The study on land-use management of engineering project from the perspective of projects' participants

Hongyong Liu [a], Ji Guo [b] and Qiushuang Huang [c]

School of Civil Engineering and Architecture, Southwest Petroleum University, Xindu 610500, China

[a]lhy78512@163.com, [b]1205073056@qq.com, [c]342691740@qq.com

Abstract. "Land acquisition difficult" has always been an important factor affecting the construction project, in recent years, problems caused by land-use of construction project become more and more, including resistance of work, disputes and conflicts. The main reason is that the stakeholders of project don't get the profit they expected. The project land problems not only affect the project schedule and cost, and event land conflict is an important factor affecting social stability. As the direct participants in the project -- construction units, the contractor and supervision units just do "according to law" cannot satisfy the needs of the construction project, project participants shall take the initiative to implement land management, and make it become a basic content of engineering project management. This paper analyzes the necessity to study land-use management from the perspective of project management, puts forward the contents and methods of the land for project management.

Keywords: Land-use Management, Compensating for Land-use, Conflict of Land-use, Project Management.

1. Introduction

In general engineering project, the construction unit through the relevant legal procedures to obtain the project by the Land-use or the right to Land-use for construction, and then provided to the contractor. Therefore, Land-use management in the project management position without important as cost management, quality management, is only a construction unit of work should be completed before the start [1]. But the construction project Land-use types are various, it relates to the government department, the land ownership or right to use and the use of units, numerous stakeholders, between project stakeholders interest relationship is complex, difficult to balance, so it is very difficult to obtain land for construction. It is very adverse to the implementation of the construction project. "Land acquisition difficult" has always been an important factor affecting the construction project, "Resistance work" is also common phenomenon in the engineering construction. This will increase the cost of project, delay the construction period. The current study for these problems mainly from the perspective of the construction land management. In engineering practice, Land-use system of compulsory, and compensation system of land expropriation cannot fully meet the needs of land use, especially for highway, railway, Long distance pipeline project and Linear engineering projects, etc. Due to the particularity of land-use and Land-use acquisition is difficult, we must strengthen the project management of land to meet the needs of project construction. Therefore, it is necessary to study construction engineering Land-use problem from the perspective of project management, which is studied from the Angle of construction units and contractors should adopt what kind of method to manage the land for construction purposes, let it become a basic functions of project management.

2. The necessity of the land-use management of engineering project

In order to strengthen the land-use project management is not only the need of project management, but also reduce project land use conflict and meet the needs of the project approval system, at the same time is also the need of protecting ecological environment and economical use of land.

2.1. The needs of the project management

The success of a project is composed of a number of factors, project stakeholders is an important part of them, the core of project management is to satisfy the needs and expectations of all stakeholders. The current land-use management of construction project lack of project management, therefore, it is difficult to balance interests of stakeholders, this leads to ongoing events such as land disputes and resistance. Table 1 analysis of the construction project land-use at different stages in whole life cycle of key stakeholders and stakeholder in general. As can be seen from the chart analysis, residents in the project location is the key stakeholders in the land-use of the whole life cycle, so we must solve the problem of interests of residents in the project location. As the holder of the land, their concern is the cost compensation standard, compensation cost of implementation, the problem of rehousing, and the influence of project on the surrounding environment, etc. As the construction unit, cost savings, to guarantee the smooth completion of the project is the focus of their concern. Therefore, it is necessary to strengthen the project management of land-use, this is the effective way to balance the interests of stakeholders.

Table 1 Stakeholder classification of construction project land-use in the whole life cycle

Project life cycle phase Classification of stakeholders	Planning stage	Implementation phase	Operational phase
Key stakeholders	Development unit Residents in the project location Relevant government departments	Development unit Supervision unit Construction unit Residents in the project location	Residents in the project location Development unit Relevant government departments EIA agencies
General stakeholders	Design unit Construction unit Local Government	Government Design unit	Construction unit Design unit Supervision unit

2.2 The need to reduce the project land-use conflict

At present, because of land problems caused by land disputes, land conflict, resistance worker often occur it reflects a series problems of the land-use management. The standard of compensation is not reasonable, the placement is not properly, disputes about use right of land and so on. To strengthen the land-use management from the project management is the effective way to solve these problems.

2.3 The needs to meet the project approval system

Under the examination and approval system, Local governments carry out project decisions of the national development and reform commission (NDRC), some construction projects need to issue a written reply to a subordinate body can handle the planning, land, forestry, environmental protection and so on. But after the implementation of approval system, the government only from the perspective of social and public management audit enterprise investment project. Especially in the linear engineering, construction projects to go through a number of different administrative areas, because of the bigger difference of the local policy, project approval cycles are usually very long, land acquisition becomes a long-term process. This has put forward severe challenge to the enterprise, the best way to solve the above problem is to strengthen the land-use project management, let the land-use management into the project management among, let it be a basic function of the project management [2].

