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Project Finance Criteria and Governance of Public-Private Partnership Hydropower Project in Nepal

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ABSTRACT

Project finance arrangement has obvious need for contract management during its life cycle. Contract management for private sector hydropower projects generally include Generation License, Project Development Agreement, Power Purchase Agreement, Financing Agreement, Construction Contract Agreement, and Operation Contract Agreement. Markets, hierarchies and hybrids are the form of governance structure under the Transaction Cost Theory, while debt and equity often regarded as a basis for determining governance structure. Fundamental criteria for project finance arrangement include establishing a special purpose vehicle to undertake a project, using debt and equity in capital structure, debt capital obtained based on projected cash flow without collateral except if the project created assets given to the lender against the security of loan by the sponsors. This paper analysed project finance criteria as the determinants of governance structure in hydropower projects. In Nepal, private sector developed hydropower projects and supply generated energy to the only off-taker under Public-Private Partnership (PPP) and Project Finance (PF)

arrangement. The chi-square test was utilised to assess the association of fundamental criteria of PF with the governance structure of hydropower projects. The results indicate strong association between PF criteria with governance structure of sample hydropower projects in Nepal.

Keywords: *governance, public-private partnership, project finance, hydropower, special purpose vehicle*

INTRODUCTION

Electricity is the primary source of energy and a sine qua non of development (Briscoe, 1999). There are various sources of electricity, and for many countries across the world hydro energy is an important source. Hydro electricity is important due to its zero-input cost, zero greenhouse gas emission, low operating and maintenance cost, and sustainability. Hydropower contributes seventy per cent to world renewable energy and seventeen per cent to global energy and it has highest potential of meeting domestic energy demand and export (Alam *et al*., 2017). Nepal has tremendous potential of hydropower but such potential is still untapped.

The World Bank has described basic financing mechanisms for infrastructure projects as (i) Government Funding, (ii) Corporate or On-Balance Sheet Finance and (iii) Project Finance or Off-Balance Sheet Finance. Infrastructure financing methods like public finance, corporate finance, Public-Private Partnership (PPP) and project finance are equally applicable in hydropower sector. Project finance is the most efficient financing arrangement for PPP project (WB, 2017). Although public finance remains the major source of financing for infrastructure projects, PPP and project finance method are applied in recent years. Since early 1980s realisation of limitation of public funding has been growing and project finance as a new tool gained importance which has evolved as a specific finance technique (Merna & Njiru, 2010). Adopting a long term concession agreement, PPP can also be form of the project finance for financing, developing and operating public services. For every model of financing, governance structure would be different. Governance is generally understood to be a system, a process or power of governing an organisation and denotes the group of people who command the functions of governing the organisation.

In large energy projects, a bank loan alone is not sufficient to finance project cost. But along with the public funding and private investment, bank loan plays significant role (Scannella, 2012). Key credit factors include transaction characteristics and security package (Lasa, Ahmad, & Takim, 2019). For attracting private investment in infrastructure, project finance has been proven to be a successful technique. Domestic institutional investors are the optimal anchor investor for any infrastructure project (Danso & Samuels, 2017). Investment structure of project finance involves debt capital from syndicate of banks and lending institutions and equity from sponsors of project (Eta, 2015). The concept of project financing is relatively new concept for Nepal, as collateral and personal guarantee-backed lending is mainly used. It is meaningless to ask for additional comfort in the form of properties (land and building) for any hydro project which in general is capital intensive project. Development of hydropower sector needs involvement of all stakeholders, the government, investors, financiers, local public, political parties etc. (Shah, 2008). Previous studies indicate project finance is important in infrastructure including hydropower project financing. Obviously, bank's involvement in project finance arrangement have influence on the governance structure of Project Company.

Recognising the importance of hydropower projects in Nepal and the significance of governance in project financing this study examines the effect of project finance criteria over the governance structure of the hydropower projects and relation of governance structure with project finance. This study also provides insights into the propensity of Independent Power Producers (IPPs) and Banking and Financial Institution (BFIs) towards project finance for hydropower development in Nepal. In the next section, background on hydropower projects in Nepal and literature review on governance structure and project finance is presented. The discussion on hypotheses development and research methodology precedes data analysis. Based on the responses received discussions on findings are presented to end study with conclusion.

HYDROPOWER PROJECTS IN NEPAL

Before the nineties, public finance was the sole source of finance for hydropower projects infrastructure. Nepal's first hydropower project, the Pharping (500kW) hydropower was constructed in 1911AD with support

of the United Kingdom (Bhattarai, 2004). Until 1990 the government and government companies/undertakings were responsible for the development of the hydropower sector. By nature of the government organisation, the structure of project governance then was hierarchical and in line with government decision making processes.

In contrast to the traditional practice of hydropower development through government undertaking, currently Nepal hydropower sector is significantly undertaken by not only the domestic private players but by the international companies and governments. For instance, Pancheswor Hydropower Project, Arun III and Upper Karnali Hydropower Project are the projects with significant involvement of governments and foreign private developers. Pancheswor Hydropower is a bi-national project to develop in Mahakali River in Nepal and India with equal size of 3,240 MW capacity underground powerhouses each in Nepal and India. A vast area of agricultural land is to be irrigated with each country having separate project entity established under the integrated Mahakali treaty (GoN, 2020). On the other hand, GMR Upper Karnali Hydropower Project in western Nepal is a prestigious 900MW project which is under advanced stage of development and oriented to export the generated energy to Bangladesh and India. The project is being developed by GMR India through Nepal based subsidiary (GMR, 2020) . Similarly another 900MW project in eastern Nepal is under construction by another Indian company the Sutlej Vidyut Nigam through a subsidiary established in Nepal under the Nepal companies Act (SJVN, 2020). This project exports its generated power to India.

Private hydropower developers started financing hydropower sector after the new hydropower policy was issued (Shrestha, 2016). Before the government opened the hydropower sector for private investment, public finance remained the major source of finance for infrastructure projects. However, after the hydropower sector has opened for private sector investment with policy of promoting PPP in hydropower development, number of private companies registered with Office of the Company Registrar of Government of Nepal (OCR, GoN) has increased. There were 289 private companies in energy sector registered up to FY2073/74 (i.e.FY2016/17) with total committed fixed capital of NRs.678 billion. As of July 2019, there are altogether 83 hydropower companies as Independent Power Producers (IPPs) in operation with installed capacity

of approximately 561MW, 120 under construction with financial closure IPPs project with installed capacity of approximately 2,614MW and 137 under construction without financial closure projects with installed capacity of approximately 2,869MW. Altogether there are 340 IPPs with 6,043MW installed capacity not including the above mentioned two export oriented projects. These IPPs are companies under the Nepal companies Act which was established after the Nepal Government introduced a policy to engage private sector in hydropower development.

