ICORCE 2022

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TOPIC: SUSTAINABLE HEALTHCARE DESIGN, CONSTRUCTION AND BUILDING OPERATIONS

SOCIAL SERVICE LEAGUE
NAIROBI
M.P. SHAH HOSPITAL
A Legacy of Care

- A modern Private hospital with 210-bed capacity
- Located in Parklands Area in Nairobi

AMEK
Association of Medical Engineering of Kenya

- AMEK is a professional Association registered under CAP 108 of the laws of Kenya
- An umbrella Body for all the Biomedical Engineers in Kenya.

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- Overview of Greening Healthcare
- Issues/Barriers Related to green Healthcare
- Drivers to Green Healthcare
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# OBJECTIVES

- To explore issues related to sustainable healthcare building practices
- To discuss ways in which healthcare practitioners can incorporate sustainable design practices in their facility.
- To identify barriers to healthcare construction sustainability
- To determine drivers to healthcare construction sustainability
- To identify opportunities for improving the existing and upcoming health facilities

# INTRODUCTION.

- Healthcare projects face multiple obstacles in achieving sustainability.
- They are among the largest consumers of energy
- contributes to greenhouse gas emissions and climate change
- They are also one of the biggest producers of waste some of which are toxic.
- Healthcare industry is contributing to the very problem it’s trying to solve
- There is an urgent need for greening of healthcare industry(C19)
- To ensure health care benefits the people, society and the planet, and does not cause more pollution or health problems
- This will have great impacts on growing economic, social and environmental issues

# SUSTAINABLE HEALTHCARE

- It’s a  safe and therapeutic environment
- Contributes to the process of healing
- Promotes health and prevention of diseases
- Design intervention contributes to improved patients outcomes
- Achieves social and environmental benefits
- Lowers negative environment impacts.
- Protect occupant health (Patient, staff and visitors)
- Improve employee productivity
- Wisely use natural resources

HEALTHCARE GREEN OVERVIEW
Energy
water
Waste
Site Selection
Air Quality
Medical Gas
Medical Devices
Sustainable Healthcare
Construction/ Renovation and Materials

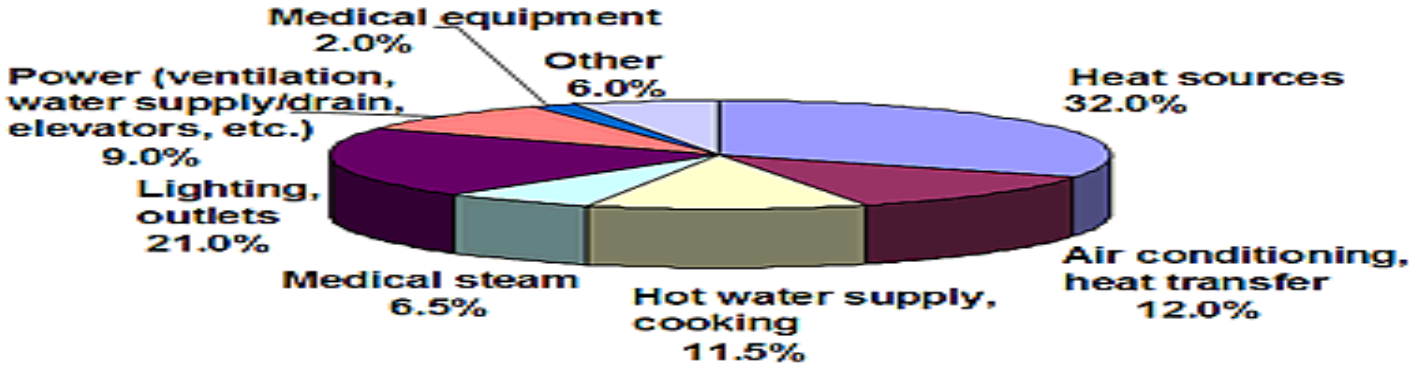
# ENERGY CONSUMPTION IN HEALTHCARE

| ITEM NO. | DESCRIPTION | REMARKS |
|---|---|---|
| 1 | Heating,Ventilation and Air conditioning,HVAC | |
| 2 | Lighting | |
| 3 | Hot water heating | |
| 4 | Medical Equipment including plants | |
| 5 | Cooking | |

