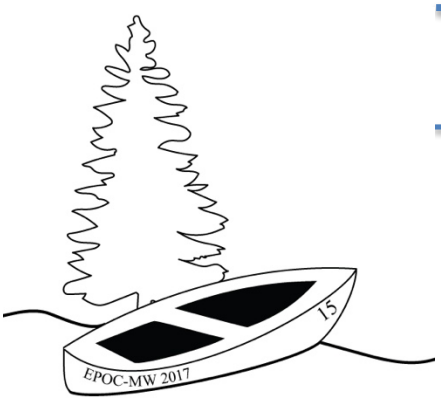

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Stakeholder Management Strategies in Infrastructure Megaprojects – A Dimensions of Power Perspective

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STAKEHOLDER MANAGEMENT STRATEGIES IN INFRASTRUCTURE MEGAPROJECTS – A DIMENSIONS OF POWER PERSPECTIVE

Johan Ninan[1] and Ashwin Mahalingam[2]

ABSTRACT

Infrastructure megaprojects involve managing external stakeholders with diverse interests. The existing governance mechanisms such as contracts and conformance to standards are not possible with these external stakeholders as they are not accountable to the project. There are records of underperformance of megaprojects as they fail to manage the stakeholders who exist across a permeable boundary. While there are instances of various strategies used by the project team in managing these external stakeholders, the relation between strategies and stakeholder category is still unexplored. We argue that the dimensions of power framework can help make sense of the strategies in practice by the project team. Hence, using the case study of a metro rail project in India, we firstly categorize the external stakeholders into stakeholders in land acquisition and stakeholders in existing services. We then unearth the strategies devised by the project team in managing these external stakeholders. The strategies identified from the case are: 1) use of persuasion, 2) coordination by deputation, 3) give and take behavior, 4) enabling design flexibility, and 5) extra work for stakeholders. We then use the dimensions of power framework to explain these strategies and understand the resources available with the project team such as recruitment discretion, government backing and fund discretion. Finally, we explore the link between project team strategies and stakeholder categories. It is observed that the 'give and take' strategy works with legal landholders in land acquisition and 'extra work for stakeholders' works with stakeholders in existing services who are affected during construction. 'Enabling design flexibility' works for all stakeholders who express concern over the proposed design. 'Coordination by deputation' works with all government employees across all the categories of external stakeholders.

KEYWORDS

Infrastructure megaprojects, External stakeholder categories, Project team strategies, Dimensions of power framework.

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1. INTRODUCTION

Infrastructure is essential for the socio-economic development of a country. Many developing countries look for massive investments in infrastructure to achieve their development goals. They look forward to big solutions for their big needs in infrastructure and hence many of these projects are megaprojects. Developed countries also challenge themselves to create these projects with an aim to improve their infrastructure standards. This phenomenon has led to an increase in the number of megaprojects in many countries.

We can classify megaprojects quantitatively as projects that cost more than one Billion USD (Flyvbjerg, 2014). Many scholars claim that these are not merely large projects but a different breed (Capka, 2004). They argue that the difference is not just the money involved. Rather it is the presence of some special characteristics (Clegg et al 2016). The characteristics that define a megaproject are that these projects are colossal, captivating, costly, controversial, complex and laden with control issues (Frick, 2005). Due to these characteristics, megaprojects are a mega-challenge to management.

Stakeholder issues are more complex in a megaproject than in an infrastructure project. A study was conducted on design output for 27 hospital projects' patient rooms in Denmark (Bekdik & Thuesen, 2016) where each hospital had a different set of clients, architects, and engineers. The patient rooms in all these hospitals were found to be different from one another. Even when the project stakeholders are different in each case, the number of stakeholders is fixed and the boundary for getting into the decision-making role is impermeable. The case concludes that the rooms conform to the standards and rules of the region and thus the project is satisfactorily complete. In contrast, the Aalborg town project in Denmark (Flyvbjerg, 1998), which satisfies our definition of a megaproject, did not achieve many of its planned goals. The project, which spanned across many permeable stakeholder boundaries, is seen to conform to the many stakeholder interests while missing the targets on time, cost and project objectives. He notes that the project that was meant to reduce traffic increased the traffic by 8% on completion. The project also increased accidents by 40% while the plan was to reduce accidents. The project failed on other objectives such as reducing noise and air pollution on its way to satisfying the concerns of the external stakeholders.

Megaprojects are a special class of projects in the region and affect the lives of many individuals and organizations. These diverse stakeholders have a say on many of the specifics of the planned megaproject such as the users it caters to, the land in which the project is to be operated, the utilities that the project would disrupt, the methodology adopted for construction etc. The project team is interested in completing the project as per the proposal made in the Detailed Project Report (DPR) while the external stakeholders only have their own self or company interest with no obligation to the DPR. Since these stakeholders are external stakeholders, they cannot be governed with governance instruments such as contracts. Adding on to this is the dependency of the project team on the external stakeholders to complete the project with no reciprocal dependency from the stakeholders. Therefore, external stakeholders in an infrastructure megaproject exist in porous boundaries, are ungoverned and are not accountable to the details of DPR.

These external stakeholders push a wide range of demands onto the megaproject (Szyliowicz & Goetz, 1995) such that their lives are not affected by the project or alternatively to reap a chunk of the benefits brought by the new project. The demands generally represent compensation in return for the co-operation of these stakeholders (Giezen, 2012). Multiple studies in this area have certified that complying with the demands leads to scope creep (Shapiro & Lorenz, 2000) and escalation of commitments (Ross & Staw, 1986) of the project. They claim that scope creep is the prime reason for the underperformance of infrastructure megaprojects (Gil, 2015). The frequency of underperformance here is substantial with Flyvbjerg (2003) surveying 258 megaprojects in 20 countries for their performance and finding that 90% of these projects fail to deliver on their promises. These projects suffer from 'productivity paradox' because, despite the growth in number and opportunities to learn, these projects often fail to reach expectations. Hence, a better understanding of the stakeholder demands and the practices of the project team in response is of substantial value in the learning of these projects.

Megaprojects experience greater obstacles in managing stakeholders than ordinary projects (Mok et al, 2015) due to many more stakeholders and the large scale project nature (Cicmil & Marshall, 2005). The project team experiences challenges in identifying the external stakeholders, identifying their needs, assessing the impact of these needs and formulating stakeholder management strategies (Yang et al, 2011). There are many classifications of external stakeholders based on their support to the project such as active opposition, passive opposition, not committed, passive support and active support (McElroy & Mills, 2000). The project team's responses to the claims of the external stakeholders are adaption, compromise, avoidance, dismissal and influence (Aaltonen & Sivonen, 2009). There are strategies recorded such as framing (Mastos et al, 2015) and fair process approach (Kim & Mauborgne, 2003). However, the rationale behind the use of a particular strategy by the project team is not well studied as there is no evidence of which strategy works with which external stakeholder. The organisational resources that enable the use of the particular strategy are also not explored. The 'dimensions of power' theoretical lens classifies strategies in practice and can help make sense of the strategies of the project team in managing the stakeholders.

