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Special Purpose Vehicle (SPV) of Public Private Partnership Projects in Asia and Mediterranean Middle East: Trends and Techniques

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Abstract: One of the main reasons for the success of public private partnership (PPP) projects is the creation of a separate commercial venture named "Special Purpose Vehicle" (SPV). SPV provides a good framework for raising funds, linking participants legally and assuring supply, production and marketing of products. SPV brings together various parties like lenders, financial institutions, public sector and export credit agencies, suppliers and off-takers. There is often a lack of precedents to identify attributes of a SPV and the process is further hampered by undeveloped financial and legal structures of a country. Thus, there is a need to establish clear attributes for a SPV to raise the funding options of PPPs. In search of these essential attributes, six PPP projects in Asia and Mediterranean Middle East are examined in this paper. Three are independent power producers (IPP), one each from India, Pakistan and China, and three are desalination Projects, one each from Israel, Singapore and Algeria. The evidence shows that not only are there common trends and techniques that are used for SPV development but also some unique features to overcome financial and legal hurdles. The evidence also gives insights for using SPV to improve financing of PPP projects.

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

JEL classifications: E61, E65, H43, H44, O16

1. Introduction

Public-Private Partnership (PPP) can be constructed through a "Special Purpose Vehicle" (SPV), which acts as a managing and operating company for project(s) as well as the legal body that guarantees concessions from the public authority. Concession agreement is the agreement between government and the SPV for development, construction and operation of specific projects. As part of the concession, a SPV owns and operates the facility and collects revenue which is used to repay the finance and investment costs, maintain

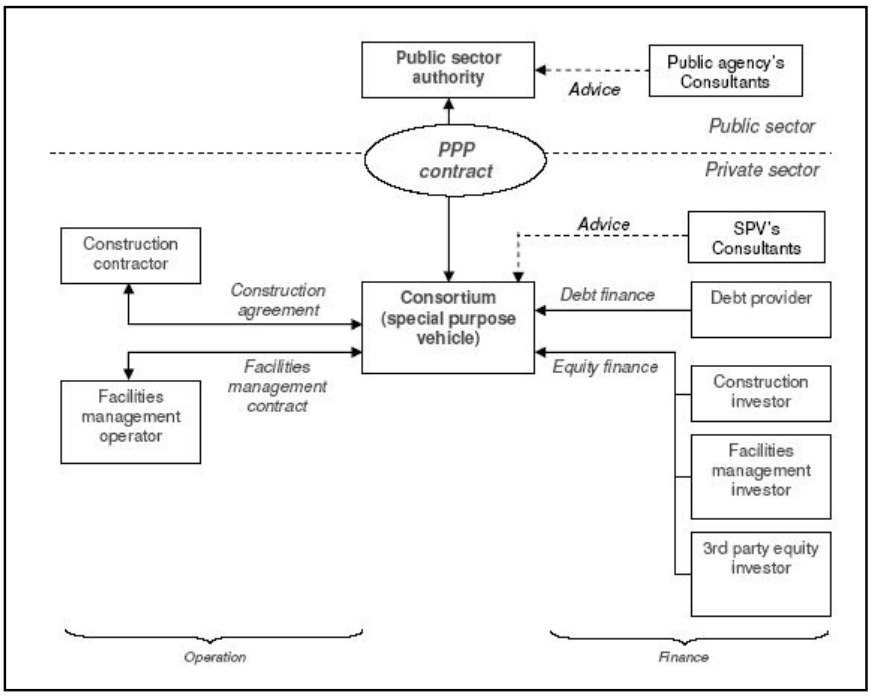
and operate the facility and to make marginal profits (Merna and Smith, 1996). Since financing is arranged through the SPV, it is thus said to be the heart of project financing (Tan, 2007; IPFA supra note 4). A contractual network revolves around the SPV where each party sets up contracts with the SPV for a specified period of the project (Gatti, 2008). All legal and financial agreements with various parties/stakeholders of a project are accorded with the SPV, thus it acts as an entity for legal manifestation of a project consortium.

The SPV is embraced by lenders, financial institutions, public authorities, export credit agencies, guarantors, suppliers and off-takers where equity comes from a prime contractor, service provider and public authority. Apart from initial share capital subscription, extra funds are raised either through subordinated debt from project participants or senior secured debt from capital markets or from banks. Because of limited liability of equity holders, creation of the SPV allows off-balance sheet financing which means that the debt raised by the promoters (i.e. investors, contractors, subcontractors and suppliers) would not appear in their balance sheet but it would appear only on the balance sheet of the SPV. This situation allows promoting companies to raise extra debt without providing their own assets as collateral (Dias and Ioannou, 1995). At the same time, through the SPV, risks of the participating parties can be minimized and the project can also be assessed on its own merits (Bult-Spiering and Dewulf, 2006). Though the SPV serves different functions for its various participants in a project (as it is bound by many legal and financial agreements), the main objective of the SPV is to obtain funds. Figure 1 shows the SPV and its agreements with various parties.

Figure 1 depicts how a project company (SVP) is interrelated with various parties in a project. It is of great importance that the SPV should be structured properly to withstand financial and legal issues of the host country. Successful structuring of a SPV is therefore essential not only for the success of a project but also for the sanction of loans or debts from banks and/or other financial institutions.

