

PROJECT MANAGEMENT SUCCESS FACTORS FOR SUSTAINABLE HOUSING: A FRAMEWORK

Abu Hassan Abu Bakar¹, Arman Abd Razak, Shardy Abdullah and Aidah Awang²

School of Housing, Building and Planning,
Universiti Sains Malaysia, Pulau Pinang, Malaysia

¹abhassan@usm.my and ²aidah0622@yahoo.com

ABSTRACT

Housing is the critical issue in global urbanization which have a tremendous impact on the environment – both during construction and through out their. As the key element in urban development, housing plays a vital role in attaining the goal of sustainable development. Effective of project management is becoming increasingly important for sustainable housing to remain competitive in today's dynamic business environment. This paper attempt to establish a theoretical framework for project management success factors in sustainable housing development. Review on past literature on the subject were carried out to build the existing research works on the area and to establish critical success factors of project management best practices. At the end of this paper, a new area of managing sustainable housing for future direction of this research was identified. A list of critical success factors for project management practices for sustainable housing development was established.

Keywords: Sustainable Housing, Sustainable Development Project Management, Critical Success Factors.

1.0 INTRODUCTION

Housing, as human basic need, is a very important issue of people's everyday life. In 1948, the United Nations, in its Universal Declaration of Human Rights, stated that *"everyone has the right to a standard of living adequate for the health and well-being of himself and of his family including food, clothing, housing and medical care and necessary social services..."* . Housing provision is one of the major challenges facing developing countries. Under the Seventh Malaysia Plan (1999-2000) and Eight Malaysia Plan (2001-2005), Malaysian governments are committed to provide adequate, affordable and quality housing for all

Malaysian, particularly the low income group. This is in line with Istanbul Declaration on Human Settlement and Habitat Agenda (1996) to ensure adequate shelter for all.

In order to be sustainable, housing initiatives must be economically viable, socially acceptable, technically feasible and environmentally compatible (Choguill, 2007). In the other hand, housing encompasses the immediate environment, sanitation, drainage, recreational facilities, and all other economic and social activities that make life worthwhile (Olejado, 2003).

The World Commission on Environment and Development (WCED, 1987) report, Our Common Future has led to a world-wide notion of the concept of sustainable development (Meldon, 1998). However, it has been argued that the history of the concept of sustainability can be traced back to the terms “stationery” or “steady state economy” used by the nineteenth century political economist (European Environment agency, 1997). Today there are over 300 published definitions of sustainable development, the products of diverse world views and competing vested interests (Moles and Kelly, 2000). Fundamentally, sustainable development addresses three major areas;

- I. People living today are entitled to justice and equal rights;
- II. Environmental degeneration must be alleviated or eliminated; and
- III. Future generations must not be impoverished as a result of current actions (Redclift,1987).

Our Common Future explores how sustainable development “*is not a fixed state of harmony but rather a process of change in which the exploitation of resources, the orientation of technological development, and institutional change are made consistent with future as well as present needs*” (Moles and Kelly, 2000). In other words, (WCED, 1987, 8) it’s defined as “*development which meets the needs of the present without comprising the ability of future generations to meet their own needs*”. The Commission not only observed that environmental problems need to be addressed, but also socials problem, such as inequity, property, non-prosperity and the violation of human rights, that are related to explosive population growth and the enormous expansion of environmental harms caused by human activities. According to the Commission, solving these problems requires global economic growth whilst respecting ecological constraints (Klunder, 2004). Other studies, (Ding, 2008) defined sustainable development is as a concern of attitudes and judgment to help insure long-term ecological, social and economic growth in society.

While the term of sustainable development is well known and widely used, there is no common understanding and approach for it. The perception of sustainability especially when it comes to what “needs” is regarded as important varies much by different nation and even different people with different points in time, economic, social and cultural backgrounds (Zinkernagel, 2001). The detail of what comprises sustainable development is very context – specific and the same condition and practice cannot apply everywhere. Therefore, sustainability has its diverse implications in every corner of the world and in every sector of a society (Bell and Morse, 2003).

For construction sector, the Dutch Ministry of Housing, Spatial Planning and the Environment (1990) explains sustainable as directed towards the reduction of the environmental and health impacts consequent to construction, buildings and the built environment. Such construction processes would bring environmental responsibility, social awareness, and economic profitability objectives to the fore in built environment related projects (Langston and Ding, 2001).