2. DIMENSIONS OF POWER FRAMEWORK

In situations of conflict of interests, where actors try to preserve their vested interests, power is used (Schwenk, 1989; Daft, 2012). One of the earliest definitions of power is by Max Weber who defines power as "the probability that one actor within a social relationship would be in a position to carry out his own will despite resistance" (Weber, 1947). However, understanding power is difficult as it occurs in multiple dimensions. There have been multiple attempts in the past to map the different forms of power (Clegg et al, 2006). The most common distinction in power is between the overt dimension and the covert dimension. Overt Power involves the direct exercise of power and we can observe this easily. Covert Power however cannot be easily observed and this power is congealed into more enduring institutional structures (Clegg, 1989). The overt dimension is also called as episodic and the covert dimension as systematic by some scholars (Lawrence et al, 2012). These two dimensions can be further divided into four dimensions of power –

resource based, manipulation, domination, subjectification (Fleming and Spicer, 2014) as represented in Figure 2.

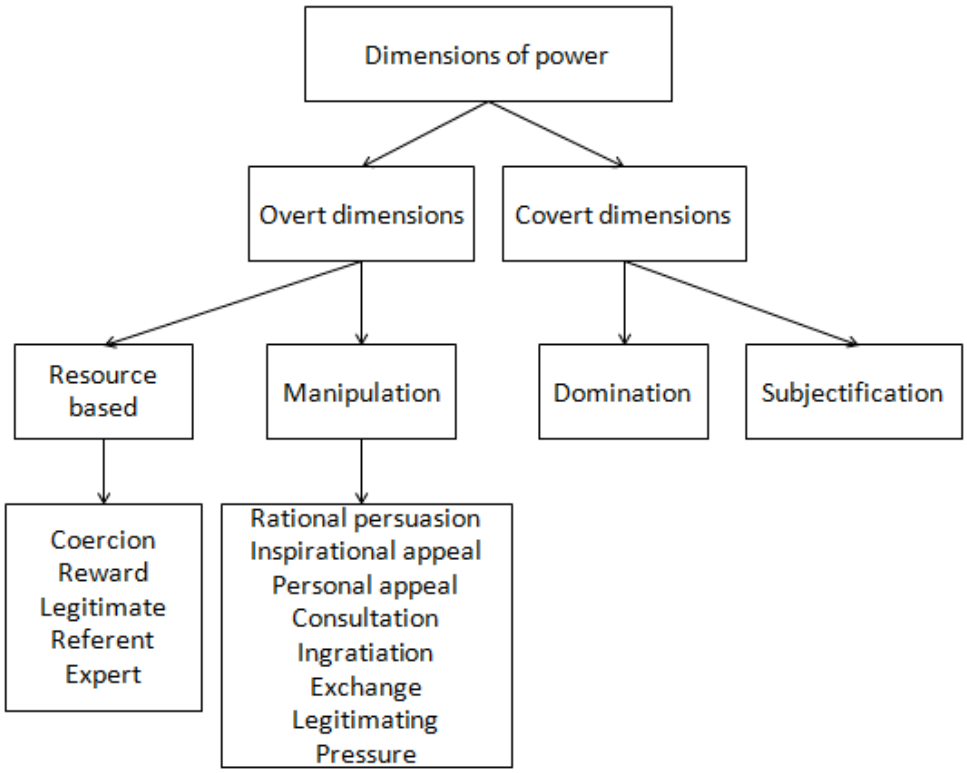

Figure 2: Dimensions of power compiled from literature

Resource-based power involves the direct mobilization of power. This dimension builds upon Dahl's (1957) concept of power based on 'what provides one with the ability to make another do something they would not otherwise do?' Research progressed on this resource-based power and five bases of power were evolved - coercive power, reward power, legitimate power, expert power and referent power (French et al, 1959). Coercive power is the power to punish for non-compliance and is dependent on fear of the negative results from failing to comply, Reward power is the opposite of coercive power and is dependent on the positive rewards obtained by complying. These rewards can be financial (controlling pay rates, raises and bonuses) or non- financial (controlling recognitions, promotions, interesting work assignments, friendly colleagues and preferred work shifts or sales territories). Legitimate power represents the formal authority to control and use organisational resources based on one's structural position in the organisation. It differs from coercive and reward power as it requires the subject's acceptance of the authority of a position (Robbins, 2001). Expert power is the possession of some special knowledge, skill or expertise. Most of us follow the advice of our doctor because we see him as an expert in his field. Referent power is the power of a role model who has some personality traits. This is the power of a celebrity who is paid handsomely to endorse products in commercials.

Manipulation is a behavioural attribute as opposed to a resource-based attribute that aims to influence decisions. Manipulation is the second dimension or face of

Overt power (Bachrach and Baratz, 1962). Scholars argue that in manipulation there is no direct exercise of resource based power, instead, there is an implicit shaping of issues considered important or relevant (Fleming and Spicer, 2007). This shaping occurs through various influence strategies. The influence tactics are basically classified into nine types – Rational persuasion, Inspirational appeal, Consultation, Ingratiation, Exchange, Personal appeal, Coalition, Legitimating and Pressure (Yukl & Tracey, 1992). Rational persuasion is the tactic of using logical arguments and factual evidence to persuade subjects. Inspirational appeal is the tactic of making a request that arouses enthusiasm by appealing to the subject's values or ideals. Consultation is the tactic where the agents seek participation in planning an activity and offer to modify the proposal to deal with the subject's concerns. Ingratiation (flattery) is the tactic where the agent tries to get the subject into a good mood before asking them to do something. Exchange is the tactic where the agent offers an exchange of favours or promises a share of the benefits achieved if the subject helps accomplish a task. Personal appeal is the tactic where the agent appeals to the feelings of loyalty and friendship before asking the subject to do something. Coalition is the tactic where the agent seeks the aid of others to persuade the subject to do something. Legitimating is the tactic where the agent seeks to establish the legitimacy of a request by claiming the authority or right to make the decision. Pressure is the tactic where the agent uses demand, threats or persistent reminders to influence the subject to do what the agent wants.

Domination is a covert dimension of power that requires detail probing to uncover. This is the third face of power (Lukes, 1974) and works by shaping the subjects preferences, attitudes and political outlook. Scholars say that this is a supreme exercise of power as it shapes preferences such that the subject accepts the situation as an existing order of things and does not imagine an alternative (Lukes, 2005). This organisational ideology can be cultivated through corporate cultures, field wide assumptions in industries or societal wide assumptions (Fleming and Spicer, 2014).

Subjectification is another covert dimension of power that was brought forth by Foucault (1977). This dimension attempts to modify an actor's sense of self, including their emotions and identity. Subjectification is a more supreme power than domination as it goes a level deeper and constitutes what the person is, their sense of identity and selfhood. Subjects become 'subjects of power' through a series of micro-practices that are practiced in everyday life (Foucault, 1977).

With this understanding of the 'dimensions of power' theory, we hope to understand the strategies in practice, the relation between strategy and stakeholder category and the resources available with the project team for managing the external stakeholders.

3. RESEARCH OBJECTIVE AND QUESTIONS

The aim of this paper is to understand the stakeholder interests in infrastructure megaprojects and the strategies used by the project team in managing these interests. Through this process, we hope to address three research questions:

(1) What are the strategies used by the project team in practice to manage these stakeholders?
(2) What are the resources that enable these strategies?
(3) Why are strategies different for different stakeholders?

The purpose of this paper is not to provide a comprehensive tool to manage the stakeholders, but rather our focus here is restricted to conducting an exploratory case study and identifying the external stakeholders and the strategies used by the project team.