In order to find out essential attributes for developing SPV, the objective of this research is to analyze and evaluate main features of six PPP projects in India, Pakistan, China, Israel, Singapore and Algeria. Of them, three are Independent Power Producers (IPP) and the other three are Desalination projects. The rationale for choosing these projects is that all these projects have been the first PPP projects in the respective countries with significant national interest. Government involvement was high as the project had a huge impact on the economic growth of the country and the projects played a significant role in the formulation of Government's long term strategy to attract and nurture private investors in future PPP projects.

Figure1: Typical structure of a PPP project



Source: Ministry of Finance, Singapore (2004) *Public Private Partnership Handbook*.

2. Description of Projects

The Dabhol Power Project, India

This was the first privatized Independent Power Producer (IPP) project in India. The Government of India and its Ministry of Power had invited Enron Development Corporation (EDC) to consider setting up a power plant in India with imported liquefied natural gas. Dabhol Power Company (DPC) was set up as the SPV to work as a nodal agency for bringing together private investors and concerned government agencies for the project. It was a 2015MW power project which would connect with the Maharashta State Electricity Board (MSEB) grid through 440KV transmission systems for a concession period of 20 years (Gupta and Sravat, 1998).

The Hubco Power Project, Pakistan

Hub Power Company (Hubco), a Special Purpose Vehicle was set up in Pakistan to produce 1292MW thermal power in the province of Baluchistan at

a total cost of US$1.833 billion. It was a Build-Own-Operate (BOO) project. The World Bank and a consortium of foreign banks and export credit agencies were committed to finance this project. National Development Finance Corporation (NDFC) was appointed to be the lead bank to arrange long term loans and also the administrator of the private sector energy development fund on behalf of Government of Pakistan (GOP). The generated power was sold to Water and Power Development Authority (WAPDA) with agreed tariff 6.1 cents per kWh for a concession period of 30 years (Siddiqui, 2000).

The Laibin B Power Project, China

It was a second phase project of Laibin Power Plant in China by wholly foreign-owned power project under Build-Operate-Transfer (BOT) framework. It involved design, finance, construction, procurement, operation, maintenance and transfer of a 2X350MW coal-fired power plant to the Chinese Government with a concession period of 18 years. The Project Company (an SPV) consisted of Electricite de France International (EDFI) and GEC Alsthom backed by Compagnie Francaise d'Assurance pour le Commerce Exterieur or COFACE, France's export credit agency. The Guangxi State Government ensured the fuel supply and power purchase agreement guarantee for this project (Wang and Tiong, 2000).

The Ashkelon Desalination Project, Israel

This was a US$250 million project for desalination of seawater. It involved finance, design, construction, operation and maintenance and transfer of the project to the government after 24 years and 11 months. The project company VID Desalination Company Ltd., entered into a concession agreement with the government agency Water and Desalination Authority (WDA). Desalinated water was sold to WDA on a "Take or Pay" basis. VID Desalination Company Ltd., the special purpose vehicle was established by Vivendi Water, IDE Technologies Ltd. and Dankner Ellern Infrastructures Ltd. (Kronenberg, 2002).

The Tuas Desalination Project, Singapore

In January 2003, the Public Utilities Board (PUB) of Singapore awarded SingSpring (a Special Purpose Vehicle) a contract to Build-Own-Operate (BOO) a desalination plant. SingSpring is a consortium composed of Hyflux Ltd (70%) and Ondeo (30%). The agreement was for 20 years with guaranteed production capacity of up to 136, 380 m^3/day. It was the first PPP project of Singapore in the water industry. The project serves 10% of the country's potable water demand. The Tuas desalination plant is one of

the most energy efficient Sea Water Reverse Osmosis (SWRO) plants in the world, producing treated water at total energy consumption for the plant of only 4.2kWhr/m^3. This has resulted in an expected first-year selling price of US49 cents/m^3 – the lowest price obtained from any comparable projects in the world (Arasu, 2006).

The Skikda Desalination Project, Algeria

This Build-Own-Operate-Transfer (BOOT) project was set up in Algeria in 2004 with an expectation to produce 100,000m^3 of desalinated water per day. The contract was signed between GEIDA Consortium formed by COBRA, ABENSUR (BEFESA) and SADYT which acted as the SPV for this project and ADE, the state-owned national public water company of Algeria. The construction period was assumed to be 24 months, at the approximated project cost of US$110.6 million. The Algerian energy company SONATRACH contributed 40% equity along with other equity sponsors with 25 years off-take agreement between the Algerian government and the SPV. Moreover, the Algerian government provided performance guarantee of US$25 million (maximum) for up to 4 years including the construction period (Energy Recovery Inc., 2008).

