
 Diffusing Green Skills in Building Construction Trade: A key to Social sustainability

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ABSTRACT

One of the sustainability triplet issues apart from the environmental and economic that requires world's attention is the social dimension. This dimension labelled as the third tier of sustainability receives less attention by authors and countries despite its importance in ensuring that the basic needs of all people are satisfied irrespective of ethnicity, geography or gender, allow them to develop and use their intellectuality which will enable them to live healthy, fulfilling and happy lives. With regard to aforementioned, this paper technically reviewed literatures on green skills and focuses on diffusing of green skills or rather skills for sustainability into building construction sector which is identified as the sector that encompasses all the three tiers of sustainability (environmental, economic and social). Three green skills were identified appropriate for integration into the building sector with a view to give both workers and occupants safe working and living respectively. These skills include strategic and leadership skills, transversal skills and adaptability and transferability skills. Strategic and leadership skills is linked to social sustainability because it helps leaders in the building construction industries to set the right incentives and create conditions conducive to cleaner service delivery, production, cleaner transportation among others. Similarly, transversal skills that range from problem-solving to interpersonal skills are considered important because having these skills, which can be transferred from one context to another, is a good basis for accumulation of specific skills required by a given job in the building construction industries. Lastly, Adaptability and transferability skills enable workers to learn and apply the new technologies and processes required to green their jobs. These skills when fully diffused into building construction sector will serve as a panacea in achieving social sustainability.

Key Words: Green skills, Strategic and Leadership skills, Transversal Skills, Adaptability and transferability skills

INTRODUCTION

Apparently, social sustainability deals with people; hence, it is seen as the ability of a social system, such as a country, family, or organisation, to function at a defined level of social well-being and harmony indefinitely; but problems like war, endemic poverty, widespread injustice, and low education rates are symptoms a system is socially unsustainable. In his point of view, Landorf (2011) opined that the social equity dimension should consist of two different concepts which are equality of access to resources and opportunities, and satisfaction of the basic needs and is fundamentally

based on the nature of the human needs which are both physical and psychological. Presumably, this physical needs can be satisfied by providing hard infrastructures such as accessibility, shelter, water, safety and security, education and job opportunity Almahmoud and Dolo (2015). Describing further, Almahmoud and Dolo (2015) noted that in the context of construction projects, the concept of social sustainability is reflected through the meeting of the needs of industry, users and neighbourhood communities and each of these communities has a unique relationship with the project and has different expectations and interests from the project. The

main theme of social sustainability is to ensure that present generation of people satisfied their own need without compromising for the next generation to get their need in terms socio-economic development, integrity, health to mentioned but a few. In line with this opinion, Said and Berger (2013) demonstrated that the people's (social) side of sustainability is concerned with the well-being condition of any person affected directly or indirectly by development efforts.

In the same vein, social sustainability according to Global Reporting Initiative (GRI) (2011) includes; labour practices such as employment, labour relationships, occupational hazard and safety, training, diversity, and equity; local community and societal impacts; human rights such as non-discrimination, child labour, forced labour, and remediation; and product responsibility such as customer privacy, customer safety, and product services. Elaborating on the above features of social sustainability while relating to building construction, Almahmoud and Ddoi (2015) came up with the following social sustainability factors:

Capital performance and Accessibility: Ensure the economic sustainability to satisfy the needs of relevant stakeholders through provision of job and creating investment opportunities; utilising locally produced materials and improving local infrastructure capacity in building. More so, the level of accessibility of the project to relevant stakeholders through; the provision of secure and safe open places, paths and facility for the public; the proximity of the project to public transportations and amenities; and the provision of car parks and the development of traffic around the project.

Health and physical/Psychological comfort: The level of improving the health and the physical comfort of the relevant stakeholders through; reducing, noise level, pollutions, glare and waste produced by the project; improving the utilisation of the daylight and air quality; and controlling of the thermal comfort, interior hygiene and the cleanness of the place. Furthermore, the project should enhance the psychological comfort of the relevant stakeholders through Provision places that enable social interaction and group formation; enable stakeholders to control over the spaces that belong to them such as accessibility, thermal condition and lighting;

satisfying the territoriality needs of the stakeholder such as the assumed rights and privilege over space; and ensuring equity and recognising the different status of relevant stakeholders.