In the next session, we present a case study of a metro rail project to identify the types of issues that occur because of external stakeholder interests in the context of an infrastructure megaproject. We then look at the project team strategies to manage these interests and demands. Using this case study, we check whether the dimensions of power framework could help in describing and understanding the strategies employed by the project team.

4. RESEARCH SETTING AND METHOD

We conducted a case study on a metro rail megaproject in South India in order to identify the external stakeholders who are ungoverned. This project has a planned cost of USD 2.2 Billion and it satisfies the quantitative requirement of project cost greater than USD 1 Billion. This project also has all the special characteristic of a megaproject. This project is to be built in an existing city disrupting many services and has a huge pressure to keep on schedule.

The metro rail project was conceived in 2007, as the existing surface transport system was unable to support the growth of population and the massive urban migration to the city. The project also had multiple objectives such as to boost economic growth of the city and reduce pollution. For the successful implementation of the project, a quasi-government organization was set up as a Joint Venture with the Government of India and the Government of the state. Even though the project has both elevated and underground sections, the elevated section is considered for the case study as there were more interactions with stakeholders in the form of land acquisition, utility shifting and traffic diversions to enable construction. Our decision to use this project as a case study is because this project is housed in an existing city and there are significant numbers of stakeholders who have an interest in the specifics of the project.

Our aim here is to explore and uncover the external stakeholders who are prevalent in infrastructure megaprojects and to understand the power dynamics surrounding them. To enable this, we adopted a qualitative research methodology. Scholars have suggested that such a method is apt for exploratory research when the aim is to gain familiarity with a problem or to generate new insights for future research (Scott, 1965; Eisenhardt, 1989). The data was collected mainly through face-to-face unstructured interviews (Spradley, 1979) with project personnel. We asked the informants to talk about the challenges they encountered in infrastructure megaprojects, specifically with external stakeholders. Whenever the project team cited challenges, we asked for personal experience from the project to anchor and triangulate instances with other respondents. Only the project team was interviewed as we looked forward to gain insights on the external stakeholders the project encountered, the interests and demands the stakeholders posed on the project and the resources and strategies used by the project team to manage the stakeholders.

We interviewed around 25 members of the project team who are from the project organization and from the contractor organizations. The participants were from

different levels in their respective organizations. Each interview ranged from a minimum of 1 hour to a maximum of around 3 hours with certain participants. In several cases, we conducted multiple interviews with several of our participants and compared comments made by various people on a given issue, to increase internal consistency and validity of our data (Yin, 1984). We also triangulated the data with reports and news articles published on the issues. We adopted a retrospective case study on the part-phase which was completed and inaugurated six months before. This enabled us to talk to the project team who are still present in the project carrying out some of the finishing items. Thus, the participants were able to recall several specific incidents relating to their experience with managing the external stakeholders. This rich data was collected over a period of 3 months.

We transcribed our interviews and then 'coded' these interviews (Glaser & Strauss, 2009). During the process of coding, we went through each of the interview transcripts and extracted every reported incident or anecdote that involved external stakeholders and their demands. Each of these incidents was assigned to a category. For instance, interests of stakeholders regarding road diversions were classified under the category 'traffic diversions.' These categories emerged from our data.

We initially started by talking to the project team about the challenges they faced from the external stakeholders. Then we were able to create broad categories relating to the stakeholders involved such as 'stakeholders in Land Acquisition.' As we surveyed more issues, we were able to create a subcategory 'Legal landholders' within the category 'stakeholders in Land Acquisition.' Hence, through the systematic process of asking open-ended questions, categorizing them to stakeholder types and then sub-categorising them, we were able to arrive at a preliminary model of external stakeholder category in infrastructure megaprojects. After this, we probed into details of how these issues were managed which enabled us to capture the resources and strategies that the project team has to manage the interests of these external stakeholders.

5. FINDINGS

Through the process of coding described above, we identified two main categories of external stakeholders:

1. Stakeholders in Land Acquisition
2. Stakeholders in existing services

In addition, we also identified four sub-categories that pertained to issues caused by interests of external stakeholders in infrastructure megaprojects

1. Legal landholders
2. Illegal landholders
3. Services affected during construction
4. Services affected after construction

Fig. 1 depicts the categories that we generated. We now discuss each of these codes in detail.

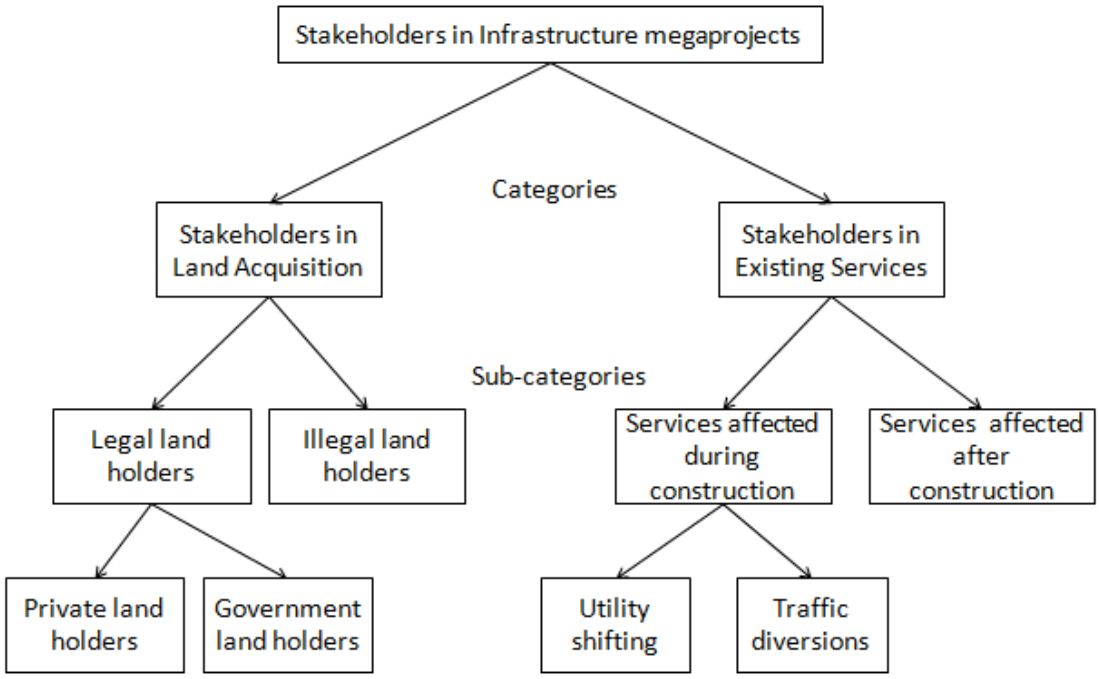

Figure 1: Categories of stakeholders in infrastructure megaprojects

STAKEHOLDERS IN LAND ACQUISITION

Land acquisition for an infrastructure megaproject is for two purposes – to construct the infrastructure and to provide working space to facilitate construction. For both these purposes, when land acquisition is attempted, the landholders object. The land required is acquired from multiple landowners which involve both private and government owners. In some cases, the land is held legally and in others, the land would be with the government legally but occupied illegally by a section of the population. We discuss issues relating to both separately.

