

Building the Foundation for Sustainable Infrastructure in Ghana: Reforms in Education, Training, and Professional Practices

by

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Presentation Outline

- Background/Context
- Objectives
- Reforms in Higher Education
- Reforms in Built Environment Professional Practices
- Summary and Conclusions
- Recommendations

Background

- *2011 Workshop at the Engineers Center: Creating Sustainable Communities through Integrated Partnerships and Collaborations*



- 2014 Infrastructure survey of Built Environment professionals

Consensus
from Panel
Session

Ghana's path to attaining and sustaining a robust economy appears convoluted

Inherent weaknesses in the educational system and technical training

Weaknesses adversely impact professional practices

Specific challenges in
higher education
identified by session
participants

“Not enough lecturers”

“Lecture rooms are very packed; if you are late you don’t get a seat”

“Course contents are archaic and not at pace with current world trends”

“Course content are very theoretical with no meaningful practical application; you pass by being good at memorization”

“Don’t feel comfortable expressing thoughts in the classroom, intimidation from some lecturers”

Challenges in
educational system
identified by session
participants

“Don’t have good labs and computer facilities; some equipment are ancient”

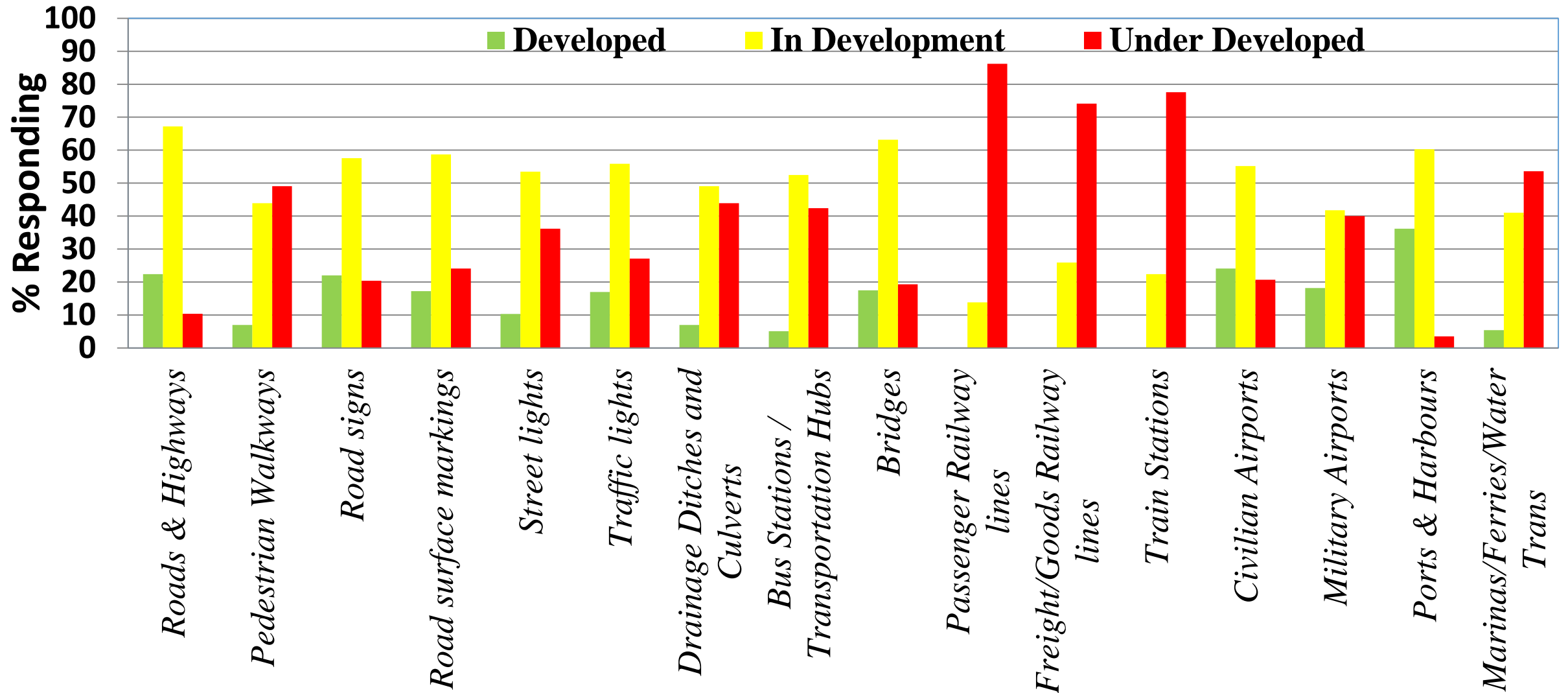
“No opportunity for practical training in the industry”

“Meals are not enough to give you the energy to learn; how can I be at my best with half-full stomach?”