Integration and Usability: The level of project integration with neighbourhood community through engaging neighbours in building design and construction process planning; collaboration with education for knowledge sharing and skills development; participating and holding the local social event; and preserving place identity, historical buildings and natural environment around the project. On the other hand, the level of meeting the users' requirements to use the project through: meeting the functionality needs of the users; safe and secure environment; and the information provided about safety of using building equipment and way finding; and the provision of important amenities (toilet, water, rest area, first aid, worship place, etc.)

Operation health and safety: The construction of the project should comply with operation health and safety requirements through the provision of the required information to workers to perform their job efficiently and safely; the implementation of safety and quality management; enabling communication and hearing workers' needs and compliments; enhancing the professional image of workers among the society; and knowledge sharing and skills development.

A critical look at the above-described factors of social sustainability by Almahmoud, it is clear to see social sustainability in respect to building construction as the social sustainability referred to the social well-being of both occupants and worker (Illankoon *et al.*, 2016). In view of the above discussion, three (3) types of green skills identified by Pavlova (2013a) are considered suitable to fit in the building construction sector that include: strategic and leadership skills, transversal skills and adaptability and transferability skills.

STRATEGIC AND LEADERSHIP SKILLS IN BUILDING CONSTRUCTION

Leadership is a key player in the development of any organisation, be it small or big. Defining leadership, Kiyak *et al.* (2011) posited that leadership is an imitative, selective, role-taking,

empathetic process besides it is how to handle implementation of the strategies and source and target in leadership is crucial. Additionally, Despite the multitudes of ways that leadership has been conceptualized, Tabassi *et al.* (2016) sees leadership phenomena and defined it as a process whereby a leader with his intelligence and willpower has a bearing on a group of subordinates to be able them to develop their potentials so as to attain the organizational objectives within granted time, funding and quality. On the same vein, strategic and leadership skills (Dayue, (2016) ; Pavlova, 2013c) are in the opinion that strategic and leadership skills to enable change to prevail in any organisation and good service delivery among others.

In line with the development above and compliance to sustainability, Strietska-Iliina *et al.* (2011) further identified key leadership skills needed to include the ability to develop a long-term vision of how the organization will contribute to a sustainable economy; the ability to inspire a broad range of people internally and externally; and the ability to work collaboratively with different stakeholders. The aforementioned leadership skills prove that leadership is the key to success for every organisation including building construction firms. Additionally, leadership skills according to Modebelu and Ugwuanyi (2014) cover areas like supervision, team-building, goal-setting, planning, motivation, decision-making, delegation and ethical judgement among others.

Consequently, Schoemaker *et al.* (2013) pointed out that strategic leaders are always awake, alert and watchful, honing their ability to anticipate by viewing the environment for signals of change; challenge their own and others' assumptions and encourage divergent points of view; recognize patterns, push through ambiguity, and seek new insights; and have the courage of their convictions informed by a robust decision process. In a bid to possess and put into action the relevant strategic and leadership skills in the construction sector, leaders should be determined to be aware of how to preserve the acquired leadership skills in coherence with what the industry is required. To support this assertion, Dimitrios *et al.* (2013b) posited that leaders who act strategically are able to see a range of chances and guidance, far in the future of the

current phase of organizational development; and are continuously determined to understand how their function provides value to the organization and a series of internal and external reactions that may modify the action which needs to be taken at future stages to increase that value.

Furthermore, in view of the Dimitrios position above, it is quite clear to offer that strategic and leadership skills are of utmost important in the development and running the affairs of any industry. To this end, Newhall (2011) found that leadership development, processes and practices require significant transformation if organizations are to meet the increasingly rapid pace of business change; but in contrary leaders in industries are poorly, do not possess the skills necessary for future business success and do not have a sufficient pipeline of talent within their organization. He (Newhall) further outlined driving and managing change, executing organisational strategy and coaching and developing others as crucial to leadership effectiveness. To this end Marsh (2013) maintained that Effective Project Management is entirely dependent on an individual with great leadership skills; while some people possess natural leadership qualities, other leadership skills must be learned and adapted to ensure that each individual approach leadership is tailored to suit their own individual style and personality.