The development of the hydropower sector of Nepal shows growing trend of increasing participation of private sector, international companies and international governments. This resulted in the introduction of new policies to govern the practice. The incorporation of new companies' and the effectiveness of project finance in infrastructure sector in general and hydropower sector further justify the scope and focus of this study.

PROJECT GOVERNANCE STRUCTURE

Governance Defined

The term'governance'is derived from the Latin word 'gubernare' meaning 'to steer', and the term has been frequently used in the literatures. Discussion on governance of projects has increased but its main origin remain ambiguous (Ahola, Ruuska, Artto, & Kujala, 2014). Contemporary governance is grounded in the philosophy of neo-liberalism where individuals are not 'steered' by their supervisors but by the subtle force in the society (Muller, 2016). Governance is about the performance of an agent in order to carry out wishes of his principal and not about the goal set by the principal, thus governance is about execution for better or worse (Fukuyama, 2013). 'Governance is the means by which to infuse order thereby to mitigate conflict and obtain mutual gains' (Williamson, 2014). Governance structure is a system or rule and can also be viewed as an institution. It is an institutional framework within which economic transactions are coordinated. It describes the parties involved in the transactions, helps to identify who owns what and who is allowed to make decisions (Spithoven, 2014).

Williamson (1998) with combined treatment of corporate finance and corporate governance said debt and equity are treated not only as alternative financial instrument but as alternative governance structure. Analysing the theory of firm and governance structure and explaining the relations with source of finance, Williamson (1998) mentioned 'board of directors is interpreted as a security for equity finance; debt and equity are not merely alternative mode of finance but are also mode of alternative governance'. He examined the organisation theory not from the lens of choice but with the lens of contracts (Williamson, 2002). Analysis with debt as a mechanism of governance suggested geographically dispersed banking syndicate as a strong form of governance in high risks countries (Dorobantu & Müllner, 2019). Comparative analysis showed project governance structure provides structured mechanism to manage risks (Guo, Chang-Richards, Wilkinson, & Li, 2014). An analysis of PPP from the lens of Transaction Cost Economics (TCE), suggests three major opportunism issues embedded in infrastructure PPP are related to principal-principal, firm's hold-up and government's hold up. These issues possibly cause high transaction cost and costly governance structure of PPP (Ping Ho, Levitt, Tsui, & Hsu, 2015).

Williamson (2014) named three modes of governance as market, hybrid and hierarchical under his examination relating to its strengths, weaknesses and alternative modes of governance. Market refers to arm's length transactions governed by contracts whereas hierarchical refers to internal organisation governed by unified ownership and internal control while hybrid refers mix of contracts of long-term and other similar arrangement with inter firm comparison (Ping Ho *et al*., 2015). PPP is a hybrid project finance structure where at least one public entity seeking to provide superior quality public services at lower cost is involved in a contract with at least one private company seeking new business opportunities with good profit. The most discouraging aspect of PPP for both public and private party is the risk of future opportunistic behaviour by the other party which may deter the promising transactions. Opportunism and bounded rationality can influence either of the parties resulting in their behaviour such as private parties lowering quality and investment and public party making more stringent regulatory provisions (Moszoro, 2013).

Economics of governance connects three fundamental concepts; adaptation, governance and the transaction cost (Williamson, 2014). In

order to reduce the contractual hazards, economic importance of creating governance structure of individual transaction is emphasized (De Schepper, Haezendonck, & Dooms, 2015). While analysing organisation and economic activity, opportunistic behaviour has been studied (Klein *et al.*, 1978). After the transaction is in place opportunism is considered, and for maintaining the results and interest in the opportunistic behaviour, firms adopt governance structure (Jap & Anderson, 2005). The need of distinct organisational forms for infrastructure project implementation is highlighted in project finance. Such form has been seen in three distinct categories as market, hierarchy and trust. The ideal-typical form market of organisation relies on the price mechanism whereas the hierarchy and trust rely on authority and community respectively (Adler, 2001).

Governance Structure and Project Governance

Governance structure has been viewed as an organisational course of action for finishing specific series of transactions. It is normally classified into market governance, hierarchical governance, and hybrid governance. Market refers to the arm's length market exchange governed by contracts whereas hierarchical refers to the internal organisation governed by unified ownership and internal control. Hybrid governance refers to the blended control of transactions characterised by inter firm cooperation such as long-term contracts, alliances, and franchising. TCE maintains that transactions portrayed by certain dimensions of transactions ought to be lined up with different governance structures, varying in the cost and competence to create an economising result. Each specific governance mechanisms present different trade-offs between benefits and transaction costs. Choosing from alternative governance should be based on careful evaluation of the comparative costs and benefits (Parker & Hartley, 2003). Ho and Tsui (2009) analysed practice of PPP feasibility analysis considering the opportunism-based transaction cost of PPPs as governance structure (Ping Ho *et al*., 2015). Institutional framework is important in project finance study in evaluating how well the project finance company has come to existence in terms of its different dimensions like separation from the sponsor/s, the lending terms including recourse provision, provisions relating to repayment and collateral.

If the governance system is working effectively, management of projects and programs can be effective. Systematic project failure is result

of the failure of organisational governance. Significant roles are to be played by project sponsors for effective governance. They can support project governance in two broad perspectives i.e. an external focus and a more internal focus. External focus is about defining strategic matters from the view point of the client, whereas internal focus is to provide top management support from parent organisation and supporting project management by bridging governance function (Too & Weaver, 2014). Project governance provides a structured mechanism to address the risks (Guo *et al*., 2014). This approach in an infrastructure project offers a structured mechanism to analyse and address the risks including cost overrun, time overrun and delay as well as substandard construction works, ineffectiveness and low efficiency of infrastructure projects in developing countries. In order to assess the causes of the failure or success needs analysis (Khan, Hussain, Waris, Ismail, & Ilyas, 2018).

Project Governance structure selected for any project has significant impact on management of risks associated with the project (Guo *et al*., 2014). Under the project finance arrangement, the Special Purpose Vehicle (SPV) or Company or the project company enter several contracts with various parties. In the context of Asian markets bank financing in infrastructure PPP projects are still at infancy stage (Rao, 2018). Nepal is not an exception of this scenario.

