

Sustainable Project Governance

Subjects: Construction & Building Technology

Contributor: Lihong Zhang, Saeed Reza Mohandes, Jiawei Tong, Mohamed Abadi, Saeed Banihashemi, Binchao Deng

As efforts toward sustainable development have gained in popularity, green project governance is increasingly included in the area of engineering construction, with the creation and supervision of green engineering projects dominating numerous project industries. Sustainable projects aim to achieve a harmonious coexistence between humans and nature, creating genuinely comfortable and healthy living conditions for people. The three central variables affecting green engineering projects are the government, the consumer, and the project-monitoring organisation.

Keywords: sustainability ; project governance ; SPG ; water-energy-food nexus ; construction industry ; infrastructure engineering ; built environment

1. Introduction

“Going green” is a popular topic that raises several attendant issues ^[1]. Greening conventional governance is a complicated process that may entail altering the entire process of how projects are approached ^[2]. Sustainable project governance is when project designers consider the environment when making engineering decisions, “thinking green” throughout the project ^[3]. Key to making this process successful is the concept of “sustainability”, in which business growth also protects the world’s population and ecosystem. A lack of sustainable practices has resulted in severe climatological crises, with the world’s sea level increasing since 1960 at a rate of 1.8 mm per year, and since 1993 at a rate of 3.1 mm per year ^[4]. The time has come to include green and sustainable development principles into project management procedures ^[5]. Many project management professionals agree with this sentiment that project management must “assist in resolving societal issues, bringing about constructive change, and building a better future for both people and the environment” ^[6]. To place green project management at the forefront, project professionals must cultivate new skills and resources that integrate social values and sustainability goals ^[6].

Recent demands for increased environmental protection due to the world’s current climate crises have given rise to a new corporate paradigm called sustainable project governance (SPG), which aims to better integrate environmental concerns with business operations and development. The SPG embeds environmental protection into business practices, adopts cutting-edge production technology, and minimises the environmental harm brought on by business development in the production sector ^[7]. However, the SPG has been slow to take effect as it is still not fully understood by the corporate sector, making the adoption of corporate regulation a difficult process. While encouraging corporate regulation for the sake of sustainable project enhancement fosters social responsibility, the environment is not seen as a primary business concern, and therefore, it is often completely disregarded by corporations ^[8]. While these conventional business models prioritise production and profit, if this pattern continues, it will negatively impact social development, leading to resource waste and climatological destruction. Therefore, to achieve both economic development and environmental benefits, firms must adjust their objectives to a more sustainable governance model, and the SPG model is one way that can help companies maximise economic and social benefits. The promotion of the SPG model contributes to both social and ecological development by restoring the balance between global businesses and environmental protection. Older corporate governance models prioritised outputs without considering environmental impact, a policy that has come at a heavy cost ^[9].

2. Sustainability

While sustainability is already ingrained in certain nations’ laws and planning processes, it is frequently only applied to engineering projects during their design and construction phases. Moreover, engineering technologies have rarely taken these sustainability requirements into account, instead focusing on environmental issues that can be evaluated, such as biodiversity and the use of building materials ^[10]. Sustainable development has attracted some attention in different fields: sustainability in power generation use and manufacturing; sustainability of different sectors, such as building projects and tourism ^[11]; sustainability of numerous new technologies, including photovoltaic cells or use of fuel cells. There has been

a dramatic rise in sustainable construction across the world. Due to resource depletion, to address a variety of managerial challenges and issues, a strategic and practical viewpoint is necessary. Additionally, the building industry is crucial to addressing society's requirements since it is central to overall quality of life ^[12].

The bulk of environmental initiatives are now performed by small-to-mid-sized construction organisations (SMSCOs) in the judgment call process ^[13]. More specifically, following the criteria laid out by Leadership in Energy and Environmental Design, design principles (Principles for Product Designers), building systems, and costs are assessed in greater depth. During the execution of construction projects, project control and record-keeping procedures become indispensable assessment tools for managers and other participants in the construction process as well as for controlling and managing project costs. All of these elements reflect the importance of operational sustainability in engineering projects.

