the person who knows the place and to the person who does not – the level of abstraction is in this case much lower. Building on his/her previous experience with the similar planning processes, the social scientist involved in the planning is able to read into abstract architectural visualisations. This ability supercedes the abilities of non-experts who have great problems in understanding abstract messages of all sorts in the same processes.
groups (parents, grandparents), the groups who are notoriously much harder to address.

Hence comes the basic pre-assumption that awareness raising, stemming from education of non-expert public, and the introduction of spatial-sustainable topics into the lifelong learning process can bring different actors involved in the shaping of our environments more in-sync – specifically; improve the understanding of expert ways of thinking, issues, attitudes, values, and established forms of visualisation. All these will finally (and hopefully) contribute to more prudent spatial interventions as well as the reduction of spatial and environmental problems.

Leaving the problematics of intra-expert communication aside for future research and papers to address, this paper will now focus on possible ways of bridging the gap between experts and non-experts, bringing them closer in ways of thinking (directly) and communication abilities (indirectly).

Digital architectural education tools for non-expert public

The results of the survey conducted among teachers in primary and secondary schools (Demsar Mitrovic et al 2007) have shown the lack of time provided for spatial-sustainable topics, the lack of information and suitable learning tools5 and last but not least – teacher’s belief that they themselves are not ‘equipped’ with adequate knowledge to convey the issues to their students, which may lead to awkward presentations and unintended omissions.

As a transitional help in transmitting expert understandings, values, perceptions etc., and overcoming the knowledge barriers of teachers, who are already besieged with other equally important topics, the emerging field of digital architectural education tools offers new opportunities to address younger generations and wider public as early as possible. Such tools represent only a fragment of fresh ways of teaching and transmitting of spatial topics to non-experts6. Graphical user interfaces of these tools are considered crucial because they act not only as mediators and communication platforms, but according to Carroll (1991), they also create the environment which broadens human capabilities, enables access to digital tools and supports cognitive interaction. The main role of education tools and their interfaces is bridging the gulf between the learner and knowledge embodied in the field (Quintana et al 2002). While the digital tools in professional education for future architects help students embrace the knowledge in the field, support experimentation, develop skills needed to practice architecture, the tools for non-experts and their interfaces have to bridge the gap between tacit knowledge and rudimentary field knowledge (values, problematics, etc), raise awareness and thus contribute to a better communication between professional and non-professional public. The distinction can be simplified to learning in architecture (professionals) and learning about (non-experts) architecture (Juvancic, Mullins and Zupancic 2012).

The research outline and the Experiment: the Eco-spatial7 digital education tool.

Our research, used here as proof of concept, supporting our claim, builds on the idea that general public or non-experts should be approached by experts through the following: adaptation to their communicative abilities and knowledge as well as with additional teaching to improve these abilities.

In endeavour to improve the communication between different participants and develop specific tools that could bridge the divide of attitudes’ value systems and actions with architectural tools for educating non-expert public, we followed Lasswell’s rudimentary model of communication (Severin & Thankard 1992): who - says what - in which channel - to whom - with what effect?

In an attempt to apply the questions to the specific fields of architecture and sustainability, the research tackled the questions about the participants, the target group characteristics, topics to be communicated, and finally the effect they all have on conception, testing and use of education tools. In order to answer these questions, some elements and characteristics concerning two aspects of tools we distinguish between content (‘what’) and communication-technical (‘how’).

In the experiment the elements of interfaces (the contents included) were tested through their use in educational settings in primary schools and the variables of interface characteristics – ways of navigation, ways of narration and ways of interaction

5For the purposes of clarification the distinction needs to be made between the following notions: platform, tool and interface. We use the term tool in this paper whenever we refer to a unit that functions as a whole and serves as a helping hand i.e. education. Most often we have digital tools in mind and these are meant to be functioning software applications. We talk about platforms when we discuss the integration of several tools ‘under one roof’, be it online, offline or in any other way, but usually digital. We use the term interface when we want to make specific distinction between the software front, its design, its functionalities and the contents.