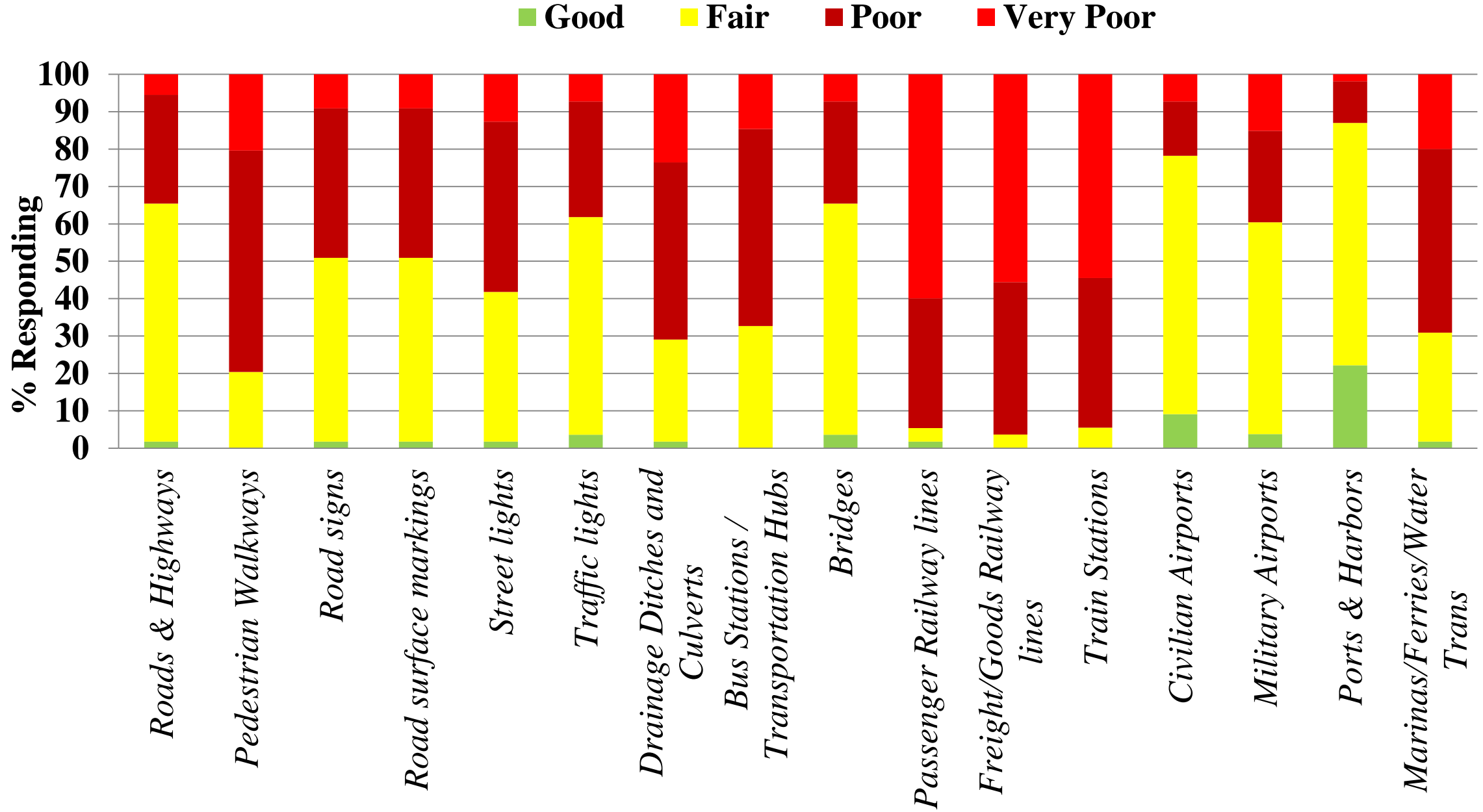
2014 Built Environment Professionals Survey on *Perceptions* of Ghana's Infrastructure

- Development Status of Infrastructure
 - **Developed** : Sector is operational with acceptable levels of service
 - **In Development**: In the planning, design, or construction phase
 - **Underdeveloped**: Exists but with unacceptable levels of service or system is non-existent
- Condition of Infrastructure
- Level of corruption associated with infrastructure