Governance is generally composed of a company's materials, administration, leadership, policies, and philosophy ^[14]. Non-linear governance models (including advisory model, cooperative model, management team model, and policy board model) often serve to handle cooperation between non-cohesive parties, generally by splitting tasks at several levels where needed. The governance model blends the connective aspects of joint planning with the dynamic learning features of adaptive management depending on the needs and purpose of the organisation, serving as an effective model for project design. There are different governances between complications in stakeholder atmosphere, and uncertainty (in some cases, it is not possible for stakeholders to agree on all issues, with some groups being more influential than others, which can cause uncertainty to occur) ^[13]. Sustainable project governance can be understood as "preparing, tracking, and attempting to control of project implementation and support functions, with evaluation of the environmental, financial, and social elements of the life-cycle of the project's assets, procedures, milestones, and effects, with an eye toward realising value for stakeholders, and conducted in a clear, reasonable, and responsible way". During the administration of sustainable projects, a sustainability perspective is used to examine the project governance and delivery processes. The project's procurement procedure ^[14], the creation of the business case ^[15], the involvement of stakeholders ^[16], and the project's monitoring are all processes of project governance ^[17].

Although project governance can be problematic due to different governance approaches and uncertainty in the stakeholder climate, introducing the concept of sustainability into project governance can aid in circumventing these problems.

Sustainability is currently a top governance issue, both for academics and practitioners of engineering projects. Conflicts between corporate and ecological concerns have been present for the past 200 years, and finding a permanent solution to this tension requires joining together business growth with environmental considerations ^[18]. According to the 1987 Brundtland Report ^[18], sustainable growth should satisfy current demands without jeopardising the ability of subsequent generations to satiate their personal needs. Such a proposition is clearly different from some contemporary approaches to project governance and highlights the need to integrate sustainability with project governance. Sustainability requires modes of living that allow all the world's individuals to experience happy, meaningful, economically solvent lives without harming their well-being or that of the environment ^[19]. Currently, sustainability research is extending beyond strict ecological concerns, resulting in several perspectives that have expanded the concept's definition; for example, in the project governance framework, sustainability is the capacity of a project to retain an appropriate level of value inflows during its market economy", showing how this definition expands the insight of sustainability ^[20]. Sanchez connects this more firmly with governance and design, stating that economic, social, and environmental factors must be accounted for when evaluating project organisational goals. While experts advocate the enhancement of corporate sustainability, it is uncertain how such changes can be implemented effectively ^[19]. Consequently, it is important to consider sustainability from multiple perspectives, including financial cultural, and ecological standpoints. Therefore, the integration of project governance and sustainable development should be an important direction for scholars in the field of project governance as well as for the practical implementers of engineering projects.

With regard to good governance practices in organisations, Martin and the APM Special Interest Group on Governance ^[21] have developed 10 golden rules to increase the probability of success: alignment of organisational strategy with projects; clear vision and strategic roadmap; reasonable and adequate delegation mechanisms; clearly assigned roles and responsibilities; continuous visibility of end purpose; comprehensive and detailed governance framework, processes, and decision gates; adequate capacity; transparency; assurance; and leadership, collaboration, and supportive culture. The majority of the critical elements influencing a project's success are connected to governance standards ^[22]. Therefore, he advises that every project design a special governance strategy that is best suited to its peculiarities. To achieve this, the business must be culturally adaptable and supportive of all good governance practices and project management methods. It is possible that many organisations have not yet attained this level of organisational maturity.

Key board members should also set an example for others and promote good governance. In summary, project governance must not only have a sustainable vision but also focus on the role of people in the governance process.