Financing model adopted has direct impact over the governance structure of the project. If a project is developed and implanted as a government project its governance structure replicates the decision making process of the government departments. Similarly, in case a project is undertaken by Company, the process of decision making will follow the corporate decision making process. On the other hand, if the government and the private sector get involved in an infrastructure project under PPP-PF model, with a new project company, the SPV, its governance structure will have impact of the aspirations of various stakeholders including:

i. Project sponsors
ii. Government
iii. Off Taker
iv. Debt Holders
v. Community people at the project location and general public

The interest of the project stakeholders has direct impact on the governance structure of the project. In context of infrastructure projects including hydropower projects in project finance model, the effect of project finance criteria in determining the governance structure is the question for the investigation under this study. SPV is a tight governance structure in Project Finance using very high debt ratio. Thus SPV as a mode to projects implementation utilises high upfront investment cost and low operating cost (Steffen, 2018).

Project Finance

Project finance as defined by Gatti (2008), Nevitt and Fabozzi (2000), Tan (2007) and Yescombe (2002) is an arrangement where a SPV or a separate project company is created by project sponsors, with primary source of repayment of project loan being the cash flows of the project and the collateral represents only project assets. It is an arrangement with limited or non-recourse lending.

Project finance is also known as off-balance sheet investment where project itself should be strong enough to get lending from the institutional investors on the basis of the estimated cash flow of the project. As in the corporate finance model, the lender will not approve the loan based on the sponsor's financial position as the main criteria for providing the project loan. Habib and Johnsen (1999), Esty and Christov (2000) and Sawant (2010), mention the firms invest in specific assets through project finance because it mitigates the transaction cost arising from assets specificity. Asset specificity is present when transaction requires specialised investments which have small or no alternative value. Many researchers have highlighted the project finance and its relation with asset specificity and transaction cost quoting Williamson. Klein *et al.* (1978) developed the theory of special economic structure and governance with an entity with special purpose, called as SPV. The essential requirement of project finance arrangement is incorporation of an independent project company, SPV to undertake the project. Such SPV is provided with the equity by the sponsors and other participants and the debt capital by the lenders mostly by a syndicate of financial institutions. Such SPVs are usually dissolved after the completion of the project (Pietz, 2010).

Yescombe (2002), Merna and Njiru, (2010), Gatti (2008), Tan (2007), Nevitt and Fabozzi, (2000), Esty and Christov (2000) highlighted project finance as special arrangement for financing infrastructure project and mention that it has unique features including the followings:

i. Cash flow based financing
ii. Limited or non-recourse financing
iii. Project assets only as the collateral for project loan
iv. Establishment of a SPV

Strictly following the above criteria, the separation of governance for a hydropower project with a SPV, the lending terms including recourse provision and provisions relating to repayment, and collateral as intra-organisation or inter-organisational requirements are important aspects of the study in project finance and hydropower development in Nepal.

The structure of project finance transaction provides a governance framework which determines the type of business, scope of project operation and the type of potential business and a financial risk. The transaction structure must meet the minimum elements of project criteria that (i) the SPV is building and operating the project independently from its parent (ii) risk of repayment is restricted to the success or failure of the project (iii) the security package with first ranking security over substantially all of the assets and undertaking of the business for the project for the security of debt of the project finance debt holders (iv) covenant package extending over the terms of the debt for limiting additional debt, security, amendment to the structure including merger and acquisition and (v) covenant package for cash management establishing priority of cash payments after managing operation to debt holders or senior debt (Bariletti, Lutereau, D'Oliver, Selting, Kernan, 2014). Parent Linkage Analysis, Structural Protection Analysis and Additional Structural Elements are the basic three groups of analysis covered for project finance transaction structure rating (Michela *et. al*., 2014). Byoun and Xu in their analysis of Contracts, Governance and Country Risk in Project Finance, analysed the choice of PPP and Project Finance and concluded that country's political and financial risks have significant impact on PPP and Project Finance (Byoun & Xu, 2014). A snapshot of the review of literatures in relation to governance structure of a project finance arrangement is in Figure 1.

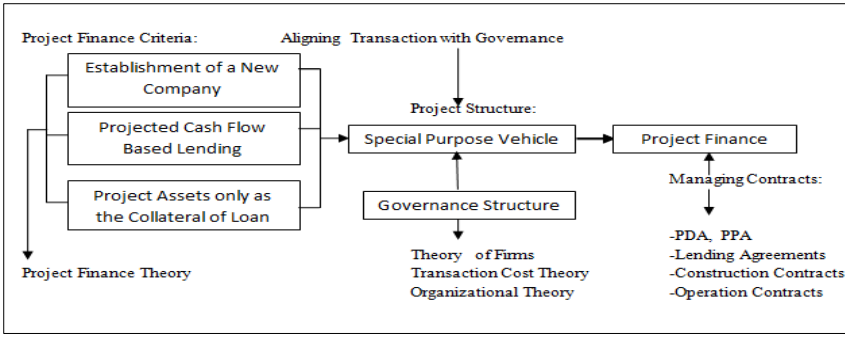

Figure 1: Project Finance Governance Structure

The literature review reveals many studies have been made in financing of energy projects and project finance in infrastructure sector. Studies in hydropower sector of Nepal also include a relatively large number of studies about financing hydropower project using PPP and PF mechanism. The following highlights indicate the gap in the past studies on project finance in hydropower development in Nepal.

SPV, a new company as project governance structure: After the opening of hydropower development to private sector, the emerging energy based companies in Nepal was simply understood as a requirement to obtain generation license. But it cannot be said that the hydropower project sponsors in Nepal are not aware of the basic criteria of project finance. Because SPV, the new company requires various contracts for example contract with the lenders, shareholders/sponsors, contractors, suppliers, and off-taker. In such a situation whether the sponsors are taking the SPV as a separate governance structure or it is just to obtain project development and generation license through solicited bids is an important gap to address.

Projected Cash-Flow based lending and governance structure: In project finance arrangement, lenders make investment in a project based on the viability of the project shown on project cash flow for at least during the loan period to make the project viable. Lenders may have conditions of unique separate governance structure of project in such investment.

Recourse provisions affecting governance structure: Project finance arrangement provides for non-recourse or limited recourse on the project

assets only. Agreement between the lender and project sponsor can provide for a new separate governance structure to specifically secure the investment of the lender in the project.

Based on the gaps identified as mentioned above, basic framework of the study is conceptualised as shown in Figure 2. The association of PF criteria namely (i) incorporation of a new company (SPV) to undertake the project, (ii) lending to the SPV based on the project cash flow and (iii) limited or non-recourse finance, with project governance and the association of project governance with the hydropower projects have been analysed.

