

## **Local authorities planning For Urban Sustainability - Towards implementing Energy Conservation policies in development plan.**

**HO Chin Siong**

Faculty of Built Environment, Universiti Teknologi Malaysia

### **ABSTRACT**

This study aims to examine lessons learned from local authorities in United Kingdom on how policies on energy conservation can be incorporated in their development plan. Two` cases of different levels of urban development and population size are chosen as case studies to understand the feasibilities of implementation of energy conservation policies in development plan. Since urban planning in Malaysia is based on British model of development plan and development control system, this study may provide directions and guidance in the implementation of energy conservation in a local planning authority area.

### **Keywords**

Local authorities, development plans, energy conservation.

### **1.0 Introduction**

Planning for sustainability in the respect of energy conservation cannot be effective as a top down policy. The role of local authorities is seen crucial in planning for sustainability. This is because they operate as front line, local and regional authorities have particularly important parts through exercise of statutory function as local planning authorities. The implementation needs a bottom up mechanism from support of the local authorities to ensure strategic plans; development control and enforcement are in coherent with the sustainability objectives.

Presently, many of the local authorities in Malaysia particularly the smaller ones, function more of provider and regulators of urban services. There are still scopes of for improvement where local authorities can play more important roles as facilitator of local growth and as well as urban manager for the planning of sustainability in terms of energy conservation. In recent years, many initiatives on urban sustainability related to energy conservation were implemented by the Ministry of Housing and Local Government, Malaysia.. Federal Town and Country Planning Department has outlined urban indicators to measure sustainability of each local authority in Malaysia. A web based planning tool known as MURNINET (Malaysia Urban Indicator) is also launched to assist local authority to assess urban sustainability.

In the case of United Kingdom, a wider scope and roles for local authorities cover the following functions (LGMA 1992)

- a) Spatial planning
- b) Economic development
- c) Infrastructure development
- d) Control of industrial pollution
- e) Waste reduction and disposal
- f) Transport
- g) Tourism
- h) Public information, education and training
- I) Environmental auditing and training**

These wide ranging activities undertaken by local authorities will help to ensure a more effective sustainable development at the local level. In addition to the above, the other new European Commission (EC) proposals of importance to local government related to sustainability and energy conservation covers the following:

- a) Directive on packaging and other waste matters
- b) Green paper on transport and environment –sustainable mobility
- c) Eco auditing
- d) Carbon tax
- e) Energy efficiency**

In this paper, the author aims to examine how energy conservation principles can be incorporated at strategic planning level. The purpose of this paper is to study local authority's experiences and how energy conservation policies are incorporated in the development plan (Unitary Development Plan (UDPs)). The case study of UK is chosen because urban planning in Malaysia is based on British model of development plan and development control system. It is hope that this study may provides directions and guidance in the implementation of energy conservation in a local planning authority area

## **2.0 Current Energy Policy in United Kingdom**

When land use planning system was introduced through 1947 Town and Country Planning Act, Electricity generation in UK is largely centralized and National Grid was established. Energy supply and transmission were not within the power of local or even county planning authority. With introduction of Non-Fossil Fuel obligation in the 1990s, electricity generation started to be undertaken in smaller units. With these changes, energy generation units are small enough and not to be under the Department of Trade and Industry Control. These responsibilities are then transferred to the Local Planning authorities. Local Planning Authorities were often unprepared with no history of involvement in energy issues when there are applications of wind farms or other forms of renewal energy facilities.

In the Energy White paper – Energy sources for power generation (1998); it stipulated that the government aims for energy, which is to ensure secure, diverse and sustainable supplies of energy at

competitive prices. This is within a strong policy context, which is flexible enough to respond to changing national needs and international obligations for cost effective climate change programme.