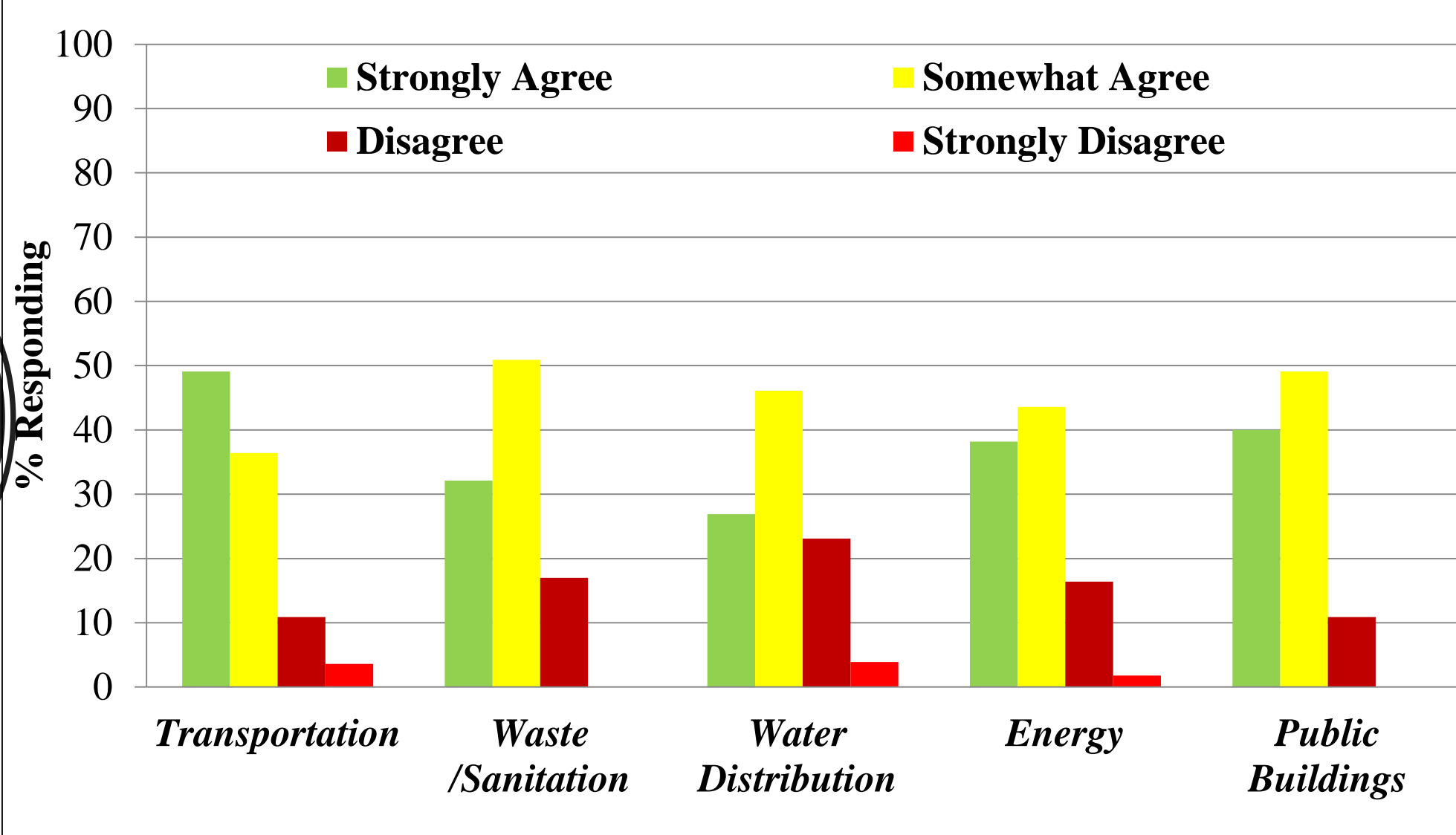
Transportation Infrastructure Development Status



Transportation Infrastructure Condition



There is a very high degree of corruption in sector



Why Sectors are Characterized by Less Desirable Attributes

- Corruption
- Poor planning
- Inconsistencies and outdated design standards and practices
- Inadequate enforcement of construction regulations and specifications
- Poor construction management
- Poor quality control and quality assurance
- Inadequate investment
- Inadequate and poor maintenance practices

Objectives

Outline specific reforms in higher education necessary to adequately prepare students for careers in the built environment

Outline specific reforms in professional practices to promote sustainable infrastructure in the built environment

Theme 1:

*Knowledge
Advancement &
Education of
Students pursuing
careers in the Built
Environment*

Theme 2:

*Provide the required
physical and
sustainable
environment to
enhance the learning
experience*

**Reforms
in Higher
Education**

Theme 3:

*Infuse leadership
skills, professional
ethics and career
development as part
of the overall
academic training*

Theme 4:

*Establish Centers of
Innovation and
Excellence for
developing
Entrepreneurship*

Theme 1:
*Knowledge
Advancement &
Education of
Students pursuing
careers in Built
Environment*

Requires

Council of Visionaries (faculty, professionals, business leaders and industrialists, student representatives and staff]

Provides guidance on

- Institutional Advancement
- Faculty Development Programs
- Faculty Excellence & Evaluation
- Research and Development
- Faculty Recruitment
- Class Size
- Extra-Curricular Academic Model

Theme 2:

Provide the required physical and sustainable environment to enhance the learning experience

Requires

Collaboration with industry and investors to *explore and establish long range strategic development plans and funding opportunities*

that provide

- State-of-the-art laboratories, libraries, computer rooms and facilities, lecture halls, and office spaces.
- **Information Technology and Communication Facilities**
- Arts & Culture, Sports and Recreation Facilities
- **Living and Learning Centers**
- Health and Medical Facilities
- **Engineering Services and Facilities Management**
- Entrepreneurship / Business Development /Mini-Manufacturing Hubs

Theme 3:

Infuse leadership skills, professional ethics and career development as part of the overall academic training

Requires

Establishing faculty, professional and student-run leadership institutes to develop *initiatives aimed at promoting leadership building, career development*

Initiatives include

- **Facilitate practicing professionals, alumni and student interactions forum and discussions**
- Introduce exemplary professional and leadership seminars to motivate and challenge students
- **Institute career fairs for students to better understand the different areas of professional and technical job opportunities and expectations**

Theme 3 (cont.):

Infuse leadership skills, professional ethics and career development as part of the overall academic training

Requires

Establishing faculty, professional and student-run leadership institutes to develop *initiatives aimed at promoting leadership building, career development*

Initiatives include

- Encourage and incentivize faculty to serve as advisors/mentors to student organizations and help to develop and maintain productive partnerships with the larger professional institutions
- **Develop mentorship programs to develop and coach students in their professional careers**
- Put emphasis on personal ethics and professional ethical behaviors.

Theme 4:

*Establish Centers of
Innovation and
Excellence for
developing
Entrepreneurship*

Requires

University-Industry-Private
Partnership

Tasked to create

- A central data bank and technology hub for infrastructure and national development efforts.
- **Collaboration between universities and colleges, polytechnics, and trade schools with various state research institutions, agencies and ministries**
- Develop an approach for scaling up Process Technology from lab scale through pilot scale and finally to full-scale development and implementation

Theme 4 (Cont):
*Establish Centers of
Innovation and
Excellence for
developing
Entrepreneurship*

Requires

University-Industry-Private
Partnership

Tasked to create

- Entrepreneurial student teams to lead various programs under the direction and mentorship of faculty and industry representatives.
- Close collaboration between faculty and industry partners both acting as major stakeholders providing education and training modules.

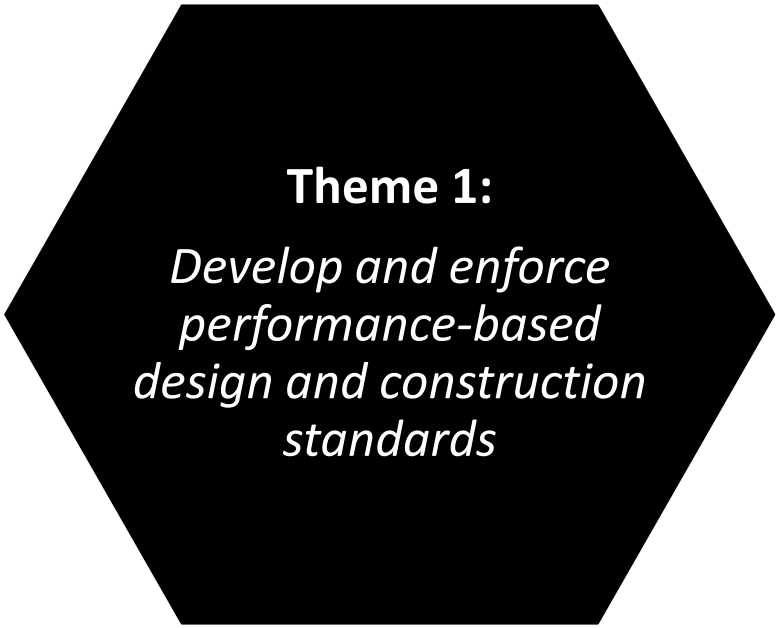
Theme 1:
Develop and enforce performance-based design and construction standards

