Effects of high population density on the environment

Population density is the average number of people living per square mile/km. Victorian houses A high population density implies that the population is high relative to the size of the country. Countries like Belgium and the Netherlands have a high population density. Large countries, such as Australia and Canada have very low densities. Although this low density is biased by the fact that large areas of Australia and Canada are considered inhospitable places to live, due to desert/Arctic conditions. There is little correlation between population density and economic development. Bangladesh and Japan have similar population densities, both Japan has a much higher real GDP per capita. Most countries have seen a very significant increase in population densities over the last two hundred years. This increase in population density has been consistent with rising standards of living and a better quality of life. However, others are concerned that higher global population density could lead to a strain on resources, leading to food shortages, congestion and loss of the environment. Benefits of a growing population density Economies of scale in national infrastructure. If you have a motorway network/train system that connects different parts of the country, a larger population density will help reduce the average costs of the transport network. Urban areas tend to be more energy efficient. Rural areas have a higher energy composition per capita. For example, in remote areas, people will have to drive a long way to the shops. In heavily populated urban areas, shops and facilities are likely within walking distance. Living in heavily built areas will benefit from your neighbor's heat. However, if you look at the suburbs, the situation is different with higher incomes leading to higher energy consumption without the density of housing near urban areas. Urban areas also make efficient public transport networks more efficient throughout the city. As population density increases, the city is forced almost forced to move from cars to more space-efficient forms of transportation, such as underground rail systems. More intellectual capital. The increased population leads to a greater reach of society will produce entrepreneurs and innovators, who come up with better technology and business that helps improve living standards. The technology has mitigated the negative forecasts of many who feared the increase in population. Malthus predicted in the 19th century, a growing population would lead to food shortages. The population has increased considerably, but areas of high population density have not seen food shortages due to the of the yields of agriculture and the ability to trade food. Technology allows for a higher standard of living with lower population levels. For example, in the 1950s, UK homes often used coal fires to keep warm, leading to smogs and high levels of pollution in cities, however smogs have been cleaned. In theory, there is scope to meet the energy needs of renewable energy, such as solar energy. Source: London's clean air Despite the increase in population, London has seen some improvement in air quality standards in recent decades. Although it should be noted O_3 has been increasing and air quality remains one of the worst recorded in the UK. The increased population creates demand for labor and increased supply. Some fear, an increase in the population (e.g. due to net migration) can lead to unemployment as migrants take jobs from native workers. However, the increase in the population increases the supply of labour and creates a new demand for greater economic growth. Globalisation means that countries are becoming more interdependent and do not need to be self-sufficient. The fear of rising population density is that it requires a country to import food. However, the UK has been a net importer of food for many years, and apart from the blockades of world wars it has seen no food shortages. It makes no sense for any country to be self-sufficient in all goods and services. Greater specialization allows an increase in living standards. Countries with higher population densities are likely to see greater specialisation in industries suitable for urban environments such as London's financial services. Problems increasing population density Pollution. Although we have cleaned the visible smogs. Air quality is often still poor in heavily edodized areas. Increasing the population makes it difficult to reduce pollution and improves air quality. Limit of improvement of agricultural productivity. Malthus massively underestimated the agricultural productivity potential to improve. However, the increased use of fertilizers and pesticides has decreased profitability. Past improvements in agricultural yields are no guarantee, yields will continue to rise. A more turbulent climate, for example, water scarcity could put strain on global food production to meet the demands of the world's rising population. Countries with high population densities are more likely to import food. The overall increase