6Other efforts include i.e. Arkki school of architecture for children and youth, Finland; Museum of Architecture and Design in Ljubljana, Slovenia – thematic workshops for children, etc.

7Adjective eco-spatial was coined from two adjectives: ecological and spatial to emphasize the interrelation between the two and their interdependence.
Improving communication and changing attitudes in architectural practices...

Figure 3. Digital Eco-spatial Education Tool was designed as a collection of five tasks, dealing with sustainable topics and most urgent, common and annoying local problems the experts want to warn future generations of, call to their attention, or change their attitudes toward, such as building on sloped grounds, greenery around habitats, unfinished houses and their surroundings, building in the existing environment, adapting to scale, renovation of residential neighbourhoods, etc. (task #3 and primary school classroom setting).

Figure 4. The tool has tested 5 different variations of the interface, with different levels of interactivity consisting of navigation, narration/presentation of contents and interactivity of tasks (visual feedback, reversibility of actions, experimenting). Conditions ranged from maximum to minimum interactivity, from traditional face-to-face education method to the test group (task no.1, maximum & minimum interactivity).

with elements – were experimentally tested with the help of prototypical eco-spatial education tool that incorporated the afore mentioned findings (Juvancic, Mullins and Zupancic 2012).
Results

Looking at the excerpt of results we can clearly discern the influence of interactivity on the test results (average score) (Fig. 5). Results also show that navigation has some effect on the results (moving freely among the tasks contributes to effectiveness), while narration/presentation of contents (or the lack of it) and interactivity of the task have considerable influence on the final score, but due to test design their individual effect contribution cannot be isolated. Considering the interactivity of tasks, while the possibilities to reverse the actions (‘undo’) did not play a significant role, whereas visual feedback, possibilities to test different elements and situations, visually evaluate and change decisions if needed, do matter and significantly contribute to higher scores.

Discussion

The meaning of the results is discussed first in the light of the specifics of non-expert architectural education tools used in educational settings. This discussion is then followed by the general implications the results have on the topics of life long architectural education, participation of non-experts in architectural and urban design planning processes and communication among different actors involved.

The joint results of theoretical analysis and data obtained with the experiment show that the selection of elements and their mutual connections (characteristics) influence the effectiveness of architectural tools for the general public in two major sets: the content and communication-technical set. The results also reveal to what extent the interactivity and effectiveness are related in the experiment presented: greater interactivity coincides with the increase in awareness and general public education.

The results about narration implicate that non-experts (at the age tested) do not explore the educational contents on their own. This calls for other principles for conveying contents, analogue to game tutorials, which lead the player through series of task learning skills, familiarizing them with the interface itself, goals and means to achieve them – the process could be described as learning-while-playing (Juvancic, Mullins and Zupancic 2012).

The importance of interactivity of the task overshadowed the effects of narration, except in f2f learning where narration proved to be crucial for highest scores. Such interactivity supports use of

Methods and Materials

The education tool was designed as a collection of five selected tasks (Fig. 3). The contents and tasks dealt with sustainable topics and most urgent, common and annoying local problems the experts want to warn future generations of, call to their attention or change their attitudes toward.

The interface was prepared in 5 different variations (Fig. 4), with different levels of interactivity consisting of 3 variables: (i) navigation, (ii) narration/presentation of contents and (iii) interactivity of tasks (visual feedback, reversibility of actions, experimenting). Conditions ranged from maximum to minimum interactivity, from traditional face-to-face (f2f) education method to the test group.

Several parameters were automatically recorded (e.g. time, user choices, etc.) and results of each task graded. The test group was made of 9th grade primary school pupils (aged 13-15, N=218) and distributed among 5 test settings – 5 variations of interfaces.