National energy policy stresses the importance to stimulate the exploitation and development of renewable energy sources wherever they have a prospect of being economically attractive and environmentally acceptable. In this respect, renewable energy sources is defined as sources that includes the wind, water combustion (including anaerobic digestion and landfill gas production), active solar systems, energy crops and wood fuel (or biomass), and water (including hydro-power, wave and tidal generation)

Government has priority for a renewable energy sources to provide 10% electricity supplies by 2010 or sooner (which entails providing 5% of national electricity needs by 2003 compared with the current future of 2% in 1999). As a long-term strategy, renewal-generating power will also serve heating, transportation, industry and commerce in near future. Renewal energy is not only important as jobs creation sector and serves developing future industries as well as play pivotal roles in making UK to meet its environmental target of reducing greenhouse gases by 12.5% by 2008-2012 and also reducing CO<sub>2</sub> emission by 20% by year 2010 (Government Consultation Paper, March 1999). In order to make renewable energy more competitive in the energy market, green electricity options and promotion of environmental credit voucher to consumers of energy will be used.

### **3.0 Local planning authority's experiences**

After 1992, almost every planning policy related document makes references to sustainable development. However, findings (Hales 2000) based on 79 local authorities showed that many local authorities are struggling to translate rhetoric of sustainable development into practice. It was found that about 60%-70% of the local authorities have supportive document such as State Environmental Report (60%), Nature and biodiversity strategies report (70%) and Local Environmental Agency Plans (60%) in the preparation of development plan. However, only limited (10%-30%) of the local authorities used these reports as inputs into the development plans.

Earlier studies (Owens S E, 1990) based on survey on 34 strategic planning authorities, 43 district planning authorities, 2 national park planning boards and 6 London boroughs and metropolitan authorities in 1990 on the extent of energy considerations are accounted in land use planning showed an overall growing awareness among local planning authorities of the significance of energy efficiency as compared with the early 1980s (Owens 1986). Her specific findings based on survey on county council showed that

- a) About 35% of the county planning authorities make some specific reference to energy efficiency in the structure plan especially in the policy or overall goal for evaluation. 2 county councils i.e. Cornwall County Council (1989) and Nottinghamshire County Planning Department (1989) have detailed consideration to energy issue. It is most common to see policies cited are concerned with transport or location policies.

- b) The other related concern is the environmental impact such as global warming. County planning council such as Devon, Humberside and Warwickshire indicated a growing awareness politically of the need to conserve energy. County council such as Oxfordshire and Suffolk expected energy efficiency to be element of environmental audits and action plans
- c) There is about 20% of local authorities in counties suggest that other such as housing, conservation, congestions and settlement pattern were more important than energy.
- d) 44% expressed reservations about the legitimacy of energy efficiency as a strategic planning issue. Many cited the land use format of structure plan and the difficulties of justifying energy related policies in the absence of relevant legislation or guidance. As a result, such policies were perceived to be difficult to formulate and to implement.

On the other hands, the district planning authorities that are responsible for development control and preparation of local plans/unitary development plans has made less progress toward integration of energy consideration than the counties. Findings on the district planning authorities are

- a) Only 18% respondents make reference to energy efficiency in their plans or informal policies. Energy efficiency has rarely been an issue in development control.
- b) Only about 16% respondents raised at some point either by planning authorities or by environmental groups.
- c) In terms of constraints perceived by the district, 47% of the respondents of the non-strategic planning authorities felt that energy efficiency was not a land use planning issue.
- d) 16% cited that the lack of government advice on statutory requirement to take energy into account. Other factors mentioned are lack of time, resources, expertise and information.
- e) More than 1/3 felt that legislation or government guidance is prerequisites for giving attention to energy efficiency at local or unitary development plan.
- f) 45% of them think it would become more important consideration.

Based on the survey findings of Hales R (2000) and Owens S E (1990), several lessons can be drawn. Hales's study which focused on sustainable development in general showed that the production of supportive texts within each local authority to specifically handle sustainable development agenda was still very limited in the format of background paper, discussion document and vision statement. The study of Owen S E (1990) focuses more on energy conservation showed a fairly strong willingness to act on this issue to integrate energy in forward planning and development control but lack of government advice on statutory requirement.