3. Methodology

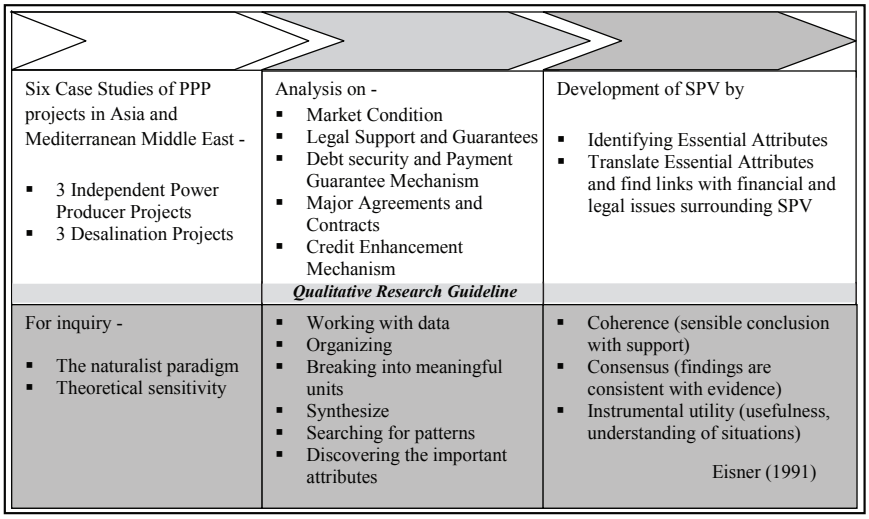
Qualitative research is done based on case studies published in journals and books and on the internet. Since quantitative measures do not adequately describe or interpret legal and financial issues of a SPV, the researchers prefer to use a qualitative research approach because the objective is to provide explanations, clarifications and illustrations (Robson, 2002). Moreover, identifying the essential attributes for developing a SPV involves structuring legal and financial frameworks logically and these depend on (1) market condition and funding sources, (2) legal support and guarantees of Government, (3) securities and payment guarantees, (4) major contracts and agreements of projects and (5) credit enhancement. Thus a conceptual framework is designed to investigate essential attributes of a SPV in PPP projects. Figure 2 shows the conceptual framework for investigating financial and legal issues of a SPV.

4. Analysis

4.1 Market Condition and Funding Sources

The market situation is a decisive factor in project financing. The existing lenders in the market and government policies confirming stability have a

Figure 2: Conceptual framework for investigating essential attributes for SPV in PPP projects



Source: Designed by authors.

profound impact on arranging debt financing for projects. Following is the analysis of the market conditions that prevailed at the time of project financing in the selected PPP case study projects.

Market of India and the Dabhol Project

Surprisingly at that time, no Multilateral Development Banks (MDBs) had participated in any IPP projects in India. The percentage of local currency debt for project financing was not enough compared to other sources of financing during that time. Most of the funds came from Export Credit Agencies (ECAs), private offshore banks and from foreign equity. Therefore, the cost of finance was high and the projects were susceptible to cross-currency risks, although the Indian government had a high involvement with those projects. These scenarios were reflected in the Dabhol project.

Market of Pakistan and the Hubco Project

At that time, the contributions of MDBs as well as Bilateral Bank loans were high in Pakistan. These two were plus points for Pakistan. It enabled Pakistan to obtain lower interest rates with a longer repayment period. The country was highly dependent on foreign debt and equity financing. Availability of

domestic loans was inadequate to reduce cross-currency risk significantly. The participation of World Bank in the Hubco project not only encouraged other investors, foreign and domestic banks to provide capital, both debt and equity, but also provided a guarantee from the Government of Pakistan (GOP) against Confiscation, Expropriation, Nationalization and Deprivation (CEND). It appeared that World Bank guarantees for this project served as a model for future guarantees in support of other BOO projects (Project Finance and Guarantees by the World Bank).

Market of China and the Laibin B Project

During 1994-1997, there was a dizzying surge of foreign investment in IPP projects in China (Woo, 2005). Compared to other countries, China had the highest contribution of local loans in IPP projects during that time. The presence of MDBs, Bilateral Banks and ECAs were high during the financing of the Laibin B project. Due to the nature of a Wholly Owned Foreign Investment (WOFI) project, most of the financing of the Laibin B project was arranged with foreign equity, from private offshore banks and ECAs, which eventually caused the interest rates to soar and face cross-currency risks.

Market of Israel and the Ashkelon Project

Israel had experienced a recession in the market economy due to international failure of the Hi-tech market in 1990-2000. Moreover, international lenders were reluctant to participate in long-term financing because of political disturbances. Despite this, the country had a strong domestic market and capital market, particularly in private placement for long term project financing. Provident funds, pension funds and domestic government bonds were all strong financing tools regulated by the Ministry of Finance. In addition to this, the investment policies allowed insurance companies broader latitude in investing in domestic markets. This market scenario was reflected in the financing of the Ashkelon project. The financing of the project lay in the structuring of a mix of bank/institutional financing. The institutional bond issued for this project represented 60% of the total investment.

Market of Singapore and the Tuas Project

Although the Singapore market was small, it had a mature financial market with a regulatory framework. The Government had set up clear guidelines for PPP projects with strong support for implementing PPP projects in the country. Domestic and foreign banks were very active, willing to participate in project financing and offering a longer repayment period (i.e. 10-12 years). Tuas was

the landmark PPP project in Singapore and it came into commercialization in 2005. The total financing of the project was raised domestically.

Market of Algeria and the Skikda Project

Algeria set a legislative framework for encouraging investment during the time of project financing. The banking and financial markets were opened up for private and foreign investments in 1990 with the adoption of the Law on Currency and Credit. Domestic loans had a significant contribution compared to MDBs, ECAs and private offshore banks in hydrocarbons, mining, power and telecommunication sectors. Overseas Private Investment Corporation (OPIC), Export Import Banks (EXIM) and other investment agencies were leading creditors in telecommunication, pharmaceuticals and power projects in Algeria. Investors of Skikda project obtained a Multilateral Guarantee Agency (MIGA) coverage on equity. Table 1 shows debt and equity ratios for case study PPP projects.