Discussion

The meaning of the results is discussed first in the light of the specifics of non-expert architectural education tools used in educational settings. This discussion is then followed by the general implications the results have on the topics of life long architectural education, participation of non-experts in architectural and urban design planning processes and communication among different actors involved.

The joint results of theoretical analysis and data obtained with the experiment show that the selection of elements and their mutual connections (characteristics) influence the effectiveness of architectural tools for the general public in two major sets: the content and communication-technical set. The results also reveal to what extent the interactivity and effectiveness are related in the experiment presented: greater interactivity coincides with the increase in awareness and general public education.

The results about narration implicate that non-experts (at the age tested) do not explore the educational contents on their own. This calls for other principles for conveying contents, analogue to game tutorials, which lead the player through series of task learning skills, familiarizing them with the interface itself, goals and means to achieve them – the process could be described as learning-while-playing (Juvancic, Mullins and Zupancic 2012).

The importance of interactivity of the task overshadowed the effects of narration, except in f2f learning where narration proved to be crucial for highest scores. Such interactivity supports use of

Methods and Materials

The education tool was designed as a collection of five selected tasks (Fig. 3). The contents and tasks dealt with sustainable topics and most urgent, common and annoying local problems the experts want to warn future generations of, call to their attention or change their attitudes toward.

The interface was prepared in 5 different variations (Fig. 4), with different levels of interactivity consisting of 3 variables: (i) navigation, (ii) narration/presentation of contents and (iii) interactivity of tasks (visual feedback, reversibility of actions, experimenting). Conditions ranged from maximum to minimum interactivity, from traditional face-to-face (f2f) education method to the test group.

Several parameters were automatically recorded (e.g. time, user choices, etc.) and results of each task graded. The test group was made of 9th grade primary school pupils (aged 13-15, N=218) and distributed among 5 test settings – 5 variations of interfaces.

Discussion

The meaning of the results is discussed first in the light of the specifics of non-expert architectural education tools used in educational settings. This discussion is then followed by the general implications the results have on the topics of life long architectural education, participation of non-experts in architectural and urban design planning processes and communication among different actors involved.

The joint results of theoretical analysis and data obtained with the experiment show that the selection of elements and their mutual connections (characteristics) influence the effectiveness of architectural tools for the general public in two major sets: the content and communication-technical set. The results also reveal to what extent the interactivity and effectiveness are related in the experiment presented: greater interactivity coincides with the increase in awareness and general public education.

The results about narration implicate that non-experts (at the age tested) do not explore the educational contents on their own. This calls for other principles for conveying contents, analogue to game tutorials, which lead the player through series of task learning skills, familiarizing them with the interface itself, goals and means to achieve them – the process could be described as learning-while-playing (Juvancic, Mullins and Zupancic 2012).

The importance of interactivity of the task overshadowed the effects of narration, except in f2f learning where narration proved to be crucial for highest scores. Such interactivity supports use of

Methods and Materials

The education tool was designed as a collection of five selected tasks (Fig. 3). The contents and tasks dealt with sustainable topics and most urgent, common and annoying local problems the experts want to warn future generations of, call to their attention or change their attitudes toward.

The interface was prepared in 5 different variations (Fig. 4), with different levels of interactivity consisting of 3 variables: (i) navigation, (ii) narration/presentation of contents and (iii) interactivity of tasks (visual feedback, reversibility of actions, experimenting). Conditions ranged from maximum to minimum interactivity, from traditional face-to-face (f2f) education method to the test group.

Several parameters were automatically recorded (e.g. time, user choices, etc.) and results of each task graded. The test group was made of 9th grade primary school pupils (aged 13-15, N=218) and distributed among 5 test settings – 5 variations of interfaces.

Discussion

The meaning of the results is discussed first in the light of the specifics of non-expert architectural education tools used in educational settings. This discussion is then followed by the general implications the results have on the topics of life long architectural education, participation of non-experts in architectural and urban design planning processes and communication among different actors involved.