In addition to possessing other skills for leadership, strategic leaders should be learned and intellectually vocal in the discharge of their duties. With regard to this, Quong and Walker (2010) noted that strategic leaders learn together, share a compatible view of the future, communicate freely and respect others' values using knowledge of, and sensitivity to, different cultures and cross-cultural issues, and entails an understanding of partnerships. Similarly, Barry (2012) stated that leadership skills needed for leadership include the ability to delegate tasks individuals who are unable to trust other people often fail as leaders and forever remain little more than micro-managers, or end up doing all of the work themselves. The rest of the skills according to him (Barry) are team-building skills (ability to provide the substance that holds the team together in common purpose toward the right objective); and problem-solving skills (the ability of an effective leader to

share problem-solving responsibilities with the team and also to have excellent problem-solving skills themselves.

These skills are significance as a result of projects' executive leadership plays an important role in sustainability within which the success of sustainable projects rests on effective leadership competencies of the leaders. Moreover, Jones (2015) stressed that to be able to ensure the achievement of sustainable development project managers within construction, manufacturing, and other project-based industries need to inspire team members to mature sustainable projects within the daily process of satisfying client and project requirements. In view of the aforementioned leadership skills identified by both Barry and Marsh, it is clear to note that leaders in any construction industry should possess team building skills and problem-solving skills among other skills in order lead such companies towards achieving sustainable development with respect to environmental development (planet), social wellbeing (people) as well as economic prosperity (profit).

In this regards Prieto (2013) infers that leadership skills are central to the success of any organisation be it a project, a program, a company, or even a nation, leadership is essential. At economic perspective, Newhall (2011) pointed out that many business leaders had never experienced an economic downturn before, certainly not on the scale is seen in recent years in many important western countries, and, as a result, they had to rapidly shift their way of thinking, use different leadership skills and demonstrate a high degree of resilience while under intense pressure. Consequently, to be a leader in an industry there is a need of combination of individual traits and learnable leadership skills. in line with this assertion by Prieto (2013) proposed a leadership checklist in table 1 titled tool for self-assessment as well as a roadmap to the actions you will need to take to establish and build the leadership skills and culture organisations require. The checklist combined both essential characteristics of leaders with the learnable leadership skills

Table 1: Leadership Skills Checklist (Prieto, 2013)

Vision	Focus	Drive
Essential Characteristics of Leaders		
Passion Passion Integrity/trust Competence Broad perspective Tolerance and respect	Persistence Persistence Commitment Resilience Risk taking Decision making Sense of self Self-confidence Self-motivation Self-esteem	Patience Calm focus Sense of time
Learnable Leadership Skills		
Communication Sense of team Team building Team development Teamwork	Continuous learning Doing	Continuous learning Motivation Coaching mentoring

Prieto further maintained that with a careful blend of passion, persistence, and patience, one achieves, in the fullest definition of leadership, all that you set out to accomplish through the efforts of others. Hence, leadership involves duty to share with others the vision that flows from your passion and the

vision must be all embracing and genuine and hence, to achieve any worthwhile vision, you must take risks. The learnable leadership skills as they represent the heart and soul of each of the courses are explained under the following sub-headings:

Communication and Motivation: Leaders communicate up, down, and sideways. They do it constantly. Leaders communicate by walking about. They are out front, in the middle, and supporting from the rear—fully engaged. Leaders do not lead from their offices, from headquarters, or by memo—success comes from engaged leadership. Leaders, most important, remember that effective communication starts with listening. And to listen you have to be out there and engaged. Leaders listen. Leaders should create a climate for motivation by ensuring that the values and principles of your organisation are well understood. You do this by coaching and mentoring—both learnable skills that are enhanced with use (Prieto, 2013).

Empowerment and the sense of team: Empowerment goes hand in hand with motivation. Motivation without empowerment is just words. Empowerment gives people room to run and equips them to do so. Additionally, in terms of sense of belonging, this includes team building, team development, and teamwork—the three different shades of the concept of team. Without a team to lead, a leader is alone. Leadership, if anything, is about the process of giving meaning—through a shared vision—to an organisation and, after building and developing the team, channelling their passion and drive toward that shared goal (Prieto, 2013).