### **3.0 Empirical Studies – integrating aspect of energy in development plans (Unitary Development Plan)**

In United Kingdom, with the proposed development plan system in 1990, Unitary Development Plan (UDP) will replace any existing development plans (structure or local plans) covering the area in local planning authority. The UDP comprised of a written statement and an overall proposals map together with detailed inset maps for individual settlements or part of a settlement and for other major development sites (for e.g. technology park or large industrial estate). It provides a policy framework

for positive forward planning, proposals and allocations for future developments and the basis on which consistent development controls can be made. Proposals must be capable of implementation within the period and UDP will be subject to continuous monitoring and periodic review, the first of which may take place 5 years into plan period.

Written statement consists of two (2) main elements, namely:

**(i) Part 1** – Brief statement of strategic policies for the area. It is a short strategic overview with limited supporting text. These policies provide context and framework for detailed policies and proposal contained in Part 2

**(ii) Part 2** – a more extensive and detailed policies and proposal. It covers 15 main topic areas of

- Environment
- Housing
- Employment
- Transport
- Retailing
- Tourism
- Leisure
- Sport and recreation
- Social and Community facilities
- Mineral
- Waste
- Unstable land
- **Energy and Utilities**
- Regeneration
- Implementation and Resources

Under Section 54A of Town and Country planning Act 1990 (as amended) makes the Development Plan central to the development control decision-making process. It requires that “*where, in making any determination under Planning Acts, regard is to be made to the development plan, the determination shall be made in accordance with the plan unless material consideration indicate otherwise*”. Additional relevant primary legislation includes the Planning (Listed Buildings and Conservation Areas) Act 1990 and Planning (Hazardous substances) Act 1990.

In the two (2) study cases of Wales, apart from the National Planning policy guidance on the content and provisions of UDPs, other statutory provision from Welsh assembly government include the following:

- a) Unitary Development Plan (e.g. Wales)
- b) Planning Policy Region (Wales)

- c) Technical Advisory Notes (TAN)
- d) Mineral Planning Policy region (e.g. Wales)
- e) Minerals Technical advice Notes (MTANs)
- f) Regional Government Orders, Regulations and Circular (Welsh Office or Welsh assembly Government Orders)

It consists of strategic and local planning policies for the area up to the targeted year (e.g. 2016). It contains policies and proposal for the development of the land in the County Borough and in particular includes land use policies and proposal for

- Transport and highway facilities and other infrastructure requirement
- Housing
- Conservation of natural and built environment
- Economic development
- Tourism, sport and recreation.
- **Energy generation, including renewal energy**
- Mineral working and protection of mineral reserves
- Waste treatment and disposal, land reclamation, reuse and hazards.

Two (2) case studies of different levels of hierarchy in Wales are used in the analysis are Cardiff Council and Bridgend County Borough council. These two study cases are chosen because they are the most recent published UDPs in Wales and different population, settlement size and locality and different rural-urban composition.

## 4.1 Cardiff Council

### a) Background,

Cardiff Unitary Development Plan (to 2016) was approved in 2003 set out council policies and proposals for the development and conservation of land with a population of 305,000 (2001). Cardiff position as capital city, the seat of Welsh Assembly Government and regional centre for southeast Wales in terms of financial, professional, business, shopping and leisure services. It aims at maintaining Cardiff's development as an attractive European capital and a first class city in which to live, work and enjoy leisure time.

### b) Relevance General Policies (Part 1) related to energy conservation.

In the Unitary Development Plan of Cardiff, there is no specific provision of general policies on energy but more focus on broader sustainable development principles. One of the 12 general planning objectives mentioned in the UDP related to energy conservation is Objective 10 i.e. safeguard and manage the use of natural resources including **energy**, water, and minimize waste. In addition, other policies contained in Part 1 related to energy saving principles can be found in Policy 1A, 1B, 1 K and

1P. (Refer Table 1: General policies of Unitary Development Plan of Cardiff (Part 1) related to energy conservation)

Table 1: General policies of Unitary Development Plan of Cardiff (Part 1) related to energy conservation