Legal landholders

The land held legally could be owned by private or government sections. The existing land acquisition act in India has provisions for land being acquired for 'public purposes' such as infrastructure by compensating the owner with a government guideline land value. The guideline land value is often significantly lower compared to the market rate of the property. So, when a request for land acquisition is made, the owners refrain from giving the land by going to courts and claiming that there are alternative lands available for construction or that this land is the only resource that the family has. Many infrastructure projects are critically delayed and even stalled due to the long litigation processes accompanying the attempts to acquire land. The megaproject here adopted some specific strategies to mitigate issues in acquiring land from private owners. The metro rail organization decided to compensate the private owners with market rates for reducing litigation and completing the project on schedule. A metro rail personnel informed,

"*One ground of land in this region actually cost Rs.2 Crores (USD 320,000) while the guideline value of the same was Rs.60 Lakhs (USD 94,000). We were able to acquire land as we paid market prices.*"

In some cases, when some private landowners were still against giving away his land, the land acquisition team visited them personally and convinced them to give up their land for a 'public good.'

There are no such land acquisition guidelines for acquiring lands from government bodies. This includes land held by the Army, Railway, and Airport for the case we have considered. Since there is no mandate for these government bodies to give their land, they would simply refuse to give the land. This approach by the stakeholders has caused many projects to simply avoid expecting land from these government bodies. The megaproject in our case was special as one of the aims of such a big scale project in an existing system is interconnectivity. The metro rail had the vision to connect the airport and rail network and thus required hubs close to their facility. Large chunks of land near the airport were with the army and thus land acquisition from them was unavoidable. The project team said that after repeated rounds of talks, the railway and airport authority agreed to give some land for the construction of the elevated metro rail station. The terms of giving the land varied. The airport agreed to this only if the structural construction within the airport premises would be handled by the airport themselves. They used this opportunity to design the station similar to the design of airport with many steel members and even constructed an extra level of parking for airport employees. On this issue, one senior manager from the metro rail organisation remarked,

"They (airport) also want something from us.. This is an added facility for them.. these kind of projects work that way only.. give and take.."

Railways, however, had a different set of demands. The railways had an existing route, which was planned for extension for a very long time. It already had the land for the new railway station but construction had not commenced due to last mile connectivity issues with the station due to land acquisition challenges. The metro rail project planned to build the elevated metro rail station in the same land as the new railway station and have interconnectivity between the two transportation networks. The railways asked the metro rail project organization to construct the new railway station in exchange for the land. The talks with the army for the land did not work out as planned. The army asked for an equivalent worth of land elsewhere in the state such that a small section of land in the city would amount to a vast area outside the city limits. They were not open to financial settlements for the land and the metro rail organization was not able to acquire such vast areas for this purpose. As compared to the detailed project report, the metro rail organization had to scrap the depot planned on army land, scrap an elevated station exit planned on army land and even change the viaduct route planned to complete the project. The new viaduct route had sharper turns and adopted a construction methodology that was not planned earlier at huge cost implications.

Illegal landholders

Illegal landholders are a section of the population who hold government lands illegally. In some cases, these people would take over unused government lands and use them for generations while in some other cases they would be cheated to buy government lands with fake sale deeds by touts. The illegal landholders who took over government lands would in most cases be politically supported. Many projects that tried to remove them in the past, failed. In the metro rail case, there was a similar section of illegal landholders near the airport and the airport had on multiple occasions tried to remove them as they were close to the airport runway. The metro rail project required this illegally occupied land for connectivity to the airport. Since the metro rail project is a project with a lot of political interest, the Deputy Chief Minister, a very influential person in the area came and talked to the illegal landholders and asked them to move out. This area also had temples, which were relocated and built with the metro rail expenses.

The case with the illegal landholders who were cheated to buy government lands was different. They had paid the full value of the property to buy the land, but from the wrong person. Until the notice from the metro rail organization stating that the land they occupied was government land and now was allotted to the metro rail organization for construction, the landholders did not know they were cheated. In the case of a large water project within the same city, which tried to occupy such lands, the landholders filed court cases against the project team for evacuating them. Such court cases and their effects delay the project. The project team of the metro rail organization went to these illegal landholders and convinced them that the full land was now with the metro rail project organization for construction purposes; However, the project required only a portion of the land which they were asking for. They warned the residents that if they went to court, they might end up losing all the land. Through these strategies, the metro rail project was able to save valuable time in dealing with these stakeholders.

> *"The full land which they (illegal land holders who were cheated) occupy is legally given to us (metro rail organisation) by the government.. if we take the land by force, they may go to court... so we talked to them and warned them that they would lose the full land if they go to court.. if they agree now.. we will only take what is required for our construction and spare the rest"*

STAKEHOLDERS IN EXISTING SERVICES

The megaproject is set to come in an existing urban system and during the construction and operation, it would affect many of the existing services. The agencies that are responsible for these services put the interest of their organization before that of the megaproject. We deal with the issues pertaining to these services during the construction and service issues due to operation separately below.

Services affected during construction

A network of services such as electricity, drinking water, sewerage, telecommunication etc are required for the welfare of the population in the city and disruption to any of these will affect the business and livelihood of many of its

residents. The metro rail project planned in the city would cross many of these services and the project team needed to take special effort not to disrupt any of these services. Most of the construction work for the stations and viaduct for the elevated stretch is along the sides of the highway, which also housed all these underground utilities. Excavation for foundations of these structures often required shifting the utilities around them. This city in our case study is an unplanned city and had both charted and uncharted utilities. Charted is where the utility owners know the exact location of the utility, as these are the ones which were laid or maintained recently and of which proper layout charts are available. The uncharted utilities are those that are relatively old and it includes live and redundant networks. For managing the uncharted utilities, the construction team dug trial pits to ascertain their locations. Coordination with the utility owners was required for ascertaining the position of charted utilities, for shifting of utilities and for the repair/restoration of utilities damaged during construction. This coordination issue is complicated with multiple bureaucratic steps. The metro rail project organization and the contractor organization with a mandate to construct the infrastructure, approach these utility owners for their coordination for utility shifting. Appointments with the government staff of these agencies are troublesome and oftentimes the contractor representee is sent back after hours of waiting. The metro rail organization had employees from these utility owners on deputation to speed up the utility shifting process. One of the top bosses of Human Resource Department in the metro rail organisation commented,

> "*We (the metro rail organisation) are given authority by the Chief Secretary (of the state) to get anyone deputed on board from other agencies (government) for long-term coordination*"

These deputed employees acted as boundary spanners between the metro rail organization and the utility agency to facilitate communication. There were employees on deputation from electricity board, water, and sewerage board and from government communication board. These employees using their relational network were able to speed up the coordination with external stakeholders even when handling stakeholder interests and demands were difficult.

The electricity board has different types of underground cables classified according to the amount of electricity it caters. The board is very stringent about disruptions in the high-energy cables due to construction purposes, as they are main supply lines to different areas of the city. In inevitable cases, to handle these areas, the board asked the metro rail organization to arrange alternative supply. However, only a specialized list of contractors had prior approval from the electricity board for this work (due to safety and supervisory reasons) and in order to make these the alternative arrangements, the metro rail organization had to transfer money to the electricity board.