Doing and Continuous learning: Doing, or taking action, encompasses planning, setting goals, making decisions, and solving problems—or, simply put, getting on with it. Leaders seek measurable progress toward their shared vision. In the case of continuous learning, it is as the final competency you must add to build a leadership in an organisation. This can be accomplished in a number of ways, such as the industry-pervasive approach of brown-bag luncheons; formal training programs through for all slices of the organisation, including management, technical, project management, marketing, and administration; the use of online knowledge communities; and real-time experiences. But that sense of learning must start with each one of us (Prieto, 2013).

Apparently, research on sustainability and area of strategic and leadership type of green skills in the works and services sectors like building construction industries can develop project and

instantly provide a future plan for efficient performance in the building sectors, especially in developing countries like Nigeria.

TRANSVERSAL SKILLS IN BUILDING CONSTRUCTION

Transversal skills or skills for sustainability are the future-oriented skills for sustainability, (e.g. thinking, process and change agent skills; 'habits of mind'), that can help build desirable graduate attributes such as resilience and adaptability in an unpredictable and changing work world and climate (Knibb and Paci (2016). In addition, according to them (Knit and Paci) transversal skills are considered to be key skills for the 21st Century workplace and 'career capital, they complement, and can be integrated into, existing frameworks for generic skills, essential employability skills, or so-called 'soft' skills and require 'deep' learning. Examples: systems thinking, capacity to solve complex problems, civic responsibility, accountability for the consequences of one's actions, ethical/moral decision-making, the capacity to work in intergenerational, culturally diverse environments. Transversal skills refer to foundation skills, at their most fundamental, as "literacy and numeracy skills necessary for getting work that pays enough to meet daily needs (UNESCO, 2012b).

Additionally, for Sterling (2012) transversal skills prepare people to cope with, manage and shape social, economic and ecological conditions characterised by change, uncertainty, risk and complexity. In the same vein, Asia-Pacific Education Research Institutes Network (ERI-Net) (2013) sees the term transversal skills which they termed as non-cognitive skills as part of holistic development of learners, often not taught explicitly in classrooms and not assessed in conventional exams (highlighted in yellow) and upon which they classified transversal skills into critical and innovative thinking; interpersonal skills; intrapersonal skills; and global citizenship. According to this report, critical and innovative thinking involves creativity, entrepreneurship, resourcefulness, application skills, reflective thinking, and reasoned decision-making. Interpersonal skills include presentation and communication skills, leadership, organisational skills, teamwork, collaboration, initiative, sociability,

collegiality. While Self-discipline, enthusiasm, perseverance, self-motivation, compassion, integrity, commitment falls under intra-personal skills.

Finally, Global citizenship encompasses awareness, tolerance, openness, and respect for diversity, intercultural understanding, and ability to resolve conflicts, civic/political participation, conflict resolution, and respect for the environment. In looking conscientiously to the above categories of transversal skills and aligning them with the sustainability issue that attracts the attention of the world for decades, it will be of great significance to the member countries to embed the transversal skills into the curriculum of their schools at different level most especially TVET institutions.

It is on the above note that the findings of regional study conducted by Asia-Pacific Education Research Institutes Network (ERI-Net) (2013) recommended that it is hoped this report will be a key resource for countries in the region to apply to education policy and contribute to progress in implementing and incorporating transversal skills into education curriculum. More so, UNESCO (2015a) revealed that the main focus of the eighth booklet in the Asia-Pacific Education System Review Series is on 'transversal skills' in Technical and Vocational Education and Training (TVET) from the educational and labour markets perspectives. It was stated that by educational perspective transversal skills goes beyond foundational and occupation-specific skills and can give TVET graduates a comparative advantage when looking for employment and from the labour market perspective, are skills that are increasingly in high demand by employers because they can allow workers to better cope with daily challenges in rapidly changing and sophisticated workplaces. Going by the above-mentioned report of UNESCO transversal skills could be seen as those skills that should be acquired from school and be utilised in the place of work, which in turn will bring about the boosting of industries to ensure sustainable life in the community.

