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ENVIRONMENTAL IMPACT IN THE E&C INDUSTRIES

**Risks
&
Opportunities**

“Reversing climate change is the defining challenge of the 21st century.

Temperatures are rising at an alarming rate, ice caps are melting, erratic weather patterns are emerging and water resources are depleting. The fate of our planet rests on the choices we make today”

Copenhagen Summit



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- Fossil fuels are our primary source of energy accounting for 60% of greenhouse gas emissions globally
- Electricity and heat generate about 25% of the world's total of greenhouse gas emissions
- Transport – cars, trucks, buses, trains , aircraft represent 12% of greenhouse gas emissions



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- 50% of emissions causing global warming are from non CO2 pollutants
 - Black carbon, low level ozone, methane and nitrogen compounds
- Black carbon – generated by burning of forests, savannas, crop residues, inefficient burning of biomass, diesel engines, coal fire power stations



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- Combination of thawing Arctic sea ice and melting Greenland and West Antarctica ice sheets likely to raise global sea levels by about 1,2 metres by 2100, affecting more than $\frac{1}{4}$ of world's population.



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- Arctic soils and wetlands contain twice the amount of carbon currently in the atmosphere. As the Arctic warms the carbon that has been frozen will start to be given off as methane and carbon dioxide, adding to the greenhouse gas burden and further accelerating climate change



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The 4 critical questions that Copenhagen wants answered

- How much are industrialized countries willing to reduce greenhouse gas emissions?
- How much are major developing countries such as India and China willing to do to limit growth of emissions?
- How will the assistance needed by developing countries be financed?
- How will this money be managed?



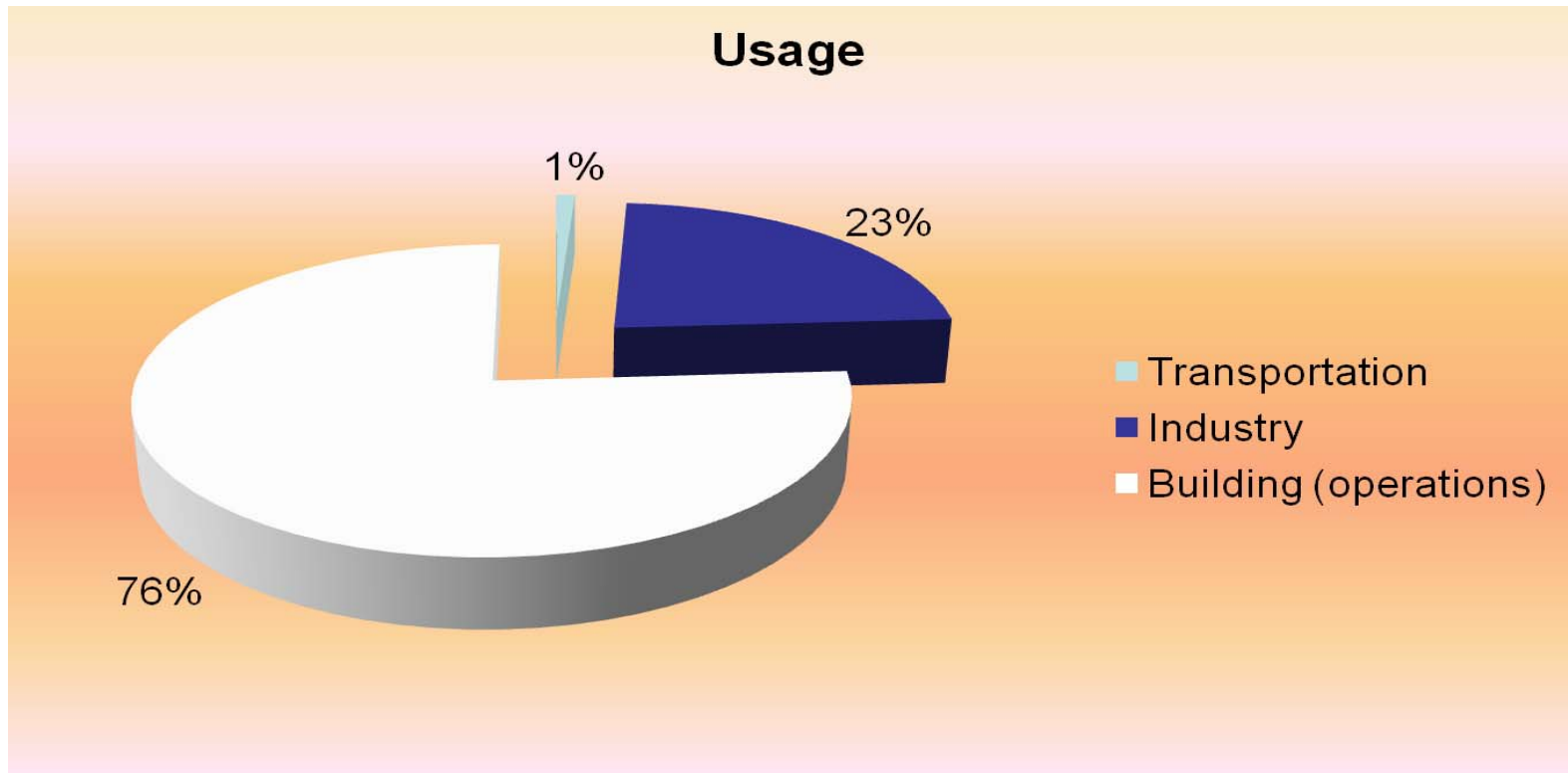
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China & India

- Between 1990 and 2007 China's CO₂ emissions rose from 2.3 BMT to 5.9 BMT
- In 2008 alone China commissioned 90 000 MW of coal fired power plants, adding 0.5 BMT of CO₂ to the atmosphere
- India's emissions grew from 0.0006 BMT in 1990 to 1.5 BMT in 2007
- World CO₂ emissions in 2007 – 29.9 BMT



US Electricity Consumption 2000



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What can we expect If nothing changes

- More droughts and more flooding
- Less ice and snow
- More extreme weather incidents, often on a localized basis
- Rising sea levels
- Extinction of species of fauna and flora



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Risks

- Lack of water for construction activities
- Increased prevalence of dust especially in arid areas – desertification
- Invasive plant infestation
- Increase in tropical and water borne diseases – malaria
- Wars, civil unrest



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Risks

- Increasing damage and delays to projects due to extreme weather events
- Safety and health risks – flash flooding, landslides, slips
- Climate risks becoming uninsurable or only at a prohibitive premium
- Prolonged global downturn reduces investment in renewable energy



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Risks

- Environmental taxes and penalties
- Carbon trading could be the next sub-prime crisis – carbon credits packaged into increasingly complex financial products
- Tipping Point – acceleration of global warming/new ice age
- Reputation



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Opportunities

- Green buildings
- Clean energy – solar, wind, hydro, geothermal, bio-energy
- Retro-fitting of existing buildings
- Nuclear energy
- Carbon credits
- Public and non motorized transport systems



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Opportunities

- Being recognized/classified as a green company
 - employers willing to pay a premium
- Harvesting rainwater, condensation, mist
- Desalination
- Greater efficiency in existing power and water generation and distribution



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Opportunities

- Environmentally friendly products
- Agriculture – more with less
- International funding opportunities
- New technologies to access and win new commodities/raw materials
- Carbon storage
- Biodegradable buildings



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Does your company know, benchmark
and measure the improvement in its
carbon footprint?



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