The joint results of theoretical analysis and data obtained with the experiment show that the selection of elements and their mutual connections (characteristics) influence the effectiveness of architectural tools for the general public in two major sets: the content and communication-technical set. The results also reveal to what extent the interactivity and effectiveness are related in the experiment presented: greater interactivity coincides with the increase in awareness and general public education.

The results about narration implicate that non-experts (at the age tested) do not explore the educational contents on their own. This calls for other principles for conveying contents, analogue to game tutorials, which lead the player through series of task learning skills, familiarizing them with the interface itself, goals and means to achieve them – the process could be described as learning-while-playing (Juvancic, Mullins and Zupancic 2012).

The importance of interactivity of the task overshadowed the effects of narration, except in f2f learning where narration proved to be crucial for highest scores. Such interactivity supports use of
intuition, tacit knowledge, past experiences, constraints and sometimes compensates for factual knowledge, consistent with Norman (1998) suggestions that precise behaviour can emerge from imprecise knowledge. The results also show that complex, game like tasks can be very engaging for imprecise knowledge. The results also show that precise behaviour can emerge from constraints and sometimes compensates for factual knowledge, consistent with Norman (1998) suggestions that precise behaviour can emerge from imprecise knowledge. The results also show that complex, game like tasks can be very engaging for

High scores of the test group suggest another aspect of learning through education tools. The lack of scaffolding, interactivity and information, combined with irreversibility of actions, make the users more cautious, self-reflecting and consciously pondering all the options before deciding. Yet another confirmation that more (information) is not always more effective.

The experiment and the prototypical education tool have taken the factors ('reading' and 'writing' abilities, motivation, knowledge frameworks and experience) introduced at the beginning of the paper into account, especially the expert to non-expert communication. Much effort has been put into the preparation and the adaptation of the graphic material and worded description in ways of getting closer to targeted non-expert public. The majority of the content was presented graphically, building on the fact that the usual way of acquiring knowledge is visual. The interface itself (especially the most interactive version) and the contents relied on user's previous experience and his/her tacit knowledge. The method of learning and communicating through examples, established to be the connection point in intra-expert learning, has been applied also to non-expert education and upgraded with the constructivist learning principles (Glasersfeld 1989).

We can comment on users’ responses, observations and the result from this perspective. The non-experts, even at the age of 14 and 15, were able to grasp the problems and tasks presented, which indirectly indicates that the efforts to get closer to non-expert public has paid off. While the feedback from non-experts to experts was not built into the educational interface, we still got some feedback from the users’ comments during interface testing. Two needs were expressed commonly: 1) more options and more openness of the system allowing greater possibilities in task solving and 2) constant feedback how well the user is doing solving the tasks, whether he/she is doing it correctly or incorrectly. Evaluating the results, we can also speculate which contents have been adequately adapted either in terms of problematics formulation (beyond the grasp of non-expert tacit knowledge) or presentation (beyond non-expert visual reading capabili-

**Conclusion**

Although the education tool and learning environment described in the paper were used in specific situation, broader implications can be derived from the research that targets non-expert audience and the transmission of architectural messages. The results confirm the applicability of the idea of blended professional architectural learning to the most general target audience, given the needed adaptations are considered and made. The results also indicate the possible ways of enhancing the efficiency of such tools through a measured mix of elements and characteristics and help developers and designers evaluate and conceptualize their work to be fine-tuned to the target audience in learning about architecture.

While the study focused mostly on the communication aspect between experts and non-experts using digital architectural education tool, building on this successful proof of concept, we ground our beliefs, that by starting to learn about architecture and urban design as soon as possible we could overcome the communication problems and significantly reduce the noise between visual and cognitive.

The nature of tasks in our research has approached problems in an isolated way to make them more understandable and transparent to non-experts. However, in reality, they are often connected in a complex manner, be it due to their frequency, different interactions or on-going negotiations of elements, users and phenomena.

