VM in green building construction

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Dr. Azzeddine Oudjehane

The road to success is always under construction…

Who we are

SAIT Polytechnic – School of Construction
BSc Construction Project Management
2012 CSVA Award of Merit / Education

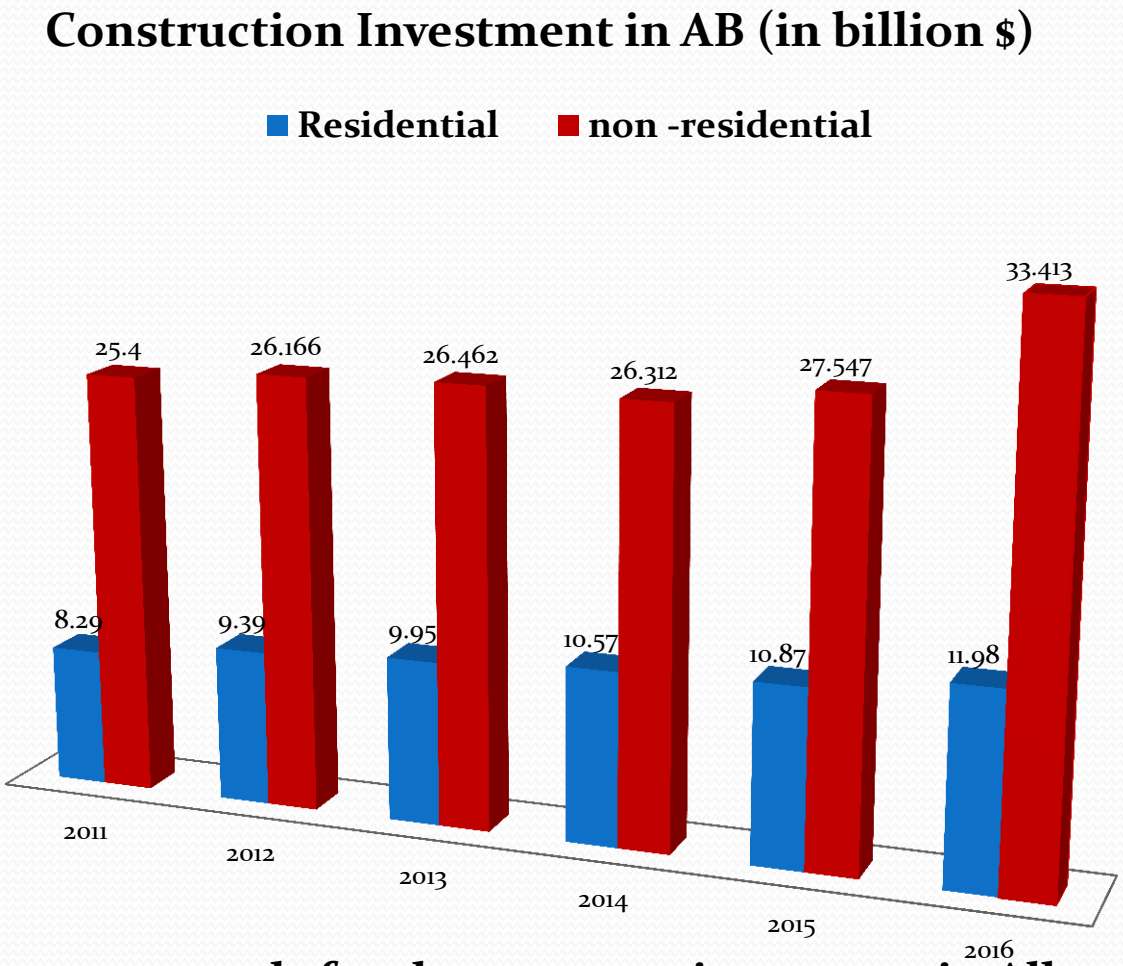
Learning objectives

- Identify the challenges of the construction industry
- Review the benefits of green building
- Review the trends for green building
- Define VM for construction and green building
- Implementing VM for sustainable/green building

The construction industry

- In 2014, the global construction industry was worth $8.7 Trillion. + $12 Trillion by 2020
- 35% of investments in emerging markets (South east Asia, MENA, India,…) in 2013, will reach 52% in 2025
- Construction investments in Canada totalled: ~$399 B in 2013; ~$ 405 B in 2014 (+1.25%)
- In 2004, construction investments in Canada was ~$180 B +***125% investment increase in 10 years***

Investments in construction



Investment trends for the construction sector in Alberta –

Source: Alberta Construction Sector Council

Opportunities and Challenges of the construction sector

- Economic uncertainty
- Steady growth and strong demand for projects
- Labour market and workforce issues
- Green or sustainable construction
- Lean construction
- Innovation and new technologies such as BIM
- Efficiency and productivity: "**Construction 2.0**"

Why Green building?

The Green stats.

Building industry:

- uses 40% of world's materials and energy

In Canada

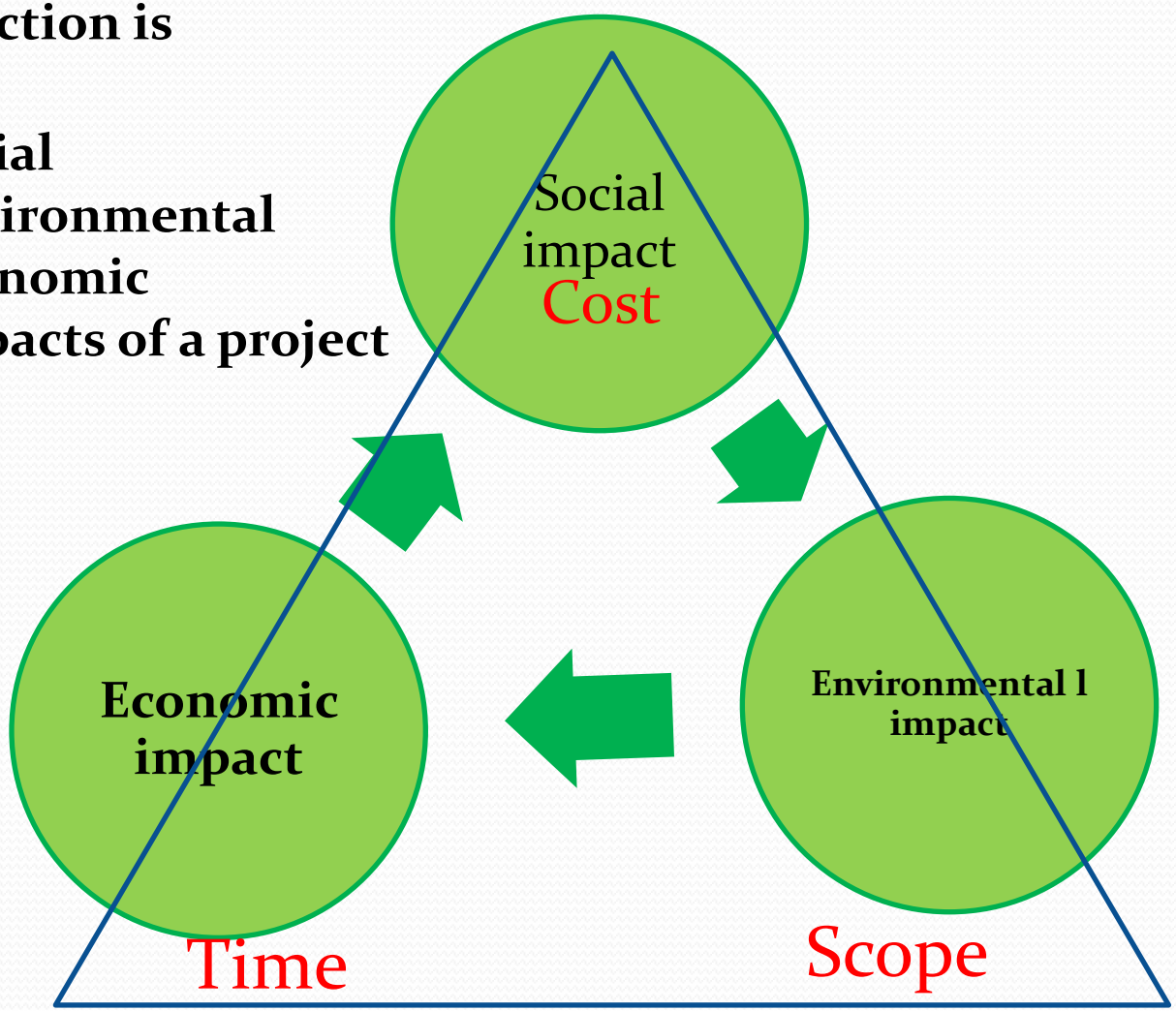
- 35% of GHG emissions
- 33% of energy consumption
- 50% of natural resources consumption
- 25% of solid waste going to landfills

We spend +90% of our time inside buildings

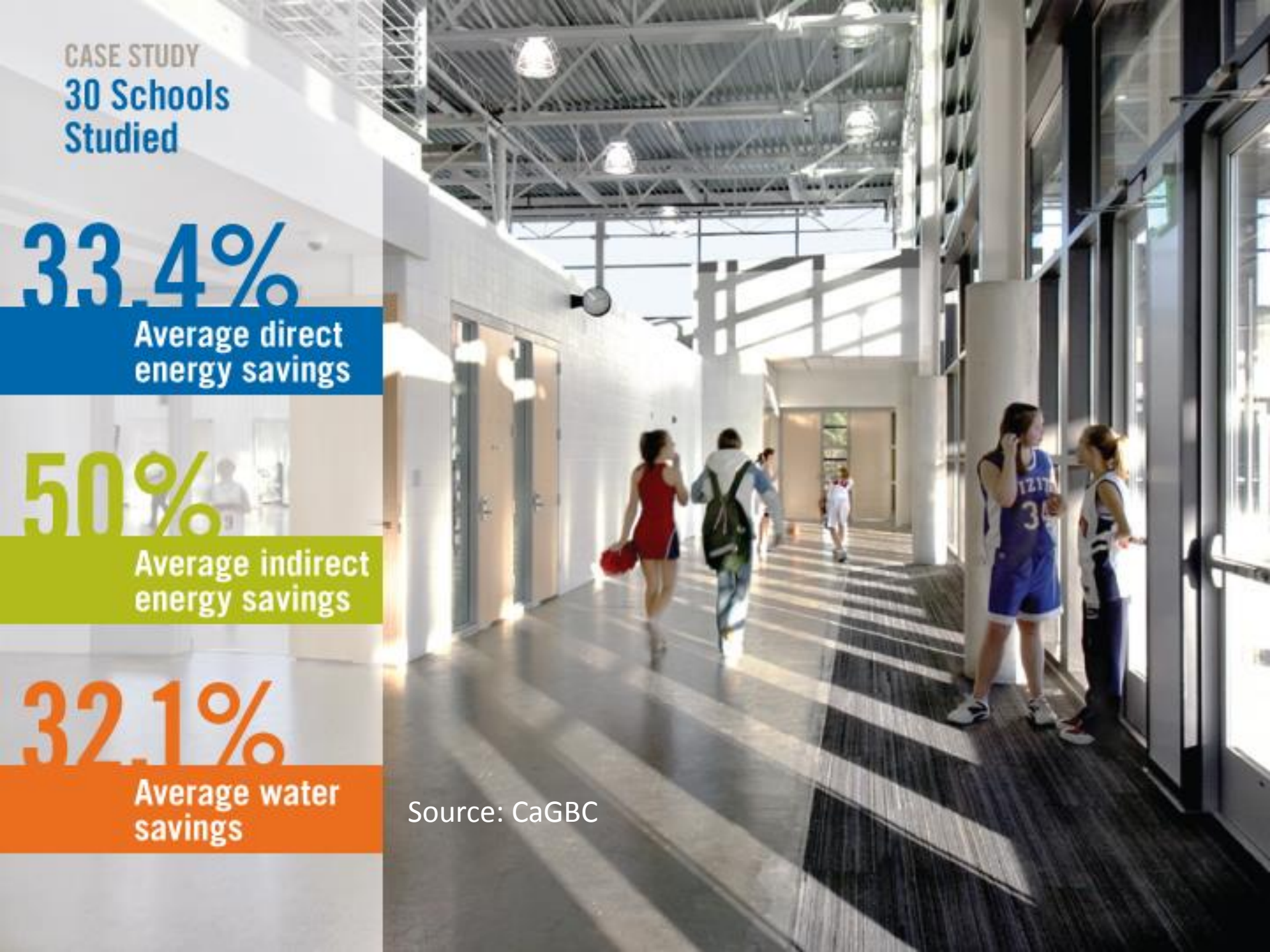
What is sustainable construction?