There are various definitions of sustainable housing; The European Union defined sustainable housing in the following perspective: construction (e.g. Quality of construction), social and economic factors (e.g. Affordability and psychological impacts) and eco-efficiency (e.g. Efficient use of non-renewable resources) (VROM, 2005). Previously, IHBC (1998) definitions present the general factor of a sustainable housing practice that is applicable under various circumstances, depending on the conditions where it’s implemented (Larasati, 2006). Basically, all these definitions were carry out the idea of Principle 15 of the Declaration of the United Nations Conference on The Human Environment: *“Planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all”* (UNEP, 1972).

A sustainable house is cost-efficient over time, comfortable, cheap to maintain and complements our unique environment (Queensland Government, 2004). “Sustainable Housing” is a new concept in developing countries and unearthing projects covering all aspects of sustainability proved to be difficult (Ebsen, 2000). For housing that make up a great proportion of building, sustainable housing could be defined as housing practices, which strive for integral quality (including economic, social, and environmental performance) in a broad way (John, Croome & Jeronimidis, 2005). The focus on sustainable housing implies a perspective of flows (Klunder, 2004). From this viewpoint, a sustainable

housing is characterized by the minimization of the environmental impacts of material use, energy consumption and water consumption during the whole service life of the building.

2.0 PROBLEM STATEMENT

Malaysia is a developing country heading towards industrialization. The growths of industries bid rapid housing expansion due to the high demand from the customer. A good housing area has to fulfill the health aspect from the building, drainage, clean water supply, domestic waste management and suitable ventilation. The quality of housing and its social, economic and environmental performance is critically important to sustainable development. However, the lacks of practices of project success factors in housing development activities may often bring about water, air and land pollutions thus affecting the natural environment, health and quality of life. These issues are often raised today as problems of uncontrolled development of housing growth as concern for the environment is not considered. With this concern in mind, housing and other social services become priority in today's development programmes which aimed at improving the quality of life and contributing towards the formation of a caring society. However, the issue of sustainable housing are still new and not that familiar in our country. With referring back the house being built in the past decade, those houses were not meeting the essential criteria of sustainability and unfortunately, there are little to none; in depth studies for this matter. Although the homes that create may look good and be cheap to build, they are poor value if they weather poorly, have high energy and other running costs, are expensive to maintain and cannot adapt to changes in use. According to Maylor (1999) those organizations that are most resourceful in seeking out best practices and making those aspects work for them will be the most successful. Although project management has proved its success in many construction projects, there is however some problems associated with the manner in which the system has been selected and/or implemented (Noum S. et al., 2004). Here, critical factors of successful project management were establish to develop a new area of managing sustainable housing for further studies of this research to ensure its potential for future sustainability.

2.1 RESEARCH QUESTIONS

Based on the problems stated above, two main questions are formed as below:

- 1) What are the critical factors that are required for the successful implementation of sustainable housing practices?

- 2) What are the critical factors project management best practices in sustainable housing development?

2.2 OBJECTIVES

There are two objectives for this paper:

- 1) To identify factor that are required for the successful implementation of sustainable housing practice.
- 2) To establish the success factors that determines the best practices for project management in sustainable housing.
- 3) To establish guideline for project management best practices for sustainable housing.

3.0 FACTORS EFFECTING PROJECT SUCCESS

Nowadays, companies are increasingly using projects in their daily work to achieve company goals. The only way organizations can be driven to achieve excellence is by keeping an eye on competition and world best practice in all aspects of the business (Bendell et. all, 1998). Recently more and more organizations are recognizing that translating corporate strategies into actions requires project management. Consequently, it is vital that projects are successful (Baccarini, 2003). Critical success factors are important influences that contribute to project success. So, critical success factors are the set of circumstances, facts or influences which contribute to the project outcomes.

According to Mobey and Parker (2002), to increase the chances of a project succeeding it is necessary for the organisation to have an understanding of what are the success factors, to systematically and quantitatively assess these factors, anticipating possible causes and effects, and then choose appropriate methods of dealing with them. Once identified, the success of the project can be achieved.

