

## ALGERIAN PPPs CONTRACTS EXPERIENCE: THE CASE OF SEAWATER DESALINATION PROGRAM

### L'EXPERIENCE ALGERIENNE EN CONTRATS DE PPP CAS DES PROJETS DE DESALINATION DES EAUX DE LA MER

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#### **Abstract:**

Since the of the eighties of the last century, Private Public Partnerships (PPPs) get more interest in public service market. In fact, PPPs prove more and more their efficiency for both public and private parties, thus they become a favorite strategic choice for public authorities in both developed and developing countries to boost the economic growth by big infrastructure projects such as highways, airports etc. even in case of scarcity of financial resources.

The present article aims at highlighting mechanisms of PPPs as an effective tool to involve private sector to invest in public infrastructures, then presenting the Algerian PPPs experience in the seawater desalination before concluding with requirements needed to succeed such experiences.

**Keywords:** Public Private Partnership; risks allocation, Public Projects, seawater desalination

#### **Résumé :**

Depuis les années 80s du dernier siècle, les partenariats public-privé attirent plus l'engouement des acteurs du marché des services publics. En fait les PPPs prouvent de plus en plus leurs avantages pour les deux parties publique et privée, ce qui a fait d'eux le choix stratégique des autorités publiques pour booster la croissance économique notamment en matière d'infrastructure tels que les autoroutes, les ports etc. même en cas de la rareté des ressources financières.

Le présent article essaye de mettre en exergue l'efficacité des PPPs comme outils permettant d'impliquer le secteur privé dans les investissements publics avant de présenter l'expérience algérienne des PPPs dans le domaine de désaliénation des eaux de mer et conclure avec les exigences nécessaires à la réussite de telles expériences.

**Mots clés :** Partenariat Public-Privé, allocation des risques, projets publics, dessalement des eaux de mer

#### **1. Introduction :**

The use of Public-Private Partnerships (PPPs) to support public infrastructure programs has been increasing over the past decades. As PPP contracts proved their effectiveness to alleviating pressure on governmental budget and viewed as a public service instruments (Bovis, 2013), they become the first choice in many developed and developing countries to financing and operating their projects in different sectors (Yongjian, et al, 2011). In fact, governments prefer PPPs for their capacity of “Value for Money” (VfM) creation and capture, based on a number of attributes such as: equitable risk allocation, design studies and construction practices leading to optimal operation and asset maintenance (life cycle management considerations), and private sector efficiencies and skills (Pantelias & Rouboutsos, 2015).

In Algeria, the government, stimulated by the important economic growth of the last two decades, planned since 2000 four (04) five-year programs: 2001-2004 (07 billion USD), 2005-2009 (150 billion USD), 2010-2014 (286 billion USD) (Seddiki, 2013), and 2015-2019 program (not estimated because of oil prices fall since 2014), in which, a large parts of budgets were reserved for developing transport infrastructures, housing, water infrastructures, energy facilities, and other industries. However, the implementation of these mega programs has known several problems, especially during the global financial crisis of 2008-2010, and the current Oil price crisis affecting the country since 2014, then the majority of planned projects for the last five-year program (2015-2019) has been frozen because of the scarcity of financial needed resources. Accordingly, PPP contracts seem to be a strategic alternative for the Algerian government to finance its future programs, share projects risks with private partners and benefit from the effectiveness of private management approaches.

In this context, the purpose of the present article aims at highlighting the Algerian experience in adopting PPP strategy with a particular focus on the major faced problems and the solution adopted.

## **2. PPP Theoretical framework :**

The first schemes of PPP dates back to nineteenth century in Europe. During this century and the early twentieth a considerable development of PPP contracts were known particularly in France where the government used to resort to financing model similar to PPP to equip new urban centers that need a big budgets. The new schemes of PPPs did not appear till the beginning of the eighties of the last century in Great Britain with the introduction of *New Public Management* (Khoteeva & Khoteeva, 2017; Khan, Ghalib & Hossain, 2015). Since then PPPs have been developed and popularized worldwide for many purposes including avoiding delays or failures in governmental big projects particularly projects related to transportation infrastructure such as railways, highways, harbors etc. Accordingly a large number of PPPs contract are signed, some of these contracts concern mega projects nationally such as the metro line of Beijing which should be achieved before the beginning of the Olympic Games in 2008 (Chohra, Cheng & Shiyu, 2011) or internationally such as the cases of the Euro-tunnel between France and United Kingdom or the TGV under the Alps connecting France to Italy (Cantier. & Linotte, 2000). As PPP fits within the process of public

sector regulation worldwide its arrival and application have genuinely revolutionized public services and the way such services are organized, financed and actually delivered to the end-user (Bovis, 2013).