in population is so marked that it is having uncertain impacts from global environments. The increase in the number of people in recent decades is unprecedented. The technology is unable to mitigate the impact on the use of raw materials and pollution. For example, burning fossil fuels is leading to higher levels of CO_2, which could have potential consequences for the world's global environment and climate. Congestion. With higher population densities, see road congestion and transport, unless there are satisfactory solutions in forms of pedestrian areas, good transport and new roads The biggest problem of higher population density is the potential loss of land of 'green belt' that impacts on quality of life. Many people value green spaces as an important factor in quality of life. If we lose all the roads and homes, this reduces the quality of life. Limit to new roads. The increase in population leads to more demand for transport, but with the building rising, there is limited space for the new road. Should we be worried about rising population density? Areas of high population density are often because they are seen as a desirable place to live. People are moving to live and work in London, despite high house prices, air pollution and congestion because there are many desirable amenities. People living in more rural areas may be likely to resist moves to increase population density because they are attracted to a quiet village life. Greater population density has definitely enabled economic and social development. But at the same time, the growth of the planet's global population threatens to aggravate a lot of environmental and economic population, such as over-fishing, increasing pollution, habitat loss and stress on water. Population density in Europe Name Population Density (/km2) Area (km2) Population Malta 1,260 316 397,499 Netherlands 393 41,526 16,932,500 Belgium 337 30,510 11,007,020 United Kingdom 269 243,610 65,542,579 Germany 233 357,021 81,799,600 Liechtenstein 205 160 32,842 Italy 192 301,230 59,715,625 Switzerland 207 41,290 7,301,994 Luxembourg 173 2,586 512,000 Andorra 146 468 68,403 Moldova 131 33,843 4,434,547 Czech Republic 130 78,866 10,674,947 Denmark 125 43,094 5,368,854 Poland 124 312,685 38,625,478 Albania 123 28,748 3,544,841 Cyprus 117 9,248 803,147 Slovakia 111 48,845 5,422,366 France 111 547,030 63,601,002 Portugal 109 92,391 10,617,999 Armenia 108 29,743 3,262,200 Hungary 108 93,030 10,075,034 Serbia 97 88,361 7,498,001 Austria 97 83,858 8,169,929 Slovenia 95 20,273 2,048,847 Spain 92 505,782 46,777,373 Greece 81 131,940 11,606,813 Macedonia 81 25,713 2,054,800 Romania 80 238,391 19,043,767 Croatia 78 56,542 4,490,751 Bosnia and Herzegovina 78 51,129 3,964,388 Ukraine 76 603,700 45,396,470 Georgia 71 69,700 4,960,951 Bulgaria 69 110,910 7,621,337 Ireland 65 70,280 4,581,269 Belarus 50 207,600 10,335,382 Montenegro 48 13,812 626,000 Lithuania 44 65,200 2,881,020 Latvia 37 64,589 1,973,127 Estonia 28 45,226 1,294,236 Sweden 20 449,964 9, 515,744 Finland 16 338,424 5,410,233 Norway 13 385,252 5,033,675 Russia 8 17,075,400 143,100,00 0 Iceland a 3 103,001 320,060 Total 31.56 26,680,676 842,033,572 Source: Wikipedia Impact related to the increase in population in the UK population and open access trends chapter reviewed by Experts Per Ilham S.M . ElsayedSubmitted: April 23 2011The view: April 3, 2012Edit: 31 October 2012DOI: 10.5772/47943The increase in the size of urban areas in terms of their population and land consumption has intensified the impacts adverse urban areas. The increased capacity of the human race causes adverse environmental change on a truly global scale. In the last two decades around the world technological changes and the re-location of the population from rural areas to urban areas have altered local natural environments beyond recognition, now the global environment is at risk. Most people would argue that changes in the location and concentration of commercial activities, especially in big cities, have produced the greatest visual impact on the built environment (Tamagno et al., 1990). In many developing countries, cities are expanding and an increasing proportion of land is being taken for urban uses, replacing fields, farms, forests and open spaces. As a result, distinctive and often unpleasant weather conditions are experienced by most urban dwellers in today's world (Shaharuddin, 1997). Urban settlements provide one of the best examples of change in human activities and perceptions. Residential areas are constantly undergoing modification and expansion in areas that were formally occupied by agriculture and the natural environment. Residential land was recovered or will be recovered from the sea or swamps if demand for land is high enough. In 1950, approximately 30% of the world's population lived in urban areas. This number is now approaching 50%, with a current urban population estimated at 2.9 billion people. By 2030, the world's population is projected to increase by two billion (Streutker, 2003), a growth that is expected to occur almost entirely in urban areas. Increasing the