# STAKEHOLDER ENGAGEMENT IN INFRASTRUCTURE PROJECTS IN CROATIA: INSIGHTS FROM KEY PM EXPERTS

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**Abstract**: Many argue that the performance of large infrastructure projects is unsatisfactory: the wrong projects are selected, costs are underestimated, and benefits are overestimated. As infrastructure projects are formed in a complex environment with numerous interested parties there is a prevailing opinion that stakeholder engagement is the key factor to achieve success. Also, research shows that it is fundamentally unexplored area of construction project management. The goal of this research is to clarify how stakeholder engagement is implemented in practice. Empirical study is done through the interviews with the eight experts with vast practical experience in the management of the large infrastructure projects. Result showed that much of the crucial project risks are derived from the stakeholders and that engagement is a mixture of hard skills (e.g. procedures) and soft skills (e.g. coordination and communication). It is also detected that there is a support by experts to implement formal stakeholder management but there is a lack of knowledge. Practices used in the project management are still traditional and formal stakeholder engagement is very rare.

**Keywords**: *Infrastructure, Projects, Stakeholders, Engagement*

## 1. INTRODUCTION - INFRASTRUCTURE PROJECTS AS VEHICLE FOR SOCIETY DEVELOPMENT

Nowadays large infrastructure projects are used as the main tool to overcome existing infrastructure capacity issues or to create new business opportunities (Kumaraswamy et al., 2017). The McKinsey Global Institute estimates that the world will need to spend $57 trillion on infrastructure by 2030 (Agarwal et al., 2016). Civil infrastructure projects create a capacity for the transportation, transmission, distribution, collection, and interaction of goods, services, or people (e.g., bridges, highways) (Dunovic et al., 2021; Safa et al., 2015) and social infrastructure enables the promotion of cultural norms and a healthy population (e.g., hospitals, schools) (Dyer et al., 2019; Henisz et al., 2012). Thus, some concludes that the large infrastructure projects are of the great importance for the development of the society (Ninan et al., 2020).

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Many argue that the performance of large infrastructure projects is unsatisfactory: the wrong projects are selected, costs are underestimated, and benefits are overestimated (Flyvbjerg, 2014). The high complexity derived from numerous stakeholders with various and sometimes conflicting interests can lead to time and cost overruns, and there are prominent cases that illustrate this problem (Rezvani et al., 2018; Wagner & Radujković, 2022). Brunet and Aubry (2016) noted that the anatomy of large public projects is changing with increasingly complex stakeholders and supply chain linkages and called for increased scientific study of this new organizational phenomenon. More general project management research shows that about 70% of companies undertake projects that neither satisfy the stakeholders nor achieve the planned objectives (Nguyen et al.,2021; Prebanic & Vukomanović, 2021). Luo et al. (2017) concluded that conventional project management approaches are not sufficient to achieve successful project outcomes in complex infrastructure projects.

## 2. STAKEHOLDER ENGAGEMENT IS THE KEY TO SUCCESS BUT IT IS NOT SUFFICIENTLY EXPLORED

Infrastructure projects have some unique distinct characteristics: often are formed in a complex environment with numerous interested parties, mostly have public clients covered by national public procurement rules, and often represents large investments (Dyer et al., 2019; Henisz et al., 2012). In these type of projects and public organizations there has been a shift of focus to make them more socially and environmentally responsible by involving broad and heterogeneous networks of stakeholders to create system-wide benefits (Bahadorestani et al., 2020; Pascale et al., 2020). Thus, stakeholder involvement is perceived as a critical factor for successful project delivery (Park et al., 2017), and yet little is known about how to promote it in projects (Heravi et al., 2015).

Many agree that stakeholder engagement is of paramount importance in large infrastructure projects (Khan et al., 2021; Mok et al., 2017; Volden, 2018), and yet stakeholder engagement is often poorly implemented. There have been few attempts to capture the complex nature of the stakeholder engagement process. Pascale et al. (Pascale, 2020) analysed ninety eight projects and found that engagement practices have been adequately explored only for the front-end phases. Collinge (2020) applied a case study approach with goal to explore intricacies of hands-on stakeholder engagement applied on several work packages in complex infrastructure project. He concluded that stakeholder engagement is a complex, intertwined process of responsibility, organizational actions, and work package requirements and that it is a fundamentally unexplored area of construction project management.