Sustainable construction is concerned with the

social
environmental
economic
impacts of a project



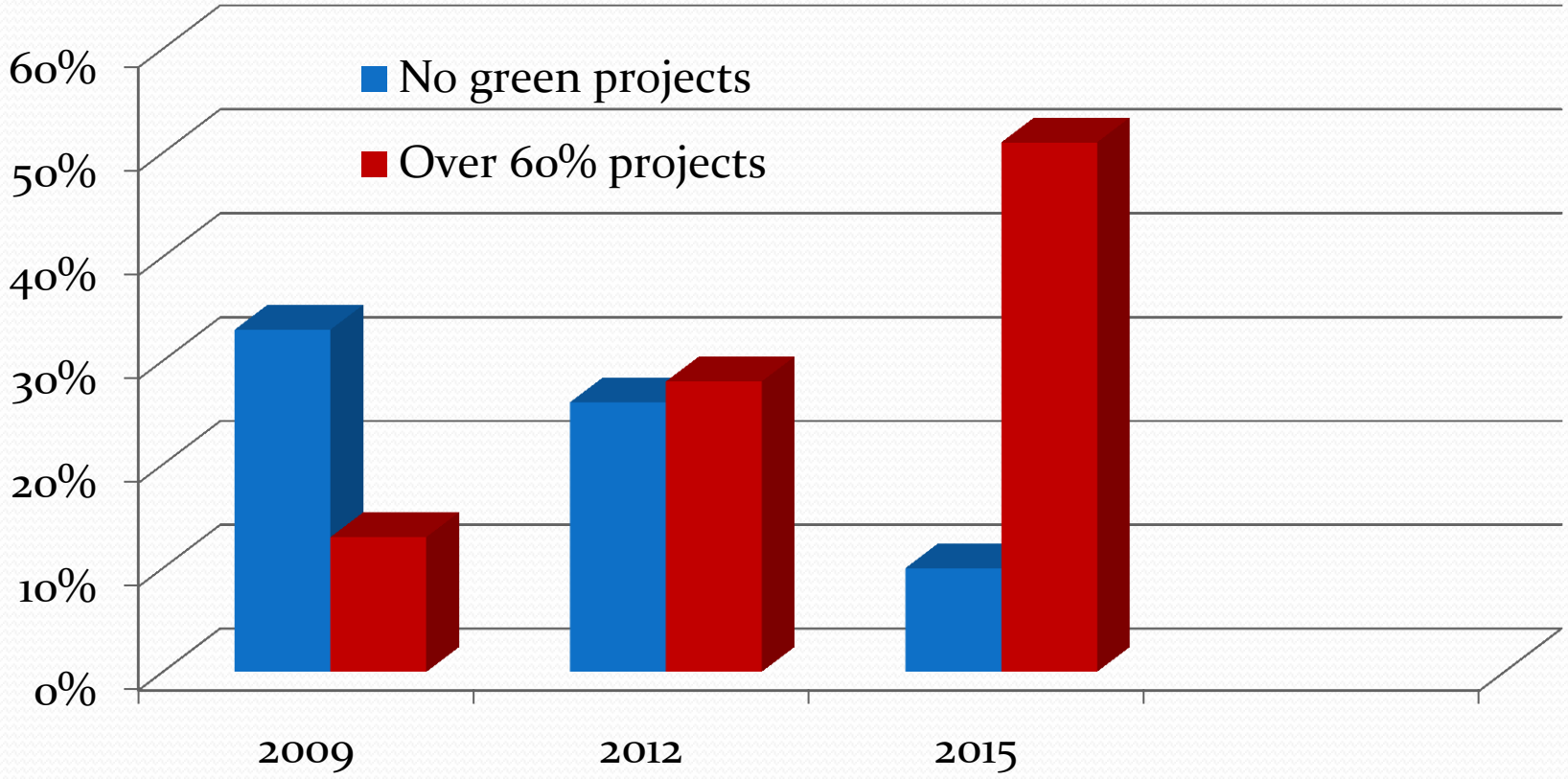
Benefits of building green?


CASE STUDY
30 Schools Studied
33.4%
Average direct energy savings
50%
Average indirect energy savings
32.1%
Average water savings
Source: CaGBC

What are the obstacles to green building?