capacity of the human race causes adverse environmental change on a truly global scale, something to which urban populations make an important contribution. Atmospheric modifications have been noticed through the urbanization. Climatically (Sham, 1987), an obvious consequence of urbanization is the creation of the heat island. (Streutker, 2003) focused on one of the main effects of urbanization on climate and climate, urban heat island; found that urban temperature depends on population density. Several factors give rise to the difference in temperature between urban and rural areas, derived from changes in the thermal properties of surface materials to alterations in the topography and activities of man in cities. Large built-up regions have been shown to physically alter their climates in the form of high temperatures relative to rural areas on its periphery (Brain, 2001). The effect of metropolitan regions is not only limited to horizontal temperatures, but also to those of vertical direction with profound consequences, studies have shown that the thermal influence of a large city commonly extends to 200-300 m and even 500 m and more (Sham, 1993). The aim of the study is to study the level of in terms of population density and land management and its effect on the intensity of kuala Lumpur city's urban heat island.Measures for the level of urbanization vary from country to country. Other. Typically, the national procedures followed for these measures are based on specific criteria that may include any/ some/ all of the following: The concentration or size of populations. The process in which the migration of people to cities merges into an urban lifestyle. The process in which urban culture extends to agricultural peoples. The predominant type of economic activity. The development of urban areas and their urban characteristics, such as specific services and facilities. The process in which the proportion of people living in an urban area increases. Of these definitions, the latter is the most quantitative. Therefore, for the purposes and limitations of this study, the last definition is used to define and measure the level of urbanization. Thus, the level of urbanization depends solely on the population density by hectares and land use for the city. Data related to population density and land management of Kuala Lumpur city were collected from Malaysian government sources, specifically Kuala Lumpur City Council. On the other hand, two large data sources are used to study the city's UHI. The 1970 and 1980 censuses in Malaysia classified urban areas into three categories: metropolitan, with a population exceeding 75,000; large city, with a population size of 10,000 and more; and small town, with a population of 1,000 to 9,999 people. Small towns, however, are excluded from consideration of urbanization levels. According to this definition, Malaysia has 14 metropolitan areas and 53 cities with a population of 10,000 to 75,000. Kuala Lumpur is the capital of Malaysia with a population of 1504,300 people. It is recognized as the largest metropolitan area in the country (Elsayed, 2006). Table 1. and fig. 1. They then illustrate changes in the population densities of Kuala Lumpur city and its city centre in 1980, 2000 and 2004 respectively. 1980156980938002341831809380023418.1367051742000142390012872023418.1360857100 200415043001216523418.1364296710Changes in population densities for KL and city center in 1980, 2000 and 2004Changes in population densities for KL and city center in 1980, 2000 and 2004There is a big change in land use of Kuala Lumpur city from 1980 to 2004. Map1. and map 2 below represent the land use of the city of KL in 1980 and 2004 respectively. Land use for Kuala Lumpur city 1980En use for Kuala Lumpur city 2004Searm and primary data sources are used to study the city's UHI. Secondary data is collected from relatively longer records of weather data provided by weather station-specific networks, while primary data is collected through a fieldwork with the collaboration of the number of attendees and field watchers. These two two they were combined and used to study and measure the city's urban heat island: Two networks of weather stations cover the city of Kuala Lumpur and its periphery; Network of government and private weather stations. According to the case study, a specific number of stations are selected to participate in the study. Regarding the first network of weather stations, which is under the Malaysian Ministry of Science and Environment and called Malaysian Meteorological Services (MMS), the stations selected to be used are: Kuala Lumpur International Airport (KLIA), Petaling Jaya, Subang, Sungai Besi and Malaya University. While for the weather station's private network, the selected stations are: Combak, Shah Alam, Cheras, Contry Height, Klang, Nilai and Petaling Jaya.This method is used in a specific area confined within the study area for this research. It was used for Kuala Lumpur city centre and four large gardens within Kuala Lumpur and its periphery, and that due to the weather station lake in these areas. In