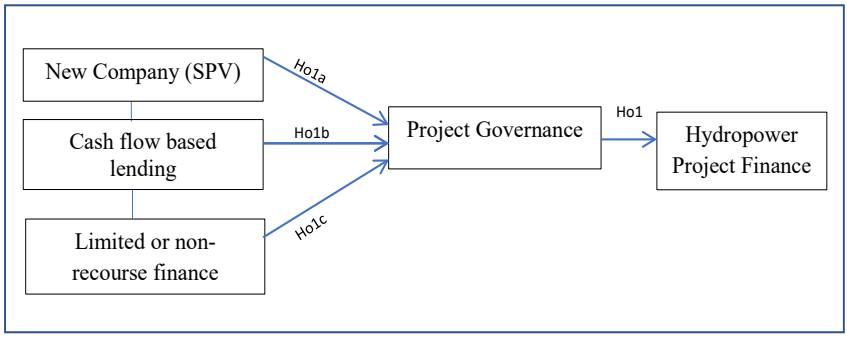

Figure 2: Research Framework

The following hypotheses were formulated:

H01= Governance structure of hydropower projects do not show the propensity of project sponsors towards project finance.

H01a= Incorporation of new company to undertake a hydropower project does not indicate sponsors propensity to governance structure of the project as per Project Finance model.

H01b= Lending based on projected cash flow is not significant in determining governance structure of hydropower project.

H01c= Limited or non-recourse finance is not significant in determining governance structure of hydropower projects.

METHODOLOGY

In the field of social science, the research design most commonly used is the survey method whereby information is gathered from the part of the

total population. There are certain important criteria on why survey design is wise choice of design. Vogt, Gardner and Haeffele (2012) suggested the criteria for the application of survey method which is applicable is this study; (i) the data are best obtained directly from the respondents; (ii) the data can be obtained by brief answers to structured questions; (iii) respondents are expected to give reliable information; (iv) the use of the answers are known; and (v) an adequate response rate can be expected. The project finance arrangement for hydropower projects in Nepal is significantly affected by the inclination of the hydropower entrepreneur to the project finance arrangement and the willingness on the part of the BFIs to invest on limited or non-recourse basis. Institutional inclination towards some specific phenomenon is the result of the professionals working for the institution. As such the survey questionnaires is seen as an appropriate data collection method for this study.

The aim of this study is to conduct empirical examination of the effect of project finance criteria in governance structure of hydropower projects in Nepal. Descriptive and analytical design has been adopted to analyse the association of factors (project finance criteria) in governance structure of hydropower projects. For this purpose, cross-sectional data has been collected from the respondents representing IPPs, BFIs, Insurance Companies and other institutional investors like Employee Provident Fund and Citizen Investment Trust. Selection of respondents is made applying purposive sampling.

The sample of this study is determined through stratified sampling whereby samples were taken from each of group or strata in the population (Pant, 2016). As per Mid-July 2019 total population is 310. In order to determine the total number of sample the following formula was applied:

$$n = \frac{N}{1+N(e)^2}$$

Where,

n = Sample size
N = Population
e = desired level of precision. The level of precision in this study is at 7%.

Replacing the value in the above formula, sample size will be:

$$\frac{310}{1+310(0.07)^2}$$

$$= \quad 125$$

Treating the above mentioned group of respondent as individual strata, the total number of samples as mentioned by Kothari and Garg (2019) will be distributed as follows:

$$n_1 = n(P_1)/N$$

Where,
n_1, n_2 = samples from individual strata
n = total number of sample
P_1, P_2 = population of the strata
N = population

Using the above formula numbers of sample to be selected from each of the above group of respondents is shown in Table 1:

Table 1: Determination of Sample

Group	Population	Sample
Hydropower Companies	211	85
Commercial Banks:	28	11
Development Banks	29	10
Retirement Funds:	2	2
Life Insurance Companies	19	7
Non-life insurance Companies	20	8
Reinsurance Companies	1	1
Total	310	125

Google form questionnaires were distributed to 125 institutions representing the sectors mentioned above. Altogether 44 organisations participated in the survey. Out of the total 44 responses considered for this analysis 40 institutions responded through the on-line form and four responses were collected physically from the responding institutions amidst series of follow ups made to all the targeted respondents.

The detail of responses received under the questionnaire survey is presented in Table 2. Altogether 44 participants responded the survey. Of the total, 28 respondents, which are 63.6 per cent are from IPPs (hydropower companies). Similarly, nine responses which is 20.5 per cent including institutional investors and professionals; five responses which is 11.4 per cent are from BFIs (commercial and development banks); two responses which is 4.5 per cent is from insurance companies.

Table 2: Respondents

Organisations	Frequency (N)	Percentage (%)
IPPs	28	63.6
BFIs	5	11.4
Insurance Companies	2	4.5
Others including Institutional Investors	9	20.5
Total	44	100.0

Note: IPPs=Independent Power Producers, BFIs=Banking and Financial Institutions.

Based on Kothari and Garg (2019), the Chi-square test was performed to evaluate whether or not there is association between project finance criteria and governance structure of hydropower projects. The Chi-square test has been applied using SPSS to analyse and describe the data for the stated purpose of the study. The respondents were asked to indicate their level of agreement on statements covering (i) requirement of a unique governance structure for project finance (ii) establishment of new hydropower company and its motive to provide unique project governance structure, (ii) unique project governance structure to obtain cash flow based project loan and (iii) unique governance structure for non-recourse finance and (v) appropriateness of project finance model for development of hydropower sector of Nepal. The 5-point Likert-Scale (5 for strongly agree and 1 for strongly disagree) is used. The details of the responses received in 5-point scale is shown in Table 3.