Greater consideration of ecological and corporate culture issues in project governance, as well as the end result of the project, can help to improve business efficiency. Notably, these two considerations rarely coincide in practice ^[18]. Researchers recommend the use of environmental performance indicators for projects to assess project feasibility, while Ugwu recommends the use of outcome-oriented analytical decision support systems and methods for infrastructure undertakings ^{[21][23]}. Meanwhile, Shen created the Sustainability Achievement Evaluation Methodology (SPbEM) for PPP (public private partnership) projects, and Liang and Wang proposed a methodology consisting of five dimensions that allows for the assessment of project viability ^{[23][24]}. Other frameworks include commercial, cultural, and ecological considerations in the concept of sustainability ^[25]. An approach to development that can encourage more individuals to live sustainably by accomplishing a number of social goals, including health, safety, self-identity, simplicity of access, and a sense of belonging, is referred to as social sustainability ^[26]. Projects should consider energy use and environmental legislation in order to achieve environmental sustainability ^[27].

3. Project Governance

Muller defines governance as a collection of methods and procedures that define an institution's goals, as well as provide a plan for monitoring a project's progress in achieving those goals ^[6]. Meanwhile, Cadbury defines governance as a comprehensive process that addresses the interests of all parties involved in a project. Ultimately, achievement is the main goal of governance ^[20].

In the context of engineering projects, governance refers to a framework through which a project's goals are established, along with methods for accomplishing them and gauging project performance. The interaction between a project's administration, sponsorship, operations, and stakeholders is a central focus of project governance. Similarly, Crawford asserts that company operations are carried out and driven by initiatives, making the effective governance of projects, conducted along government-directed lines, a critical priority for businesses ^[28]. In many cases, the company has chosen to prioritise the completion of government-related projects, which does not meet the requirements of sustainability as it does not take other projects into account and does not improve the overall operational efficiency of the company. Every project's primary goal is to produce and maximise an organisation's value, and the accomplishment of a project can serve as a primary barometer of organisational effectiveness ^[28]. It is therefore essential that these projects are effectively governed through the adoption of effective governance systems and the adoption of a holistic vision of sustainable development.

Project governance has been characterised in a variety of ways by various researchers, and frequently requires the use of techniques, methods, frameworks, philosophies, and technologies. According to the Project Information Centre, project governance occurs at the project, program, and spectrum management levels. Similarly, Muller sees project governance as pursuing corporate goals from the portfolio, program, venture, and project management dimensions ^[6]. Project governance is therefore a process for making important choices that affect a program's growth, and generally comprises a carefully constructed framework, a tight relationship between an initiative and the president of a project's overall growth plan, and the reasons why the project will ultimately be successful. Stakeholders are then alerted after a chosen engagement initiative is reviewed and with permitted participation. Further analysis is then conducted methodically to determine what the populace believes lawmakers intend with the project, while a probe is conducted to see whether the project remains feasible.

The goal of an efficient project governance system is to eliminate project failure and conduct proper projects frequently. No project that displays elements forecasting project delays should be permitted to move forward without the proper governance, and stage completion is necessary for goal achievement. This completion entails selecting, prioritising, and aligning initiatives with strategic goals ^[29]. Weaver has referred to successful project governance as a set of instruments ^[29]. Project delivery governance and control, meanwhile, are still challenging to achieve, and there must be a minimum commitment to reform and change regardless of how effectively infrastructure spending project governance is being implemented. The most successful projects are those with efficient front-end governance, without which projects risk confrontations and incompatibilities, resulting in failure and negative project consequences ^[6]. A project governance system's deployment, however, does not ensure successful projects, and all organisers' judgment, dedication, and enthusiasm are crucial factors for project effectiveness. Consequently, numerous administrative positions are currently creating project governance frameworks.

Project governance therefore creates the necessary connections that manage and oversee works across all enterprises [30]. This means that project governance frameworks are essential to project success [19]. Research by Sharma, Joslin, and Muller showed how analytical processes are not always apparent when regulating or intervening in project governance functions, and thus the mechanisms for project success may be better served if preceded by effective project governance [19]. Their findings are consistent with those of other scholars. Using Delphi and hypothetical group approaches, Bekker performed qualitative case investigations in South Africa to investigate the links between project governance and project success for major investment projects [30]. After interviewing several participants, they found a high correlation between project governance and success. All of the above exemplify the relationship between project governance and project success, and how effective project governance can contribute to project development.

