

# Sustainable project management through project control in infrastructure projects



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## KEYWORDS

- Sustainable development
- Project control
- Sustainable project management
- Public–private partnership (PPP)
- Alliance contract

## Article highlight:

This research paper explores the ways in which a major infrastructure project – the construction of an urban road tunnel in Finland situated near to an environmentally sensitive area – was managed according to the 'triple bottom line' of economic, environmental and social sustainability, using a package of appropriate project control mechanisms.

## What does the paper cover?

Focusing on a single case study – a large-scale infrastructure project in Finland with multiple stakeholders and an alliance contract – the authors examined the sustainability of the project management in terms of the 'triple bottom line' of economic, environmental and social sustainability. Contextualised within a literature review, their analysis draws on documentary sources and interviews with project personnel to identify and comment on the mechanisms and practices ('control package') for sustainability during the planning and, more particularly, the implementation phase of the project.

## **Methodology:**

The researchers studied a high-profile road tunnel project with a budget of 180M€ plus VAT involving 1,000 person-years of work. It was in an urban area, with lakes situated nearby, and its potential impact on the environment elicited considerable public interest.

The researchers studied 350 newspaper articles, as well as official project documents. They conducted semi-structured interviews with five project managers and engineers from the consortium formed to implement the project. All the data was then broken down, coded according to the three sustainability criteria, and evaluated to look at how the alliance contract affected sustainable project management and what methods of project control were used to promote and ensure sustainability in the project.

## **Research findings:**

The alliance drew together key stakeholders, including local authorities and contractors, enabling the sharing of risks and benefits, and promoting open discussion, quicker decision making and innovative solutions. Twenty innovations were implemented during the construction phase, saving time and money and addressing all three sustainability criteria.

In general, the researchers found that the three strands of sustainability tended to be addressed through different types of project control. The control practices promoting sustainability could be grouped into five categories: alliance model; project planning; measurements and indicators; regulations; and external communication. The first three addressed all aspects of sustainability. Regulations focused on the social and environmental aspects, and external communication only on social sustainability.

The economic aspect was addressed through shared financial incentives that kept costs down and collectivised risk. These were underpinned by four key performance indicators (KPI) relating to the project schedule, safety, usability of the tunnel and publicity. No environmental indicator was included, and in two instances a decision was made not to apply the most environmentally sustainable solutions on grounds of cost (for tunnel ventilation and exhaust gas cleaning). By implication, where a control mainly concerns only one strand of the triple bottom line, the KPIs would be an opportunity to link it with the other strands – this is hinted at in the authors' introduction, where they advocate further research into holistic project control packages.

The environmental aspect was mainly addressed through observance of regulations which were built into the plan and implemented with the help of monitoring and corrective measures. One interviewee commented simply, 'we follow the goals and plans, and they result in sustainability.'

Publicity, including public hearings, addressed the social aspect. Effective external communication, for example about environmental monitoring, gradually allayed public concerns and provided transparency about what was being done to address them.

The authors noted a tendency for social sustainability to take precedence over environmental sustainability, since it was more fluid and rewarded efforts to engage the public and improve their perceptions. However, the KPI on publicity also indirectly addressed the environmental aspect, because poor environmental practice leads to negative perceptions.

## **Conclusions:**

The alliance contract of this major infrastructure project encouraged openness and provided an incentive model that promoted efficiency, cost-effectiveness, innovation and risk sharing.

It proved an effective mechanism for sustainable project management, though the findings confirmed a need for sustainability also to be integrated into KPIs and project control routines.

The incentive model was a key feature of project governance (internal control) and the guiding force of the control package, supported by regulatory requirements (external control). In particular, the incentive model addressed economic sustainability. Environmental sustainability was mainly addressed through regulations and social sustainability through public engagement.

## **Significance of the research:**

This research shows how an alliance contract can facilitate control practices contributing to the sustainable governance and management of an infrastructure project. It suggests there would be benefits to further research in: project sustainability governance, including the role of external control; holistic project control; drivers and mechanisms for sustainability-oriented innovations; and integration of sustainability-oriented incentives in non-alliance PPP models.

## **Comments from the authors:**

We wanted to understand how complex infrastructure projects can be implemented sustainably. The studied project offered one example; other projects would offer further insights on the various ways that sustainable project management can be achieved. Alliance contracts have been implemented in other infrastructure projects in Finland and globally, and their efficacy in promoting sustainable project management is increasingly acknowledged.

Since the alliance contract has multiple purposes and limitations, other control mechanisms also need to be considered in promoting sustainability.

The case project was successful and the tunnel is now in full use. Its ongoing use over forthcoming decades may create some novel sustainability challenges that could not have been anticipated, and we are interested in how infrastructure projects can be designed and planned to deliver sustainable value over their entire life cycles. We want to promote a proactive approach in which sustainability principles are built into the front end of the project, when the expected value and benefits are negotiated. This phase is crucial for ensuring sustainability over the infrastructure life cycle – during the infrastructure use – with maintenance and modernisation requirements being acknowledged, not just in economic terms but also in terms of social and environmental effects. Public sector investment planning should, therefore, increasingly take account of service planning and management over the long life cycles of infrastructures.

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## **Complete article**

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## Glossary:

### Sustainable development:

'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland definition, 1987).

### Project control:

Framework and mechanisms to ensure that the goals of the project are met – 'encouraging behaviour that is desirable to achieving the organisation's objectives' (quoted from a paper by LB Cardinal et al., 2010); more specifically, tracking performance against agreed plans and taking the corrective action required to meet defined objectives.

### Alliance contract:

A type of project management contract that enables project contractors, subcontractors and stakeholders to work in partnership, with shared goals, practices and incentives.

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