Table 3: Frequency Table of Responses on 5-point Likert Scale Questionnaire

Variables	Response	Frequency	Percent	Valid Percent
New Company (SPV) as the Unique Governance Structure for PF	Strongly Disagree	6	13.6	13.6
	Disagree	4	9.1	9.1
	Neutral	7	15.9	15.9
	Agree	16	36.4	36.4
	Strongly Agree	11	25	25
	Missing	0	0	0
	Total	44	100	100
Separate Governance Structure and Loan based on Cash Flow	Strongly Disagree	6	13.6	14.0
	Disagree	7	15.9	16.3
	Neutral	4	9.1	9.3
	Agree	22	50	51.2
	Strongly Agree	4	9.1	9.3
	Missing	1	2.3	
	Total	44	100	100
Separate Governance Structure and Limited or non-recourse finance	Strongly Disagree	5	11.4	11.4
	Disagree	5	11.4	11.4
	Neutral	6	13.6	13.6
	Agree	19	43.2	43.2
	Strongly Agree	9	20.5	20.5
	Missing	0	0	0
	Total	44	100	100
Establishment of SPV as a separate governance structure for Project Finance	Strongly Disagree	6	13.6	13.6
	Disagree	8	18.2	18.2
	Neutral	5	11.4	11.4
	Agree	16	36.4	36.4
	Strongly Agree	9	20.5	20.5
	Missing	0	0	0
	Total	44	100	100

Project Finance	Strongly Disagree	4	9.1	9.1
	Disagree	3	6.8	6.8
	Neutral	5	11.4	11.4
	Agree	22	55	55
	Strongly Agree	10	22.7	22.7
	Missing	0	0	0
	Total	44	100	100

The instrument has been verified and validated with opinion of industry experts, and a pilot study. The reliability of the data has been accepted with Cronbach's Alpha of 0.721. As the analysis of 5-point Likert scale data resulted with more than 20 per cent of expected count less than 5, the data were recoded into two variables (i) Agree and (ii) Disagree with transform option available in the SPSS in order to apply Fishers Exact Test. The detail of the corresponding responses after recoding the 5x5 table into 2x2 contingency table has been depicted in Table 4.

Table 4: Corresponding Reponses After Recoded into 2x2

Variables	Response	Frequency	Percent	Valid Percent
New Company (SPV) as the Unique Governance Structure for PF	Agree	17	38.6	38.6
	Disagree	27	61.4	61.4
	Missing	0	0	0
	Total	44	100	100
Separate Governance Structure and Loan based on Cash Flow	Agree	17	38.6	39.5
	Disagree	26	59.1	60.5
	Missing	1	2.3	0
	Total	44	97.7	100
Separate Governance Structure and Limited or non-recourse finance	Agree	16	38.4	38.4
	Disagree	28	63.6	63.6
	Missing	0	0	0
	Total	44	100	100
Establishment of SPV as a separate governance structure for Project Finance	Disagree	19	43.2	43.2
	Agree	25	56.8	56.8
	Missing	0	0	0
	Total	44	100	100

Project Finance	Disagree	12	27.3	27.3
	Agree	32	72.7	72.7
	Missing	0	0	0
	Total	44	100	100

Governance Structure of the hydropower projects have been treated as the mediating variable for the study. The main project finance criteria, (i) establishment of a new company, SPV, (ii) lending based on project cash flow and (iii) the limited or non-recourse provisions have been taken as the independent variable. At first the effect of individual criteria on the governance structure of the project has been analysed. Secondly, the association of governance structure with project finance in hydropower projects has been analysed. Accordingly, the association between the variables has been tested using the Chi-square test.

FINDINGS AND DISCUSSION

Effects of Project Finance Criteria in Governance Structure:

Administration of PPP projects is challenging because the governance of PPP involves unique relationship between public and private parties and the complex financing issues (Ho & Tsui, 2009). TCE suggests different governance structure can be recognised for projects. PPP feasibility is viewed from the opportunism based transaction cost as well. This opportunism causes high transaction cost and costly governance structure. To avoid a risk of contaminating the sponsors existing business by potential failure of a new venture, sponsors may choose for a unique governance structure for a project. In order to mitigate transaction costs arising from assets specificity, firms choose project finance arrangement. As the SPV is created for specific project and usually dissolved after the completion of the project, such unique feature obviously demands different governance structure. This relates with the alternative form of market, hierarchies and hybrids of the governance structure as said by Williamson (2002). Ping Ho *et al*. mentions PPP, a costly governance structure involves three type of opportunism based problems principle-principle problem, firm's hold up problem and government led hold up problem giving rise to substantial

transaction costs (Ping Ho *et al.*, 2015). Klein *et al.* (1978), Habib and Johnsen (1999), Esty and Christov (2000) and Sawant (2010), Pietz (2010), Steffen (2018) highlighted the uniqueness of SPV, a new company for the PF arrangement. In these conceptual frameworks, the incorporation of new companies in Nepal's hydropower sector and the effect on project governance has been analysed with formulating following hypothesis.

H01a= Incorporation of new company to undertake a hydropower project does not indicate sponsors propensity to governance structure of the project as per Project Finance model.

Currently hydropower projects in Nepal are mostly PPP projects. Most of the projects are governed under new companies incorporated after the hydropower sector was opened to private sector. The incorporation of new companies is phenomena similar to one of the criteria of project finance i.e. establishment of SPV to run the project. The motive of this study is to investigate into propensity of sponsors to project finance while establishing such companies.

Respondents were asked to express their opinion on whether the SPV is a compulsory requirement for project finance in hydropower projects. Another question about need of unique governance structure for project was given to obtain opinions from respondents. With cross tabulation of the responses for these questions, the test is significant with p-value falling within the alpha (α) of 0.05 taken for this study. As the null hypothesis has been rejected, the establishment of new companies in hydropower sector indicates sponsors propensity toward project finance. Thus the general grievance to private sector about the growing number of new companies to merely obtain hydropower generation license alone is not correct because project sponsors are aware of the requirement of project finance arrangement. It is the hydropower entrepreneur's opportunistic behaviour to utilise the PPP policy adopted by the government with a motive of business diversification accepting to manage complex relationship with public sector along the complex governance structure of PPP bearing substantial transaction cost. Choosing of alternative governance structure as Parker and Hartley (2003) described is critically rest upon the careful comparative analysis of costs and benefits.

Table 5: $H_0$1a Coefficient Value of Person's Chi-square and Fisher's Exact Test

	Value	Degree of Freedom	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.231[a]	1	.022		
Continuity Correction[b]	3.899	1	.048		
Likelihood Ratio	5.286	1	.021		
Fisher's Exact Test				.031	.024
Linear-by-Linear Association	5.112	1	.024		
N of Valid Cases		44			
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.34. b. Computed only for a 2x2 table					

$H_0$1b=Lending based on projected cash flow is not significant in determining governance structure of hydropower project.

In balance sheet finance lending is based on the financial strength of the borrower. Lenders are primarily concerned on the sponsor's financial strength as assessed to be continued over the life of the loan rather than a specific economic activity. However, where financing is based on the financial viability of specific economic activity, the lender is highly concerned with the governance related to the economic activity rather than the sponsor's overall financial strength of now and of the future as long as the whole of the loan is repaid. In such a situation lender or syndicate of lenders in a syndicate finance put stringent conditions through various covenants which significantly influence the governance structure.