addition, there is no weather station in the city centre. The area was limited not only due to a lack of data in these areas, but also because of the equipment and financial constraints that confronted the researcher during this period. Due to the difficulty of making simultaneous measurements, a number of eighteen observers took measurements and readings. They are senior undergraduate students at the Faculty of Architecture and Environmental Design and the College of Engineering, Malaysian International Islamic University. With the help of these observers, an intense crossing was carried out to measure air temperature, relative humidity and air speed over a period of one week in December 2004, starting on the 20th day of the month and finishing in 26th place for one hour of duration per day from 9pm-10pm Malaysia Local Time (LMT). The area of study is divided into several sectors. Each sector is assigned to one or two observers according to the area and complexity of the sector. The total number of sectors is 12. (Table 2. and Map 3. below). station No.Name There are no observers1-KLCCTwo2-Bukit BentangOne3-Time SquareOne4-Chow kitOne5-SogoOne6-Central MarketOne7-PudurayaOne8-Hang TuahTwo9-KLCC ParkTwo10-Main Lake GardenTwo 11-Titiwangsa Lake GardenTwo12-National ZooTwoStations used by Traverses Surveys MethodLocation of the Stations with the City Center of Kuala Lumpur CityThe results and analysis of the urbanization level in terms of population density and land use, and urban heat island are detailed below. Population densities in 2000 for Kuala Lumpur city centre, Kuala Lumpur city (KL) and Kuala Lumpur metropolitan region (KLMR) are 7100 and 1052 (people/ square kilometers) respectively. While in 2004 these population densities become 6710 for the city center and 6429 for Kuala Lumpur city. Lumpur. the expected population densities for 2020 are 1750 for KLMR, 9402 and 13547 for Kuala Lumpur city and city center respectively. Thus, the highest population density is in the city center, then Kuala Lumpur city, while the least population density is found in KLMR. The population density of the city of KL has been increasing from 670 in 1980 to 6085 in 2000 to 6429 in 2004 due to the city's increasing levels of urbanization compared to its periphery. It increased due to increased numbers of migrants seeking better job opportunities, services and facilities. Using graphs 1, 2 and 3 below, a huge change is recognized in residential, commercial, open and recreational space reserves, roads and railways, and undeveloped land in the city from 1980 to 2004. Residential and undeveloped use throughout the city decreased from 25.7% to 22.66% and from 27.7% to 23.7% respectively. Under the undeveloped use of the soil is categorized the use of agricultural/ fishing/ forestry land. There is a recognized decrease in the use of agricultural/ fishing/ forestry land. In 2004 it occupied only 0.07% of the total area of the city. By contrast, commercial, open and recreational space and road and rail reserves increased from 2.1% to 4.51%, from 1.3% to 6.52%, and from 14.0% to 23.42% correspondingly. There is almost no change in industrial, institutional, cemetery and educational use throughout the city. Industrial and institutional land decreased from 2.3% to 2.28% and from 7.2% to 6.69% respectively. While the cemetery, and educational land increased from 3.3% to 3.98% and from 1.1% to 1.13%, respectively. Changes in land use in the city centre are almost following the same way kuala Lumpur city. Commercial, road and rail reserves increased from 254.88 to 318.99 hectares and from 498.69 to 566.68 hectares respectively. While residential, industrial and institutional land use fell from 390.58 to 287.6 hectares, from 4.12 to 0.93 hectares, and from 266.04 to 163.06 hectares correspondingly. Contrary to increased open space and recreational land use, the open space in the city center and recreational land use decreased from 179.28 to 170.25 hectares. While undeveloped use of the city centre increased from 0.0 to 137.89 hectares. Land use as a percentage for Kuala Lumpur city in 1980The percentage use for the city of Kuala Lumpur in 2004The use of land on acres for Kuala Lumpur city centre in 1984 and 2004The study shows that, the UHI intensity of Kuala Lumpur city is 5.5 or C recorded on Sunday, December 26, 2004 (Map. 4 and 5 below). On the other hand, based on previous studies, the intensity of the island of city of Kuala Lumpur in 1985 was 4.0 ºC. ºC. (Table 3 below), the intensity increased from 4.0 ºC in the last previous work carried out in 1985 (Sham, 1986, 1987) to 5.5 ºC in 2004. Thus, the increase is more than one degree Celsius, which is a recognized value whenever human health and comfort are problems. The UHI of the sity of Kuala Lumpur on Sunday, December 26, 2004The UHI of the center of the sity on Sunday, December 26, 2004YearUHI Intensity(or C)Highest Temp. (or C)Lowest Temperature Temperature Location. (or C) Location of lowest temperature19854.028.0City centre24.0Al the city centre20045.529.2City center23.7A side of the city centre the cityIntensity