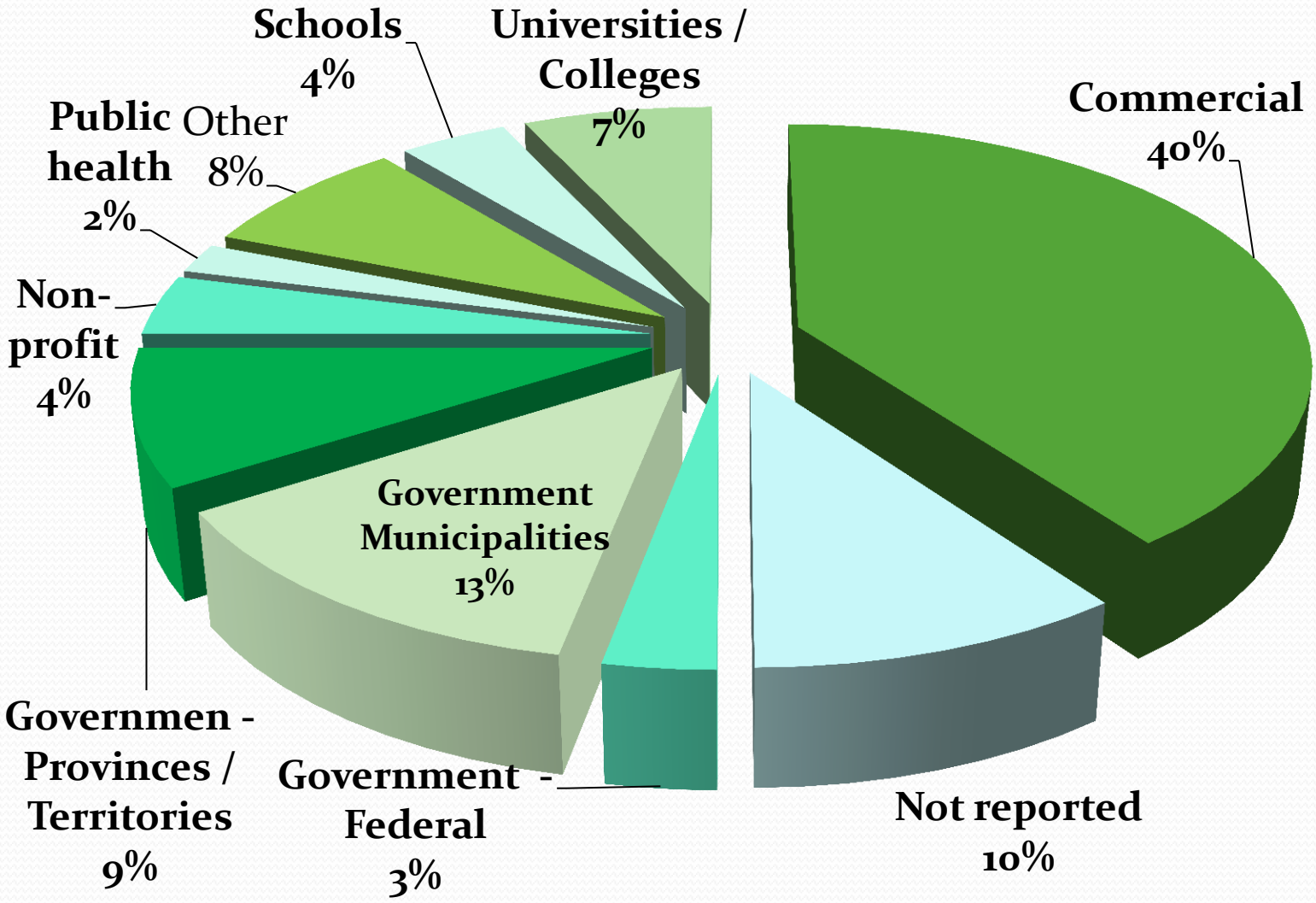
Global green building activities

Results of a survey over 62 countries



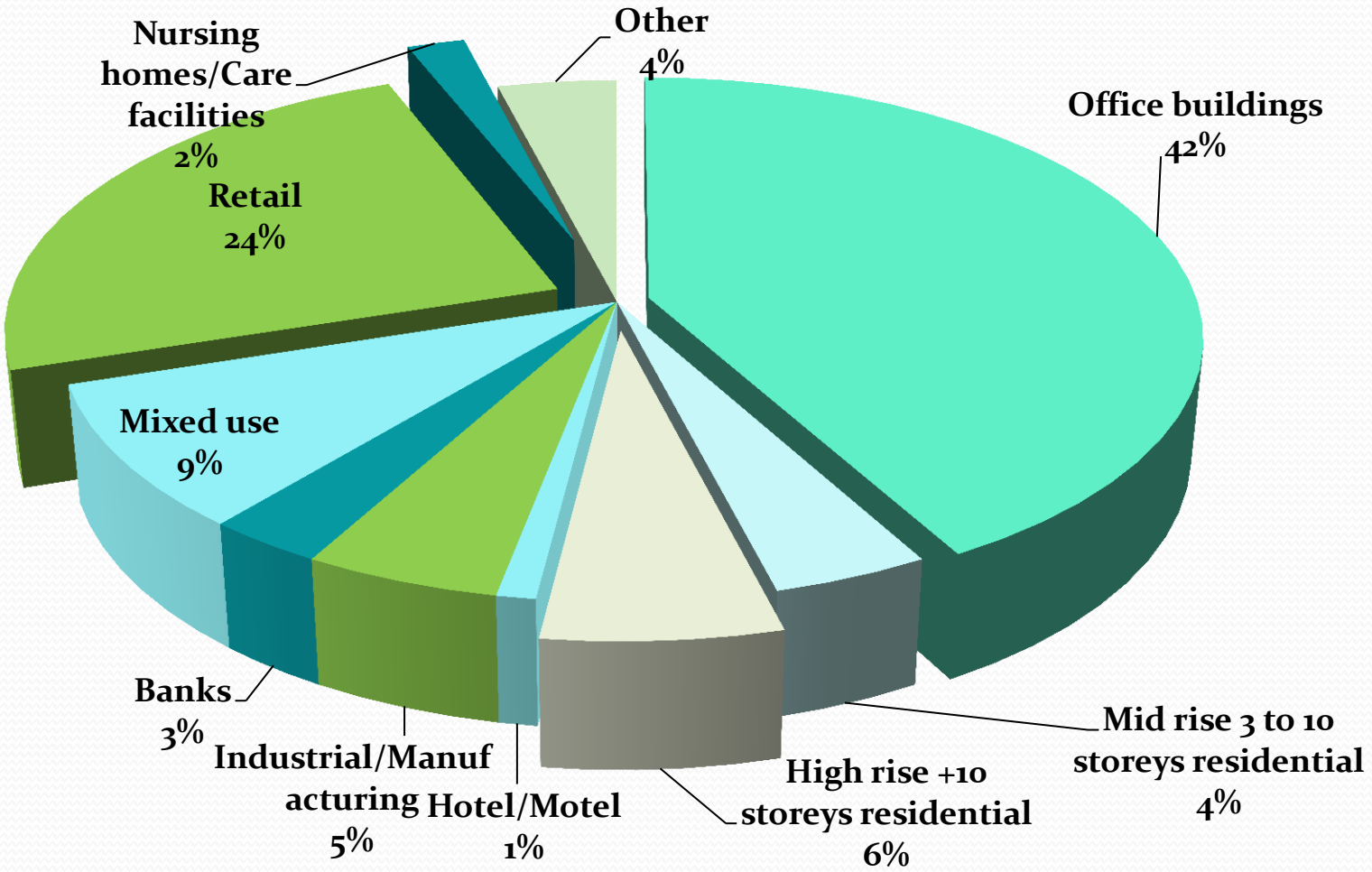
Source: World Green Building Trends
Smart market report by McGraw-Hill Construction