---

13 The pupils considered task no.3 the most interesting one. The same task was also the most complex of all five tasks and most game like, with different architectural elements, their ‘value’ and ‘financial’ balance required. The most difficult task was, according to the pupils, task no 4, which was also the most abstract and the least liked.

14 It has not been designed as a two way communication tool.
The issues and scale of the tasks in the described tool have been selected on the grounds that they can be presented in experiential15 way. Demonstrations of larger scale urban phenomena would have to resort to conceptual presentations or the combination of both. Several researchers have tested computer games with complex urban models that use such visualizations in educational settings (Devisch 2008, Gaber 2007) to teach about the complex cause-effect relationship. While we recognize the need for an overall, top down awareness and insight into our living environments’ mechanics, we wanted to show also a bottom up, recognizable, ‘from-my-doorstep’ alternative perspective on those environments and with them connected issues. The main purpose: emphasizing not only the collective, but also the individual responsibility for acting in space.16

These two approaches – top-down and bottom-up – combined could have a significant impact on the effective understanding of our spatial environments and consequently on the effective participation in spatial planning. However, this assumption has yet to be confirmed through future research.

Communication, coordination and collaboration across domains of knowledge, both among professionals themselves as well as between professionals and different publics, are of great importance for establishing visually more understandable representations of architecture and urban design and in a wider sense to insure the foundations for more inclusive and participative approach to spatial interventions.

REFERENCES


HOCEVAR, M., URSIC, M., KOS, D., TRCEK, F. 2005, Changing of the Slovene urban system: specific socio-spatial trends and anturban public values / attitudes, in: Paths of urban transformation (The European city in transition ; vol. 5) [ed. Eckardt, F.], P. Lang: 281-300, Frankfurt am Main etc.


15Bosselman (1998) distinguishes between two main principles depending on “the perception of the world”, which may be (applied to the image or message itself) abstract/conceptual or concrete/ experiential. The experiential approach is directly derived from the experience, whereas the abstract approach indirectly.

16Making users aware the small scale decisions also matter: “What would you do specifically when it comes to such a mundane, everyday life decision? And are you aware that this decision is influencing the environment?”


Author(s):

Matevž Juvancic
University of Ljubljana, Faculty of architecture
Tel +386 1 2000 715; gsm +386 41 868 388; Email: matevz.juvancic@fa.uni-lj.si

Marjan Hocevar
University of Ljubljana, Faculty of social sciences

Tadeja Zupancic
University of Ljubljana, Faculty of architecture
Overview

Comparatively no longer a radical alternative to many approaches emerging to analyze and organize the design and construction processes which shape the built environment, THE FUTURE OF OPEN BUILDING conference asks participants to critically consider what the notion of ‘open building’ continues to offer within broader international contexts. The aim of this provocation is to encourage participants to challenge how collaborative synergies amongst the design professions and those impacted by design choices, are often made, unmade and transformed within every scale of the built environment. What forms and directions should ‘open building’ take in the twenty-first century?

Structure

Designed to be relevant and accessible to both academics and practicing design professionals, the conference is organized around keynote speakers and panelists in the morning sessions and case study oriented paper sessions in the afternoon.

Special Guest of Honor

N. John Habraken

Speakers

Frank Bijdendijk / Bijdendijk Consult
Prof. Alfredo Brillemborg / Urban Think Tank / ETH Zürich
Prof. Yung Ho Chang / Atelier Feichang Jianzhu / MIT - Massachusetts Institute of Technology
Prof. Renee Chow / Studio Urbis / University of California, Berkeley
Prof. Dietmar Eberle / Baumschlagere Eberle / Director, ETH Wohnforum - ETH CASE / ETH Zürich
Prof Dr. Bernardo Gómez-Pimienta / BGP Architects / Director, Architecture School at the Anahuac University
Martin Henn / Design Director, HENN Architects
Prof. Kerstin Höger / Kerstin Höger Architects / NTNU - Norwegian University of Science & Technology
Hiromi Hosoya / Partner, Hosoya Schaefer Architects
Prof. Hubert Klumpner / Urban Think Tank / ETH Zürich
Giorgio Macchi / Canton of Bern, Former Chief Architect
Prof. Dr. Amira Osman / University of Johannesburg
Prof. Dr. Arno Schlüter / Founder, Keoto AG / Singapore - ETH Centre - Future Cities Laboratory / ETH Zürich
Ute Schneider / Director, KCAP Architects & Planners
Roland Stulz / Founder, INTEP / Director, 2ooo Watt Society