The drinking water and sewerage board also posed some special challenges for the construction of the metro rail project. In some cases, the project team as per instruction of the water authorities had to shift these heavy utilities to a new location temporarily and re-shift them back to the old location after construction works were complete. Taking up these works by the metro rail organisation itself, saved many bureaucratic procedures and saved the time lost due to delayed action by the utility

agency, but increased the project costs. In one case, shifting of water lines was not possible for the construction of a station foundation and the metro rail organisation had to change the design of the foundation based on the available land. An official who was involved in this design change commented,

> *"We (design team) will be designing piles beautifully, but only once the excavation starts we will be able to know the real challenges underneath.. the challenges faced mainly were because of utilities and not due to ground conditions.. we sometimes had to adjust for the utilities and use eccentric foundation designs to accommodate the utilities"*

Government telecommunication utility is very particular about the disruption of their services. Their services involve providing internet connectivity along with telephone connectivity to businesses and homes. This infrastructure sector had undergone privatisation compared to electricity and water sectors and hence there are many private players in the area. The government communication agency handled any disruption of this service severely as it would result in a loss of business, and they do not have monopoly for the service. The government agency snapped heavy fines on the metro rail organisation and pulled them to the courts for their loss in business. In some occasions, the metro rail organisation had to shift these utilities at their own cost and built few 'state of the art' inspection chambers at the request of the government agencies.

> *"We (metro rail organisation) were asked (by the communication government agency) to install new and modern cabling system with inspection chambers in place of the conventional cabling systems that we wanted to shift... We did it for them free of cost even though we were not obliged to do so"*

The telecom utilities that the metro rail project crossed included private utility agencies too. They responded quite differently compared to their government counterparts. When the metro rail organisation informed them about their lines in the construction zone and requested to shift them, these private agencies responded quickly and shifted the utility or made alternative arrangements at their own cost. They did not mind losing the money compared to the risk of their service disruption.

Another service that is essential for the city is the existing roadway/highway network. The project team had to handle the traffic during construction as the metro rail viaducts were planned along the median of the highway. The highway network is under the control of the highway department and the traffic police department is responsible for managing an uninterrupted traffic flow. Both these government interfaces are crucial for getting approvals to divert traffic and start construction. To enable this, the metro rail organisation, absorbed on deputation a high-level police officer and a senior official from highways department. Both of them facilitated communication and enabled seamless coordination. Both the government agencies are interested in minimum disturbance to highway traffic due to the metro rail construction. Whenever construction work required a longer period, the project team proposed diversions and got approval from the highway department and traffic police department. For this, the metro rail organisation submitted traffic diversion plan to

their offices and even showed live simulations on how the new diversion would affect the traffic. These government offices gave permission only after ascertaining that traffic disruptions would be minimal. They looked at the traffic volume and allowed the construction only during the night hours when the traffic volume is low. Movement of equipment such as transit mixers, cranes, trailers and boom placers were also restricted to the night hours when the traffic is lean. However, when there were VIP movements during the allotted night times, the traffic police informed the contractor to stop work immediately and this has led to the loss of productive time with the contractor even paying for the idle labour and equipment. The frequency of this halting of work was quite common along the metro rail stretches connecting the airport.

Airport posed a special challenge to the metro rail project due to the height restrictions during construction, which restricted the use of tall cranes. The project team had to change the construction methodologies for a few stations, to restrict the use of tall cranes for lifting the structural members. They used multiple launchings to reach the required height with a short crane. In spite of this, there was a time restriction for working at these heights so as to cause only minimum disturbance to the air traffic. Unlike highway traffic, airport traffic is at its peak during the night hours as most international flights operate during this time. Even after repeated rounds of negotiations, the airport authority only agreed for six hours of work per week for construction of these stations.

Similarly, construction permission for a bridge above an operational sub-urban rail network was restricted to three hours at night only after the completion of the daily operation and maintenance schedule of the sub-urban rail network for safety reasons. After every night of construction work, railway officials inspected the rail to ascertain that there are no construction materials or other hindrance for the trains. Only after complying with these demands of the railway department, did construction commence on this stretch.

Services affected after construction

There were disruptions in some infrastructure services due to metro rail operations that the utility agencies foresaw during the time of construction. These included the airport, rail networks etc.

Airports pose a special challenge due to their height restriction requirements meant to ensure a flight's safe vertical clearance that affect both the construction and operation phase of the metro rail project. To facilitate coordination with the airport authorities, the project organisation hired a manager who had construction work experience in two international airports in India and no special metro rail experience to head construction and coordination along the airport stretch. This manager knew many of the present employees of the airport and had a good relation with even the director of the airport, which improved coordination for the metro rail project. The project team had to change a 500 m elevated section near the runway (as per the DPR) to an underground section complying with the request of the airport authority. The authority said that the section being close to the runway did not satisfy the vertical clearance requirements. The section was then contracted out by the project team as a separate package as it deviated from the contractor agreements planned. The authority also expressed concerns on the electronic interference that the 25KV electric supply on the viaducts would cause on the aircraft system. The metro rail organisation then

had to carry out a detailed electronic interference study with the help of a premier educational institute that concluded that there was no such electronic interference to the aircrafts. Next, the airport authority said that the moving trains cause visual disturbance for pilots nearing the landing zone. Thus, all metro rail track sections which came under the air funnel region were covered by FRP sheets with red and white strips restricting any visual disturbance to the pilots when they neared the landing zone. An official who was involved in this coordination remarked,

> *"They (Airport authority) have codal provisions for their flight zone that there should not be any visual disturbances during flight landing and taking off.. we (metro rail project team) had a lot of meetings with airport authority and finally we together decided to use shielding.. they wanted it in red and white check colour.. this was not there in our initial design and was an extra work"*

There were height restrictions for two stations that came under the air funnel region. For this, the project team changed the design from curved roof to flat roof to accommodate the change in height.

The city has a sub-urban rail network that transports around 1.76 million people per day and is the lifeline of the city. Interconnectivity with this network is at a main station of the sub-urban rail network. For connecting this station, the metro rail organisation planned a 105 m bridge above an operational sub-urban rail. As this bridge is immediately after the metro rail station whose orientation was constrained due to the land available, it had to accommodate a turn to connect to the other piers; the team could not use a launching girder to do a segmental construction. Finally, the section plan was an I-girder bridge with a deck slab. When the project team approached the railway department for permissions for constructing the bridge, the railways conveyed that concrete bridges were not permitted above the rails as a precautionary measure due to heavy damages for the service below in case of collapse and high deflection rates. The project team proposed the use of a steel bridge, which would have low damage in case of collapse and have a low deflection rate compared to the concrete bridge. After multiple considerations for a suitable design for a long steel bridge, the railway authorities gave approval for a two span open web steel bridge. While the planned cost for the bridge was INR 80 Million, it was completed at INR 210 Million.

Compared to other infrastructure projects, alternative transport routes and services offer competition for this metro rail project. In order to capture market space and achieve societal acceptance, the metro rail organisation inspired its users by using slogans such as "our metro rail" and "sustainable and environment friendly way of transport." The project team also conducted other brand value enhancing strategies such as conducting food festivals and supporting local festivals. They also maintained a presence online in the major social networks to propagate a good brand name.

All the categories of stakeholder interests and the demands stemming from them led to cost and time implications on the project. We see that the project team resorted to different strategies to deal with the external stakeholders in land acquisition and existing services. From the case discussed above, 22 different events that span across stakeholder categories are consolidated in Table 1 for quick reference.