Generally, the success of a construction project depends on a number of factors, such as project complexity, contractual arrangements, and relationships between project participants, the competency of project managers, and the abilities of key project members (Chua et al., 1999). Bayliss, (2002) in his report said that successful project delivery requires the concerted effort of the project team to carry out the various project activities, but it is the project manager who, at the center of the project network, is responsible for orchestrating the whole construction process. Possessing the core project management competence would help

to define the ability of project managers to deliver good performance towards the attainment of project success.

The search for factors that influence project success has been growing interest over the past decade. Among researchers that have tried to a certain extent to identify success factors for project management are Pinto and Slevin (1987,1989), Cooke-Davis (2002), Muller and Turner (2003), Belassi and Tukel (1996) and etc. Success factors are those input to the project management system that lead directly or indirectly to the success of the project or business. Belassi and Tukel, 1996, categorized success factors into four main group. These are factors relating to the project, project managers, organization, and external environment. Others researcher, Chan et al., 2002 identify a set of project success factors; project team commitment, contractor's competencies, risk and liability assessment, client's competencies, end-users needs and constraints imposed by end user.

As referred to the ten critical success factors developed by Pinto and Slevin (1986), Pinto and Mantel (1990) suggest that "these critical success factors were found to be generalisable to a wide variety of project types and organizations". Their model is one of the most widely quoted lists of critical success factors (Muller and Turner, 2007). However a single set of project success factors may not be suitable for all industries (Lim et al, 1999; Hartman et al, 1996). Liu and Walker 1998 suggest that as industries operate differently, "a set of critical success factors may not be transferable from one project to another project...only generic areas can be identified and used as broad guidelines."

A comprehensive review of the literature research on success factors of project management was conducted. Table 1 gives lists of the critical success factors developed in the various literatures. Several researchers have identified the factors that significantly determine project management success. Based on the frequency analysis, the critical success factors are prioritised as shown in Table 2.

Table 1. Summary of literature reviews from various author's for project success

Critical Success Factors	Author's							
	Pinto & Slevin (1987,89)	Belassi & Tukel (1996)	Cooke-Davies (2002)	Baccarini (1999, 2003)	Andersen et al., (2006)	Hyvari (2006)	Turner & Muller (2005,07)	Khang & Moe (2008)
Project Understanding	√	√		√	√			√
Top Management Support	√	√				√	√	√
Information/Communication	√	√			√	√		
Client Involvement	√	√			√	√		√
Competent Project Team	√	√	√	√	√	√	√	√
Authority of the Project Manager/Leader	√	√		√		√	√	√
Realistic Cost and Time Estimates	√		√	√	√			
Adequate Project Control	√				√			
Problem Solving Abilities	√					√		
Risk Management	√		√	√				
Adequate Resources		√		√		√		√
Planning/Controlling	√						√	√
Monitor performance and feedback			√			√	√	
Project mission /common goal	√		√	√	√	√		
Project Ownership			√				√	√

Remark: "√" critical success factors that is determined by the authors either on a conceptual or empirical basis.

Table 2: Prioritisation of CSFs

Sr. No.	Critical Success Factors	Frequency of Occurrence	Prioritised Rank
1	Competent Project Team	8	1
2	Authority of the Project Manager/Leader	6	2
3	Project Understanding	5	3
4	Top Management Support	5	3

5	Client Involvement	5	3
6	Project mission /common goal	5	3
7	Adequate Resources	4	4
8	Realistic Cost and Time Estimates	4	4
9	Information/Communication	4	4
10	Project Ownership	3	5
11	Monitor performance and feedback	3	5
12	Planning/Controlling	3	5
13	Risk Management	3	5
14	Adequate Project Control	2	6
15	Problem Solving Abilities	2	6

The frequency analysis in Tables 1 and 2 revealed that there are only one critical success factors in all frameworks in common which is competent project team. The analysis also showed that authority of the project manager/leader is prioritised in rank 2. The analysis further revealed that 5 out of the 8 frameworks have four critical success factors in common: Project Understanding, Top Management Support, Client Involvement and Project Mission/common goal. The Adequate Resources, Realistic Cost and Time Estimates and information/Communication success factors have their presence in forth frameworks respectively.