Key Dates

January 30, 2015 - Paper Abstracts & Poster Proposals Due - CET Midnight (Central Europe Time)
March 2, 2015 - Authors Informed & Payment Options Open
May 1, 2015 - Full Papers & Posters Due for Review
June 1, 2015 - Review Comments Distributed
July 1, 2015 - Final Submissions Due & Regular Registration Closes
August 1, 2015 - Late Registration Closes
September 9-11, 2015 - Conference at ETH Zürich
32 years of back issues. Available on DVDs as well as online. This digital collection consists of 128 issues with approximately 1,024 articles dealing with settlement, planning and housing design, education, adaptability, open building, sustainability, affordability, user participation, design roles and many other aspects of housing and settlement design. Many case studies from around the world are included. Open House International is covered by EBSCO Publishing Thomson ISI and Elsevier Scopus databases.

University References:

“One major contribution of Open House International is its ongoing emphasis on open-ended design as an important attribute of environmental quality of built environments. Through this, Open House International has ensured that this topic has not been forgotten and has continued to develop.” Prof. Amos Rapoport, University of Wisconsin, Wisconsin, USA.

“The high academic level of the journal is an example to be followed. We are privileged by our affiliation with you and the journal. I think that our disciplines are hungry for the level of academic rigor that OHI demonstrates on a sustained basis.” Guillermo Vasquez de Velasco, Dean, College of Architecture and Planning, Ball State University.

“Open House International provides a unique, international forum for presentations of the multi-dimensional nature of housing with illustrative examples from all continents around the globe. Today this perspective is rare in mainstream academic and professional publications.” Dr. Rod Lawrence, University of Geneva, Switzerland.

“This is a journal with a long standing history of exploration into issues of development, built environment and housing. It distinguishes itself in the unselfconscious way it invites writings reflecting people, work and thinking not yet part of the mainstream.” Prof. Nabeel Hamidi, Oxford Brookes University, Oxford, Great Britain.

“As an educator, I use many of the articles published in Open House International as supplementary material for my courses since the information is well researched and quite often state-of-the-art in its field.” Dr. Avi Friedman, McGill University, Canada.

“Since its beginning in 1976 Open House International has been the only journal to cover the extremely important ground between the traditional and the new concerns of architects and builders and those of development studies. This is of increasing significance in the context of the international agendas for the next millennium.” Prof. Pat Wakely, Emeritus, Development Planning Unit, University College London, UK.

Among the journals focused on the built environment, Open House International (OHI) has always stood for the possibility of informed discourse on cross-cutting, global and local issues linking methods, the culture of building, built form studies, technology, pedagogy and user-centred public policy and planning. Thank goodness it is there for students, teachers and practitioners.” Prof. Stephen Kendall, Ball State University, USA.

“...In recognition of the high quality and relevance to the scientific community of Open House International we are pleased to inform you that your publication has been selected for coverage in the Elsevier Bibliographic Database Scopus as of 2007.”

Check all this by visiting www.openhouse-int.com and / or order through nicholaz.wilkinson@emu.edu.tr
Any on-line queries write to tchenyi@yahoo.com

For an invoice ask at: openh@hotmail.co.uk or PayPal facility at www.openhouse-int.com

Price: 395.00 GBP including postage and packing.