2.4 The need to protect the ecological environment

In previous years, many construction units and development units ignore the protection and restoration of the ecological environment, then it pays a high price. The local government and local residents have to require the construction side to spend a lot of cost to improve the environment, it means that enterprises need to spend more investment to obtain land. How to protect the ecological environment, protect the construction project land-use, ensure smooth completion and operation of the project, this is a problem should be solved by project management.

2.5 The need of economical use of land

Economical use of land is not only control the cost, by reducing the occupation of the land, try to avoid crossing the farmland and optimize the land route and other measures can protect the ecological environment, reduce the land compensation and avoid land disputes, all of these need project management to control [3].

3. The content of the land-use management of engineering project

From the perspective of project management, the content of land-use management mainly in order to safeguard the interests of development units and construction units. The content of the land-use project management mainly includes: (1) Project site selection and circuit design (combined with planning), (2) The project land area measurement and use plan, (3) The cost estimation of land, (4) Acquire the right of land use according to law, (5) To deal with the relationship between meet with other engineering, (6) Land compensation negotiation and the payment of compensation in a timely manner, (7) Economical use of land and protect the ecological environment, (8) Deal with land disputes and conflicts, (9) Establish and maintain harmonious relationship with the Land stakeholders.

4. The measures of the land-use management of engineering project

4.1 Organizational measures

Work breakdown structure (WBS) is a basic method of project management, is a kind of decomposition and definition method of the work package at all levels in the total project scope. Applied to the land-use project management, through the work of the structure of the decomposition, divide the task, every project team is responsible for the project scope, mutual cooperation between the various project groups, it can increase efficiency of land acquisition.

4.2 Technical measures

Network planning technique is a plan model which based on network graph based, it is the most basic advantages is that it can intuitively reflect the relationship between the project work or activities, make project plan constitute a whole system, thus laid a solid foundation to achieve the quantitative analysis of the project. Figure 1 shows the program of land-use construction project, according to the chart shows, can manage the land acquisition process according to the network planning technique. In engineering practice can attach to the work of specific operational time. So that we can achieve the purpose of optimization, program managers can follow the execution of the plan, to make predictions about the future based on scientific evidence. So that we can complete the project land acquisition in the shortest time, the least amount of resources, the best process and the lowest cost.

4.3 Economic measures

The cost of land use evaluation is mainly the evaluation of the right to use construction land, according to the land use categories can be divided into permanent land, temporary land and undefined land, it can be divided into three levels, ground, surface and underground. According to the different land categories corresponding land-use cost assessment, then make a reasonable assessment of risk.

Permanent land**.** Permanent land is the permanent possession of land use right, such land are generally appropriate compensation standards, we can evaluate the cost of land under the land compensation standards.

Temporary land**.**Temporary land refers to engineering construction and geological survey for temporary use in the construction or survey has been completed no longer need to use the state-owned or collective-owned land, not included the land for temporary use of buildings or other facilities. Temporary land is generally not more than two years. The cost of temporary land is generally based on the contract provisions of temporary land. This need to negotiate compensation standards with the holder of the land, we can according to the following methods to evaluate the cost of land.