and location of the UHI of kuala Lumpur city in 1985 and 2004The study finds that as the UHI intensity of the city increased the residential, industrial city, industrial, undeveloped and agricultural/ fisheries/ forestry decreased. On the contrary, commercial, open space and recreational, road and railway reserves, cemetery and educational land increased. On gain from this, as the city centre warmed and its temperature increased its commercial, undeveloped, road and rail reserves increased, while its open space and recreational, residential and institutional land decreased. There is no contradiction between recent and earlier findings of the first similar work published on uhi of the city he reported (Sham, 1973a). The city centre is still the hottest area in Kuala Lumpur city. This finding is due to continuous human activity and development within KL city center. The results of the study show that, temperature records for most stations located in the city center are recorded as the highest temperatures, while records for stations located inside KL but outside the city center are those of higher temperatures. On the other hand, the less heat and high temperatures are recorded only for stations located outside KL. Therefore, the higher the urbanization level in terms of population density, the higher the temperature value recorded. The city centre has been occupied by several floors and tall buildings. These polystorial buildings located in the city centre dominate the horizon, and have a dramatic effect on the microclimates of the city centre. Man, through his constant constructions, has affected the exchange of energy and humidity within the system altering the physical and material qualities of the earth's surface with the city center. continuously replaced vegetation and vegetation by buildings. In addition, it has become a main source of heat production of its transport systems, industrial plants and air conditioning systems. Therefore, the city centre remains the hottest area of the kuala Lumpur. On the other hand, the study shows that, all gardens and parks have relatively low temperatures regardless of their locations, inside or outside KL. In addition, the lowest temperature is recorded for a station located in the city center, which is Main Lake Garden Station. This is due to age and garden area compared to other gardens included in the study. The main lake garden is the largest lake park in the city (Hamidah, 1984). This garden dates back to the 1890s with an area of 73 hectares. While the lake garden Titiwangsa is the second lake park in the city with an area of 44.5 hectares. The garden is even different from other gardens in terms of its type and age of plants. Recent studies (Elsayed, 2006, 2009) show that although the city of KL's urban heat island intensity dependence on population density is significant, population density in the downtown area is decreasing. It might be of interest to urban planners that although the temperature is likely to rise with increased population density, the situation in the city centre is different. This is due to the intense human activity and development within the city centre of KL. This indicates that, the management of these lands is greatly affecting the intensity of the urban heat island of these lands. The city centre undergoes rapid changes in the concentration of commercial activities and constructions. Man through his constructions has affected the exchange of energy and moisture within the system by altering the physical and material qualities of the earth's surface with the city center. The city centre has been occupied by several floors and very tall buildings, for example Petronas Twin Towers. These polystorial buildings located in the city centre dominate the horizon, and have a dramatic effect on the microclimates of the city centre. Man replaces vegetation and vegetation with buildings and becomes a main source of thermal products. Therefore, downtown remains the hottest area of Kuala Lumpur city, regardless of the reduction that occurred in its population density. This should help persuade urban planners and design manufacturers to place more emphasis on strategies that relate land management to urban heat island mitigation. The effects of population density on the intensity of the urban heat island of Kuala Lumpur city could be concluded from Table 1, Figure 1 and Table 3 above, illustrating changes in population densities of KL and City center in 1980, 2000 and 2004, and the intensity and location of the UHI of the city of Kuala in 1985 and 2004 respectively. The study shows that, the city's population density is proportional to temperature records taken during the survey. The population density of the city of KL has been increasing from 670 in 1980 to 6085 6085 2000 to 6429 in 2004. Consequently, the city's UHI intensity increased from 4.0oC in 1985 to 5.5oC in 2004. Therefore, there is a proportional relationship between the population density and the UHI of the city of KL. Therefore, the study concludes that, the UHI of kuala Lumpur city is proportional to the population