Registered/Certified green projects by Owner type

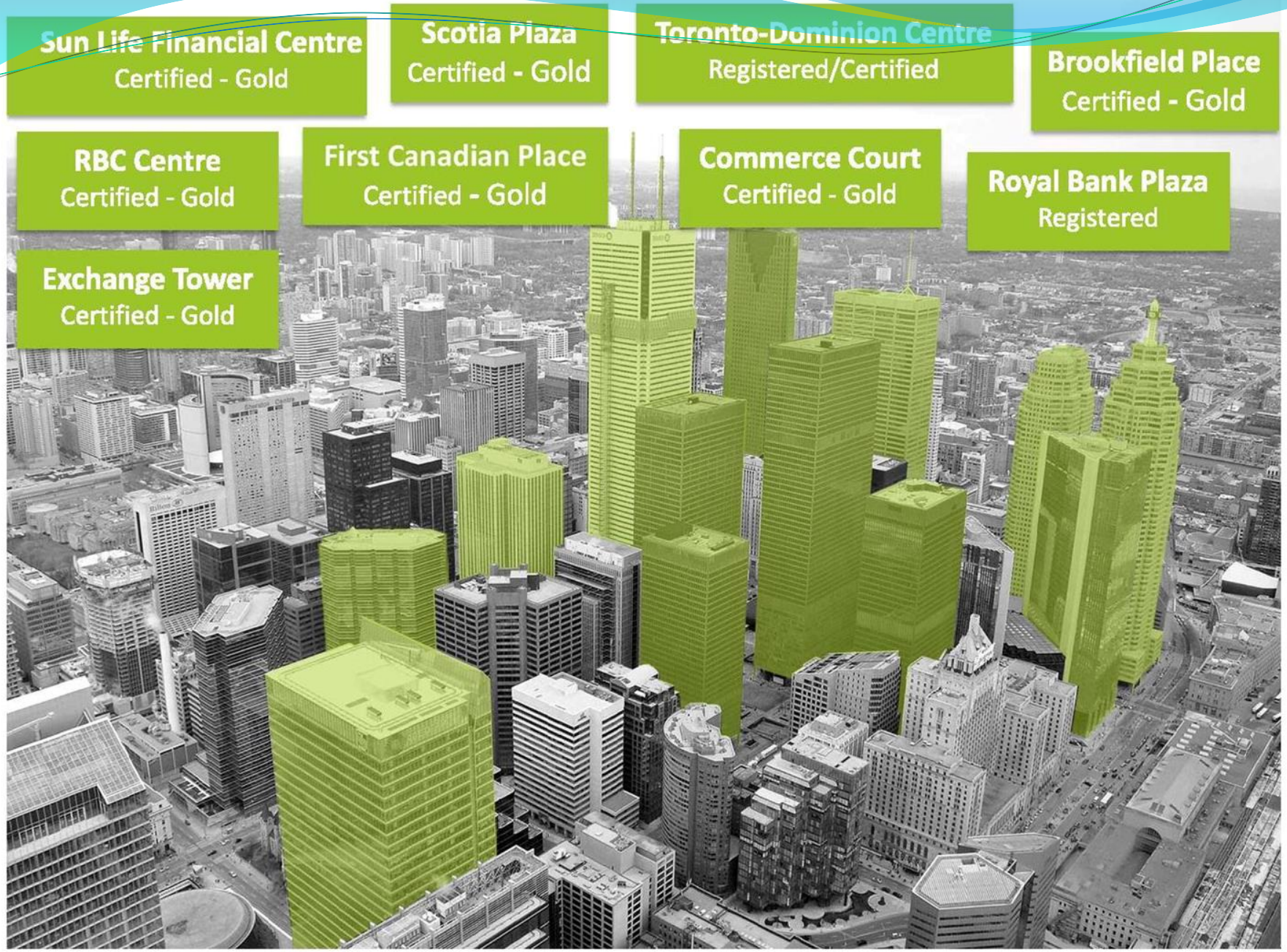


Source CaGBC: Trends for green building 2014

Registered/Certified green projects by Building type



Source CaGBC: Trends for green building 2014



Ref: Green building trends -Courtesy of CaGBC

LEED Gold building at SAIT

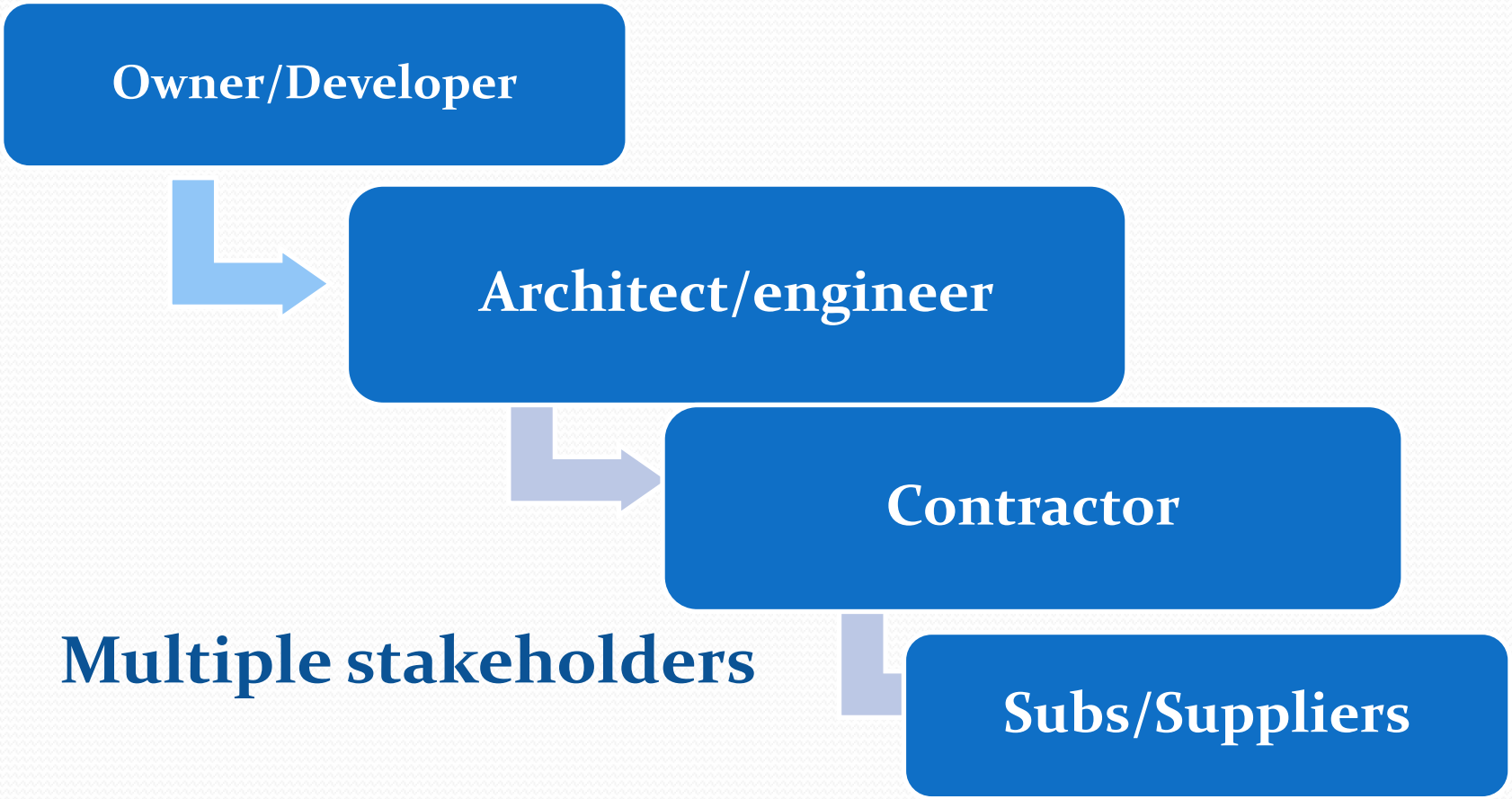
LEED Gold building at SAIT

LEED Silver building at SAIT

A sustainable neighborhood

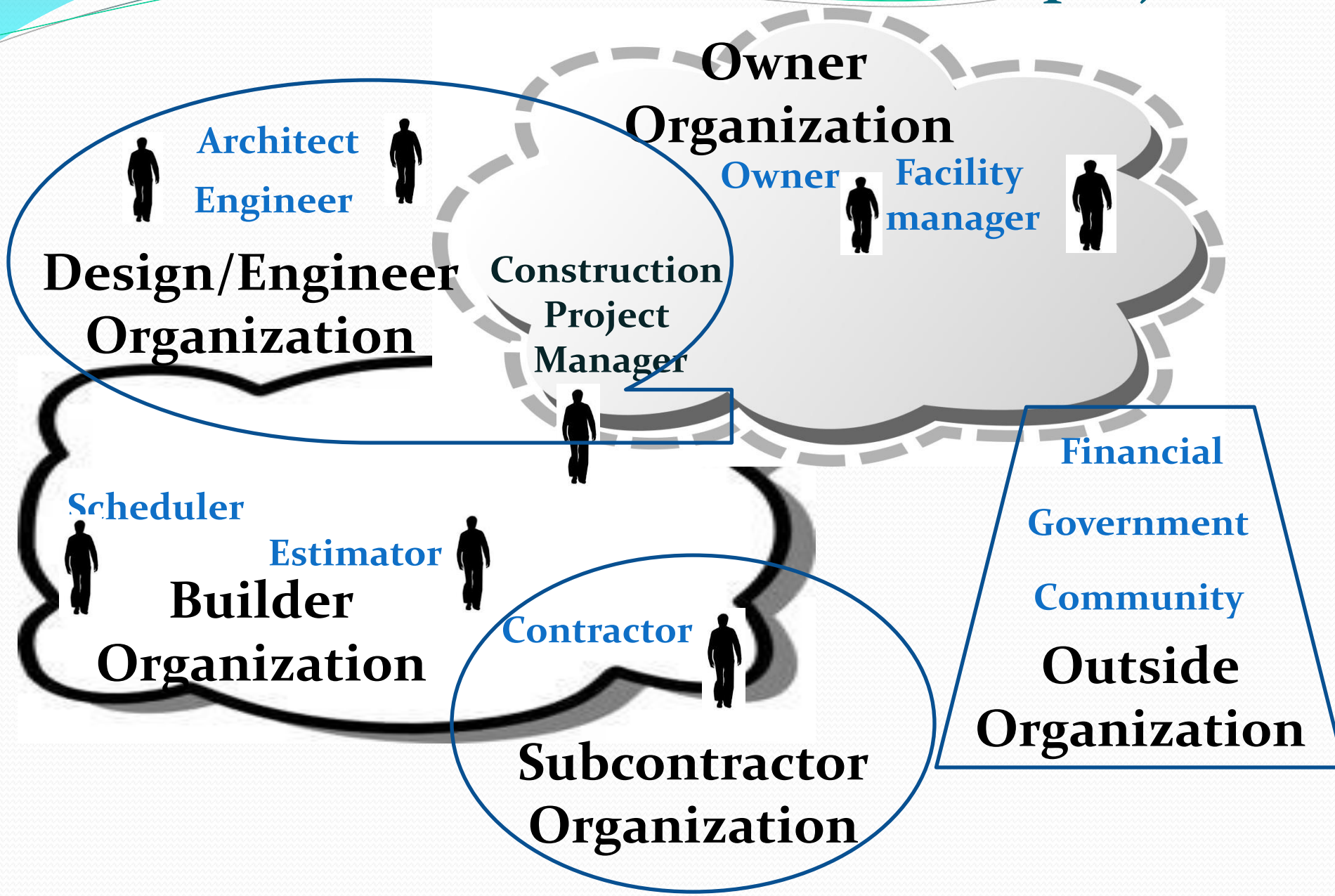