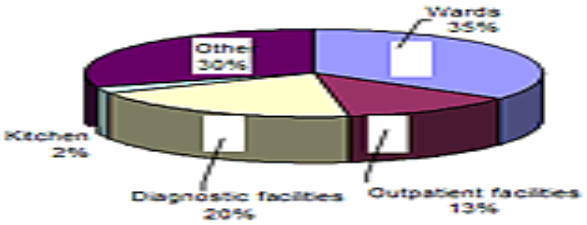
# Energy Consumption In Healthcare

## Energy Consumption Structure and Floor Area for Each Department in Hospitals

### Hospital




Energy consumption components




Floor area by department

Source: 2003 Building Energy Survey, The Energy Conservation Center, Japan

# Types of Hospital Waste

## Risk Waste

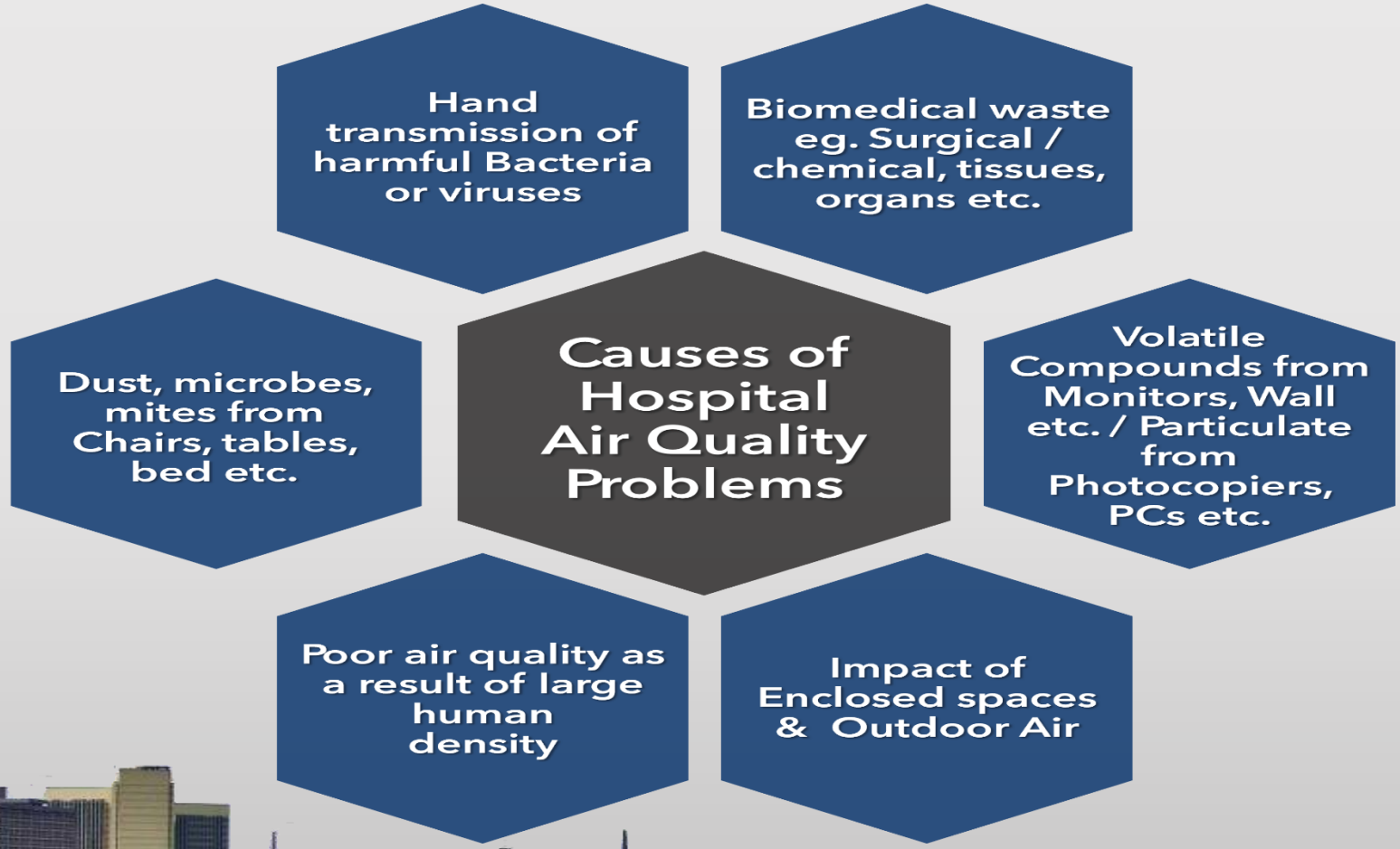
- Infectious waste
- Pathological waste
- Sharps
- Pharmaceutical waste
- Genotoxic waste
- Chemical waste
- Radioactive waste