Questionnaire required the respondents to express their opinion in relation between the governance structure of the project and cash flow based lending providing unique governance structure required for project finance arrangement. With cross tabulation of the responses for these questions, the test is significant with p-value falling within the alpha (α) of 0.05. The output of the analysis is shown in Table 6 for $H_0$1b which indicates rejection

of null hypothesis with p-value of 0.001 both in Pearson's Chi-square and Fisher's Exact Test. In huge capital intensive project institutional investors look into the bankability in term of sufficient cash flow for repayment instead of financial strength of project sponsors in case of corporate or balance sheet finance. Merna and Njiru (2010), Gatti (2008), Yescombe (2002), Tan (2007), Nevitt and Fabozzi (2000), Esty and Christov (2000) highlight the cash flow based lending as one the unique feature of the PF arrangement. Analysis by Michela *et. al.* (2014) and Byoun and Xu (2014) is critically related to the project cash flow and covenants of the financing agreement that have significant influence in the governance structure.

Table 6: $H_0$1b Coefficient Value of Person's Chi-Square and Fisher's Exact Test

	Value	Degree of Freedom	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.882[a]	1	.001		
Continuity Correction[b]	9.816	1	.002		
Likelihood Ratio	12.387	1	.000		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	11.606	1	.001		
N of Valid Cases	43				
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.51. b. Computed only for a 2x2 table					

H01c=Limited or non-recourse finance is not significant in determining governance structure of hydropower projects.

As per Williamson (2014), debt and equity are not merely modes of finance but an alternative governance structure. Board of Directors are security for equity finance. But wherever the debt finance is significant in specific assets then the governance structure is influenced by debt financing. PF is limited or non-recourse finance. All of the authors including Merna and Njiru, (2010), Gatti (2008), Yescombe (2002), Tan (2007), Nevitt and

Fabozzi, (2000), Esty and Christov (2000) mention limited or non-recourse as one of the basic features of PF. By nature of this arrangement lenders try their best to influence the governance of the project by putting certain covenants on financing which has direct impact on the governance.

To test this hypothesis question with regards to requirement of separate project governance structure as an essential requirement for limited or non-recourse loan for the hydropower project in Nepal was asked to the respondents. The association of the responses on questions pertaining to requirement of unique governance structure and recourse provision has been analysed and the output as shown in $H_0$1c of Table 7 suggests rejection of null hypothesis with *p*-value less than the acceptable value of alpha 0.05 as mentioned above. This indicates that there is significant impact of recourse provision of the financing agreement on the governance structure of hydropower projects.

Table 7: $H_0$1c Coefficient Value of Person's Chi-square and Fisher's Exact Test

	Value	Degree of Freedom	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.699[a]	1	.010		
Continuity Correction[b]	5.162	1	.023		
Likelihood Ratio	6.798	1	.009		
Fisher's Exact Test				.013	.011
Linear-by-Linear Association	6.547	1	.011		
N of Valid Cases	44				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.91.
b. Computed only for a 2x2 table

Propensity of Project Sponsor to Project Finance in Hydropower Projects

The choice between corporate finance and project finance is of the sponsors. Theory prescribes specific criteria for PF arrangement for any infrastructure project. In project finance debt financing is obtained through the SPV, a new company. No assets of sponsors other than the project are given as the collateral. Financing is based on the financial viability of the project rather than the sponsor's financial strengths reflected by the balance sheet. This gives the lenders an opportunity to significantly influence governance structure of the PF entity. Governance structure of projects with PPP-PF model is influenced by the PF criteria analysed above. This has been confirmed by the above test. Governance structure has been treated as a mediating variable between the PF criteria and Project Finance in the hydropower sector.

Review of literature reveals two views on project governance structure. The first is project governance structure unique to the specified project which is independent from other projects. Another view is, in addition to project management discourse, to view project governance structure from transaction cost economics (Ahola *et al.*, 2014). Important factor emphasised in the finding of Ahola *et al.* (2014) is when the governance is taken as independent to any specific project the focus is intra-organisational. While dealing with project, several organisations get involved but the governance challenge is inter-organisational (Ahola *et al.*, 2014). A uniform way of privatisation can be disagreed upon but with respect to the transactions (as per TCE) different governance structure can be recognised for project investment negotiation agreement between Multi-National Enterprise (MNE) and host government (Jiang, Peng, Yang, & Mutlu, 2015).

In this study, to test the association of the governance structure with PF in hydro power sector specific question about appropriateness of PF model for development of hydropower sector of Nepal was given to the respondents. Responses on this question and responses on the questions relating to unique governance structure requirement have been cross tabulated to determine the association. The questions asked in the survey were individually and collectively intended to investigate into the association between governance structure and PF in hydropower project in Nepal

to determine the propensity of hydropower project sponsors towards PF arrangement. As mentioned above following hypothesis has been set for analysis:

H01= Governance structure of hydropower projects do not show the propensity of project sponsors towards project finance.

As per the results shown for H01 in Table 8, the coefficient value of Person's Chi-square and Fisher's Exact Test is significant with *p*-value comparing with the alpha value of 0.05. With these indicators the above null hypothesis is rejected. Hence, there is propensity of project sponsors towards project finance in hydropower projects in Nepal. Moving forward with the results we can say that theory of opportunistic behaviour is significant. Private entrepreneurs are entering into the hydropower sector as the state owned entity is the off taker of the energy produced. Rejection of the null hypothesis suggests that new companies incorporated are the SPVs as per the PF criteria hence; these are not incorporated merely to obtain the power generation license after of PPP policy in hydropower development is adopted by the Government of Nepal.

Table 8: $H_0$1 coefficient value of Person's Chi-square and Fisher's Exact Test

	Value	Degree of Freedom	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.842[a]	1	.001		
Continuity Correction[b]	8.708	1	.003		
Likelihood Ratio	11.338	1	.001		
Fisher's Exact Test				.002	.001
Linear-by-Linear Association	10.595	1	.001		
N of Valid Cases	44				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.18.
b. Computed only for a 2x2 table

CONCLUSION

Project Finance has much larger importance in renewable energy projects (Steffen, 2018) and is a typical project governance structure (Kripa & Xhafa 2013). This study found that BFIs, pension and retirement funds and institutional investors have significant influence on the governance of the hydropower projects, while laws relating to PPP, security transactions and government policy on hydropower have influence on the governance. Similarly, contractual provisions like lenders requiring periodical reporting on financial and physical achievement, lending institution represented in the board of directors of the project company, loan covenant for restricting the use of cash ensuring repayment of loan and covenants pertaining to additional loan have significant influence on the governance. These are consequential to various agreement entered into by the Project Company. Management of different contracts along the life cycle of projects are indispensable in project finance arrangement. Contracts necessarily to be managed in private sector hydropower projects generally include Generation License, and agreements on project development, financing, construction contract, and operation contract.

