

**Question:**

Analyse those factors impacting on the ecological sustainability of a large city in the developed world?

**Answer:**

There are various factors affecting the ecological sustainability of Sydney. For Sydney to be containable and sustainable it means growing within resource limits & improving on natural & biodiversity endowments when and where we can. Careful planning of new areas & the revitalisation of existing communities is needed to increase the diversity of housing choices to achieve sustainability & affordability. Sydney's rapid growth and huge demand for natural resources has put pressure on the natural environment. The impacts on the ecological sustainability of Sydney can be seen through the urban sprawl, road congestion, air pollution, water, energy use, waste disposal and the rapidly decreasing area of bushland. The ecological sustainability of Sydney depends on effectively reducing resource inputs and waste outputs while maintaining the liveability of urban areas.

Sydney is the most populous city in Aust & the capital of NSW located in south-eastern Aust on a lowland basin on the Pacific Ocean. To the city's north is the Parramatta River, an estuary of the Pacific Ocean that cuts through the city's northern boundary. To the city's south is the mouth of the Georges River which flows from Prospect Reservoir 20 miles to the city's east into Botany Bay. Sydney covers 4074 square kilometres at an elevation of 62 feet above sea level. Sydney approximately 60 miles east of the Blue Mountains.

The Sydney Morning Herald's 30/5/05 "Campaign For Sydney" showed Sydney is growing at a rapid and undesirable rate. For example one million more people are tipped to come into Sydney in the next 20yrs. 100 new residents enter Sydney per day which is expected to continue for 25years and 70% of new arrivals will be accommodated in existing suburbs. Baulkham Hills Shire has a pop growing at a rate triple the Sydney average. For example between 1996 and 2001 its pop expanded by 16.5%. By 2016 Sydney's population will grow by 16% & by 2026 it will grow by 29%. In the next 25yrs 650 000 homes will be needed & 70% of them will be squeezed into existing suburbs. Within 15yrs 70 million flights a yr will arrive at & depart from Sydney airport doubling current movements. In 2004 there was 2.2% growth in energy use nearly triple the pop growth & it was fuelled by rampant air conditioning use while every day an extra 40 homes are built.

Such a large urban area like Sydney has huge demand for natural resources. For instance Sydney's population has doubled since 1950 but consumption has tripled. This obliterates the natural hydrological system within its area. Producers waste products including solid & liquid waste, sewerage, air pollutants, heat & noise which alter the environment around it this reduces biomass & alters species of plants & animals in & around it. These impacts make up the ecological footprint of a city. The footprint provides an estimate of the total area of productive land & water required to produce all resources consumed & assimilates all waste products produced

The urban sprawl took place to accommodate the increasing population in existing suburbs. Most of these areas already had a history of poor environmental infrastructure especially the public transport system. This has created many problems. Firstly road congestion has increased in recent times. For example almost all commuters in Sydney's newest suburbs drive to work. The national cost of road congestion in terms of wasted time, fuel, air pollution & stress is tipped to rise to \$8.8 billion a yr by 2015. Car use is expected to increase by one third by 2020. 91% of all residents in Baulkham hills travel to work by car and work related public transport use is down to 10.6% of all journeys. The train system lost 6 million trips last yr as commuters abandoned the network. This can create social isolation of people without cars. For example by 2001 more than 150 000 homes in Sydney had three or more cars while only 13% of homes were without a car. It also means large areas of land devoted to parking & roads.

Air quality is under threat because State government failed to shift people out of their cars & onto public transport. Car dependency is growing faster than the population. Tiny airborne particles emitted from cars linked to increased respiratory problems, aggravation of asthma, more hospital emissions & premature deaths. Cleaner fuels & more sophisticated engines have been offset by the growth in car use. Building more toll roads ahead of demand will only stimulate more car use. Smog is becoming worse despite cleaner fuel & better vehicle technology because on weekdays 4.1 million people each make an average 3.78 trips by car. Cars are the main source of pollution & car use is tipped to rise by 32% by 2020. As a result maintaining air & quality will be a continuing challenge for the Government. A present Sydney's air quality only meets four of six national goals & its photochemical smog continually breaches the Australian standard. The government has also stopped monitoring air toxins & stations capable of reading air standards have been cut by a ¼ because of budget restrictions. In 2004 the government scrapped its gas fuelled bus program. Carbon dioxide emissions from cars are forecast to rise to 72% during the next 15yrs. Air quality guidelines were exceeded in Sydney's south western suburbs on nine days last year. The topography of Sydney means air quality is consistently worse in western Sydney.