The goal of this research is to clarify how stakeholder engagement is implemented in practice. Two main research questions are: What are the methods and practices used for stakeholder engagement in infrastructure projects? How do practitioners perceive stakeholder engagement as part of the common project management approach?

## 3. METHODOLOGY

To answer the research questions empirical study is done through the interviews with the eight experts with vast practical experience and knowledge on project management in large infrastructure projects. Interviews were conducted with practitioners covering all key roles in infrastructure construction projects (see table 1).

**Table 1.** Interviewers profile

| | **Years of experience; education** | **The type of infrastructure projects respondent has experience with** |
|---|---|---|
| **Project manager 1** | 20 in construction and 16 in project management (certified); Civil engineer | Civil - roads, railroads, water agglomeration…<br>Social – hospitals schools… |
| **Project manager 2** | 28 in construction and 20 in project management (certified); Civil engineer | Civil - water agglomeration, waste management centers, ports and marines…<br>Social – hospitals schools… |
| **Project manager 3** | 20 in construction and 10 in project management (certified); Civil engineer | Civil - roads, water agglomerations<br>Social – schools, courts… |
| **Public client consultant** | 12 in consultancy (project management) (certified), 7 in construction; Economist | Civil - water agglomeration<br>Social - visitor centers, adaptations of cultural buildings… |
| **Public client** | 20 in construction and project management (certified); Civil engineer | Civil – roads, waste management centers, power plants, airports … |
| **Supervising engineer/FIDIC engineer** | 15 in construction and project management (certified); Civil engineer | Civil – roads, water agglomerations<br>Social – social housing (POS) |
| **Designer** | 20 in construction and 15 in project management (certified); Civil engineer | Civil - roads, water, agglomerations…<br>Social –hospitals schools… |
| **Contractor** | 23 in construction and 17 in project management (contractor side) (certified); Civil engineer | Civil – waste water treatment device<br>Social – school, hospital |

There were two printed copies of the interview questionnaire, one for the interviewer and the other for the interviewee. Detailed notes were taken on each of the 31 questions. Seventeen themes were derived from the questions. This research addresses four themes which are most relevant for the stakeholder engagement process. Each specific theme was addressed by one or a few questions, e.g. whether formal stakeholder engagement is conducted on projects and how do they engage stakeholders was covered through five questions (i.e questions 15th to 19th).

## 4. RESULTS

First topic that we addressed regarding the stakeholder management was the topic of how stakeholder analysis and engagement are done in practice.

**Table 2.** Knowledge and formal usage of stakeholder management tools and methods

| | **Answers of interviewed experts** |
|---|---|
| **Project manager 1** | Mostly informal, some formal communication procedures and contractual dispute resolution mechanisms (description of stakeholders in feasibility studies) |
| **Project manager 2** | Informal through communication (heard about some formal tools and methods) |
| **Project manager 3** | Informal in project, formal for personal usage (measures responsiveness of stakeholders…) |
| **Public client consultant** | Informal through communication, see benefits in making it formal but caution for smart approach (e.g. prevent adding to much new tools/plans) |
| **Public client** | Formal – Power-Manageability Matrix (stakeholder are referred often in project plans) |
| **Supervising engineer/FIDIC engineer** | Informal, see benefits in making it formal but caution for smart approach |
| **Designer** | Informal through communication (description of stakeholders in feasibility studies) |
| **Contractor** | Informal (learned about some formal tools and methods through PM certification but does not use it in projects yet) |

We asked a few questions to get the insight whether respondents are aware of stakeholder management tools and methods and whether analysis and engagement is conducted formally. The result is seen in table 2. Most of the respondents does not know enough about formal tools and methods although they fully acknowledge the importance of stakeholder engagement for the project success. One respondent is formally using power-manageability matrix for analysis. Each respondents stated that engagement is done through frequent communication, but it is not formally planned and monitored.

We also wanted to find out whether respondents think that current practice is appropriate in terms of timely engagement of the key project stakeholders. We provided a list of twenty stakeholder groups (e.g. designer, contractor(s), project manager, financiers, residents, media…) and asked which should be engaged earlier.