Motive of incorporating SPV for undertaking a project under project finance arrangement is to obtain loan to the SPV based on the project cash flow without any collateral except if the project created assets given as the security of loan from the sponsor to the lender. This study found hydropower project companies manage several contracts within its corporate governance structure. Many domestic as well as foreign project sponsors are involved in tapping the hydropower potential in Nepal. Similarly, domestic as well as international financial institutios are emerging as important players in hydropower sector in contrast to the situation of public sector as the sole source of infrastructure finance in the past. It has been found that these project companies are organisations that implement the specific project under the PPP framework adopted by the government and these companies significantly fulfil the project finance criteria.

This study analyses the effect of PF criteria in governance structure of hydropower companies in Nepal. Attempt has been made to relate the theories pertaining to governance and project finance. Being contextual with the study, reference of transaction cost theory has also been considered.

However, this study has not been involved into every aspect of TCE and its impact over the governance of hydropower project is Nepal, which is beyond the scope, hence the limitation of the study. The results of the test conducted show that there is significant effect of PF criteria on governance structure of hydropower projects in Nepal and the governance structure confirms the propensity of projects sponsors toward project finance. Domestic as well as foreign project sponsors are involved in tapping the hydropower potential of Nepal. Similarly, domestic BFIs and foreign institutional investors are emerging as the significant player in the hydropower sector whereas in history government was only the sole source of finance and development of the hydropower sector.

Future studies should include interviews with representatives from hydropower companies, government agencies, and banking sector. The emerging private institutional investors are expected to continue to significant influence the governance of the projects undertaken by the private project sponsors. To mention few of the facts which substantiate such effect (i) lenders requiring periodical reporting on financial and physical achievement (ii) lending institution represented in the board of directors of the project company, (iii) loan covenant for restricting the use of cash ensuring repayment of loan, (iv) covenants pertaining to additional loan and (v) impact of political and financial risks has impact on PPP-Project Finance arrangement and its governance structure should be taken into consideration in future studies.

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REFERENCES

Adler, P. S. (2001). Market, Hierarchy, and Trust: The Knowledge Economy and the Future of Capitalism. *Organization Science, 12*(2), 215–234. https://doi.org/10.1287/orsc.12.2.215.10117

Ahola, T., Ruuska, I., Artto, K., and Kujala, J. (2014). What is project governance and what are its origins? *International Journal of Project Management, 32*(8), 1321–1332. https://doi.org/10.1016/j.ijproman.2013.09.005

Alam, F., Alam, Q., Reza, S., Khurshid-Ul-Alam, S. M., Saleque, K., and Chowdhury, H. (2017). A Review of Hydropower Projects in Nepal. *Energy Procedia, 110*(December 2016), 581–585. https://doi.org/10.1016/j.egypro.2017.03.188

Bhattarai, N. P. (2004). Financial Resources For the Development of Hydropower in Nepal: A Projection Up to 2030. Dissertation for Doctor of Philosophy, Tribhuvan University. Retrieved from www.tucl.org.np

Briscoe, J. (1999). The financing of hydropower, irrigation and water supply infrastructure in developing countries. *International Journal of Water Resources Development, 15*(4), 459–491. https://doi.org/10.1080/07900629948718

Byoun, S. and Xu, Z. (2014). Contracts, governance, and country risk in project finance: Theory and evidence. *Journal of Corporate Finance, 26*(254), 124–144. https://doi.org/10.1016/j.jcorpfin.2014.03.003

Danso, H. and Samuels, B. (2017). Sovereign Wealth and Pension Funds Investment in Africa's Infrastructure. In African Investor. Retrieved from http://aiswpff.com/wp-content/uploads/2017/07/Unlocking-Actions-to-Mobilize-Institutional-Investment.Focus-Africa.GlobalDF-Ai.-2017-FINAL.pdf

De Schepper, S. Haezendonck, E. and Dooms, M. (2015). Understanding pre-contractual transaction costs for Public–Private Partnership infrastructure projects. *International Journal of Project Management, 33*(4), 932–946. https://doi.org/10.1016/j.ijproman.2014.10.015

Dorobantu, S. and Müllner, J. (2019). Debt-side governance and the geography of project finance syndicates. *Journal of Corporate Finance, 57,* 161–179. https://doi.org/10.1016/j.jcorpfin.2017.12.022

Esty, B.C. and C.I.L. (2000). An Overview of Project Finance. Project Financing. Retrieved from https:// faculty.fuqua.duke.edu/~charvey/ Teaching/BA456_2006/Esty_Overview_project_finance.pdf

Eta, A. E. (2015). Banks / Financial Sector Project Financing and Economic Growth in South Sub-Saharan Countries. *European Journal of Business & Management, 7*(23), 19–30. Retrieved from www.iiste.org

Fukuyama, F. (2013). What Is Governance? - Working Paper 314 Center For Global Development. Center for Global Development, (January 2013), 1–18. Retrieved from https://www.cgdev.org/publication/what-governance-working-paper-314

Gatti, S. (2008). Project Finance in Theory and Practice - Designing, Structuring, and Financing Private and Public Projects. In Academic Press.