Water also has a significant effect on the ecological sustainability of Sydney. After years of profligate water use in the face of one of the worst drought for decades our water supply has never been lower. An antediluvian attitude to water recycling could mean billions of \$ are wasted on energy hungry desalination to provide the city with fresh water. At present 91% of NSW in drought. Sydney's dam levels have fallen to 38.8% of full capacity. Every yr Sydney Water discharges about 450 gigitalitres of waste water into rivers & the ocean recycling only 3.2% of effluent. This is expected to rise to 4.6% after a new water reclamation plant starts operating in Wollongong in Oct. Overall water consumption has tripled since 1950 despite a recent decline. Nearly 11% of piped water is lost through leaks.

Energy consumption is growing causing more greenhouse gas emissions and this impacting on the ecological sustainability of Sydney. Each yr Sydney uses 2.2% more electricity then the year before. Peak demand times are forecast to rise by 2.9% a yr as the use of air conditioning grows. As poor housing design has made buildings hotter in summer & colder in winter leading to sky high sales of air conditioners

causing growth in demand energy. This is prevalent in areas such as Kellyville and Rouse Hill where the economic gains from housing developments have clearly played a more important role than the ecological sustainability of such complexes. State owned buildings are only compelled to buy 6% of their power from renewable energy sources. Energy demand needs to be curbed by weaning Sydney residents off highly polluting coal fired plants with a mixture of gas & renewable energies such as wind & solar.

Disposing of solid waste will become more difficult. Landfill has been a traditional solution but this limited within the GSMR. In 2001 the northern suburbs of Sydney ran out of landfill space. Disposing of sewerage & waste water will become more difficult. Every day Sydney empties more than 1 billion litres of poorly treated effluent waste water into the ocean. Sydney sends more than 7 times the amount of primary sewerage into the ocean than any other water utility in the country.

There are also significant problems with Bushland. Groups such as the National Parks Association of NSW want to see a “greenbelt” of parks around the city to contain the urban sprawl & protect biological diversity. Parks & open space are scarce in the city’s west compared with other areas. With the increased density across the city parks, reserves will become more contentious. The planned new suburbs on the fringes of Sydney will subsume agricultural land, with farmers & academics fearing threats to food supply – notably leafy greens, mushrooms & other perishable vegetables.

The decline in public transport use has also had an impact on the ecological sustainability of Sydney. The Sydney transport network is in disarray. For example only 4.7% of Baulkham Hills residents were able to take a train or bus from near their home to work. Alternatively in Waverly more than 21% of workers rely solely on a train, bus or ferry to get to their jobs which is still relatively low. Also no new lines are under way to expand the system & Chatswood to Epping link is an inferior version of the circuit to Parramatta first envisaged. While 50 yrs ago half of all journey’s to work were by train, now fewer than 10% are & public transport use is falling by the day. The train system lost 6 million trips in 2004 as commuters abandoned the network. Work related public transport use is down to 10.6% of all journeys. Government spending is only 5% of what it needs to be to prevent the rail system collapsing. On a Friday night a pedestrian can beat a bus from Central Station to Circular Quay.

The ecological sustainability of Sydney depends on effectively reducing resource inputs & waste outputs while maintaining the liveability of the urban areas. Firstly in relation to traffic congestion the government has plans for numerous new roads in order to reduce traffic. For example the government wants to complete Sydney’s orbital motorway plus- M4 Airport tunnel. Road projects are intended to contain demand not stimulate it. All major suburban corridors need fixed public transport. It is planned four new rail lines will be located in the Hills District, Leppington, cross Harbour and Randwick along with three metros located from Dee Why – Miranda, Victoria Road – Maroubra and Parramatta Road – North Sydney. Four light rail lines will be located at Parramatta, Epping, Circular Quay, Lilyfield & Burwood. The building of dedicated freight railway to three depots is also needed.