density of the city. Consequently, the study concludes that population density affects the city's urban heat island and contributes to the increased intensity of urban heat island in the city of Kuala Lumpur, Malaysia.The study shows that although the city's global population density increases, that of the city center decreases, while the core of this UHI is the center of the city. It is therefore difficult to conclude that UHI's intensity is inversely proportional to the population density of the city centre. However, it is possible to conclude that, the increased intensity of UHI is not only related to the population density of the city center, it is actually affected by other factors and different human activities. The study notes that the city's commercial, viriological and railway reserves are proportional to the intensity of the UHI, while open space and recreational, residential, institutional and agricultural/forestry lands are inversely proportional to the UHI intensity of the city. Therefore, using these findings and the revised literature the study concludes that, urban heat island intensity could be reduced if kuala Lumpur city lands manage in such a way that: Trees must be planted to shade hot asphalt from the city's roads or at least low-level shrubs and vegetation. Within the city of KL, many open areas are covered with blocks of marble, granite or tiles. Although they are better than black asphalt, these areas still absorb a lot of heat in direct sunlight and release heat in the afternoon, afternoons and early nights. Again, the author recommends that these open areas should be converted into green areas or even very small parks. In addition, trees must be planted to shade the hot asphalt of inner city roads such as Jalan Tuanku Abdul Rahman, Chow Kit... etc; or low-level shrubs planted along the covered drains in these areas. On top of that, some roads and highways, which occupies an increasing proportion of the urban area, should also be creatively designed to include green shade. Large masses of concrete on new flybys that are being continuously built throughout the city, capture and store large amounts of solar heat, must also take into account some plant cover, such as struting trawlers that can protect or block heat absorption and significantly the air temperature. Roads and motorways, which occupies an increasing proportion of the urban area, should also be creatively designed to the green shade, at least along the averages. Large masses of concrete in new flybys that are being continuously built throughout the city, which can capture and store large amounts of solar heat, must also take into account the cover of plants, such as struting trawlers that can protect or block heat absorption. Urban car parks must meet a minimum requirement of 50% shade. Previous studies ([Eliasson, 1993; Sham, 1987, 1990/1991; Shashua, 2000) show that shade trees contribute significantly to temperature reduction, hence reducing UHI intensity. Therefore, the author notes that urban car parks must meet a minimum of 50% of the shade required for planting low-level trees or/and shrubs. Tree planting programs must be reintroduced for all housing estates. Incentives and subsidies should be part of long-term planning. Many commercial buildings, almost all (Ahmad, 2004) are having flat roofs in Malaysia, either to house air conditioning equipment or water tanks, or for other purposes. These buildings should green their roofs and plant them with low-level shrubs and shrubs. This means growing vegetation on the flat roof surfaces to absorb heat. This will not only help the city counter uhi, but building owners will also benefit in terms of savings in air conditioning energy consumption. As has been demonstrated in previous studies; please check Chapter 2 for more details. The creation of as many city parks as possible will improve the situation and significantly help reduce the UHI intensity of the city. Therefore, tree planting programs should be strengthened in the city of KL, and incentives and grants should be part of long-term planning for the city. Previous studies (Eliasson, 1993; Sham, 1987, 1990/1991; Shashua, 2000) show that green areas moderate urban temperatures. The results of this study confirm this theory; shows that green areas are relatively low in temperature than non-green areas. Reduce summer solar radiation by managing land covered by critical surfaces, e.g. pedestrian walks, waiting areas and busy streets. Reduce the abundance of concrete and asphalt, and increase the amount of vegetation and open water. This will increase the highest volumetric heat capacities and higher rates of latent heat influx, thus lowering air temperatures. Increase airflow at ground level to wash heated and polluted air out of the city and that could be achieved by managing the ground cover and designing the building. The author financial support provided by the Sudanese University of Science and Technology, Ministry of Higher Education, Sudan, and the Center for the Built Environment, Malaysian International Islamic University, for fieldwork and surveys.