The other critical success factors (namely, Project ownership, Monitor performance and feedback, Planning/Controlling and Risk Management) are presented in very few frameworks (Table 1 and 2). Meanwhile, the other two factors were not commonly found in the literature which is adequate project control and problem solving abilities.

4.0 FACTORS OF PROJECT SUCCESS FOR SUSTAINABLE HOUSING

The subject of project management is vast and numerous authors continuously add to the body of literature on the subject. According to the Project Management Institute (2004), the discipline of project management can be defined as follows:

Project management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction.

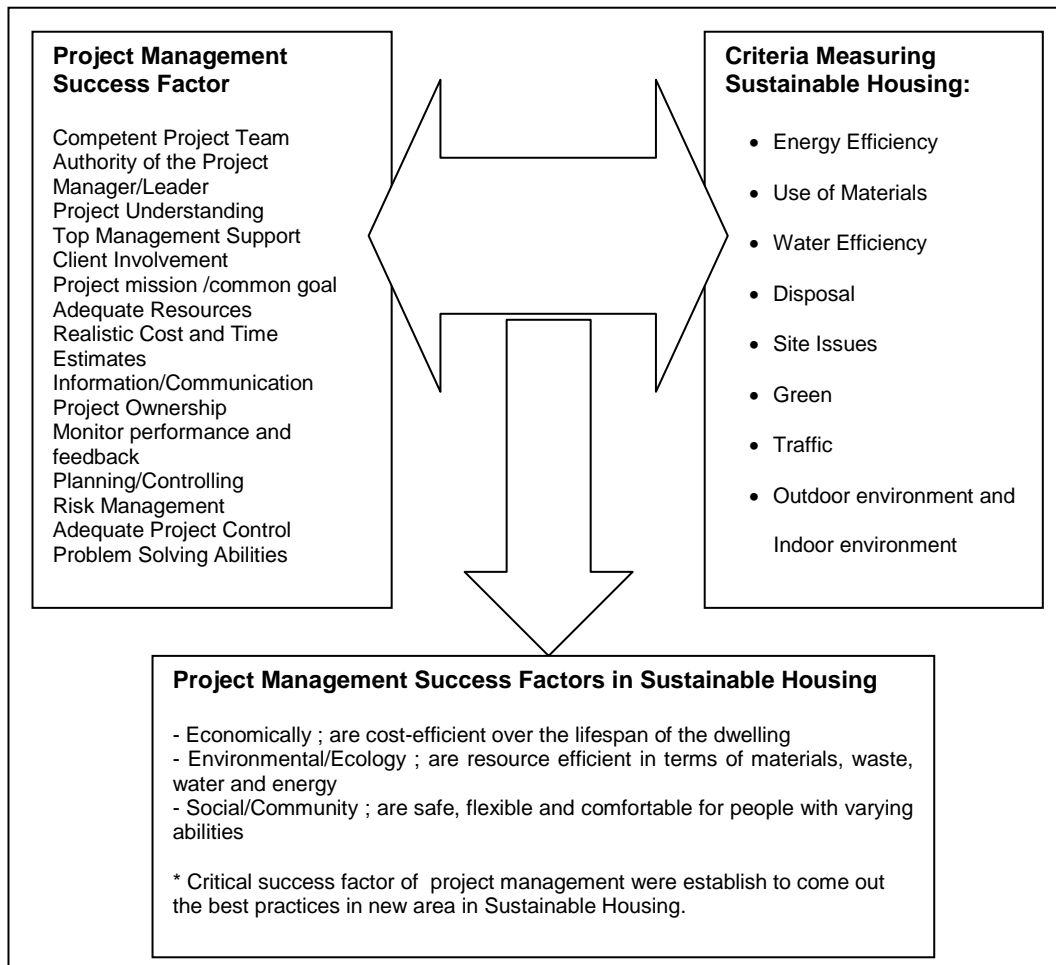
Project management best practices may be described as optimum way of performing work to achieve high performance (Ramabadron et al., 1997). According to Dey (2002), current project management practices of organizations in the industry sector do not always ensure success. The main problems with projects planning and implementation have been cost and time overruns and quality non-achievement. Dey (2002) stated that the main contributing factors are:

- Expansion of the scope and subsequent quality increases of input resources;
- Engineering and design changes;
- Underestimation and incorrect estimation and
- Unforeseen inflation
- Project size and complexity and etc.