Policy	Aspect	Details
1 A	General Principles for location of development	<ul style="list-style-type: none"> <li>- To make best use of redundant previously developed land &amp; encourage Brownfield development</li> <li>- To minimize travel demand and dependence on the car, facilitate walking and cycling and the use of public transport</li> </ul>
1B	Achieving good design	Planning obligations will be sought to secure other requirements necessary to make development acceptable. (Inclusive energy efficiency)
1K	Movement and Transport	<ul style="list-style-type: none"> <li>- To minimize travel demand and dependence on the car,</li> <li>- Facilitate walking and cycling and the use of public transport</li> </ul> Support the movement of freight by rail or water.
1P	Waste management	- Supporting waste minimization and the provision of facilities that use recycled or composted products.

Source: adapted Cardiff UDPs (2003)

### c) Energy Issues and Detailed Policies (Part 2) related to energy saving cities

Part 2 Unitary Development Plan of Cardiff elaborates the general policies outlined in Part 1.

#### i) Policy 1 A – General Principles for location of development

As in Policy 2.A .3 the Brownfield development policies encourage mixed use and higher density development in appropriate locations, for example, where there is good public transport accessibility.

#### c) Policy 1.B - Achieving Good Design

The policy of achieving a good design are based on TAN (W) 12 which advises that a well designed development should have good design attributes such as ease of access, legibility, adaptability, diversity, safety, energy and resource efficiency and local sensitivity in policy 2.B.2

#### d) Policy 1K: Movement and Transport Priorities

Policy 2.K.6 highlights the priority access to be given to cyclists, public transport users and impaired mobility. In addition restriction measures on car use also mentioned in Policy 2.K.8.

#### e) Policy 1P:Waste management

Policy 2.P.2 highlighted the Best Practice Environmental Option (BPEO), Sustainable Waste Management Option (SWMO), Waste Hierarchy, Proximity Principles and Regional Self Sufficiency

as key drivers in the policy shift. Among these principles, Waste hierarchy approach encourages the 3 Rs (reduce, reuse and recycle) and promotes energy recovery.

## 4.2 Bridgend County Borough Council

### a) Background

The UDP covers the whole of County Borough of Bridgend with an area of about 25,500 hectares with population of 131,671 (2001). It is located about 20km from Cardiff and encompassing Ogmere, Garw and Lynn valleys in the north and bordering the Bristol Channel to the south. The biggest settlements are the town of Bridgend and Masteg and seaside resort of Portcawl.

### b) Relevance General policies (Part 1) related to energy conservation

Under the Part One of Unitary Development Plans of County Borough of Bridgend, policies on energy and utilities in two (2) related policies (i.e. Policy 19 and Policy 20) specifically concern with Energy Conservation. (Refer Table 2: General policies of Unitary Development Plan of County Borough of Bridgend (Part 1) related to energy conservation)

Table 2: General policies of Unitary Development Plan of County Borough of Bridgend (Part 1) related to energy conservation.

Policy	Aspect	Details
3	Environment	Reduction travel by private car and vehicle movement Regeneration of the urban environment
7	Transport	Increase in Public transport usage
19	Energy and Utilities	-Exploitation of renewable energy sources
20		All development proposals should take appropriate consideration of energy efficiency and water conservation in their layout, design material and construction.
21	Regeneration	Any development which are likely to put a regeneration at risk will not be permitted

Source: adapted from Bridgend County Borough 2001

Both policies explicitly discussed about energy saving measures and direction such as exploitation of renewal energy and consideration of energy efficiency measures.

This is then elaborated in the Part 2 of the UDP plan where sustainable development concept has already endorsed by most national government as guides and overriding principles towards environmental protection, prudence use of resources and also importance of economic growth, employment and also need for social progress.



Based on the aims and objectives outlined in Part 2 of UDP of Bridgend County Borough, three (3) sectors i.e. Transportation, Energy & Utilities and Regeneration, are relevant to energy saving cities are highlighted in the plan.