Dabhol and Skikda projects had the same Debt to Equity ratio. The presence of subordinated debt in a project helps to attract more debt from financial institutions. The situation of subordination may arise when senior debt providers are not prepared to increase the level of debt and the sponsors cannot invest more equity. In the selected case-studies, two projects, Hubco and Ashkelon, had arranged subordinated debt. The contribution of subordinated debt in the Hubco project was quite significant. The World Bank Private Sector Energy Development Fund (PSEDF) helped to attract other financial institutions in spite of a lower sovereign credit rating of Pakistan. In the Ashkelon project, subordinated debt was arranged by institutional tranche (Bonds) which constituted 60% of total debt financing. Involvement of

Table 1: Debt and equity ratios for case study PPP projects

Projects	Debt/Equity Ratio	Senior Debt (%)	Subordinate Debt (%)	Equity (%)
Power Generation Projects				
Dabhol	2.35	70	–	30
Hubco	3.15	48	28	24
Laibin B	3.0	75	–	25
Desalination Projects				
Ashkelon	4.0	32	48	20
Tuas	4.7	82.5	–	17.5
Skikda	2.35	70	–	30

Source: Compiled by authors.

Table 2: Sources of funds for case study PPP projects

Projects	Financing	
	Equity Financing	Debt Financing
Power Projects		
Dabhol	$274 million from the equity investor; General Electric (10%) and Bechtel (10%) with Enron Development Corporation (50%) as lead sponsors. MSEB as state owned agency 30% (for Phase I).	$646 million as loan from financial institutions; USEXIM $298 million, ABN-AMRO $60 million, $90 million IDBI, OPIC $100 million and domestic commercial banks $98 million.
Hubco	$372 million from National Power UK, Mitsui, IHI, Xenel, local and others.	$1174 million: (WB $200 million, JEXIM $100 million, ECAs $326 million, CDC $102 million, PSEDF $436 million.
Laibin B	$154 million as equity; GEC Alsthom 40% and Electricite de France International 60%.	$462 million; $130 million floating rate arranged from HSBC, $125 million commercial loans from China Development finance, French Export credit covered $290 million.
Desalination Projects		
Ashkelon	$50 million equity; IDE technologies 50%, Vivinde 25% and Dankner 25%, provided equity and institutional tranche (Bond) $120 million as subordinated debt.	$200 million; Local Bank loan of $80 million from Leumi Bank and Goren Capital Group.
Tuas	$20.47 million by Hyflux (70%) and Ondeo (30%).	Four banks involved in debt financing; DBD (lead arranger), KBC, ING Bank, Standard Chartered for a total amount of $96.53 million.
Skikda	$33 million equity from the consortium: COBRA, SADYT, ABENSUR and Algerian government.	CAJA, MADRID, ICO banks provided short-term loan with floating interest rate of $77 million.

Note: All figures are in US dollars.
Source: Compiled by authors.

various lenders in a project has distinct objectives and obligations and thereby advantages to the project vehicle. The project vehicle has to fulfill those conditions which in turn influence structuring of the SPV. For example, in the Hubco Power project, the World Bank involvement gave financial guarantee that protects lender against breach by the government of any contractual undertaking. This helped the investors to gain more debt from other financial institutions. Moreover, the World Bank fostered fund, that is, the Private Sector Energy Development Fund (PSEDF) also supported as a subordinated debt to the project. It is also seen that the projects that had arranged complete local financing (as in Ashkelon and Tuas) had higher D/E ratio than other projects. Table 2 shows sources of funding of each project.

In the Ashkelon Desalination project, involvement of ECAs was absent and total funds were raised from a mixture of domestic banks and institutional tranche. Similarly in the Tuas Desalination project, the total financing was arranged from domestic markets. In contrast, other projects had arranged debt through private offshore banks with floating interest rates, loans from Multilateral Banks, credit guarantees from ECAs and investment agencies.

4.2 Legal Support and Guarantees

According to Khan and Parra (2003: 199-200), country risks can influence the SPV. This can be better perceived by Sovereign Credit Rating (SCR). Credit ratings help investors to understand risk exposures and uncertainty, default records and access to international bond markets for a specific country. International banks use SCR to avoid problems with home country regulations through certification of their portfolios by independent raters. Legal institutional factors are the crucial determinants of sovereign credit rating. Normally projects do not receive a rating higher than the host country's SCR. But a project may get improved rating through creditworthy agencies (i.e. financially sound off-takers), tight off-take agreement, reliable supply agreement and setting up of escrow accounts (either offshore or onshore depending on lenders' requirements). Better sovereign credit rating (SCR) helps in finding a variety of options for international debt financing. Table 3 shows the sovereign credit rating (SCR) of each country.

According to Standard and Poor's (S&P) rating, three countries namely India, Pakistan and Algeria fall under non-investment grade, while others are close to the investment grade. It is seen that the countries selected for the case studies had almost similar credit rating except Singapore. Pakistan's rating was the lowest among the other countries and it received a non-investment grade. To make the project attractive and finance-worthy to international lenders, the Pakistan government provided several agreements and guarantees related to the project and also urged for World Bank support. The World Bank was a

Table 3: Sovereign credit rating for each case study country

Projects	Country	Sovereign Credit Rating (1997-2000)	Category (Standard & Poors)
		Grade (S&P)	
Power Projects			
Dabhol	India	BB+	Non-investment grade
Hubco	Pakistan	B+	Non-investment grade
Laibin B	China	BBB	Investment grade
Desalination Projects			
Ashkelon	Israel	BBB	Investment grade
Tuas	Singapore	AAA	Investment grade
Skikda	Algeria	BB+	Non-investment grade

Source: Kraussl, R. (2005).

lender as well as guarantor for this project which eventually made the project attractive for various investors, lenders and domestic banks. On the other side, Israel and Singapore were able to raise total financing from domestic markets. It is noted that sponsors and lenders did not require exchange rate guarantee or assurance of currency convertibility or transferability from the Singapore Government as the country maintains a stable macro-economic environment.