Additionally, in Malaysia, Australia, and India for instance, Asia-Pacific Education Research Institutes Network (ERI-Net) (2013) reveals the positioning of the key policy documents that

appeared in the ten country/economy research reports and hence, transversal skills or competencies are integrated into the education systems in a variety of ways, from government legislation to curriculum and education programs, both explicitly and implicitly. In Malaysia, while transversal competencies are embedded in education policy and curricula there is no specific term used to refer to this set of skills and competencies, such as 'non-cognitive skills', 'transversal skills', '21st-century skills' or 'soft skills'. However, these skills and competencies are explicitly integrated into learning. In Australia, transversal competencies are explicitly and implicitly incorporated into the curriculum frameworks; while none of the policy documents examined in the case study explicitly mention terms such as non-cognitive or transversal skills, the development of these capabilities are embedded in the curriculum and learning frameworks that guide the Australian education system. While in India, transversal competencies are implicitly included in education policy, and the National Curriculum Framework – 2005 (NCF 2005) provides directive for inclusion of transversal skills in the curriculum.

In consequence, Ramos (2012) posited that transversal skills are both shaped early in the lifecycle and have an important impact on social and economic success in later life. For UNESCO (2015c) transversal skills are included under life skills which are understood as the ability for self-development and eagerness to learn and explore new knowledge and specific subjects are designed to impart life skills alongside traditional subjects such as languages, mathematics, and science, among others while elements of life skills are also integrated into teaching and learning of occupational skills, electives and extra-curricular activities. In the light of the above, European Commission. Education and Agency (2012) outlined the following transversal skills as the life skills that could be required in any organisation which of course include building construction industries:

- i. Capacity to organise oneself, to plan the tasks and the priorities
- ii. Capacity to integrate socially within the company, to adapt to the various actors and to understand the position occupied in the hierarchy

- iii. Being able to learn permanently and to adapt to new technologies
- iv. Being able to anticipate and take initiatives
- v. Being able to work in autonomy and being proactive in case the instructions are not clear (capacity to reformulate and to ask for more information).
- vi. Being able to solve problems, (orientation to seek the most appropriate and effective answers to difficult situations and complex themes trying different ways).
- vii. Interpersonal Effectiveness: ability to understand the perceptions, needs, attitudes of others and interact in a constructive way.
- viii. Result orientation: the ability to direct constantly their own and others work to achieve the organisational goals influencing actively the events and providing a level of performance consistent with the nature and importance of the goals.
- ix. Decision: ability to choose among different alternatives with thoughtfulness, clarity, timeliness under uncertainty situations, scarcity, complexity
- x. Stress tolerance: the stability of the performance in conditions of difficulty and conflict through lucid and balanced reactions and the ability to confront and control situations that arise contrasts within groups and tension in interpersonal relationships.
- xi. Self-assessment skills: ability to self-observe and self-judge own actions, resources, and skills, in the coincidence between who observe and who is observed,
- xii. Spirit of initiative: proactive, ability to implement actions and behaviours independently.

In addition to the above skills, practical support measures should be developed to assist the implementation of transversal skills education in TVET institutions. National guidelines alone are not sufficient to make transversal skills education effective unless these are complemented by measures, such as targeted teacher training, development and sharing of best practices, development and use of practical manuals and incentives for employer engagements. Policies outlining such measures can be included in a comprehensive national strategy for the development of transversal skills education in TVET (UNESCO, 2015c). With regard to this European

Union (2011) maintained that employability of individuals is based on specific skills, but transversal skills that range from problem-solving to interpersonal skills are considered important because having these skills, which can be transferred from one context to another, is a good basis for accumulation of specific skills required by a given job.

ADAPTABILITY AND TRANSFERABILITY SKILLS IN BUILDING CONSTRUCTION

The emergence of sustainability issues around 80's requires people to acquire range of green skills in combating the problems of economy, environment and society. Among these skills as suggested by authors, include adaptability and transferability skills. Adaptability and transferability skills enable workers to learn and apply the new technologies and processes required to green their jobs (Strietska-Illina, *et al.*, 2011). In addition to greening jobs, adaptability and transferability skills as "a broad range of skills that can be transferred and adapted to different work needs and environments", and technical and vocational skills that can be considered "specific technical know-how" (UNESCO, 2012a). Hence, all these could be seen as the ability to learn and adapt at a high level, self-confident, think quickly on your feet, and respond appropriately to large amounts of information The Graduate School Michigan State University Board of Trustees (2016).