### **c) Energy Issues and Detailed Policies (Part 2) related to energy saving cities**

South Wales Strategic Planning Group has identified five (5) key issues in preparing Draft strategic Planning guide to be addressed by the local planning authority

- a. To reduce the need for energy by encouraging **improved efficiency** in its local use
- b. To achieve **self sufficiency in supply of energy** in the short term by supporting the development of new generating capacity while resisting the loss of existing generating capacity which can be sustainable and economically up-graded
- c. To support the NAW in its future efforts to set realistic ‘target needs’ for energy in Wales (in general) and SE Wales (in particular) and those urgent changes needed to current planning guidance.
- d. To support growth in the **local exploitation of renewable** as a component of future sustainable energy strategy for South Wales and
- e. To assist sub region in becoming **net exporter energy** in longer term by encouraging the development of its renewals energy potential subject to the appropriate environmental safeguards being applied to future locations.

Several policies identified related to energy saving cities are in Energy Conservation and specifically in

#### **a) Efficiency Use of Energy**

Development which encourages the more efficient use of energy and or which conserves its supply will be favoured

#### **b) Exploiting Renewable Energy Sources**

Developments for exploitation of renewal energy sources and associated facilities that will not be permitted of it adversely affect the environmental interest or visually impinged upon any conservation area or natural beauty.

#### **c) Detailed Considerations to be assesses in exploiting energy sources**

Detailed proposals for the exploitation of renewable energy sources and their associated facilities that do not conflict with Policy U2(Exploiting Renewable Energy Sources) will be favoured provided that impact on local environment can be reduced.

Bridgend UDP policies emphasized energy efficiency, as it is specific as in Policy U1(Efficiency Use of Energy and Policy), U2(Exploiting Renewable Energy Sources). However, the additional

conditional requirement spelt out in Policy U2 and U3(Detailed considerations to be assessed in exploiting energy sources) for the use of renewal energy with the list of limiting conditions make the potential of the provision of renewable energy by use of wind and solar power to be limited because of its possible visual impact.

## 5 Conclusions

The empirical cases in UK have shown that the local authority strong willingness to act on this issue to integrate energy in forward planning and development control is important beside the statutory requirement. The recent UDPs in UK in all the 2 case studies showed the attempt to incorporate energy conservation policies in the UDPs irrespective the larger county such as Cardiff and the smaller one such as Bridgend.

In the case of Malaysia, although sustainable development concept has been accepted as a national policy in our settlement planning, our current State Structure Plans in Johor, Pahang and Selangor do not show any reference to energy conservation other than utility study on electric supply.

In term of Energy policy in Malaysia, the Ministry of Energy, Communications and Multimedia proposed Five Fuel strategy to replace the Four Fuel /diversification Policy in year 2001 (KTKM 2003). Under the new strategy, the Four Fuel diversification policy which comprises oil, gas, hydro and coal is to include Renewal Energy (RE) as the Fifth Fuel. Biomass has been identified as one of the most promising among all the different sources of RE. In addition to intensify the use of RE, Small Renewable Energy Program (SREP) was also implemented in 2001 to promote the growth of small power generation plants that utilize Renewable energy. This can also facilitates the implementation of grid connected renewable energy. In addition, promotion of Energy efficiency (EE) to encourage efficient utilization of energy particularly in the industrial and commercial sector was one of strategies cited in the Eight Malaysia Plan (2001-2005). However, many of the measures in promoting utilization of energy focused mainly on energy efficient building (PTM 2005) and not at a broader scale (city or regional levels). The implementation of Renewal energy and Energy efficiency measures should also be taken up at the development plan level so that local authorities can ensure approved development has already considered them. Hence it is important for the Federal Town and Country Planning department to work closely with Malaysia Energy Centre, Ministry of Energy, Communications and Multimedia so that the EE and RE policy can be translated into spatial policies.

Land use planning at National, state and regional level has a role in achieving the objectives of energy efficiency in long term. Greater integration between land use, transportation and energy supply (including RE) and conservation is important ingredient towards planning for sustainability. Energy conscious land use planning may not be sufficient for the improvement of urban energy efficiency. It had to be comprehensive encompassing policies related to other sectors such as transport, housing, industry, renewal energy and environment. Land use planning must be set within the context of local, national, and even at international policy frameworks employing the wider range of policy instruments. It needs to consider public and private investment, information, fiscal measures and regulation.