Dey, (2002) illustrates projects management growing popularity has stimulated interest in how companies compare in their application of project management process, tools and techniques. Successful project management can contribute towards project success but is unlikely to be able to prevent project failure (de Wit, 1988).

The various variables affecting the success factors are identified in the previous section. There are Project Understanding, Top Management, Support Communication, Client Involvement, Competent Project Team, Authority of Top Level, Realistic Cost and Time Estimates, Adequate Project Control, Problem Solving Abilities, Risk Management, Adequate Resources, Planning/Controlling, Monitor performance and feedback, Project mission /Common goal, and Project Ownership. Furthermore, a new conceptual framework that includes the indentified variables of project success is shown in Fig. 1. Its show that variables project success can influence a variable of criteria measuring sustainable housing.

Figure 1: Framework of Project Management Success Factors in Sustainable Housing.



An extensive literature survey on sustainable housing also has been carried out to select criteria measurement frameworks for this study. The relevant literature has revealed that different researchers have adopted similar sustainability criteria's framework that consider on three basic themes of the sustainable construction; social, environmental, and economic. Below, there are a few literatures findings in term of criteria of measuring sustainable housing:

1. Winston (2007) have carried out some important characteristics of sustainable housing include: sustainable land-use planning; resisting scattered settlements; housing close to employment and public transport; higher residential densities; sustainable construction; high standards of energy efficiency in use of dwellings; housing availability, affordability and quality; access to green space, and a high quality residential environment. Many sustainable building indicator sets are derived from conceptual models (Winston and Pareja, 2008).

2. Blaauw (1997), the following environmental theme are derived from a workbook for sustainable building and housing: Energy, Use of Materials, Water, Disposal, Site, Green, Traffic, Outdoor environment and Indoor environment.
3. Building Environmental Science & Technology (B.E.S.T), formulated residential green building guidelines: Emphasize the reduce, recycle, re-use, renewable; use energy, water and resource efficiently; healthy indoor air quality; building has affordable community; development creates a sense of well-being; the home remains reasonably affordable and cost effective.
4. (Bennett and James, 1999) Effective sustainability measurement should consider the complete triple bottom line of economic, environmental, and societal performance which is:

a) Social Sustainability -

- Healthy internal environment
- Safety (personal, household and environmental)
- Provision of social amenity
- Provision of recreation amenity
- Accessibility to jobs and amenities

b) Economic Sustainability -

- Cost efficient over time
- Adaptability with min. cost
- Affordability
- Job creations and local economy

c) Environmental Sustainability -

- Energy efficiency
- Water efficiency/Conservation
- Reduction of greenhouse gas emissions
- Waste management / recycling
- Material efficiency
- Pollution prevention– noise, water, air
- Optimization & conservation of land
- Protect and enhance biodiversity
- Reduction of car dependency

5. Green Building Manual from the US Department of Energy (DOE) & Public Technology, Inc. (PTI) include the following points:

- Site Issues: selection of building sites, landscaping, watershed, site materials and equipment
- Building Design: building systems (heating, ventilating, air-conditioning, electrical and plumbing systems) and indoor environmental quality
- Construction Process
- Operations & Maintenance
- Economics & Environment: energy and water efficiency, waste reduction, construction costs, building maintenance & management savings.

For the purpose of this research, eight aspects of criteria sustainability that can be used to analyze sustainable housing , were derived from the six environmental themes that are distinguished The National Measures for Sustainable Building (Hendriks, 2001):

- Energy: reducing the demand for energy, promoting the use of sustainable energy resources and using energy efficiently
- Materials: more efficient use of materials, reducing waste and removing it responsibly
- Water: reducing water usage, preventing land drying up, and protecting water quality
- Indoor Environment: improving air quality, improving thermal comfort, and reducing noise levels.
- Surrounding Environment: supporting bio-diversity, strengthening the perception of the environment (including maintaining old townscapes) and reducing nuisance (noise, wind, odor)
- Miscellaneous: improving the flexibility of the home with regard to accommodating new functions and improving safety

It is expected that study of project management best practices in the extent of project success could lead toward meeting criteria of sustainable housing. This approach in sustainable housing area will provide much needed information to local authorities to take more effective control of housing issues.