In China according to Bai and Geng (2014), the concept of transferable skills refers to competencies that are not subject-specific but can be optimally applied to diverse new subjects and fields and the skill is are a critical factor in the holistic development of students. These conceptual interpretations of these skills narrate its importance and relevance in the organisation most especially where sustainability is to be ensured. In consequence, a short overview of transferable skills should be carried out with a view to identifying a number of educational programs and instructional techniques that seem to provide for the implicit recognition or development of adaptability and transferability skills. This is due to the fact that transferable skills as perceived by Wang (2012) are "portable" skills that can be developed along the way and take with you into other life/work experiences,

which its acquisition helps you market yourself better to employers, and using specific action verbs can help you describe what your skills, abilities and accomplishments are in your résumé.

Consequently, transferable skills are internally integrated not only because of the vicarious experiences one undergoes throughout the life circle, but mainly because of the practice that comes along with learning Rocha (2012). He further emphasized that transferable skills should not be introduced as an intentional learning process but their representations will be more influenced by previous personal experiences. And hence transferable skills are internally integrated not only because of the vicarious experiences one undergoes throughout the life circle, but mainly because of the practice that comes along with learning. With regard to the aforementioned, Bai and Geng (2014) citing example with Chinese government infers that the government is highly supportive of the development of vocational education, and has placed importance on the training of vocational education teachers; however, vocational education teachers still need to improve their ability to impart transferable skills in TVET.

Bai and Geng (2014) further elaborated that in Chinese research reports on TVET, many researchers define transferable skills as the competencies required to solve problems, communicate ideas and think creatively; while to some transferable skills are non-technical and non-vocational skills, such as teamwork, self-criticism, problem-solving skills or lifelong learning skills. In essence, Business leaders, educational organizations, and researchers have begun to call for new education policies that target the development of broad, transferable skills and knowledge, often referred to as "21st-century skills." For example, the Partnership for 21st Century Skills argues that student success in college and careers requires four essential skills: critical thinking and problem-solving, communication, collaboration, and creativity and innovation (Partnership for 21st Century Skills, 2010).

In the same vein, Bai and Geng (2014) posited that transferability skills include the following: communication (orally, in writing or electronically); teamwork (being a constructive team member,

contributing practically to the success of the team); leadership (being able to motivate and encourage others, whilst taking the lead); initiative (ability to see opportunities and to set and achieve goals); problem solving (thinking things through in a logical way in order to determine key issues, often including creative thinking). The remaining according to them include flexibility/adaptability (ability to handle change and adapt to new situations); self-awareness (knowing your strengths and skills and having the confidence to put these across); commitment/motivation (having energy and enthusiasm in pursuing projects); interpersonal skills (ability to relate well to others and to establish good working relationships); and numeracy (cash handling, competence and understanding of numerical data, statistics and graphs).

Accordingly, part of the above-mentioned adaptability and transferability skills are in consistent with those identified by Doyle (2016) that is, transferable skills are skills that apply to multiple career fields. They are practical capabilities such as problem-solving and critical thinking that are necessary for many different lines of work. Doyle further emphasized that transferable skills can be developed through classwork, extracurricular activities such as sports or clubs, internships, former jobs, travel and study abroad experience, etc. Many skills can be established through non-conventional work or educational environments, so no experience is too distant. On the same vein, The Graduate School Michigan State University Board of Trustees (2016) noted that transferable skills are skills you acquire or learn in one setting that can be applied or translated to new and different settings, environments, and activities. Defining way to convince people to develop their transferable skills European Union (2011) demonstrated that is related to explanation of their role as perceived by employers, importance for teamwork and building a professional career; and hence, in the interests of a more flexible labour market, to encourage continuing training and to make mobility easier, everyone, irrespective of age, gender and socio-economic circumstances, needs to build up, update and develop generic transferable skills (team working, problem-solving, decision-making, "learning to learn", oral and written communication, information

and communication technologies etc.) throughout their lives.

CONCLUSIONS

Based on the literature reviewed in this paper, it is pertinent to note that social sustainability can be achieved by following different ways like embedding skills for sustainability into the building construction program. This integration could take place by reviewing the existing building construction trade curriculum with the aim of identifying skills gaps that need attention. In line with this, this paper introduces three green skills typologies that include strategic and leadership skills, transversal skills and adaptability and transferability skills. Diffusion of these skills yields a positive result by filling the green skills gaps that exist in almost world's construction industries which in turn would aid in achieving social sustainability.

RECOMMENDATION

Based on the literatures reviewed, it is recommended that, to improve the social sustainability of any generation there is need to diffuse green skills into building construction trade courses.

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