The degree of government involvement has significant impact on SCR and it can influence the financial structure of the SPV. Government involvement can be direct or indirect. Due to its non-investment grade, Pakistan required sound and strong infrastructure sector strategies, policies, reliable sponsors, sensible and transparent power purchase agreements. The financing of the Hubco project was successful due to the comprehensive set of contractual agreements containing necessary securities that ensured viability of the project. Table 4 shows the government support mechanism of each project.

Both the Hubco and Skikda projects obtained support loans from the government which ensures the government's direct commitment to the project and low cost of financing of the project. Hubco received US$500 million from the Private Sector Energy Development Fund (PSEDF) which was established by the Government of Pakistan to facilitate financing of independent power projects with the support of the World Bank and United States Agency for International Development. Moreover in the Hubco project, the Government of Pakistan provided performance guarantee of WAPDA (the off-taker), PSO (Pakistan State Oil Company, the fuel supplier) and the State Bank of Pakistan (SBP) for its obligation of purchase, supply and foreign exchange

Table 4: Government support and initiatives for case study PPP projects

Projects	Support Loan	Minimum Operating Income (purchase minimum quantity)	Commercial Freedom (tariff rate fixation)	Interest Rate (difference of repayment)	No Second Facility Guarantee	Assist in Timely Issuance of Permit and Consents
Power Projects						
Dabhol	No	Yes	Yes	No	No	Yes
Hubco	Yes	Yes	Yes	No	No	Yes
Laibin B	No	Yes	Yes	No	No	Yes
Desalination Projects						
Ashkelon	No	Yes	Yes	No	No	Yes
Tuas	No	Yes	Yes	No	No	Yes
Skikda	Yes	Yes	Yes	No	No	Yes

Source: Compiled by authors.

availability, transferability and convertibility respectively. In the Laibin B project, the Chinese Government gave strong support in three areas: (1) State Planning Commission (on provincial performance guarantee), (2) the Ministry of Electrical Power (on tariff stability) and (3) the State Administration for Foreign Exchange (on currency transfer and convertibility). It can be seen from the table that all governments had agreed to purchase an exact minimum quantity thus reducing demand risk.

4.3 Debt Security and Payment Guarantee

The widely used debt securities for non-recourse and limited recourse financing are the project's revenue, partial indirect sponsor's guarantee, possible multilateral credit or risk guarantee, export credit agency's coverage, and the host government's approval for bond issue. These components are important for lenders as well as for sponsors. The financial structure depends on the guarantee mechanism and debt security assurance. This necessitates legal support from the host government to set a security mechanism as well. In the Hubco project, the World Bank's guarantee had protected commercial lenders against sovereign risks associated with the project. Moreover, other integral components of securities and guarantees of this project were: (1) escrow agreement for local and offshore escrow accounts, and (2) foreign exchange risk insurance provided by the State Bank of Pakistan. Multilateral Banks and Export Credit Agencies also give debt and payment guarantees to PPP projects. For example, in Skikda project, MIGA guarantees had protected all lenders involved in this project on debt security and payment guarantee. Similarly, in Laibin B project, COFACE gave US$290 million loan coverage as well as political risk guarantees on pre- and post- project completion. Table 5 shows the debt security and payment security mechanism of selected case studies.

Moreover, it can be seen that several agreements were put in place by the SPV of each PPP case study project to mitigate financial risks. Table 6 shows the agreements to mitigate financial risks in the case study of PPP projects.

It can be seen that all the projects had made Project Fund Agreement (PFA) and Financial Completion Agreement (FCA). The Hubco project had set up onshore and offshore escrow accounts to meet the requirements of both foreign and local lenders. These escrow accounts had been set up to prevent siphoning of the project's revenues for other purposes by the sponsors. The SPV needed to ensure these accounts abided by the covenants of the lenders as they wanted to control cash available for debt service (CADS) and free cash flow (FCF) of the project. The supply agreement of Dabhol had serious drawbacks which made it prone to financial risks. The Supply agreements of

Table 5: Security structure for case study PPP projects

Debt Security Mechanism	Power Projects			Desalination Projects		
	Dabhol	Hubco	Laibin B	Ashkelon	Tuas	Skikda
Project's revenue	First priority due to non-recourse; requires full capacity production to avoid penalty	Project's cash flow as the sole source	Project's cash flow as the sole source	Requires +- 8% tolerance band of plant availability to avoid LDs	Requires plant availability to avoid reduction in capacity payment	First priority due to non-recourse; requires plant availability to avoid penalty
Partial Indirect Sponsor's Guarantee	Absent	National Power Plc* provided 20-25% in equity and standby equity up to $50 million	Extended equity commitment by the foreign owned enterprise	Standby facility 10% of total financing to cover unforeseen cost overruns during availability period (2.5 years)	Base facility and standby facility provided by lenders	Absent
Multilateral Bank's credit/risk guarantee	Absent	World Bank arrangement of Partial Credit Guarantee (PCG) and Partial Risk Guarantee (PRG)	Absent	Absent, debt financing is fully arranged in domestic market	Absent	Multilateral Investment Guarantee Agency (MIGA)
ECAs credit/risk guarantee	Onshore trustee and Offshore collateral agent on	COFACE, MITI and SACE covered the credit risk and	COFACE coverage up to $290 million; letter of comfort to	Absent	Absent	Export Credit Guarantees Department's