The findings from the metro rail megaproject show that depending on the external stakeholders involved, megaprojects experience different set of interests and demands. To manage these interests, the project team resorted to different strategies. Nevertheless, the purpose of our exploratory case study was not to generate a comprehensive list of external stakeholder interests and the project team strategies to deal them in megaproject, but to study a representative case and attempt to find a theoretical framework that would generally describe and explain the project team's strategies to deal with these interests. We believe that power theory and the dimensions of power framework (Fleming and Spicer, 2014) could explain these project team strategies in megaprojects. In the next section, we hope to demonstrate the theory's applicability as a unified framework to explain project team's strategies in dealing with external stakeholders in infrastructure megaprojects.

Table 1: Summary of stakeholder management strategies practiced by project team in metro rail project case

Sl No	Stakeholder category	Stakeholder sub-category	Example incident	Strategy	Strategy category
1	Stakeholders in Land Acquisition	Legal landholder	Legal land holders who refused to move due to poor compensation	Project team agreed to pay the land holders market land rates for their land	Give and take behavior
2	Stakeholders in Land Acquisition	Legal landholder	Legal land holders who did not move even after offering market rates	Project team inspired them to give up the land for public good	Use of persuasion
3	Stakeholders in Land Acquisition	Legal landholder	Acquiring land from railways and airport when they did not agree for talks	Metro rail project projected with the aim of interconnectivity such that all existing services get benefited	Use of persuasion
4	Stakeholders in Land Acquisition	Legal landholder	Acquiring land from airport who generally won't give up their land	Metro rail project allowed the station works to be executed by Airport construction team with funds from metro rail project. They also gave funds for extra parking for airport employees	Give and take behavior
5	Stakeholders in Land Acquisition	Legal landholder	Acquiring land from railways who generally won't give up their land	Metro rail project agreed to construct a new station for railways in exchange for the land	Give and take behavior
6	Stakeholders in Land Acquisition	Legal landholder	Army did not give land required for construction	Have a new design to construct with available land	Enabling design flexibility

Sl No	Stakeholder category	Stakeholder sub-category	Example incident	Strategy	Strategy category
7	Stakeholders in Land Acquisition	Illegal landholder	Illegal land holders who occupied government land on purpose	Project team was able to get the deputy CM to talk with them and convince them to leave the land	Use of persuasion
8	Stakeholders in Land Acquisition	Illegal landholder	Illegal land holders who were cheated to land holding	Project team convinced the stakeholder that they have authority over full land and would acquire everything if landholder refuse to give land required for construction	Use of persuasion
9	Stakeholders in existing services	Services affected during construction	Coordination with service providers such as Highways, Telecommunication, Railways, Police, Electricity Board	Allow people on deputation so that they can get work done from their colleagues	Coordination by deputation
10	Stakeholders in existing services	Services affected during construction	Height constrains during construction because of big crane posed by airport authority	Used a complicated methodology which required more time and money, but is acceptable for the stakeholder	Enabling design flexibility
11	Stakeholders in existing services	Services affected during construction	State-owned communication networks to be shifted to enable construction of metro rail	After getting permission from government agency, the metro rail organization shifted communication networks and even complied to demands of government agency to build state of the art inspection chambers	Performing extra work for stakeholders

Sl No	Stakeholder category	Stakeholder sub-category	Example incident	Strategy	Strategy category
12	Stakeholders in existing services	Services affected during construction	State-owned water lines to be shifted to enable construction of metro rail	After getting all permissions, the metro rail organization shifts the water line using their funds	Performing extra work for stakeholders
13	Stakeholders in existing services	Services affected during construction	State-owned underground electric cables to be shifted to enable construction of metro rail	An estimate is prepared by the electricity board and the metro rail organization pays the funds to electricity board to shift the cables	Performing extra work for stakeholders
14	Stakeholders in existing services	Services affected during construction	Water lines which could not be shifted for construction of footings	Use design expertise to have another footing which accommodates in the space available	Enabling design flexibility
15	Stakeholders in existing services	Services affected after construction	Coordination with Airport	Recruit talent who has relational experience with Airport authority	Coordination by deputation
16	Stakeholders in existing services	Services affected after construction	Convincing users to use metro rail for transportation compared to other means of transportation	Project team convinces users by various brand managing strategies such as conducting food festivals and maintaining an online social network account	Use of persuasion
17	Stakeholders in existing services	Services affected after construction	Sub-urban railway did not approve the concrete bridge design planned	The metro rail team created a steel bridge design in coordination with railway team which is acceptable to railway, but more costly	Enabling design flexibility

Sl No	Stakeholder category	Stakeholder sub-category	Example incident	Strategy	Strategy category
18	Stakeholders in existing services	Services affected after construction	Airport didn't approve the elevated stretch near the runway as it would cause difficulty for pilots during landing	After negotiations with airport authority, a 500m section was changed to underground near the airport runway	Enabling design flexibility
19	Stakeholders in existing services	Services affected after construction	The elevated moving trains in the vicinity of the pilot nearing the landing zone caused visual hindrance to the pilots	After negotiations with Airport authority, the tracks near air funnel area was covered with FRP sheets	Enabling design flexibility
20	Stakeholders in existing services	Services affected after construction	The height of two stations near the landing zone was not within the airport permits	The metro rail project team re-designed the station from curved to flat top for satisfying the height limits	Enabling design flexibility
22	Stakeholders in existing services	Services affected after construction	Airport concerned about electronic interference from 25 KV OHL electric lines of metro rail	Get expert opinion from educational institutes to check whether such issues are there	Use of persuasion

6. DISCUSSION ON FINDINGS

The use of dimensions of power framework on the project team strategies from the metro rail megaproject case can help us understand how and why the project team used various strategies to combat different types of stakeholder challenges in project settings. Such anchoring in theory would help us determine the enablers of these strategies and the resources available with the project team. We see that the strategies used by project team in the metro rail case are from the overt dimensions of power. Deeper probing into the strategies would unearth the covert dimensions of power but that is beyond the scope of this paper.

I. STRATEGIES IN PRACTICE TO MANAGE EXTERNAL STAKEHOLDERS

All of the strategies that the project team use to convince stakeholders are from the second dimension of power - i.e. manipulation.