4. Project Success

To a certain extent, it is difficult to determine if a project is a failure or a success [31]. According to Muller and Judgev (2016), a good strategic plan is “mostly in the eyes of some people”, suggesting that projects are only viewed as profitable in the view of select stakeholders, and while some stakeholders may support a project, others may view it as a failure [6]. Shared awareness is therefore required to minimise a project’s uncertainty, and to accomplish this performance, standards should be integrated into the project from its earliest planning stages.

Criteria for success are interdependent variables that determine whether a project has achieved its goals. Strategic objectives are therefore important for the development and even the success of a project, and setting them at the beginning of a project will be more instructive and allow for greater clarity. Critically, some factors such as technological limitations or acceptance of innovative practices remain arbitrary in project plans, despite thorough specifications for success criteria. However, projects with different stakeholder groups are unlikely to agree on the identification of strategic objectives without setting metrics that can determine whether the development is judged to be successful [31]. Therefore, it is important to take into account the views of project stakeholders when setting strategic objectives for a project in order to set goals in a better way for the success of the project.

Recently, success factors for projects have progressed from straightforward, measurable moments, applicability, and expense initiatives, due to prototype efficiency toward measurements that have potential long-term efficacy and organisational impact [5][6][7][8][9][10][11][12][13][14][15][16][17][32]. Project achievement is one of the most studied subjects in the project management field, with the concept and significance of “project success” addressed and disputed by numerous scholars [19]. Basic productivity measuring tools have gradually been replaced by a record of project accomplishments as indicators of project success: Alam described project success criteria as the accomplishment of specialised performance indicators, and later added “accomplishment of project goals” to this description. Later, Shen proposed the notion of stakeholder satisfaction as a further metric of project success [22]. Building on these criteria, Khan identified five separate areas of project success: project productivity, organisational advantages, successful completions, demands for effectiveness, and enormous prospects. It is therefore clear from previous research that project success is measured on a variety of fronts to ensure that the average consumer is comprehensively satisfied with project results while also seeing that the project is completed within an allotted timeframe and budget.

The ability of organisations to link strategic goals with overall organisational objectives is one reason for highlighting project success criteria [19]. Project success allows firms to assess both their effectiveness and continuous improvement [31]. Muller notes that by finally passing their initiatives, businesses may boost their profitability, gain a larger market share, and provide shareholders with a higher return on their investments [6]. That said, Santos argues that the steps required to accomplish organisational goals have not been sufficiently studied. Recent researchers have therefore examined a variety of precursors that could potentially result in project success [33]. Koskinen argues that contact on projects should only be used to spread information because it might not ensure the project’s success [34]. Gray claims that project management’s main goal should be hazard elimination. Dvir [35] states that the amount of effort invested in a project impacts its subsequent effectiveness [36]. Raymond and Bergeron assert that project management databases significantly aided in projects’ accomplishment [37]. Others have suggested practical factors for project administration [18][19][20][32]. These are problems that some academics have identified that may arise in the course of project governance meetings.

Achievement is more than a simple binary between failure and accomplishment. For example, the Telescopes and the Melbourne Concert Hall demonstrate that even if a project has unsuccessful economic outputs, it may be successful in terms of expenditure productivity [26]. Similarly, if a project meets its deadlines, budget, and quality requirements but does not yield desired results, it may not be considered a successful investment. Even terms such as “achievement” and “disaster” in the context of business may be contested. The abandonment of a project due to shifting market demands may not rely on effectiveness or inability [38]. Project success is multi-dimensional, and accomplishing project

management achievements may be distinct from a finished product. The success of projects is sometimes evaluated subjectively, and using a sustainability perspective to evaluate project success is a new way of thinking.