Policies statement in the case of Cardiff and Bridgend also shows that planning sectors such as Environment, Transport, Energy & utility and Regeneration can incorporate the energy efficient city principles in the preparation of development plans.

## References

Anderson Victor, *Energy Efficiency Policies*, Routledge, London (1993)

Batty, Sue, *Politics of Sustainable development - an overview* in Simin Daoudi, Antonia Layard and Sue Batty (edit) *Planning for Sustainable future*, London, Spon. (2001).

Beaumont, J R., Clarke and Wilson AG, *Changing energy parameters and the evolution of urban spatial structure*. Regional science and Urban Economics. Vol .11 pp 287-315 (1981).

Blowers Andrew, *Planning for a sustainable environment - A report by the Town and Country Planning Association*, Earthscan. London (1994)

Bridgend County Borough Council, *Unity Development Plan- Deposit Plan*, Bridgend, Wales. (2001),

Byrne J and Rich D (ed.) *Energy and Cities*, Energy Policy Studies Volume 2, New Jersey. (1985),

*Cardiff Unitary Development Plan (to 2016) Deposited Written Statement*, The development Plan Group, Strategic Planning and Neighbourhood Renewal, Cardiff Council. (October 2003)

City of Cardiff Local Plan (Including Waste Policies) (1996)

David R Cope, Peter Hills and Peter James (edit), *Energy Policy and Land use planning- An international perspective*, Pergamon Press, Exeter. (1984)

De La Barra T, Rickaby PA, Modeling regional energy use; land use transport and energy evaluation model. Environment and Planning B; Planning and Design 9 pp 429-443. (1982)

De La Barra T, Rickaby PA, 'A hierarchical land use transport model for energy evaluation. *Energy and Built environment form*.(Eds) D U Hawkes J Owers, PA Rikaby,J P Steadman. Butterworth, Sevenoaks, Kent. (1987)

Department of Environment (DOE),) *The UK Environment*, HMSO, London. (1992)

Gilbert Gorman and J S Dajani, "Energy, Urban Form and Transportation Policy", Transportation Research 8 (September) 267-275. (1974)

Habitat, *Cities in Globalizing world- Global Report on Human settlement* Earthscan, London. (2001)

Hales Richard, *Land use development planning and the notion of sustainable development exploring constraint and facilitation within the English Planning system*, Journal of Environmental Planning and Management 43(1) 91-121(2000).

Haughton, G and Hunter, C, *Sustainable Cities*, Jessica Kingley Publishers, London(1994).

Jenk, Mike, Burton Elizabeth and Williams K, edit (1996). *The Compact City: A Sustainable Urban Form?* London E & FN Spon

*KTKM, Energy in Malaysia , Ministry of Energy, communications and Multimedia Malaysia. (2003)*

Local Government Management Board (LGMB), *Environmental practice in Local Government*, London. (1992)

Owens Susan, *Land use planning for energy efficiency in Energy, land and Public Policy* Ed JB Cullingworth ( Transactions Publishers, Centre for Energy and Urban Policy Research, University of Delaware, Newark) pp 53-98 (1990)

Owens Susan, *Energy, Environmental sustainability and land use planning. Ed MJ Breheny Sustainable Development and Urban Form*, European research in regional science. (1994)

PTM, *Energy efficient Buildings- A Strategic Resource*, Malaysia Energy Center, Selangor. (2005)

Simin Daoudi and Antonia Layard, *Sustainable development and Planning- an overview in Simin Daoudi, Antonia Layard and Sue Batty (edit) Planning for Sustainable future*, London Spon (2001).

Wakernagel, Mathis and Rees, William, *Our Ecological Footprint*, New Society. (1996)

White R, *Strategic decisions for sustainable urban development in the Third World*, Third World planning Review, 16(2), pp 103-116(1994)