GMR. (2020). GMR Karnali.pdf. Retrieved on March 25, 2020, from https:// www.gmrgroup.in/upper-karnali/ website: https://www.gmrgroup.in/ upper-karnali/

GoN. (2020). Pancheswor.pdf. Retrieved March 25, 2020, from http:// www.pmp.gov.np/about-project.php website: http://www.pmp.gov.np/ about-project.php

Guo, F., Chang-Richards, Y., Wilkinson, S., and Li, T. C. (2014). Effects of project governance structures on the management of risks in major infrastructure projects: A comparative analysis. *International Journal of Project Management, 32*(5), 815–826. https://doi.org/10.1016/j. ijproman.2013.10.001

Habib, M. A., and Johnsen, D. B. (1999). The financing and redeployment of specific assets. *Journal of Finance, 54*(2), 693–720. https://doi. org/10.1111/0022-1082.00122

Ho, S. P. and Tsui, C. W. (2009). The Transaction Costs of Public-Private Partnerships: Implications on PPP Governance Design. Lead 2009 Specialty Conference: Global Governmance in Project

Organizations, South Lake Tahoe, CA, (February), 5–7. https://doi.org/10.13140/2.1.3298.8962

Jap, S. D. and Anderson, E. (2005). Safeguarding Interorganizational Performance and Continuity Under Ex Post Opportunism. *SSRN Electronic Journal, 49*(12), 1684–1701. https://doi.org/10.2139/ssrn.423040

Jiang, Y. Peng, M. W., Yang, X., and Mutlu, C. C. (2015). Privatization, governance, and survival: MNE investments in private participation projects in emerging economies. *Journal of World Business, 50*(2), 294–301. https://doi.org/10.1016/j.jwb.2014.10.006

Khan, A., Hussain, A., Waris, M., Ismail, I., and Ilyas, M. (2018). Infrastructure project governance: An analysis of public sector project in northern Pakistan. *Journal of Governance and Integrity, 1*(July), 120–134.

Klein, B., Crawford, R. G., and Alchian, A. A. (1978). Vertical Integration, Appropriable Rents, and the Competitive Contracting Process. *The Journal of Law and Economics, 21*(2), 297–326. https://doi.org/10.1086/466922

Kothari, C.R. and Garg, G. (2019). *Research Methodology (2019th ed.).* New Delhi: New Age International Publishers.

Kripa, E., and Xhafa, H. (2013). Project finance, and projects in the energy sector in developing countries. *Economics and Finance Review, 3*(1), 1–11.

Lasa, Y. M., Ahmad, N., and Takim, R. (2019). Key credit factors for public private partnership (PPP) projects financing in Malaysia. *International Journal of Recent Technology and Engineering, 7*(6), 887–897. Retrieved from https://www.researchgate.net/publication/333992793.

Merna, T., and Njiru, C. (2010). Financing Infrastructure Projects. Thomas Telford Limited 2002.

Michela Bariletti, Pablo F. Lutereau, Trevor J. D'Oliver, Anne C. Selting, and Peter Kernan, A. D. P. (2014). Project Finance Transaction Structure Methodology. Standard & poor's, S&P and ratings direct. Retrieved from www.standardandpoors.com/ratingsdirect

Moszoro, M. (2013). Overcoming Opportunism in Public-Private Project Finance. *Journal of Applied Corporate Finance, 25*(1), 89–96. https://doi.org/10.1111/j.1745-6622.2013.12010.x

Muller, R. (2016). *Project Governance.* New York: Routledge.

Nevitt, P.K. and Fabozzi, F. J. (2000). Project Financing (Seventh). Euromoney Books.

Pant, P. R. (2016). Problem Definition, Theoretical Framework and Hyptothesis Formulation. In Social Science Research and Thesiis Writing (Seventh, pp. 88–90). Kathmandu: Buddha Publications.

Parker, D. and Hartley, K. (2003). Transaction costs, relational contracting and public private partnerships: A case study of UK defence. *Journal of Purchasing and Supply Management, 9*(3), 97–108. https://doi.org/10.1016/S0969-7012(02)00035-7

Pietz, M. (2010). Simulation-based Valuation of Project Finance Investments-– Crucial Aspects of Power Plant Projects : Doktors der Wirtschaftswissenschaften, Vollständiger Abdruck der von der Fakultät für Wirtschaftswissenschaften der Technischen Universität München zur E. Technische Universität München.

Ping Ho, S., Levitt, R., Tsui, C. W. and Hsu, Y. (2015). Opportunism-focused transaction cost analysis of public-private partnerships. *Journal of Management in Engineering, 31*(6), 04015007. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000361

Rao, V. (2018). An Empirical Analysis of Factors Influencing Project Financing by Banks of Infrastructure Public–Private Partnership Projects in Select Asian Economies (No. 554). https://doi.org/10.22617/WPS189505-2

Sawant, R. J. (2010). The economics of large-scale infrastructure FDI: The case of project finance. *Journal of International Business Studies, 41*(6), 1036–1055. https://doi.org/10.1057/jibs.2009.63

Scannella, E. (2012). Project Finance in the Energy Industry: New Debt-based Financing Models. *International Business Research, 5*(2). https://doi.org/10.5539/ibr.v5n2p83

Shah, A. K. (2008). Banker's Perspectives on Hydropower Development in Nepal: Problems & Prospects. *Hydro Nepal: Journal of Water, Energy and Environment, 2,* 9–12. https://doi.org/10.3126/hn.v2i0.1153

Shrestha, R. S. (2016). Hydropower Development: Before and After 1992. *Hydro Nepal: Journal of Water, Energy and Environment, 18*(18), 16–21. https://doi.org/10.3126/hn.v18i0.14638

SJVN. (2020). SJVN.pdf. Retrieved March 25, 2020, from https://sapdc.com.np/page/about-sapdc

Spithoven, A. (2014). *Institutional Economics. An Introduction*. London: Palgrave Macmillan.

Steffen, B. (2018). The importance of project finance for renewable energy projects. *Energy Economics, 69*, 280–294. https://doi.org/10.1016/j.eneco.2017.11.006

Tan, W. (2007). Principles of project and infrastructure finance. In *Principles of Project and Infrastructure Finance.* London: Tailor & Francis

Too, E. G., and Weaver, P. (2014). The management of project management: A conceptual framework for project governance. *International Journal of Project Management, 32*(8), 1382–1394. https://doi.org/10.1016/j.ijproman.2013.07.006

Vogt, W. P., Gardner, D. C., and Haeffele, L. M. (2012). When to use survey designs. In *When To Use What Research Design*. Guilford Press.

WB. (2017). Pppirc Public-Private-Partnership in Infrastructure Resource Center. Retrieved September 1, 2017, from The World Bank website: https://ppp.worldbank.org/public-private-partnership/financing/mechanisms

Williamson, O. E. (1998). Transaction cost economics: How it works; where it is headed. *Economist, 146*(1), 23–58. https://doi.org/10.1023/A:1003263908567

Williamson, O. E. (2002). The theory of the firm as governance structure: From choice to contract. *Journal of Economic Perspectives, 16*(3), 171–195. https://doi.org/10.1257/089533002760278776

Williamson, O. E. (2014). The Transaction Cost Economics Project. *Montenegrin Journal of Economics, 10*(1), 7–12.

Yescombe, E. R. (2002). Principles of Project Finance. In *Principles of Project Finance: Second Edition* (2002nd ed.).Academic Press.