Table 5 (continued)

Debt Security Mechanism	Power Projects			Desalination Projects		
	Dabhol	Hubco	Laibin B	Ashkelon	Tuas	Skikda
	USEXIM and ECGD guarantees	political risk	facilitate backing and export credit from the host country			(ECGD) coverage
Host Govt. bond issue (approval)	Not chosen	Not chosen	Not chosen	Institutional tranche contributed 60% of total debt financing	Not chosen	Not chosen
Payment Security Mechanism						
Escrow Mechanism	Continual basis (Monthly)	Continual basis (Monthly)	Guarantee on Convertibility of RMB (renminbi)	Absent	Absent	Not known
Host Govt. Guarantee (limited)	GOI guarantees to 1/3 of the due amount	FX and transfer to offshore and domestic escrow	Change in law risks	Fixed price is paid bimonthly and variable price is a function of actual water delivery	Capacity payment on Govt. force majeure, change in law and grid failure	Guarantee on Convertibility of local currency and change in law risks

Note: * Promoting sponsor.
Source: Compiled by authors.

Table 6: Agreements to mitigate financial risks for case study PPP projects

Projects	Off-take Agreement	Supply Agreement	Escrow A/C	PFA/FCA
Power projects				
Dabhol	√	–	√	√
Hubco	√	√	*√	√
Laibin B	√	√	√	√
Desalination projects				
Ashkelon	√	√	√	√
Tuas	√	∞√	√	√
Skikda	√	√	–	√

Notes: * Onshore and Offshore escrow A/C.
∞ Spot purchase.
Source: Compiled by authors.

the Dabhol and Tuas projects were different from the widely used practice of "Supply or Pay" agreement. These cases are discussed in the Supply Agreement section.

4.4 Major Contracts and Agreements

Of the six projects, the Dabhol project was awarded through direct negotiation, which was found to have suffered from a lack of transparency, tariff fixation and from political stands. Without competition, it is much harder to assess the reasonableness and cost-effectiveness of a proposal. Direct negotiation is not at all a good choice for a country like India, Pakistan and other developing countries where an unstable political structure exists (Chowdhury and Charoenngam, 2009). Table 7 shows the tender modality for each project.

The Dabhol project of India was highly criticized by the BJP government soon after the election as it was awarded by the preceding Congress government on a direct negotiation basis in 1992. A committee was formed to review the Dabhol deal which revealed high capital cost of the plant, high cost of power and potential environmental damages. In August 1995, the government of Maharashtra decided to cancel Phase II of the project and suspend construction of Phase I of the project. This was the first of many setbacks for the project. The award of tender of the Dabhol project had culminated in the settlement of dispute and resumption of construction which was eventually renegotiated through reduction of capital cost and power tariff (Hoffman, 2008). A new agreement was reached that lowered the price of power by 20%, reduced Enron's equity in the project to 50% by giving

Table 7: Contract awarding process for case study PPP projects

Projects	Tender Modality	
	Competitive	Direct Negotiation
Power Projects		
Dabhol		√
Hubco	√	
Laibin B	√	
Desalination Project		
Ashkelon	√	
Tuas	√	
Skikda	√	

Source: Compiled by authors.

up 30% ownership to MSEB (Ramamurti, 2003). In the Laibin B project in China, the project company won through competitive bidding on the basis of its offer of the lowest tariff rate (RMB 0.4/kWh) and by managing to minimize its cost structure by acquiring turbines from Chinese manufacturers rather than importing them from outside. Thus the competitive tendering process had proven to be a valuable tool for awarding tenders in this region although direct negotiation may be faster and preferred in fast-track projects.

Off-take and supply agreements are crucial agreements to decide on the magnitude of financing by the lenders as well as from the project vehicle's point of view. It also becomes a vital issue in some instances of failure of PPP projects. For example, in a recent study, it was found that Indian giant Tata Group had finally given up its US$3 billion investment plan on fertilizer, power and steel projects in Bangladesh. This is due to the fact that the Bangladesh government was unable to give assurance for a long term gas supply. Khan and Parra (2003: 113-114) stated that a project that has an off-take agreement is always more attractive than one that does not. It is found that all the off-take agreements for the case study PPP projects were for long term. For example, a 30 year agreement of off-take was signed between Hubco and WAPDA (the off-taker) and that secured the project's revenue stream. The analysis shows that the culture of merchant facilities had not been adopted in any of these projects. The market risks were eliminated through this long term off-take agreement. Table 8 shows off-take agreements that were set in each project.