## Non-Risk Waste

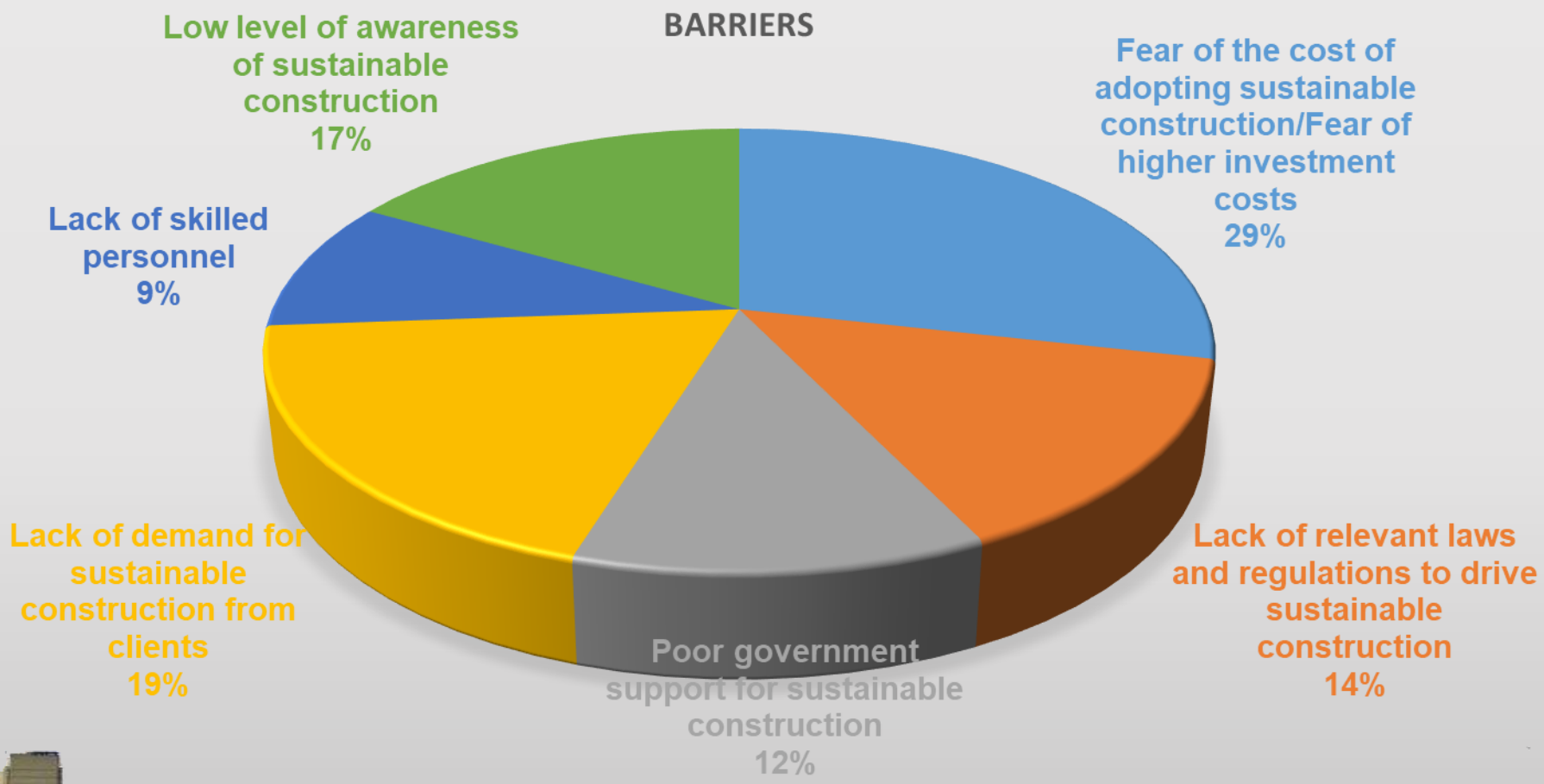
- Paper and cardboard.
- Packaging.
- Food waste.
- Aerosols. (spray)

# Healthcare waste

# Air Quality


Hand transmission of harmful Bacteria or viruses
Biomedical waste eg. Surgical / chemical, tissues, organs etc.
Dust, microbes, mites from Chairs, tables, bed etc.
Causes of Hospital Air Quality Problems
Volatile Compounds from Monitors, Wall etc. / Particulate from Photocopiers, PCs etc.
Poor air quality as a result of large human density
Impact of Enclosed spaces & Outdoor Air