VM in construction projects

The business model in construction projects



Multiple stakeholders

The stakeholders in a construction project



Other challenges…

- *Communication* or ***lack of it…***
- *Collaboration* or ***lack of it..***

Did you know???

For every $ 1 billion in project investment

13.5% **$ 135 million is at risk**

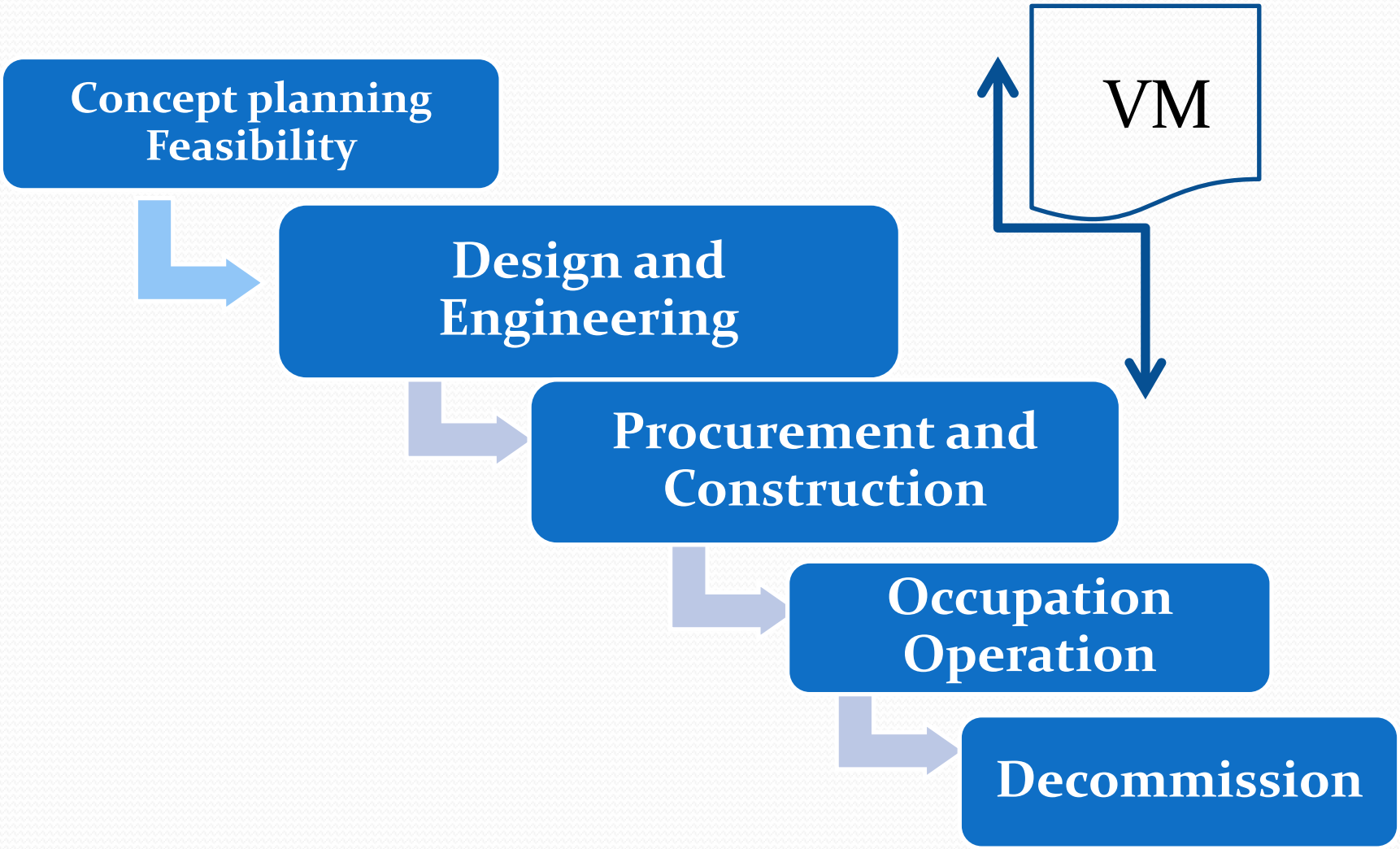
56 % **$ 75 million is at risk due to ineffective communication**