**Table 3.** Which stakeholders should be engaged earlier

| | **Answers of interviewed experts** |
|---|---|
| **Project manager 1** | Project Manager (consultant), in some occasions some other stakeholders too |
| **Project manager 2** | Project Manager (consultant) |
| **Project manager 3** | Project Manager (consultant), end users, infrastructure operator, local residents |
| **Public client consultant** | Project Manager (consultant) |
| **Public client** | Infrastructure operator, contractor (for complex projects), designer, local residents, public authority which issues building permits |
| **Supervising engineer/FIDIC engineer** | Project Manager (consultant) |
| **Designer** | Project Manager (consultant) |
| **Contractor** | Project Manager (consultant), Supervising engineer, public authority which issues building permits |

Each respondent pointed out that in current practice in Croatian infrastructure projects project manager should be engaged earlier to enable him to properly manage the project. Also, authorities issuing permits, infrastructure operators and residents were mentioned in couple of interviews as those which should be engaged earlier and more closely involved.

Third topic regarding stakeholder engagement were about indicating which crucial project risks were related to project stakeholders.

**Table 4.** Which major risks are related to stakeholders

| | **Answer of interviewee** |
|---|---|
| **Project manager 1** | Non competent (internal) party |
| **Project manager 2** | **Poor design/technical documentation**, bureaucratization of the system, change in prices, labour shortage, long period between finance agreement and construction, |
| **Project manager 3** | Poor design/technical documentation, **uncommitted and unresponsive stakeholders**, intermediary body 2 having too much influence, contract supervising engineer-PM don't exist |
| **Public client consultant** | Delays (from any stakeholder), uncommitted and unresponsive stakeholders |
| **Public client** | Hidden interests, geopolitical risks, environmental protection groups, non-competent (internal) party |
| **Supervising engineer/FIDIC engineer** | labor shortage (causing delays and poor quality), political pressures for speeding the project |

| | |
|---|---|
| **Designer** | contractor's delays with construction works |
| **Contractor** | Poor design/technical documentation, building permit procedure too long, **non-competent internal party** |

Three risks were emphasized; non-competent internal stakeholder (each contracted stakeholder is of a great importance), poor technical documentations which leads to various problems and uncommitted or unresponsive stakeholder(s). They agreed that these risks could be mitigated by putting more emphasis on proper stakeholder engagement.

Fourth topic was aiming to identify whether respondents think that stakeholder engagement is more about plans and procedures or about listening to and communicating with stakeholders.

**Table 5.** Is stakeholder engagement more relied on hard or soft skills

| | **Answer of interviewee** |
|---|---|
| **Project manager 1** | You always try soft approach first, if this does not work then hard skills and procedures are important (but you are lucky if you have detailed procedures to help you) |
| **Project manager 2** | Soft more important, it's very intertwined, plans and procedures important but if someone is unwilling, they will not follow it (hard to enforce, need to have good people skills) |
| **Project manager 3** | Both is very much needed, depends on the project stage and resources available |
| **Public client consultant** | Soft skills are more important, especially in large and complex projects |
| **Public client** | Maybe hard is more important, methodologies/procedures improved over the years, still probably in my projects I get more through soft (people) skills |
| **Supervising engineer/FIDIC engineer** | Equally important, for certain stakeholders (i.e local community) soft skills are more important |
| **Designer** | Equally important, for upwards stakeholders (client, financial bodies…) hard skill is more important and for downward stakeholders (contractor, supervisor) soft skills |
| **Contractor** | Both, plans and procedures are vastly important, but to implement it soft skill are much needed, there is a lot of pressures and communication in construction so there is need for soft skills |

Most of the respondents indicated that both hard and soft skills are very intertwined and equally important to conduct proper engagement. Soft skills are a bit more emphasized because respondents agreed that if communication and coordination of stakeholders is not working in project there is no procedure which can resolve it.

## 5. DISCUSSION AND CONCLUSION

In early phases client or its consultants are responsible for engagement of the projects stakeholders since the project manager is usually contracted late, mostly after technical documentation is over (Prebanic & Vukomanović, 2023). This is counterintuitive since project manager usually has the more competence to engage the key stakeholders and thus respondents emphasized that PM should be engager earlier and much closer to public client or should be employee of client. Also, local residents and end users should be engaged earlier which is consistent with some finding from UK and other countries (Di Maddaloni & Davis, 2017). Also, result showed that much of the crucial project risks are derived from the stakeholders. It is also detected that there is a support by experts to perform formal stakeholder management but there is a lack of knowledge and practices of management are still traditional which is also true for some developed country like Australia (Yang et al., 2018). It can be concluded that experts in infrastructure project management in Croatia agrees with the prevailing opinion that stakeholder engagement is of paramount importance in this type of complex projects. Also, there is a great need to provide the engagement tools and methods which are easy to include into usual management practice and educate experts to implement formal engagement.

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