# Issues/Barriers

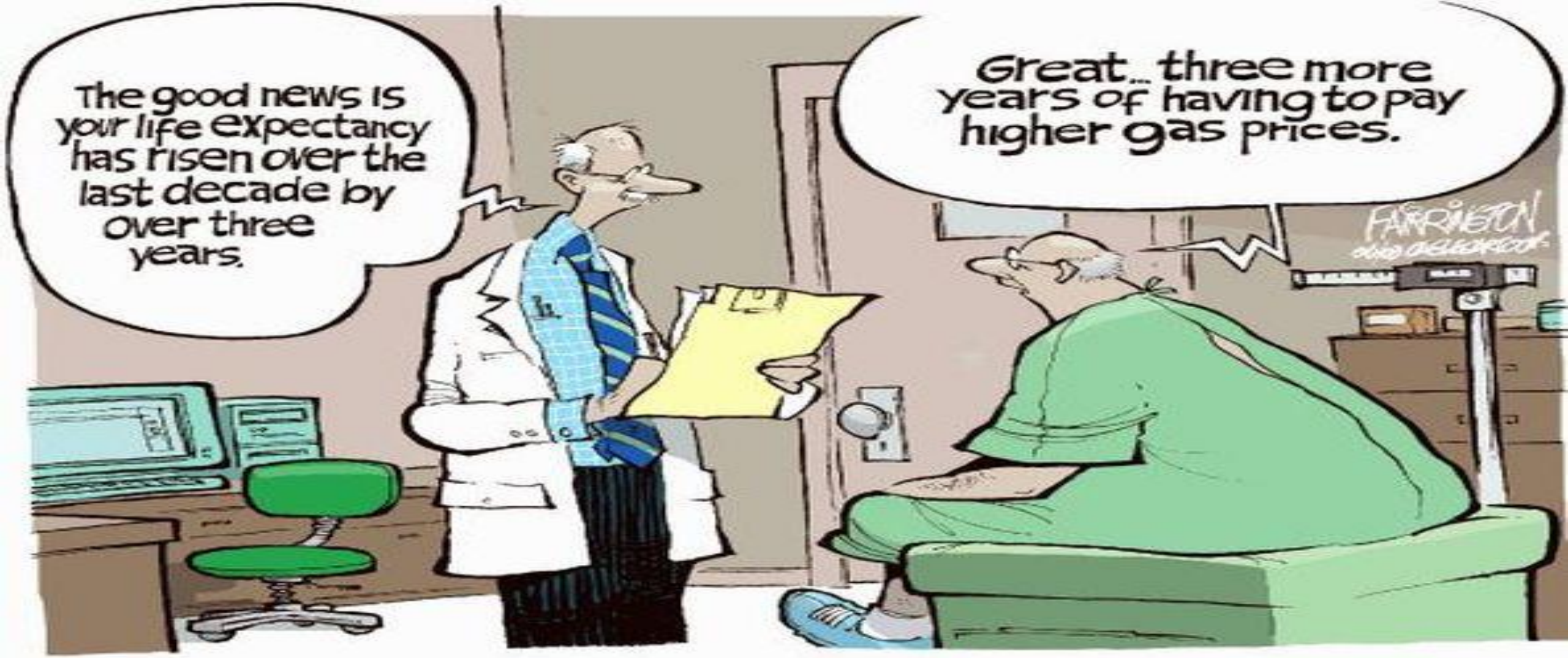


| Item No. | DRIVERS |
|---|---|
| 1 | Energy conservation |
| 2 | Water conservation |
| 3 | Waste Reduction |
| 4 | Improving Environmental indoor air Quality |
| 5 | Medical Equipment Management –Use Intelligent Technologies |
| 6 | Medical Gas management |
| 7 | Sustainable Renovation |
| 8 | Design and construction |
| 9 | Way marking ,Signage and Navigation |

# RECOMMENDATION

- *Implementation of relevant laws &regulation/Policies(Mandatory Audits)*
- *Government support for sustainable H.construction/Incentives*
- *Raise Industry awareness in both public and private functions*
- *Incentives and Rewards to both institutions and Individuals*
- *Have green mark standard specifically for healthcare supported by LEED*
- *Appropriate benchmarking for Healthcare Facilities*
- *Routine budgeting for sustainable H.construction/Renovation*
- *Demonstration of Best Practices*
- *Sustainability to form health Professional Bodies mandate*
- *Introduction at Primary education level*

EARTH DAY
CLEAN UP


The good news is your life expectancy has risen over the last decade by over three years.
Great... three more years of having to pay higher gas prices.
FARRINGTON