5. Sustainable Project Governance

It can be stated that there is a strong affinity between project governance and sustainable development. For instance, one of the main pillars of governance towards realising sustainability is the implementation strategy, which depends on the mode of governance and perspective on sustainable projects. In addition, another steering wheel for achieving sustainable development is that societies are committed to take appropriate actions in bringing about such a paradigm. In this regard, diverse types of governance dominant in the community play a pivotal role in shaping the related paradigm—either to enhance or lessen it. Aside from that, project governance can promote sustainability pillars by overcoming the uncertainty that is intertwined with the type of governance controlling the related projects. The importance of uncertainty is due to the fact that sustainable projects have mostly been poorly understood, and their success has been doubtful. To solve this problem, the successful epitomes of sustainable projects being governed under an appropriate governance strategy need to be highlighted and presented to different stakeholders and end users involved in the related projects.

References

1. Spoon, J.-J.; Hobolt, S.B.; de Vries, C.E. Going green: Explaining issue competition on the environment. *Eur. J. Politica I Res.* 2013, 53, 363–380.
2. Ibrahim, A.; Bartsch, K.; Sharifi, E. Green infrastructure needs green governance: Lessons from Australia's largest integrated stormwater management project, the River Torrens Linear Park. *J. Clean. Prod.* 2020, 261, 121202.
3. Hwang, B.-G.; Ng, W.J. Project management knowledge and skills for green construction: Overcoming challenges. *Int. J. Proj. Manag.* 2013, 31, 272–284.
4. Thomson, C.; El-Haram, M. Potential and implications of sustainability action plans. *Built Environ. Proj. Asset Manag.* 2014, 4, 108–122.
5. Bryde, D.J. Methods for Managing Different Perspectives of Project Success. *Br. J. Manag.* 2005, 16, 119–131.
6. Müller, R.; Lecoeuvre, L. Operationalizing governance categories of projects. *Int. J. Proj. Manag.* 2014, 32, 1346–1357.
7. Geissdoerfer, M.; Savaget, P.; Bocken, N.M.P.; Hultink, E.J. The circular economy—A new sustainability paradigm? *J. Clean. Prod.* 2017, 143, 757–768.
8. Banihashemi, S.; Hosseini, M.R.; Golizadeh, H.; Sankaran, S. Critical success factors (CSFs) for integration of sustainability into construction project management practices in developing countries. *Int. J. Proj. Manag.* 2017, 35, 1103–1119.
9. Mansur, S. Strategy for Sustainability, A Business Manifesto. *Adarsh J. Manag. Res.* 2010, 3, 89–91.
10. Willetts, R.; Burdon, J.; Glass, J.; Frost, M. Environmental and Sustainability Impact Assessment of Infrastructure in the United Kingdom. *Transp. Res. Rec. J. Transp. Res. Board* 2010, 2158, 143–150.
11. Dincer, I. Environmental and sustainability aspects of hydrogen and fuel cell systems. *Int. J. Energy Res.* 2006, 31, 29–55.
12. Smith, A.; Stirling, A.; Berkhout, F. The governance of sustainable socio-technical transitions. *Res. Policy* 2005, 34, 1491–1510.
13. Patterson, J.; Schulz, K.; Vervoort, J.; van der Hel, S.; Widerberg, O.; Adler, C.; Hurlbert, M.; Anderton, K.; Sethi, M.; Barau, A.S. Exploring the governance and politics of transformations towards sustainability. *Environ. Innov. Soc. Transit.* 2017, 24, 1–16.
14. Claudia, W.; Martina, H. Project initiation: Investment analysis for sustainable development. In *Sustainability Integration for Effective Project Management*; Gilbert, S., Jennifer, T., Eds.; IGI Global: Hershey, PA, USA, 2013; pp. 144–159.
15. Eskerod, P.; Huemann, M. Sustainable development and project stakeholder management: What standards say. *Int. J. Manag. Proj. Bus.* 2013, 6, 36–50.
16. Mulenburg, G. Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation by Aaron Shenhar and Dov Dvir. *J. Prod. Innov. Manag.* 2008, 25, 635–637.
17. Schmidt, T.S.; Sewerin, S. Measuring the temporal dynamics of policy mixes—An empirical analysis of renewable energy policy mixes' balance and design features in nine countries. *Res. Policy* 2018, 48, 103557.
18. Joslin, R.; Müller, R. The relationship between project governance and project success. *Int. J. Proj. Manag.* 2016, 34, 613–626.