In the Dabhol power project, the project vehicle locked the Maharashta State Electrical Board (the off-taker) in a way that the Maharashta State Electricity Board (MSEB) had to pay even if it did not require or that the

Table 8: Off-take agreements for PPP projects

Projects	Off-take Agreement		
	Hell or High Water	Take or Pay	Tariff Rate*
Power Projects			cents/kWh
Dabhol	√		6.67
Hubco		√	6.61
Laibin B		√	5.2
Desalination Projects			cents/m^3
Ashkelon		√	0.52
Tuas		√	0.49
Skikda		√	0.74

Note: * Total average life.
Source: Compiled by authors.

plant could not produce electricity. It is not at all a wise decision to select a "Hell or High Water" off-take agreement for non-credible and financially unstable off-takers like MSEB. The "Hell or High Water" off-take agreement is a stringent "Take-or-Pay" agreement. Though it contributes high indirect credit enhancement to the lenders, it needs to be projected carefully, keeping in mind that the project will be capable enough to produce the product. This is an unconditional obligation to pay the contract amount even if no good or service is provided or producible by the SPV. This onerous situation happened in the Dabhol project where MSEB had to pay US$1.2–1.3 million yearly for its electricity.

On the other side, a supply agreement is also essential for the project vehicle to ensure continual supply of raw materials so that the facility can generate production on time and at the agreed price. This agreement is important for determining the tariff rate of the product. It is also crucial to select what raw materials will be used for the facility and from where. The supply contract of the selected case studies is shown in Table 9.

It is seen that all the projects had selected "Put or Pay" supply contract except Dabhol project. This contract gives the SPV a maximum degree of flexibility as long as the yearly minimum purchase requirement is maintained. In the Dabhol project, the supply contract was based on spot purchase with no long term agreement and the project was fully dependent on volatile price risks as well as supply from offshore. Supply of LNG was contracted from Middle East projects which were partly owned by Enron. Thus, the supply of LNG as fuel for the Dabhol project turned out to be very expensive and raised the issues of cross subsidies where the off-taker (here MSEB) was eventually

Table 9: Supply agreement for PPP projects

Projects	Supply Contract		Energy Used	Source
	Put or Pay	Put and Pay		
Power Projects				
Dabhol		√	Local Naphtha then LNG	Local and then foreign
Hubco	√		Furnace oil	Local
Laibin B	√		Coal fired	Local
Desalination Projects				
Ashkelon			IPP and Spot	Local
Tuas			Spot Purchase	Local
Skikda			IPP	Local

Source: Compiled by authors.

unable to bear the burden of payment. On the other side, in the Hubco project, fuel supply was secured through 30 years agreement between the government-owned fuel supplier, Pakistan State Oil Company and the SPV, Hubco. It is obvious that local supply is relatively more advantageous than foreign supply. But at the same time, the supplier needs to be a reliable one with a proven record of experience and capability. For foreign supply, a careful selection and government logistic support needs to be checked upfront. In order to ensure a continuous and uninterrupted supply in the Ashkelon desalination project, the lenders and investors made an agreement with sponsors for an independent power production contract as well as spot purchase from national grid. Thus, both IPP and desalination projects require a reliable supply of raw materials (i.e. gas, oil, coal, etc.) with credible performance guarantee and long term supply contracts.

4.5 Credit Enhancement

Credit enhancement is a sort of guarantee that the project vehicle needs to have in various stages of financing. Though literally credit enhancement means a third party's assurance in a project for payment guarantee, performance guarantee and the like, credit enhancement may also be done by the host government, multilateral and bilateral banks and insurance companies' commitment towards a project. For example, in the Dabhol project, there was political risk coverage by OPIC; the Pakistan Government's performance guarantee on supply of Pakistan State Oil Company and US$436 million subordinated debt by PSEDF; the performance guarantee by the Guanxi

provincial government for fuel supply and off-take agreement in the Laibin B project; the institutional tranche (pension funds) and domestic rating agency (Maalot) which accepted construction risks without any completion guarantee for the Ashkelon project; ECGD and COFACE coverage on political risk in the Skikda project; and banks' agreement for US$4.5 million standby facility to fund 70% of cost overruns in the Tuas project. All these are credit enhancement tools used in case study PPP projects.

Thus, it is found that credit enhancement is done in two ways. One is done financially and the other legally. Subordinated debt, payment guarantee, performance guarantee, currency transfer and convertibility etc. are credit enhancement tools from the financial point of view. On the other hand guarantees against political risk, construction risks, completion risks and so on are credit enhancement tools from the legal perspective. Both these ways of credit enhancement can be underwritten by the government, multilateral banks, bilateral banks, export credit agencies and investment banks. It should be noted that credit enhancement can also be done through sponsors' Equity Support Agreement (ESA), contingent equity, claw back guarantees and the like. None of these sponsor's credit enhancement mechanisms were found in any of the case study PPP projects.

5. Discussion of Findings

It is found that financial and legal risks were very high in the Dabhol project. Many essential attributes were not set out properly for the special purpose vehicle which eventually led to legal and financial setbacks. In the Dabhol project, Enron had undermined the pristine nature of the special purpose vehicle which caused all the structures of the project to look suspect. For example, there was no agreement for reliable long term supply and supply of raw materials always remained uncertain. Price of raw materials was susceptible to inflation due to import tax and custom duties. Although the Central Government of India gave a counter guarantee to mitigate sub-sovereign risks of MSEB as it was a non-credible off-taker, it failed to overcome unconditional "Hell or High Water" payment obligation.

