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How Can Sustainable Building Practices Reduce the Environmental Impact of Building Activities?

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Abstract:

Sustainability has been a very important subject lately, due to the observable change in the environment, which drives us to seek solutions for the current situation. In this poster we will discuss some of the sustainable solutions that aim to reduce the environmental impact that relates to building & construction industry.

Introduction:

One of the major issues that facing humankind is the environmental impact of the human activities. Problems like draining natural resources, pollution and waste products and global warming are raising a serious threat to our existence.

Building and construction activities considered one of the biggest participants in this environmental change, it is responsible for 39% of CO2 emissions. (as shown in fig.1 below).

Sustainable Building concept try to offer some solutions for these problems. by lowering pollution resulting from the materials manufacturing process, use more energy efficient materials, and reducing waste materials, humans' impact can be significantly lowered.

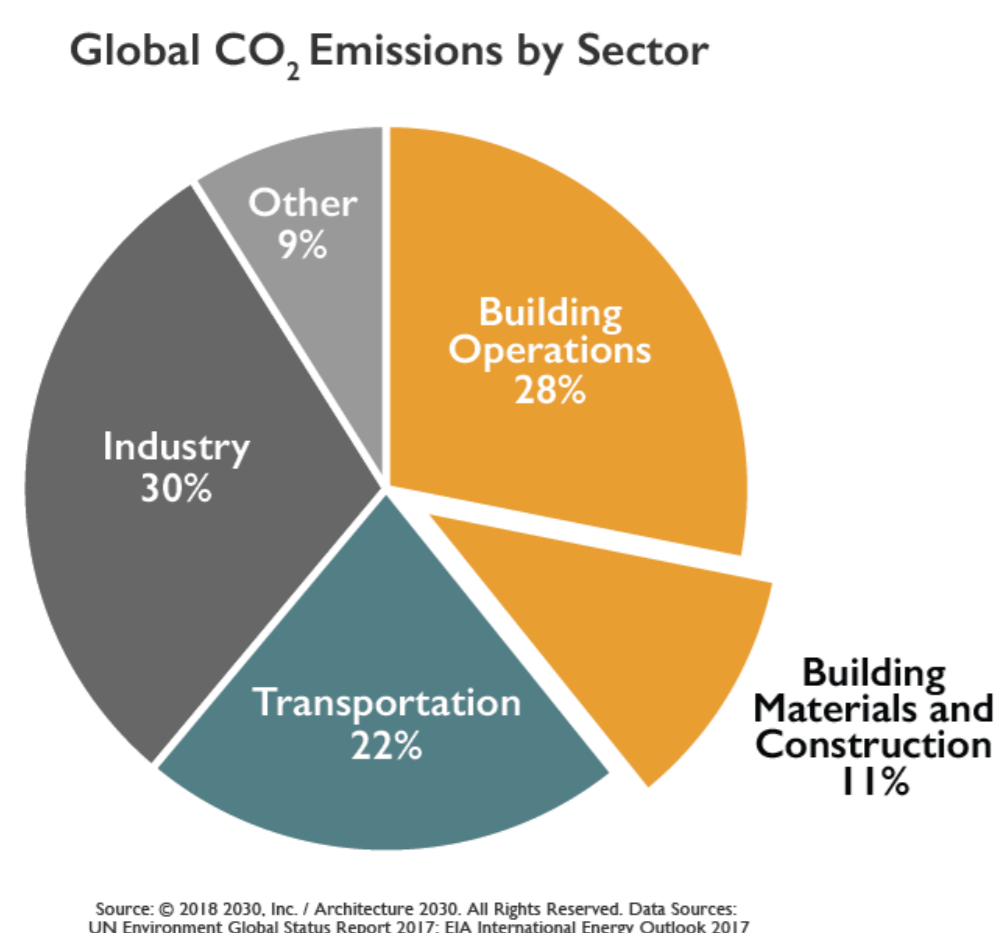


Fig.1

Lowering pollution resulting from the materials manufacture process:

One of the widely used building materials is cement, it is also responsible of 5% of global CO₂ emissions as a by-product of its manufacture. (Archer & Rahmstorf, 2010) materials with a lower environmental impact may offer a solution by replacing traditional materials. for instance, Bricks can be used as replacement of concrete; it is sufficiently strong and it releases less emissions during its manufacture than cement. (Aran Eales, 2012)

There are many attempts to produce "Green concrete" which can lower the impact on the environment but it still under development.

It is anticipated that green buildings can reduce CO₂ emissions by 39% (as shown in fig.2) (Kats,G.,2003)

use more energy efficient materials :

Buildings consume about 30% of our global energy production, The main energy types used in buildings are heating, cooling. improving building insulation can improve heating efficiency. heating costs can be lowered in cold climates by almost 85% below standard practice. Architectural design Can reduce the energy required for cooling by using for shading and ventilation. (Archer & Rahmstorf, 2010) green buildings can reduce energy consumption by 50% (as shown in fig.2) (Kats,G.,2003)

Reduce waste materials through reusing & recycle building materials:

According to Aran Eales a huge amount of raw materials consumed every year (about 3 billion tons) by building & construction activities worldwide, which is 40% of all the global use. (Aran Eales, 2012), To lower that amount, reusing and recycling used materials can be implemented.