### **2-1. What is the PPP?**

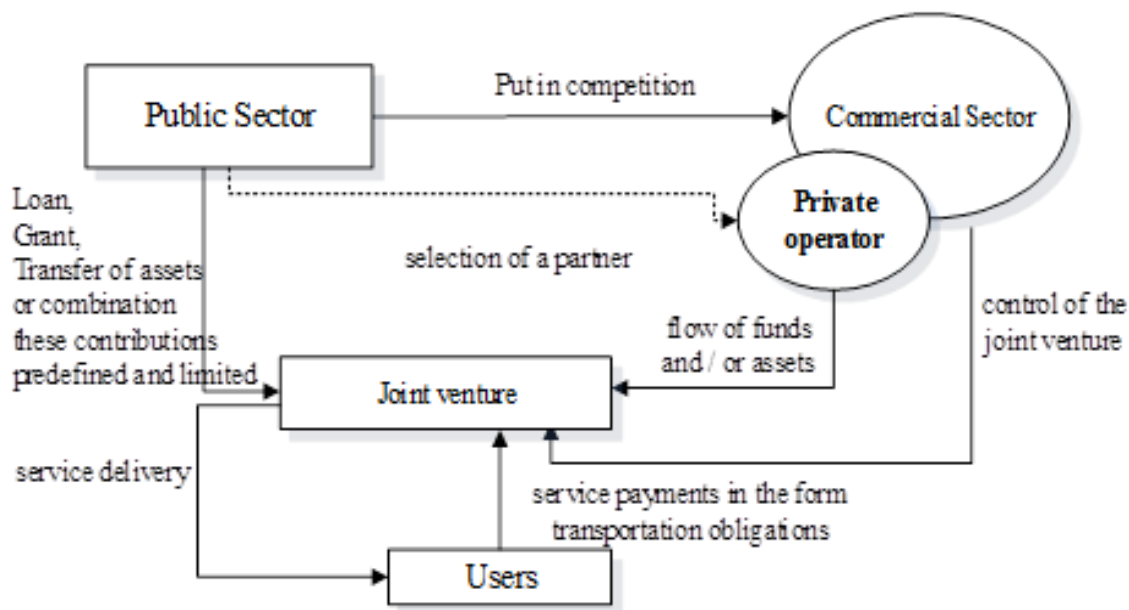
In its broadest definition, the Public-Private Partnership covers all association forms between public and private sectors for implementing all or part of a public service. PPP project consists of a business agreement between the public sector and the private sector to deliver a public service by jointly assuming, to varying extents, financial, technical and operational risks, where the public sector stakeholders typically consist of national, regional and/or local governments, governmental agencies and state-owned entities, whereas the private sector stakeholders typically consist of private sub-contractors, private investors, financiers and insurers (Ouenniche, Boukouras & Rajabi, 2016). In other words, the PPP is a specific form of collaboration, in which government and private actors interact on an issue of public interest (Heldeweg, Sanders & Harmsen, 2015). Nevertheless, it is Important to mention that:

- PPP projects do not mean privatization or a sale of public services (Marty & Voisin, 2005), but they could be used to improve the implementation process of the existing privatization policy (Suhaiza, 2013);
- Not every interaction between government and private actors can be regarded as PPP.

In view of considering PPP as the appropriate tool to address problems of implementing complex public service projects, international institutions such as European Investment Bank (EIB), International Monetary Fund (IMF) and Organization for Economic Cooperation and Development (OECD) adopted their own definition of PPP.

The European Investment Bank considers PPP as "a wide variety of work arrangements, the more informal strategic partnership in the design, construction, finance, and operation contracts and semi-public companies"(EIB, 2010). For the OECD "PPP can be defined as whatever contractual arrangement where the private sector provides public services based on a pre-agreed risk and profit sharing with the public sector and where the public sector retains planning and control functions and can also provide backup financial support to private investors or become the counterparty of the private sector as a purchaser of the goods and/or services" (OECD, 2014).It is clear from these definitions that PPP means in general any contract of cooperation between public authorities and private actors with regard to the financing, construction, renovation, management and maintenance of infrastructure or the provision of public service. Even so, PPP provides ways in which the private sector can complement the government work and resources and encourages a valuable transfer of skills and experience between the two sectors. (Khoteeva & Khoteeva, 2017). The following figure summarizes the structure of a PPP project:

**Figure N°1: PPP project structure**



Source: Marty et al (2006), p: 54

## 2-2. PPP schemes

There are various schemes of public-private partnership depending on the adopted classification criteria such as project risks, partner competencies, project nature etc. (Tahir, 2007). According to IMF some of the many PPP schemes are summarized in the following table:

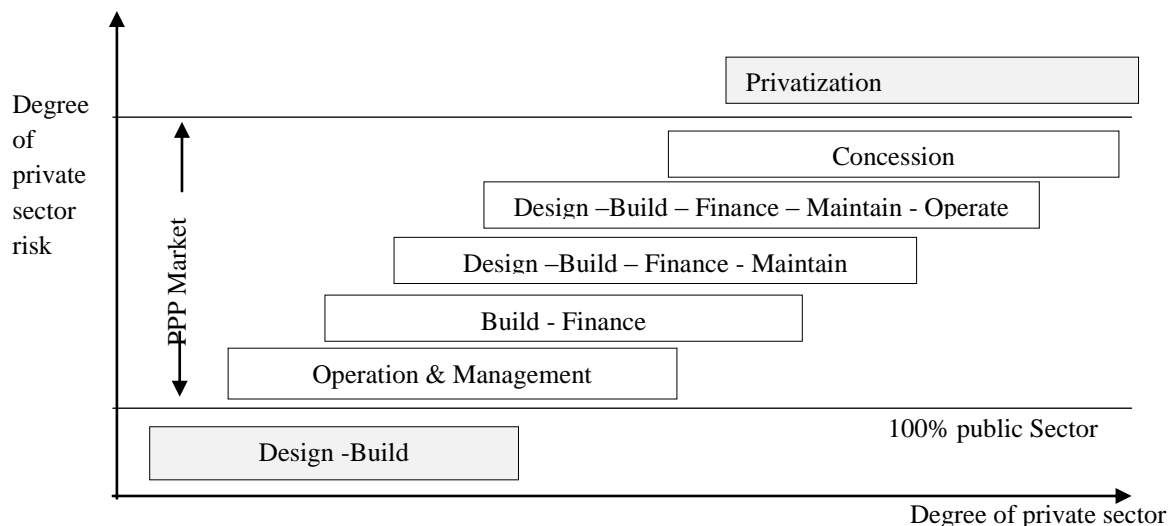
**Table N°1: PPP schemes**

Schemes	Modalities
Build-own-operate (BOO) Build-develop-operate (BDO) Design-construct-manage-finance (DCMF)	The private sector designs, builds, owns, develops, operates and manages an asset with no obligation to transfer ownership to the government. These are variants of design-build-finance-operate (DBFO) schemes.
Buy-build-operate (BBO) Lease-develop-operate (LDO) Wrap-around addition (WAA)	The private sector buys or leases an existing asset from the government, renovates, modernizes, and/or expands it, and then operates the asset, again with no obligation to transfer ownership back to the government.
Build-operate-transfer (BOT) Build-own-operate-transfer (BOOT) Build-rent-own-transfer(BROT) Build-lease-operate-transfer (BLOT) Build-transfer-operate (BTO)	The private sector designs and builds an asset, operates it, and then transfers it to the government when the operating contract ends, or at some other pre-specified time. The private partner may subsequently rent or lease the asset from the government.

Source: IMF (2004), p: 8

The Canadian Council for Public-Private Partnerships focuses more on the risk factor and categorizes PPPs according to the degree of the private sector involvement and the degree of risk transferred to this private partner in a PPP project. Accordingly, PPP could be categorized as follows:

**Figure N°2: PPP categorization according to the risk transferred to private partner**



Source: Website of Canadian Council for Public-Private Partnerships ([www.pppcouncil.ca](http://www.pppcouncil.ca))

In the case of the concession model for example, the private sector involvement is very strong, contrary to the operation and maintenance model. In the case of the concession, the private partner provides the integrality of the project funding which is a considerable advantage for the public partner. However the degree of the risk is very high in this case.

PPP could also be categorized based on the division of responsibilities between the public and private partners (Roehrich, & George, 2014).

The purpose of the categorization of PPP, in general, is to find who is responsible for each project development step, including the initiative stage, the design stage, the financing stage, the construction stage, the operation and maintenance stage.

### 2-3. Risk Allocation approaches in PPP Project

To build a successful PPP contract, the establishment of an efficient risk allocation mechanism is an essential step in the preparation of a project document stage. The issue of risk allocation in PPP contracts has attracted much attention of researchers in various activities fields in recent years. All interested researcher agreed that the optimised risk repartition is a *sine qua none* condition for succeeding PPP (Beckers et al 2013; François& Marsac, 2014; Checheritaand, 2007).

A state-of-the-art risk-management approach for PPP projects needs a shared perception of risks among different actors of the project. However parties involved in PPP projects have different perceptions of risks and consider risks only when they are materialized, and solutions are sought in response to the posed threats. Moreover the contracting parties are

satisfied with risk allocation so long as its consequences are minimized and adopt a risk management strategy geared towards problem-solving rather than risk-preventing (Abednego, & Ogunlana, 2006).