Ref: PMI 2013 report

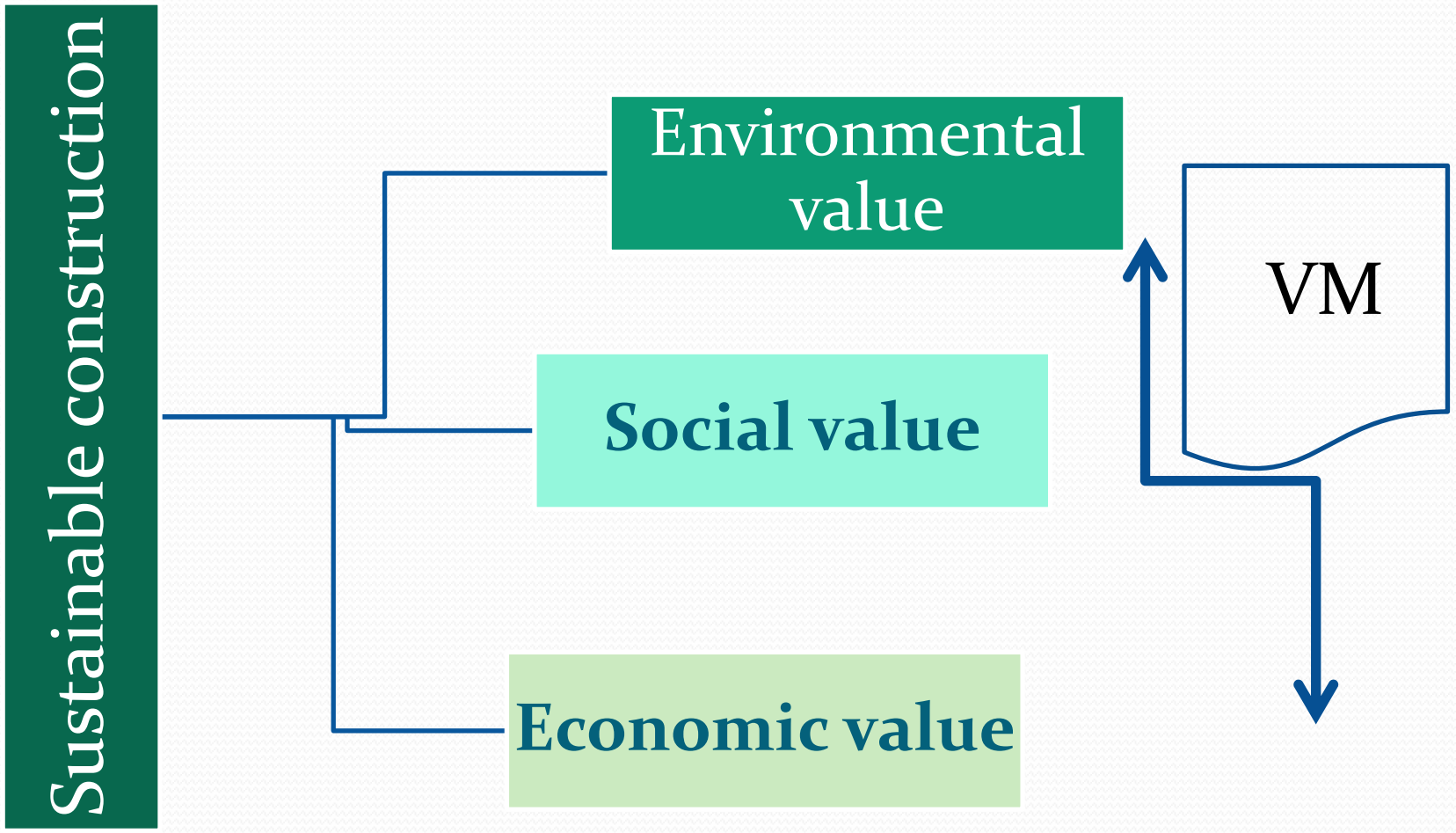
WHY VM?

- to provide the best design alternatives for projects
- to reduce costs of projects
- to improve quality
- to improve organizational performance
- to improve schedule
- to reduce risk
- to identify problems
- to provide optimized solutions