Numerous strategies have been suggested to reduce air pollution and improve air quality. For example the State government must invest in modern public transport, focus on local & regional centres so people can walk & ride bikes for short trips & put job centres on an expanded public transport grid so commuters have a choice of travel modes. The government needs to pursue building reform to cut home energy demand. It needs to establish a single state authority responsible for air quality as an April report by the auditor general identified this lack of accountability as a problem. Although the NSW State department of Environment & Conservation has the responsibility for monitoring air quality & co-ordinating the government action for air policy it does not have the resources or power to implement anything.

In relation to the water crises the State government is relying on building its way out of a water shortage with an expensive energy-intensive & greenhouse gas polluting desalinisation plant. While instead it should be treating water as a scarce resource and pricing it appropriately. The Government should adopt recommendations drawn up last year by its own experts which included making water restrictions permanent. At the very least residents of Sydney must stop using quality water for non-drinking purposes. Recycling water would reduce the amount of water diverted from our rivers & cut the amount of polluting wastewater discharged into oceans. Storm water could also be used for agriculture, public parks & golf course irrigation & to re-store suburban creeks. Wholesale step pricing, charging big users higher prices should also be introduced to remove the incentive for Sydney Water to sell more water. The authority should be penalised when it buys more water than it needs from the Sydney Catchment Authority. Installation of water meters in individual units would also reduce demand. Non-drinking water should be used to cool power plants & oil refineries & in paper mills, carpet dryers & on construction sites for dust control. In the longer term businesses need to rethink & restructure to dramatically cut water & energy use as well as pollution. The NSW government should plan for a new dam.

A number of strategies have been presented in order to reduce energy consumption. At the NSW labor conference Mr Carr announced two gas fired power stations would be built to meet peak demand which is really a short term fix. The Building Sustainability Index requires new homes to cut energy use by 25%, while there are few suggestions on curbing use or increasing prices. The BASIX guidelines for new housing encourage people to install energy efficient appliances & hot water systems & to use insulating glass or double glazing. The introduction of smart metering by Energy Australia encourages users to switch off when demand is high. Higher prices for power, tougher energy-efficiency ratings for electricity appliances & five star energy efficiency standards for all new commercial buildings are needed to reduce energy use. Building managers must be encouraged to turn off lights in empty offices or pay more. 12% of household electricity is wasted through stand by power consumption. Solar hot water systems could be made mandatory in new suburbs with a government subsidy to cover upfront costs, cutting resident's power use over the long term. The renewable energy sector must be supported with grants & tax incentives while the coal & gas industries should be penalised for greenhouse gas emissions

Attempts are being made to finalise native vegetation laws but both environmentalists & farmers are unhappy with the proposed legislation. The government is promising a plan to protect agriculture in the Sydney Basin. Although the government must develop tough unambiguous guidelines that give farmers planning certainty & the Department of Infrastructure, Planning & Natural Resources and the authority & incentive to prosecute illegal land clearers.

Public transport needs to be transformed into one service run by one agency and integrated services & fares across all modes are needed along with frequent & faster services with standardised stops. Higher & more realistic fares along with a revamp of staffing costs & maintenance are required. There are plans for increased mass transit facilities with increased bus ways & railways. For example \$1 Billion is being spent to untangle the city's maze of intersecting lines & mainly to improve the number of trains that arrive on time.

Ultimately if Sydney is going to be a sustainable city and have a natural environment to offer future generations then it needs to stop consuming unrenewable resources at such exhaustive rates. The ecologically sustainability of Sydney is affected by road congestion, air pollution, water consumption, energy usage, waste disposal and the falling area of bushland. If each resident in Sydney made a concerted effort to reduce their usage of these vital unrenewable resources and the government provided economic disincentives for the use of such resources then perhaps these factors would impact on the ecological sustainability of Sydney to a lesser extent.