1. Use of persuasion – We see the project team used persuasion to convince the legal landholders who refuse to move even after providing market rate compensation through the influence tactic of 'inspirational appeal' (Yukl & Tracey, 1992). Here the team inspires the landholders to give up their land for a public transportation system that would benefit many residents of the city. The project team combined this inspirational appeal with some 'pressure' (Yukl & Tracey, 1992) also as they visited the homes of these landholders repeatedly. They also used 'rational persuasion' (Yukl & Tracey, 1992) for convincing these landholders that the metro rail organisation is giving market rates and hence, the landholder obtains adequate compensation for their loss. We also saw 'inspirational appeal' when the deputy Chief Minister personally asked the illegal landholders to leave to alternative arrangements. With government agencies such as airport authority and the sub urban rail network, the rationale of interconnectivity (everyone gains by interconnecting the service) worked that inspired these agencies to share their land for increased ridership for their service. Here, the team combined 'rational persuasion' with 'inspirational appeal' to get conformance from the stakeholders. The literature backs these findings - the use of storytelling and framing strategies for instance can get work done in megaprojects (Matos et al, 2015). We also saw such behaviours in service affected after construction. The project team was able to convince the airport authority by using experts from a premier education institute that there is no electronic interference posed by the 25KV power line on the viaducts.
2. Coordination by deputation – Coordination is a critical area to manage the external stakeholders in these megaprojects. The project team coordinated with external stakeholders by using employees deputed from these government agencies. The project team deputed senior managers from electricity department, highways department, railways, telecommunication and police department as a part of this strategy. These deputed employees were able to convince their colleagues to coordinate effectively. In situations where deputation was not possible such as in the case of the airport, the project organisation appointed managers who had worked in the government agency before and had a good relation with them. These employees on

deputation acted as boundary spanners and helped coordination by getting access to these agency offices, getting insights on the agency's concern and interests and pursuing these stakeholders through multiple rounds of negotiations until a resolution on the issue was made. The strategy of coordination with deputation works on the influence tactic of 'personal appeal'(Yukl & Tracey, 1992). The deputed employees ask their colleagues for personal favours relating to repeated rounds of talks and hence act as boundary spanners.

3. Give and take behaviour – With some stakeholders, the project team adopted a give and take policy. While acquiring lands from airport authority, the project team permitted the construction of an additional parking space for airport employees from the metro rail project funds. In the case of railways, the project team constructed the station for the railway and the metro rail together in exchange for their rights to the land. For convincing the private legal landholders to give up their land, the project team compensated them according to the market rate in exchange for the land rights. With give and take behaviour, the project team gets something in return from the stakeholders to compensate for the cost implications. The give and take behaviour works on the influence tactic 'exchange' (Yukl & Tracey, 1992). Here, exchange is used in combination with 'personal appeal' enabled by project team members on deputation.
4. Extra work for stakeholders – For stakeholders who experienced service issues during metro rail construction, the project team carried out extra work to speed up the shifting process. Such instances are seen during shifting of electric cables where the metro rail organisation had to make payments to electricity agency for shifting their cables. In the case of water lines, the metro rail organisation had to use their own contractors to shift and re-shift the water lines. For the state owned communication agency, the metro rail organisation had to shift the communication cables and also built state of the art inspection chambers as per the demand of the agency. This extra work for stakeholder strategy is because of the combination of 'exchange' and 'personal appeal' made by the project team members on deputation. Here, the metro rail organisation extends favours in exchange for cooperation during construction and operation of the project.
5. Enabling design flexibility – In most cases the design suggested in the detailed project report would not have considered the concerns and interests of the external stakeholders. As the project team became aware of the many stakeholders who experience service issues during the construction and due to the operation of this megaproject, the project evolved in design. The project team was able to change the design when land was not available from the army. During the construction of two stations, the team changed the roof design to conform to the height restrictions posed by airport authority. During construction, they changed the construction methodology by using small cranes to satisfy the airport authority's height restriction standards. Also during construction, when the water authority refused to shift existing water lines, the project team changed the design of the footing to manage the loads within the available area. They were also able to handle service stakeholder's

issues due to operation of metro rail project by changing design as seen in the instance when the elevated section was changed to underground section for airport and in the instance when the tracks near air funnel area was covered with FRP sheets. In another instance, the project team changed the design of an elevated bridge based on the concerns of the operational sub-urban train rails below. The 'enabling design flexibility' strategy adopted in multiple cases are examples of the 'exchange' (Yukl & Tracey, 1992) influence tactic used in combination with 'personal appeal' enabled by deputation team members. Here, the project team convinces the stakeholders that a new design addresses the concerns raised by them. The manipulation strategy used here is 'rational persuasion'.

These strategies can be further categorised into strategies without cost implications and strategies with cost implications as shown in figure 3 where strategies are arranged on cost criteria. The strategies that do not have cost implications are 'use of persuasion' and 'coordination by deputation' as the megaproject team do not have to spent money to convince the stakeholders using these strategies. The strategies that have cost implications are 'give and take behaviour', 'extra work for stakeholders' and 'enabling design flexibility'.

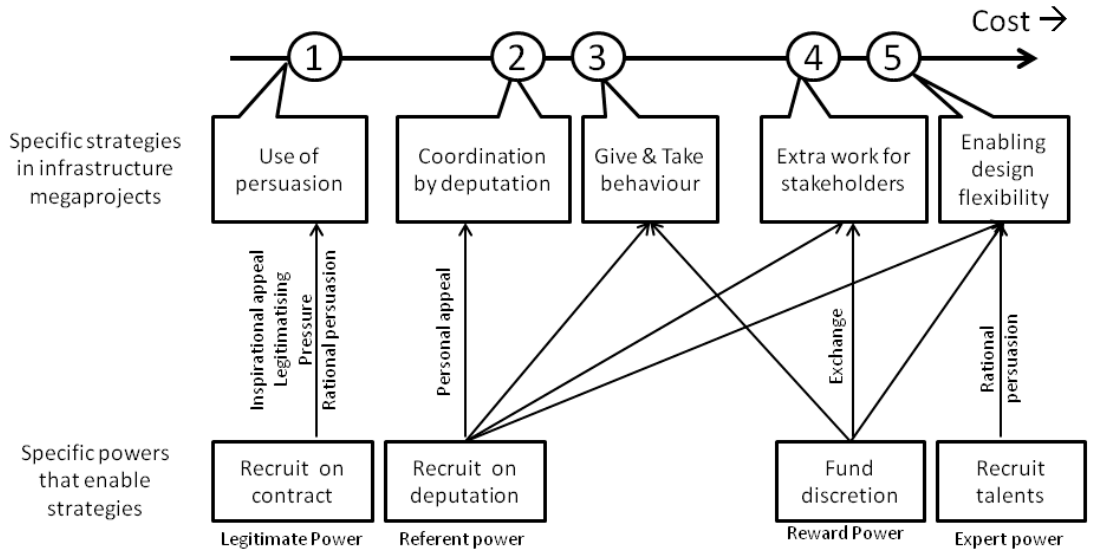

Figure 3: Specific power and strategies in megaprojects

II. RESOURCES THAT ENABLE STRATEGIES

These strategies in the second dimension of power are possible only because of the existence of resource-based power. Such powers act as enablers for the strategies that the project team used to manage the external stakeholders. Figure 3 shows the specific powers in megaprojects which enable the specific strategies of the project team and the role of the various dimensions of power in explaining them.

1. Recruit on contract basis - The project team convincing the stakeholders using persuasion is possible because the project organisation hires employees on a contract basis. The metro rail project is a quasi-government organisation and the permanent employees are subject to the accountability standards as in the

case of government. However, since these project team employees are recruited on a contractual basis, they have more freedom to act. Due to this, we see the project team convincing the illegal landholders who were cheated by using a legitimatizing strategy. The project team informed the landholders that they would acquire the full land if they refused to give land for construction. A government team member would not be able to give such kind of assurances as their decision can be questioned or challenged in the future. The recruited employees who are under contract have 'legitimate' (French et al, 1959) sources of power to use manipulation strategies and not be accountable for it. The contract-based employees have only one mandate - to complete the work as fast as possible.