In contrast, the SPV of the Hubco project had covered almost all the attributes needed to make the project withstand financial and legal risks surrounding the project. The Government of Pakistan (GOP) provided performance guarantees to all state organizations (such as supplier, off-taker and central bank) which were involved in the Hubco project. The SPV of the Laibin B project had low financial risks as the debt security mechanism was quite strong. This was due to extended equity commitment from sponsors and ECA's political and commercial risk guarantees. The legal structure of the SPV of the Laibin B project was almost similar to the SPV of the Hubco

Table 10: Essential attributes of a SPV

Essential Attributes of a SPV		
Debt Financing	Subordinate Debt	▪ Presence of this attribute helps SPV to get more finance in equity and senior debt from investors and commercial banks; lenders consider their money as protection to the loans
	Domestic Loans	▪ Through this attribute, SPV can reduce cost of financing, higher D/E ratio and lower cross currency risk; more commitment from lenders for project success
Credit Facility and Standby Loan Facility	▪ Presence of this attribute helps SPV to reduce construction risk and ensure completion guarantee	
Debt Security	▪ SPV can achieve this security mechanism through Multilateral Bank's credit/risk guarantee; and ▪ Through Export Credit Agencies credit/risk guarantee	
Payment Guarantee	Attributes are – ▪ Presence of Offshore and onshore escrow A/C ▪ Host Government's limited guarantee for foreign exchange convertibility and transferability ▪ Central Bank Guarantee and/or counter guarantee by host government	
Involvement of Export Credit Agencies	Guarantees	▪ This attribute helps SPV in political risk coverage and currency convertibility and transferability
	Coverage	▪ On credit risk, inflation, pre- and post-completion ▪ Helps SPV in insurance covering export financing
Involvement of Multilateral Development Banks	Loans	▪ SPV can augment borrowing capacity of a project by introducing MDB loans; funding boaster for PPP projects
	Guarantees	▪ MIGA helps SPV in breach of contract against government through its insurance coverage

Table 10 (continued)

Essential Attributes of a SPV		
Contract Modality	▪ SPV must not participate in any direct negotiation award even though it might sough effective for fast track projects	
Foolproof Off-take Agreement	Hell or High Water	▪ This attribute can ONLY be used for financially sound and credit worthy off-taker; project gets highest credit rating in competitive Market risk benchmark score
	Take or Pay	▪ For this attribute, SPV needs to be certain that project can produce and offer its product to sole off-taker; product will not be sold in market as well; this unconditional payment helps SPV to get better credit rating for the project
Reliable Supply Agreement	Supply or Pay	▪ SPV must use this agreement for long term contract and for unstable market; helps to get better credit rating for a project
	Spot Purchase	▪ SPV may use this avenue if many suppliers are available in the market and suspects little price risk
Performance Guarantee	▪ SPV needs to confirm central government counter guarantees on state owned enterprises for off-take, supply and central bank	
Payment Guarantee	▪ To reduce sub-sovereign risk, SPV needs to ensure that off-taker (i.e. SOE) must provide guarantees and/or counter guarantee from central government	
Credit Enhancement	Financial	▪ Through Equity Support Agreement (ESA), Contingent equity, claw back, debt subordination and payment guarantee SPV can reduce financial risks
	Legal	▪ SPV needs to ensure political risk guarantee, performance guarantee by state government or through counter guarantee by central government

Source: Compiled by authors.

project except in the context of undeveloped regulatory environment and host government's loan support (see Table 4). The SPV of the Ashkelon desalination project had high legal risks. This is due to low support from the government and political instability of the country. On the other side, the SPV of the Tuas desalination project had attained favorable financial atmosphere due to stable political and clear government initiatives. All the essential attributes for structuring the SPV had been attained in this desalination project except spot purchase of electricity supply contract. This is due to wide availability of suppliers and little price risk. The indexation mechanism for off-take agreement and fuel supply hedging with Standard Chartered Bank in the Tuas project reduced inflation risk as well. But, the SPV of the Skikda desalination project was found to contain higher financial risk because of absence of supplier agreement during the concession agreement. Moreover low sovereign credit rating caused the SPV of Skikda to bear high legal risks.

Thus, to improve financing in PPP projects or to make a project finance-able, the SPV needs to ensure certain essential attributes in its structure. The essential attributes are identified from the case study PPP projects. Table 10 shows the essential attributes of a SPV.

These attributes fall within the contractual structure, economic and legal conditions of a country. Presence of these attributes in the SPV structure helps a project to withstand financial and legal issues surrounding PPP projects.

6. Conclusions

The research is conducted through comprehensive examination of three independent power producer (IPP) projects, one each from India, Pakistan and China, and three desalination projects, one each from Israel, Singapore and Algeria. The results are insightful. The study leads to the consideration of essential attributes for structuring a SPV. There is often a lack of precedents to identify attributes of the SPV and the process is further hampered by undeveloped financial and legal structures of a country. It is believed that incorporation of these attributes (as discussed in Table 10) in the SPV structure will help the investors to improve financing aspect of PPP projects. At the same time, it will assist the host government to check its competence in financing PPP projects by considering financial and legal attributes of the SPV structure.

The study has some limitations. First, the study is focused on IPP and desalination projects only in Asia and Mediterranean Middle East. Thus, the results may not be generalized to other sector infrastructure projects in this region. Second, the research is based on qualitative analysis. The authors believe that quantitative analysis may further strengthen the study on identifying essential attributes of the SPV.

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