5.0 CONCLUSION

The implementation of success factors for project management in sustainable housing is important in other to ensure project success. Apparently, the sustainable housing is one of

the major contributors to the development of any country. Unfortunately, in our country Malaysia, the issue of sustainable housing development is still new and not yet the proactive action had been taken to develop the housing sector in sustainable way. Thus, this research is proposed to identify success factors for project management in sustainable housing area. At the end of this paper, a new area of managing sustainable housing for future direction of this research will identified. A list of critical success factors from various authors for project management success for sustainable housing development in Malaysia was established. Further work is needed to explore in more detail which factors are important and to understand how the factors interact with each other in sustainable housing area.

6.0 REFERENCES

- Andersen, E.S., Jessen, S.A. (2000), "Project evaluation scheme", *Project Management*, Vol. 6 No.1, pp.61-9.
- Baccarini D. (2003), *Critical Success Factors for Projects*. Faculty of The Built Environment, Art and Design Curtin University of Technology, Australia.
- Belassi W, Tukul OI (1996), A new framework for determining critical success/failure factors in projects. *International Journal of Project Management*. 14(3): 141-151.
- Bell, S and Morse, S (2003), *Measuring Sustainability: Learning from Doing*. Earthscan: London, UK.
- Bendell, T., Boulter, L. and Kelly, J. (1998), *Benchmarking for Competitive Advantage*, Pitman, London.
- Bennett M., James P. (1999). *Sustainable Measures: Evaluation and Reporting of Environmental and Social Performance*. Greenleaf, Sheffield, UK.
- Blaauw, drs. F.J. (1997), *Werkboek Duurzaam Bouwen en Wonen*. Alphen aan de Rijn: Samsam HD Tjeenk Willink bv.
- Building Environmental Science & Technology (B.E.S.T.). 'Green Building' – <http://www.energybuilder.com/greenbld.htm#top>
- Chan, A.P.C., Scott, D. and Lam, E.W.M. (2002) Framework of Success Criteria for Design/Build Projects. *Journal of Management in Engineering* Vol. 18 (3), pp. 122-128.
- Choguill, C. L. (2007), The search for policies to support sustainable housing. *Habitat International*, pp 143-149.
- Chua DKH, Kog YC, Loh PK (1999), "Critical success factors for different project objectives." *Journal of Construction Engineering and Management*, pp. 142-150

- Cooke-Davis, T. (2002). 'The "real" success factors on projects', *International Journal of Management*, 20 (3), pp. 185-190
- de Wit, (1988), "Measurement of project management success", *International Journal of Project Management*, Vol.6 (3), pp. 164-170.
- Dey, P.K. (2002), "Benchmarking project management practices of Caribbean organizations using analytic hierarchy process", *Benchmarking: An International Journal*, Vol.9 No.3, pp. 326-356.
- Ding, G.K.C (2008), Sustainable Construction-The role of environmental assessment tools. *Journal of environmental management*, 86, 451-464.
- Dutch Ministry of Housing, Spatial Planning and The Environment (1990), *Nationaal milieubeleidsplan-plus; notitie instrumentarium + duurzaam bouwen*, Sdu. Den Haag.
- Ebsen C., Ramboll B. (2000). International Review Of Sustainable Low-Cost Housing Projects Proceedings: Strategies for a Sustainable Built Environment, Pretoria, 23-25 August 2000
- Green Building Manual from the US Department of Energy (DOE) & Public Technology, Inc. (PTI)
- Hartman F, Ashrafi R. (1996). Failed successes and failures. PMI Annual Seminar/Symposium, Boston, PD 35, 1-5,
- Hendriks, (2001). Sustainable Construction. Boxtel, The Netherlands : AEnas technical publishers.
- John. G., Croome D.C and Jeronimidis G. (2005), Sustainable building solutions: a review of lessons from the natural world. *Building and Environment*, 40(3): 317-326.
- Khang D.B and Moe T.L, (2008). Success Criteria and Factors for International Development Projects: A Life Cycle-based Framework, *Project Management Journal*, Vol. 39, No. 1, pp. 72-84.
- Klunder G. (2004), The Search for The Most Eco-efficient Strategies for Sustainable Construction; Dutch lessons, *Journal of Housing and The Built Environment* pp 111-126.
- Langston, C. A. & Ding, G. K. C. (2001) (Eds.), Sustainable practices in the built environment, Langston, Butterworth-Heinemann, Oxford.
- Larasati D. (2006).Towards An Integral Approach Of Sustainable Housing In Indonesia With An Analysis Of Current Practices In Java. Delft University Of Technology - The Netherlands
- Lim, C.S. and Mohamed, M.Z (1999), "Criteria of project success: an exploratory re-examination", *International Journal of Project Management*, Vol. 17 No. 4, pp. 243-8.
- Liu, A.M.M. and Walker A. (1998), Evaluation of project outcomes. *Construction Management and Economics*; Vol. 16 No.2, pp. 209-219.