2. Recruit on deputation - Coordination by deputation is possible only because the project organisation is able to recruit people on deputation due of the 'referent' (French et al, 1959) power the organisation enjoys. The megaproject here has adequate political support and hence they can ask the state government to depute staff from these government agencies. The instance of the metro rail organisation recruiting an ex-employee of airport authority who had a good relation with the airport staff and making him the manager of the stretch shows the 'referent' power in use. Here, we also see that 'referent power' results in ''personal appeal' influence tactic.
3. Fund discretion - Convincing stakeholders with cost implication is possible only because the metro rail organisation has fund discretion. The ability to use funds at their own discretion gives the organisation a 'reward' (French et al, 1959) power that enables them to reward other players who support their cause. The people on deputation who facilitate continuous coordination until a resolution is made and the financial discretion to account for the extra cost to give to the stakeholders enable the give and take strategy that the project team uses. The coordination enabled by the people on deputation from the railway and the discretion to use funds for building a new station for the railway department lead the metro rail organisation to get land permits to construct their own metro rail station. The continuous coordination enabled by the people on deputation from communication department and the discretion to use the metro rail funds for paying for shifting communication cables and building inspection chambers resulted in faster utility shifting as part of the performing 'extra work for stakeholders' strategy. This shows that 'reward power' results in 'exchange' influence tactic.
4. Recruit talents - The design flexibility strategy that project team uses is because the organisation can recruit special talents, which is an 'expert' (French et al, 1959) power than the organisation enjoys. The organisation recruits from other metro rail projects in India and worldwide which is not possible with other public projects that have a particular recruitment policy. For enabling design flexibility, the organisation also has discretionary funds to account for the extra costs required for the new design and the improved coordination because of the people on deputation. We see this with the metro rail organisation going through multiple rounds of negotiations to change the concrete bridge to steel bridge over a sub-urban rail network, which was

possible only with the combination of special talents, fund discretion and coordination by deputation.

Thus, the resources which are available with the project team to manage the external stakeholders are recruitment discretion (to recruit on contract basis and recruit special talents), government backing (to recruit on deputation) and fund discretion.

III. THE RELATION BETWEEN STRATEGIES AND STAKEHOLDER CATEGORY

The application of dimensions of power framework to make sense of the project team strategies helps us understand when a particular strategy is used.

1. It is observed that the project team uses 'coordination by deputation' to deal with government landholders and government service agencies. This strategy helps to get through the bureaucratic procedures in the government agency as the deputed employees personally appeal to their colleagues back at their parent agency. This relation shows that the influence tactic 'personal appeal' behind the specific strategy 'coordination by deputation' can be successfully used with government employees.
2. To acquire land from the private and government legal landholders, the project team adopted a 'give and take' strategy using their fund discretion to offer something in exchange for land rights for the metro rail construction. Monetary compensations were given to private legal landholders in the form of market rate compensation and non-monetary compensation were given to government legal landholders in the form of additional work in exchange for the land rights.
3. To acquire land from illegal landholders, the project team resorted to 'use of persuasion' strategy. 'Use of persuasion' strategy is used widely with all stakeholder groups as seen in table 1.
4. To convince stakeholders whose services are affected during construction, the project team adopts an 'extra work for stakeholder' strategy. The project team is willing to do these extra works in return for the stakeholder cooperation required for shifting utilities.
5. In case the stakeholders in existing services who do not agree with the proposed plans for metro rail construction, the project team uses the 'design flexibility' strategy to accommodate the stakeholder interests in the new design and convince them.

7. CONCLUSION

The aim of this paper is not to demonstrate methods to eliminate all stakeholder issues in infrastructure megaprojects. It was also not our intention to comprehensively document all the issues that a megaproject would face and all the resources and strategies available to the project team to manage them. Rather, we see this research as the first in a set of stepping stones that would help us enhance our understanding of external stakeholder, their demands and project team's strategies to deal with them, by bringing in the dimension of power.

The study documents and categorizes external stakeholders in a metro rail megaproject. We can classify external stakeholders into stakeholders in land acquisition and stakeholders in existing services. The stakeholders in land acquisition

can be further classified as legal landholders and illegal landholders. The stakeholders in existing services can be further classified as services affected during construction and services affected after construction. To manage these external stakeholders, the project team resorted to five strategies: i) use of persuasion, ii) coordination by deputation, iii) give and take behaviour, iv) enabling design flexibility and v) extra work for stakeholders. We can group these strategies into convincing stakeholders without cost implications and convincing stakeholders with cost implications.

This study of using the dimensions of power framework to make sense of megaproject stakeholder's interests has two contributions to power theory and two contributions to megaproject practice.

As a first contribution to power theory, this study empirically shows the link between the first and second dimensions of power. Scant literature addresses this link such as how an expert source of power leads to rational persuasion (Yukl et al, 1996), and this paper helps to explain other sources of power and influence tactics. The 'referent power' obtained from recruiting on deputation resulted in 'personal appeal' influence tactic as observed in this case. The 'reward power' obtained from the fund discretion that the metro rail organisation enjoyed resulted in 'exchange' influence tactic. Therefore, this paper offers empirical support for the relation between the first and the second dimensions of power.

The second contribution to power theory that this paper provides is regarding the context of using a particular influence tactic. Literature claims that influence tactic dependent on contexts such as direction of usage (Kipnis et al, 1980; Yukl & Tracey, 1992), content of game (Yukl et al, 1999), culture (Fu & Yukl, 2000) and leader's quality (Cable & Judge, 2003). However, no such distinction is made with respect to government or private organisation. This study shows that 'personal appeal' influence tactic works exceptionally well by the use of deputed staff with all government agencies among the multiple categories of stakeholders. This is a significant contribution to understanding the context of use of influence tactics.

To the megaproject practice, the main contribution is that the strategies varied with different stakeholders. The project team used 'coordination by deputation' to deal with government landholders and government service agencies. They adopted a 'give and take' strategy to acquire land from private and government landholders. With government agencies in services affected during construction such as utilities, the project team used an 'extra work for stakeholder' strategy. To deal with stakeholders in land acquisition and existing services who do not agree with the proposed plans for metro rail construction, the project team used 'design flexibility' strategy.

The second contribution to megaproject practice is that this paper highlights the resources that the project team is empowered with for dealing the external stakeholders. Megaprojects executed as new organisation gives the organisation autonomy on the areas of fund discretion and recruiting people. These projects also enjoy special preference from the state political leadership, which allows recruiting employees on deputation. Fund discretion enables the project team to acquire lands from legal stakeholders at market rate compensation, adopt a give and take strategy to get work done and account finally for the costly design changes. Due to the discretion in recruiting talents, the project is able to get expertise from other metro rail projects who previously dealt with similar issues and helps in design changes. The ability to

recruit on contract basis allowed the employees to adopt risk-taking manipulation behaviours that helped deal stakeholders quickly and save on time.

This work has some limitations. Firstly, since an exploratory case study was used as the research methodology, only the overt dimensions of power namely the first and second dimensions of power were observed. An in-depth study can explore the covert third and fourth dimensions of power. Secondly, while the experiences of this metro rail megaproject were extreme, we cannot consider the explored categories of external stakeholders to be exhaustive or completely representative of megaprojects. Our case study was restricted to a infrastructure megaproject and as a result, we were not in a position to observe contextual nuances that would arise in other megaprojects such as an Olympic stadium or an Apollo mission.

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