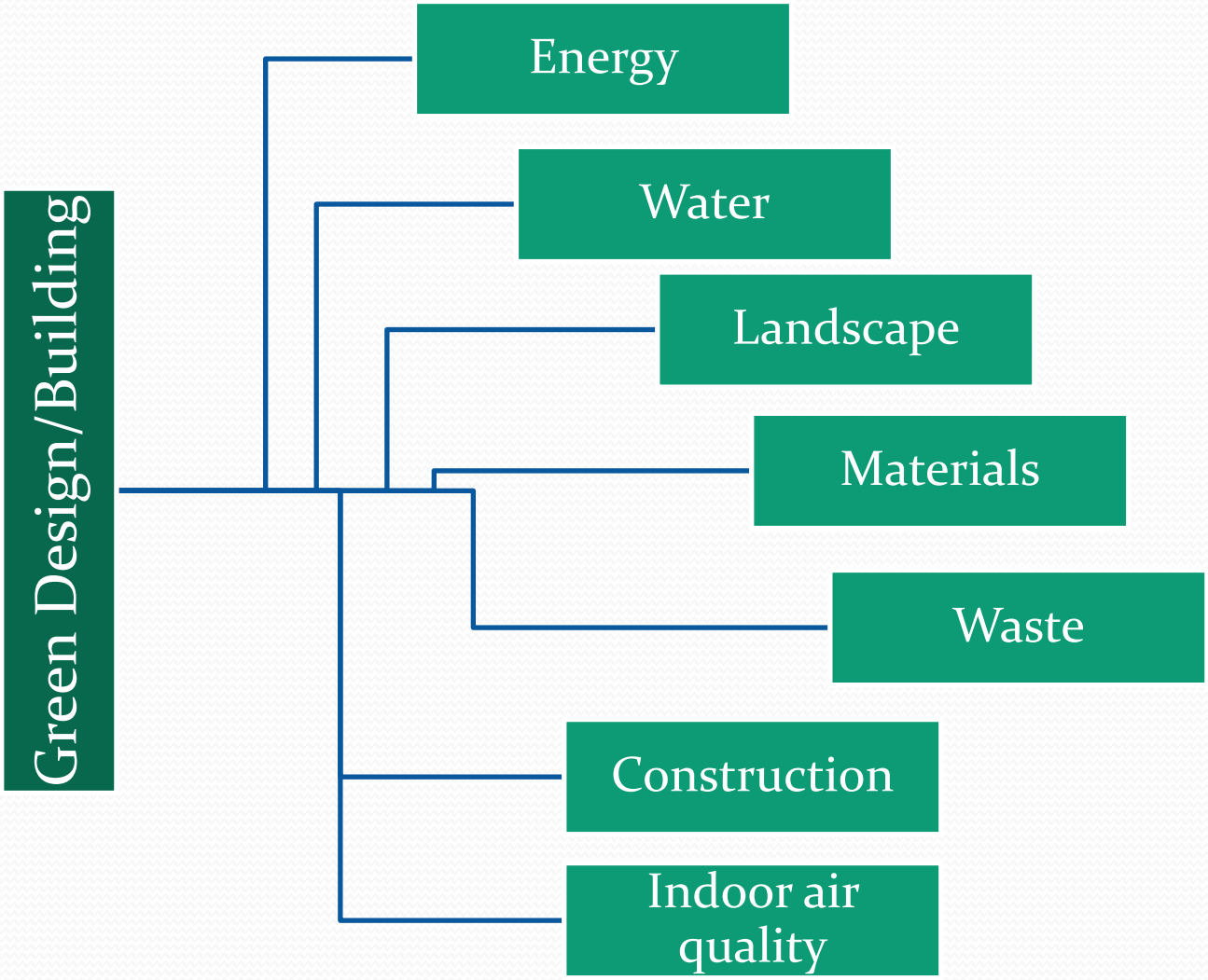
VM in construction projects



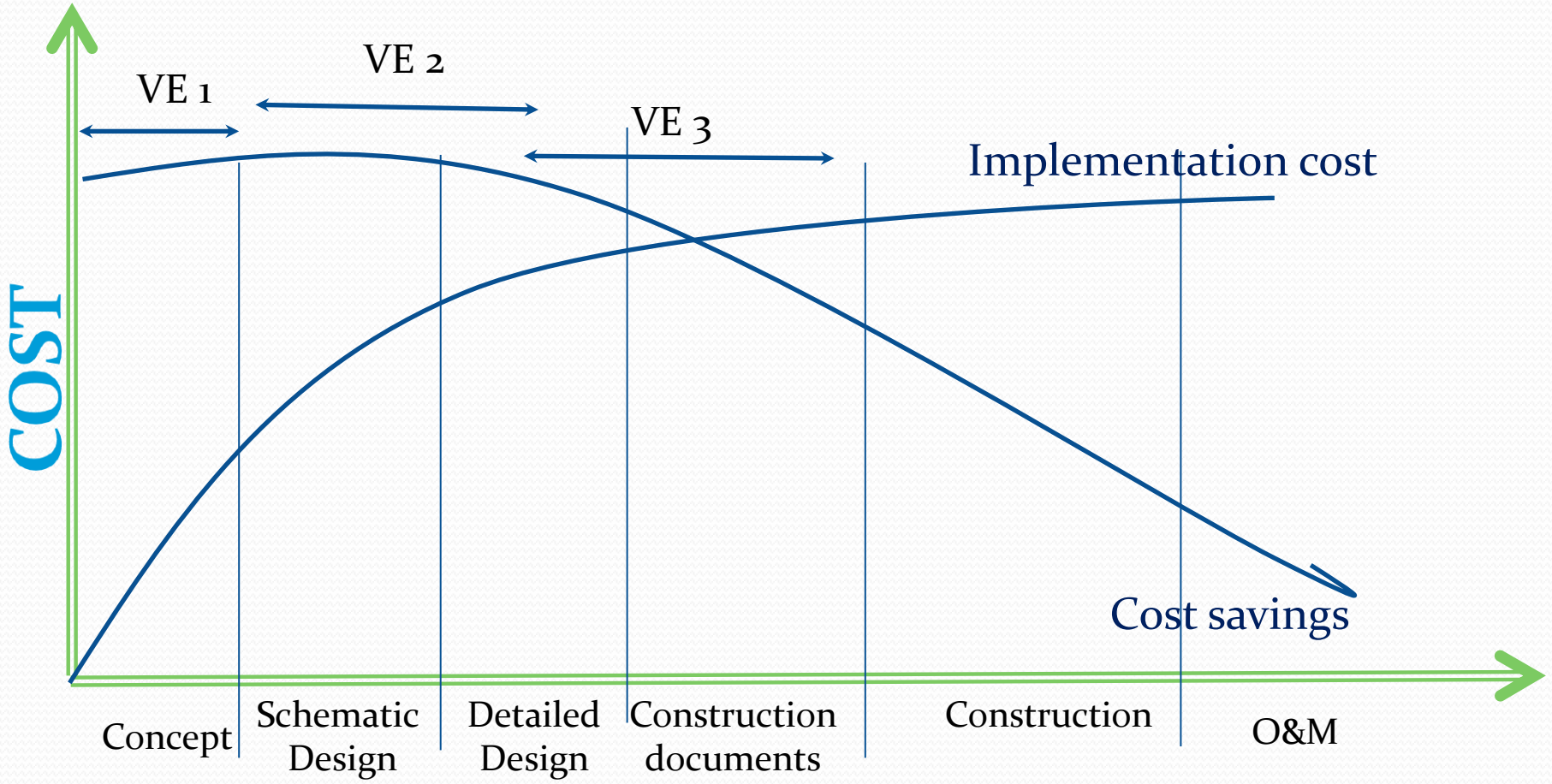
VM functions for Sustainability



VM checklist for green building



VM for sustainable construction projects



Project Life cycle

Implementing VM for green/sustainable building

An Integrated design process during the project briefing – a 3 steps process

- VE 1 – During the programming phase
- VE 2 – During the detailed design phase
- VE3 – During the detailed design phase and construction administration

Our proposal/Objective

- Define a systematic multi-step VM approach to construction projects
- Train the next generation of construction project managers

So that:

All construction projects are delivered with high quality, and are eco friendly: optimized cots to impact relationships


ANIMALS
HIPPOPOTAMUS
ZEBRA
Nutrition Facts
Serving Size 8 crackers (28g
Servings Per Container About 2
Amount Per Serving
Calories 120
Calories From Fat 30
% Daily Value*
Total Fat 3.5g 5%
Saturated Fat 1g 5%
Trans Fat 0g
Polyunsaturated Fat 1.5g
Monounsaturated Fat 0.5g
Cholesterol 0mg 0%
Sodium 140mg 6%
Total Carbohydrate 22g 7%
Dietary Fiber Less than 1g 3%
Sugars 7g
Protein 2g
Vitamin A 0% • Vitamin C 0%
Calcium 10% • Iron 4%
* Percent Daily Values are based on a 2,000 calorie diet.
CONTINUED ON OTHER SIDE

Blaise Pascal

"Je crois ce que je vois,
Je vois ce que je regarde
et je regarde ce que je veux"

"I believe what I see,
I see what I look at,
and I look at what I want"

- **Dr. Azzeddine Oudjehane**

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