19. Khan, I.; Hou, F.; Le, H.P. The impact of natural resources, energy consumption, and population growth on environmental quality: Fresh evidence from the United States of America. *Sci. Total Environ.* 2020, 754, 142222.
20. Musawir, A.U.; Serra, C.E.M.; Zwikael, O.; Ali, I. Project governance, benefit management, and project success: Towards a framework for supporting organizational strategy implementation. *Int. J. Proj. Manag.* 2017, 35, 1658–1672.
21. Shen, L.; Tam, V.W.; Gan, L.; Ye, K.; Zhao, Z. Improving Sustainability Performance for Public-Private-Partnership (PPP) Projects. *Sustainability* 2016, 8, 289.
22. Belout, A.; Gauvreau, C. Factors influencing project success: The impact of human resource management. *Int. J. Proj. Manag.* 2004, 22, 1–11.
23. Liang, Y.; Wang, H. Sustainable Performance Measurements for Public–Private Partnership Projects: Empirical Evidence from China. *Sustainability* 2019, 11, 3653.
24. Crawford, L.; Cooke-Davies, T.; Hobbs, B.; Labuschagne, L.; Remington, K.; Chen, P. Governance and Support in the Sponsoring of Projects and Programs. *Proj. Manag. J.* 2008, 39, S43–S55.
25. Abdelfattah, F. Relation between Green Buildings and Sustainable Development Practices. In Proceedings of the 1st International Conference on Towards a Better Quality of Life, El Gouna, Egypt, 24–26 November 2017.
26. Wang, H.; Zhang, X.; Lu, W. Improving Social Sustainability in Construction: Conceptual Framework Based on Social Network Analysis. *J. Manag. Eng.* 2018, 34, 05018012.
27. Ojiako, U.; Chipulu, M.; Ashleigh, M.; Williams, T. Project management learning: Key dimensions and saliency from student experiences. *Int. J. Proj. Manag.* 2014, 32, 1445–1458.
28. Wearne, S.; Aar, S. A study of the reality of project management: W G Morris and G H Hough, John Wiley, UK (1987) £29.95, ISBN 0471 915513 pp 295. *Int. J. Proj. Manag.* 1989, 7, 58.
29. Beddington, J. Land use futures—Land use policy journal introduction. *Land Use Policy* 2009, 26, S1.
30. Ika, L.A. Project Success as a Topic in Project Management Journals. *Proj. Manag. J.* 2009, 40, 6–19.
31. Alam, S.; Kumar, A.; Dawes, L. Sustainability Assessment of Road Infrastructure using Sustainability Index. *Infrastruct. Asset Manag.* 2018, 5, 3–13.
32. Häyry, M.; Laihonon, M. Situating a sustainable bioeconomy strategy on a map of justice: A solution and its problems. *Environ. Dev. Sustain.* 2022.
33. Koskinen, K.U. Tacit knowledge as a promoter of project success. *Eur. J. Purch. Supply Manag.* 2000, 6, 41–47.
34. Gray, R.J. Organisational climate and project success. *Int. J. Proj. Manag.* 2001, 19, 103–109.
35. Dvir, D.; Raz, T.; Shenhar, A.J. An empirical analysis of the relationship between project planning and project success. *Int. J. Proj. Manag.* 2003, 21, 89–95.
36. Raymond, L.; Bergeron, F. Project management information systems: An empirical study of their impact on project managers and project success. *Int. J. Proj. Manag.* 2008, 26, 213–220.
37. Breese, R.; Jenner, S.; Serra, C.E.M.; Thorp, J. Benefits management: Lost or found in translation. *Int. J. Proj. Manag.* 2015, 33, 1438–1451.
38. Tabatabaee, S.; Mohandes, S.R.; Ahmed, R.R.; Mahdiyar, A.; Arashpour, M.; Zayed, T.; Ismail, S. Investigating the Barriers to Applying the Internet-of-Things-Based Technologies to Construction Site Safety Management. *Int. J. Environ. Res. Public Health* 2022, 19, 868.