Theme 2:
Position the BE to be nationally and globally recognized body of professionals who exhibit and maintain high ethical and professional standards

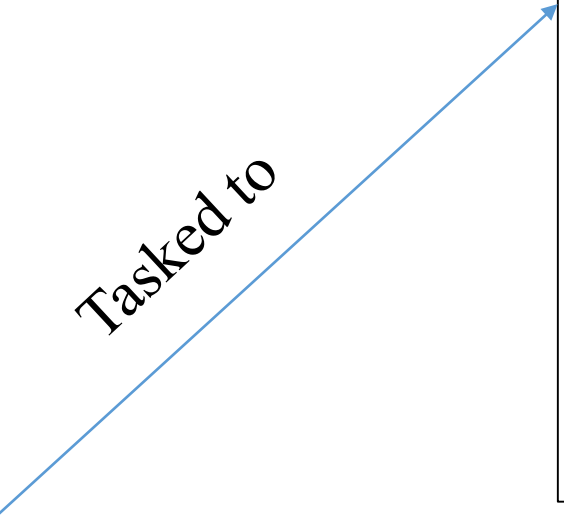
Reforms in Professional Practices in the Built Environment

Theme 3:
Create professional culture to promote societal recognition for the value of Built Environment professional practice, along with the appropriate rewards

Theme 4:
Create professional leadership, mentorship and coaching programs



Technical Oversight Committee
(Higher educational institutions, private companies and governmental institutions)



- Advocate vigorously for the establishment of national design and construction codes and standards for the BE Industry
- Develop continuing education programs and certification for educating, training and certifying special inspectors and testing individuals to enforce regulations across the country

Theme 2:

Position the BE to be nationally and globally recognized body of professionals who exhibit and maintain high ethical and professional standards

Requires

Tasked to

Ethics & Professional Standards Committee

[Built Environment practitioners, higher educational institutions, regulatory agencies, government agencies]

- **Develop and improve code of ethics for the professional practice**
- Develop continuing education accredited programs to ensure professional advancement in the professional practices
- **Develop effective regulatory and professional practice policies, and standards for reviewing professional misconducts and necessary disciplinary measures**

Theme 2 (Cont.):

Position the BE to be nationally and globally recognized body of professionals who exhibit and maintain high ethical and professional standards

Requires

Tasked to

Ethics & Professional Standards Committee

[Built Environment practitioners, higher educational institutions, regulatory agencies, government agencies]

- Develop programs to establish and promote business and contractual relationships that encourage sustainable and integrated planning, engineering, design, construction, operation, and maintenance for community resilience and minimize societal risks.
- Develop pro-active advocacy plan for inclusion as primary participants and contributors in formulation and implementation of national infrastructure, educational and economic policies.

Theme 3:

Promote societal recognition for the value of Built Environment professional practice, along with the appropriate rewards

Requires

Tasked to

Professional Development Committee

[Professional organizations and higher educational institutions in the Built Environment]

- Develop initiatives to recognize and reward professionals and students making a difference in communities with their professional skills and talents
- **Develop incentive programs to actively engage practicing professionals to mentor and coach students and young professionals**
- Promote professional responsibility and volunteerism

Theme 4:

Create professional leadership, mentorship and coaching programs

Requires

Mentorship

[Professional organizations and higher educational institutions in the Built Environment]

Tasked to

- Develop programs to support established leaders by enhancing core leadership skills and developing cross professional relationships in order to enhance collaboration, creativity, strategic relationship building, change management and interactive and integrated planning and decision making
- Initiatives to improve capacity for current professional leadership and create a diverse pipeline for future leaders and visionaries

Summary & Conclusions

Higher education is an instrument and a major driver of sustainable infrastructure and economic growth. However, several gaps exist in Ghana's higher educational system and technical training; such gaps negatively impact professional practices

Ghana's infrastructure sectors are mostly underdeveloped and exhibit fair to poor condition rating

Several factors are attributed to the underdevelopment and the less desirable conditions of infrastructure, including poor planning, inconsistencies in design practices, lack of enforcement regarding building construction regulations, poor construction management and quality control, inadequate investment and maintenance practices, and corruption

Reforms are needed in both higher education and professional practice in the Built Environment

Recommendations

Advance knowledge and educate students in areas of the Built Environment

Provide the required physical and sustainable environment to enhance student learning experience

Infuse leadership skills, professional ethics and career development as part of student academic training

To remain relevant and competitive, Ghana must adopt a strategic plan to improve skills and productivity and encourage creativity and innovation.

Develop and enforce the adoption of performance-based national design and construction codes and standards that incorporate resilience in the Built Environment