- Malaysian Government (1999), Seventh Malaysia Plan, *Percetakan Nasional Berhad*, Kuala Lumpur.
- Malaysian Government (2001), Eight Malaysia Plan, *Percetakan Nasional Berhad*, Kuala Lumpur
- Mylor H. (1999), *Project Management*, 2nd ed. London: Financial Times.
- Meldon, J. (1998), Learning Sustainability by Doing – *Regional Integration by the Social Partners, European Commission and the Department of Environment and Local Government*, Dublin.
- Mobey A, Parker D (2002). Risk evaluation and its importance to project implementation. *Int. J. Productivity and Performance Manage.*, 51(4): 202 – 208.
- Moles R. Kelly R., (2000), Towards Sustainable Development in The Mid-West Region of Ireland. *Environmental Management and Health*, Vol. 11 No.5 pp 422-432.
- Muller R, Turner JR (2003). On the nature of the project as a temporary organization. *Int. J. Project Manage*, 21(1): 1
- Muller R, Turner JR (2005). The project manager's leadership style as a success factor on projects: A literature review. *Project Management Journal*,36(2): 49 - 61
- Muller R., Turner R. (2007), "The influence of project managers on project success criteria and project success by type of project." *European Management Journal* Vol. 25 (4), pp. 298-307
- OECD. (1998) *Towards Sustainable Development - Environmental Indicators*. OECD Code 971998031P1.
- Olejado, E.O. (2003), Implication of Designs and Material Specifications on Housing Development. *Proceedings: Housing Development in Nigeria - Which Way Forward*, Lagos State of Nigeria. 1st & 2nd April, 2003.
- Pinto JK, Slevin DP (1989). Critical success factors in R & D projects. *Research Technology Management*, 32(1): 31 – 36
- Pinto JK. (1986). Project Implementation: A determination of its critical success factors, moderators, and their relative importance across the project life cycle (Doctorate dissertation, University of Pittsburgh, 1986).
- Pinto, J.K., Slevin, D.P. (1987), "Critical factors in successful project implementation", *IEEE Transactions on Engineering Management*, Vol. 34 No.1, pp.22-7.
- Pinto, J.K., Slevin, D.P. (1988), "Project success: definitions and measurement techniques", *Project Management Journal*, Vol. 19 No.1, pp.67-71.
- PMI (2004) Guide to the project management body of knowledge. (3rd edn.). Project
- Ramabadron, R., Dean, J.W. Jr and Evans, J.R (1997) Benchmarking and project management: A review and organizational model, *Benchmarking for Quality Management of Technology*, vol. 4, pp. 47-58.

- Redclift, M. (1987), *Sustainable Development: Exploring the Contradictions*, Routledge, London.
- VROM (Ministry of Housing, Spatial Planning, and the Environment); The Netherlands. 2005. *Sustainable Refurbishment of High-Rise Residential Buildings and Restructuring of Surrounding Areas in Europe*. Report for European Housing Ministers' Conference held in Prague, Czech Republic, 14 -15 March 2005.
- Winston N., Pareja M., (2008). *Sustainable Housing* in the Urban Context: International Sustainable Development Indicator Sets and *Housing*, Social Indicators Research; Vol. 87 Issue 2, p211-221
- World Commission on Environment and Development (1987), *Our Common Future*, Oxford University Press, Oxford.
- Zinkernagel.R (2001), Indicators to measure sustainable development in urban residential areas. *Thesis for the fulfillment of the Master of Science in Environmental Management and Policy*. Lund University : Lund, Sweden.