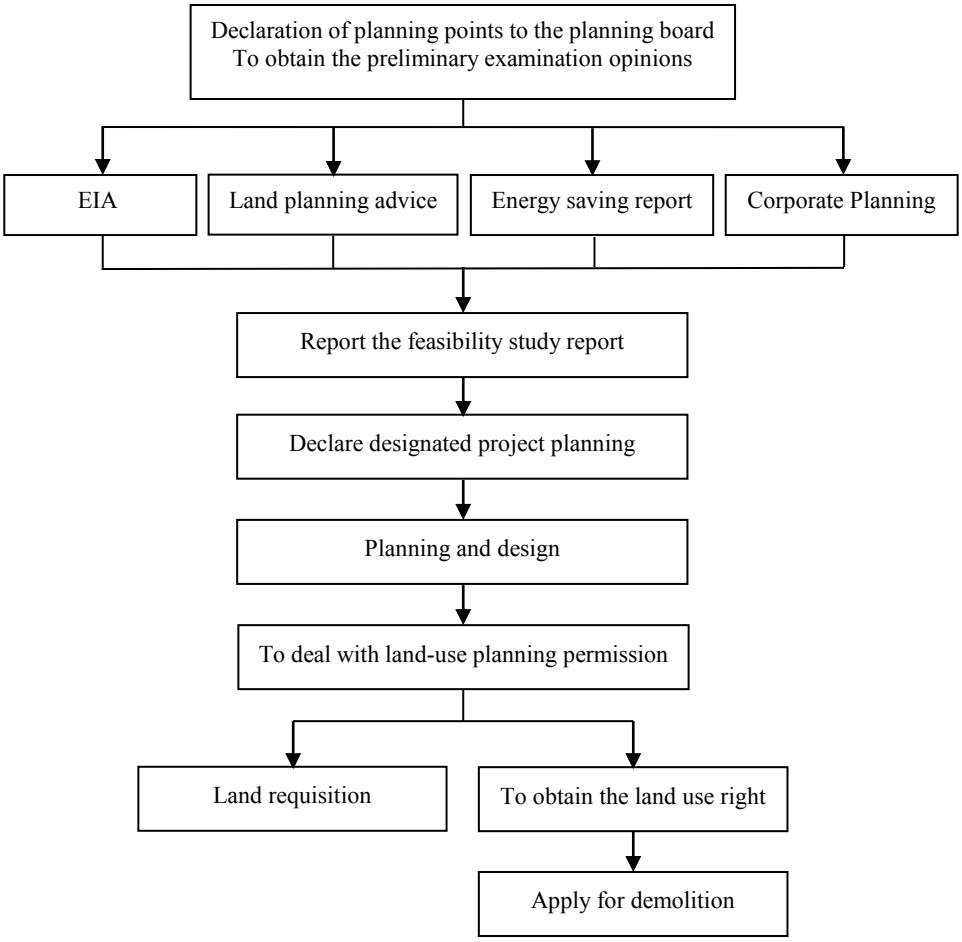

Fig. 1 The flow chart of land acquisition

(a) Market comparison approach. Market comparison approach has wide applicability, it can be used to evaluate the project cost by comparing the similar case. But it needs to have a comparative case enough, the results of the assessment will have real value, it is most suitable for the transaction of real estate. Application of market comparison method should pay attention to two important principles, best use principle and the valuation time substitution principle.

A large number of transaction examples related to land which remains to be assessed should be prepared, so that the accuracy of the market comparison approach can be guaranteed. And it is bound to affect the operability of land assessment. Many factors that affect land assessment constitutes a complex system, so we can use fuzzy control method to solve the complexity, fuzziness question. We can use the fuzzy pattern recognition and fuzzy control theory to establish the fuzzy control model of land assessment, so that the land assessment more accurate and scientific.

(b) Cost approach. For the construction land of little or no market case, need to use the cost approach, it was based on the production cost of land, we usually use the method of comparative analysis, factor analysis and correlation analysis method in practical work. As well as the market comparison approach, it is necessary to focus on best use principle and the valuation time substitution principle.

(c) Income approach. For a construction project land with clear benefit value, should consider using income approach. This method is especially suitable for petroleum engineering, such as linear engineering projects, because of the unpredictable nature of the project, to determine the reduction in interest rates has a certain risk. Therefore, using the income approach must be combined with other methods [4].

Undefined land. For there is no clearly defined land, in negotiate compensation standard also can learn from the above method. Usually reflected in the linear engineering, such as pipeline project land. The pipeline enterprises can through consultation to obtain the pipeline right according to relevant provisions of the easement in "property law". Thus, the pipeline companies will have to get the

pipeline right-of-laws and procedures to follow, the compensation for the land rights of people to get compensation will be much higher than the temporary land, the pipeline enterprise can also carry on the negotiations and consultations on issues related to the holder of the land according to the easement [5]. In this way more flexible, you can save the cost of land and is a cost-effective method for assessing land use.

4.4. Management measures

The project land-use has many risk factors, for example: compensation payment is not timely, demolition is not timely, resistance work, conflict with land-use planning, and so on. Therefore, risk management should also become an important part of the project land-use management. First, we must carry out the project site risk management plan, decide how to proceed, plan and implement the risk management activities of land-use, forming a risk management plan. The second is to identify the risk of the project land-use, to determine what risks may affect the project. First, make risk management plan for the project land, and determine how to carry on it, then, come into the form of the risk management. Second, identify the risks of the project land, and determine which risks could have an impact on the project. Third, assess the risks of project land. Evaluate the project risks which are identified and analyzed, and then optimize and order them, then determine the overall impact on the project objective. Fourth, develop project land risk response plans, including optional solutions and action plans, to increase the chance to achieve project goals and reduce or eliminate the threat of the aim of the project. Fifth, supervise the risk of project land, track and process the risks which have already been identified during the whole project life cycle, monitor the residual risks, identify new risks and carry on risk response plan.

4.5 Administrative measures

The newly revised "land management law" and "property law" is to distinguish the concept of "collection" and "expropriation". The revised practice significance lies in not all construction projects are required for land collection, Some projects only need to obtain land use rights can meet the demand of the project does not need to perform the land collection procedure. Therefore, we should treat them differently according to the actual situation of land-use.

5. Conclusion

This paper analyzes the necessity to strengthen land-use management from the perspective of project management, put forward the content and method of land-use management from the perspective of project management. It can be as much as possible to balance all the stakeholders' needs and expectations, protect the interests of the holder of the land, avoid land disputes and land conflicts, reduce social unstable factors. It also can ensure the progress of the project, control costs and protecting the environment. Therefore, the application of project management method in land-use management has important theoretical and practical significance.

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