Aran also add that in many situations materials can be re-used. Used Bricks that are still structurally safe can be reused in certain types of construction. other materials can be recycled, for example breaking old concrete or rubble to use as aggregate for a new concrete work.

Reusing materials doesn't require energy, so it is preferable to recycling. (Aran Eales, 2012)

It is anticipated that green buildings can reduce 70% of solid waste (as shown in fig.2) .(Kats,G.,2003)

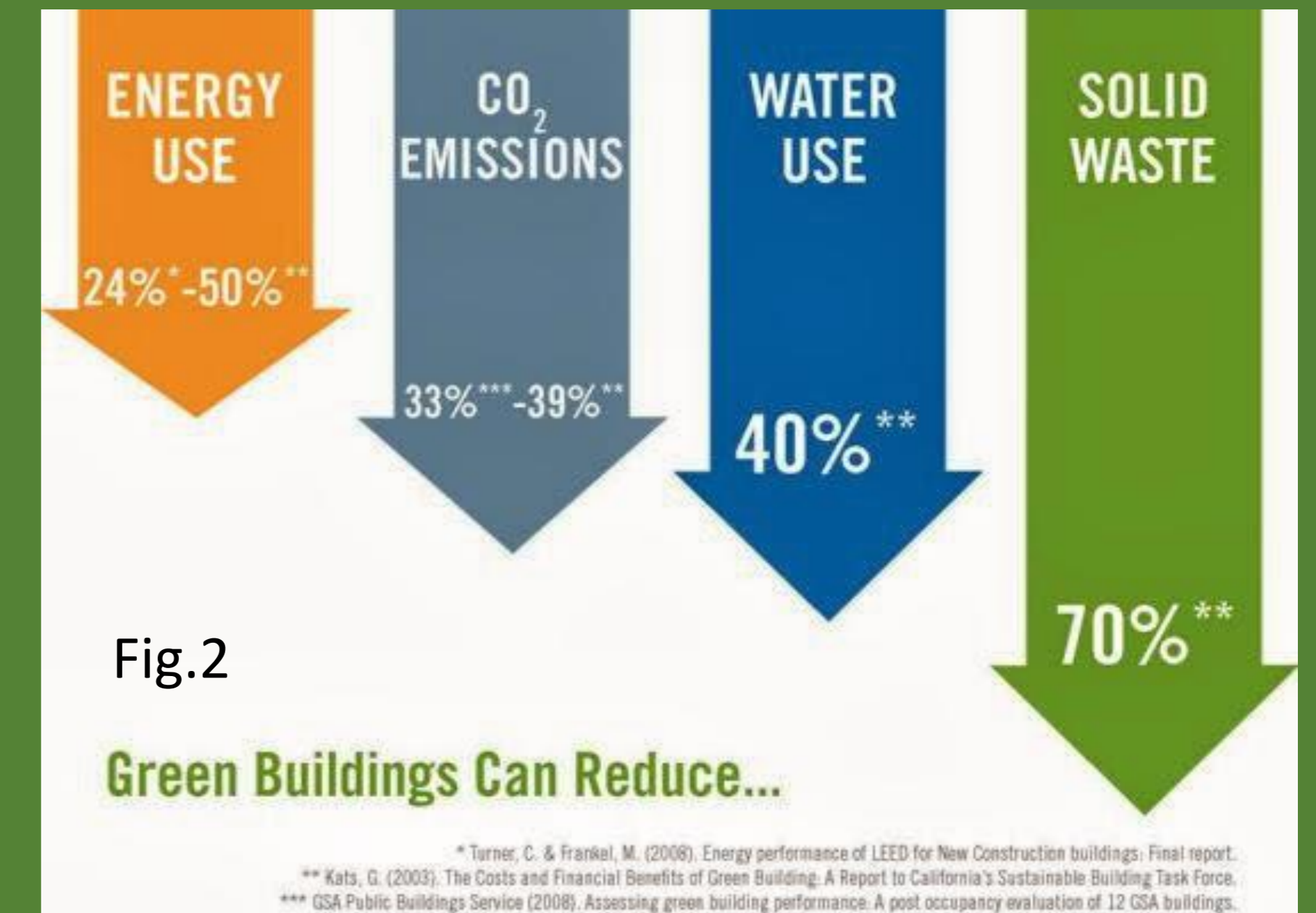


Fig.2

Conclusion:

There are many solutions to lower the environmental impact, mainly focusing on reducing the amount of pollutants, and preserve energy. Implementing new sustainable ways of building put our relationship with nature in a more balanced situation and organize our consumption.

References:

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3. Fig.1 Source: © 2018 2030, Inc. Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017
4. Fig.2 Data Source:
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