Bing et al. (2005) confirm that PPP risks repartition between the public sector and private sector is not always obvious, although McDowall (2003) tried to show how risks might be allocated between partners using an operational facilities management risk allocation matrix, which illustrates how PPP partners consider risk. He stressed that, most macro-level risks – for example: political, legal, social and economic risks – and other risks which are ‘exogenous’ to the project should be borne by the public sector, in counterpart of operational risk which should be allocated to the private sector.

In the same order of idea Shen, Platten, & Deng (2006) mention that an effective risk allocation could occur if site acquisition, and legal and policy risks are allocated to the public sector; design and construction, operation and industrial action risk are allocated to the private sector; and development, market, financial and force majeure risks are shared between the two partners. Accordingly, an efficient allocation of risks will be an essential part in management process and will be an integral part for PPP contract success in order to satisfy all the parties with different interests and objectives. An operational model of risk allocation could be as follows:

**Table N°2: Risk allocation Matrix of PPP Projects**

<b>Allocation</b>	<b>Risks</b>
Public sector	<ul style="list-style-type: none"> <li>- Site risk (land acquisition related)</li> <li>- Political risk</li> <li>- Currency inconvertibility and non-transferability</li> <li>- Expropriation</li> <li>- Discriminatory and specific change of laws</li> <li>- Regulatory consent</li> <li>- Authority’s default</li> <li>- Tariff adjustment breach</li> <li>- Network connectivity risk</li> <li>- Market changes risk</li> </ul>
Private sector	<ul style="list-style-type: none"> <li>- Site risk (preparation conditions related)</li> <li>- Design, construction and commissioning</li> <li>- Operating risks</li> <li>- Output quantity and quality</li> <li>- General change of law</li> <li>- Financial risks</li> <li>- Sponsor risks</li> <li>- Project company, contractor’s default</li> </ul>
Shared	<ul style="list-style-type: none"> <li>- World economic crises</li> <li>- Concurrency risk</li> <li>- Environment risk</li> </ul>

Source: Prepared by researchers

### **3. Algerian PPP experience**

#### **3-1. General overview on PPP projects in Algeria**

PPP model bears particular significance and importance in the context of a developing country (Khan, Ghalib & Hossain, 2015) such as Algeria which has undertaken, since 1990, an extensive regulatory and economic reforms to create a favorable climate for investment. However, the multiple revisions made on the legislative framework related to the promotion of the investment could not create expected favorable and attractive climate for investors. For example, the Algerian code of public procurement regulations has witnessed 06 changes, including revisions and supplements, since 2002 (D. No. 02-250 of July 24, 2002; D. No. 03-301 of September 11, 2003; D. No. 08-338 of October 26, 2008; D. No. 10-236 of October 7, 2010; D. No. 11-98 of March 1, 2011; D. N° 12-23 of January 18, 2012 and D.N° 15-247 of 30 December 2015). This situation shows clearly that the Algerian government is lacking the stable institutional and regulatory framework which could govern its public investments. As PPP projects depend broadly on the administrative environment and investment climate (Hawkesworth and Loudiyi, 2016), the effectiveness of the PPP governance framework in Algeria could be also compromised.

Although this may be true, the Algerian government developed, since 2005, several successful PPP projects in different sectors such as the experiences of SEAAL, urban transport, the metro line, the international airport, the 13 desalination seawater plants, the port terminal operations of Algiers, Bejaia and Djenjen, in addition to the experience accumulated in the of energy and mines sector which has realized many PPP projects during the past two decades. All these projects were conducted in light of the Investment Code n°01-03 of 20th August 2001, which has been revised twice in 2006 by ordinance n°06-08 and in 2009 by ordinance n° 09-01. It is important to note that most projects conducted using PPP schemes between 2005 and 2012, could be considered successful particularly in attracting a considerable number of international investors from many countries including those which have a large experience PPP projects.

The following table witnesses clearly on the international characteristic of Algerian PPP projects implemented between 2002 and 2012:

**Table N°3: Major international PPP contracts in Algeria (2005 and 2012)**

Sector	Company	Mission	Partners		Type of PPP	Investment cost	contract duration
			Algerian	foreign			
Water	SEAAL	Water destrubion	ADE	SUEZ Envir France	Management contract (2006)	370 M€	5,5 years
Energy	AEC	Seawater desalina-tion:13 plants	AEC	Multinational (refer to Tab.2)	BOO (2002-2012)	3 443 M\$.	15-25 years
Transport	Port of Algiers	exploitation of container terminal	EPAlger	DPW UAE	Concession (2009)	100 M€	30 years
	Port of Béjaia	exploitation of container terminal	EPBéjaia	Portek Singapore	Concession (2005)	21 M\$	20 years
	Port of Djen Djen	exploitation of container terminal	EPJenjen	DPW (UAE)	Concession (2009)	400 M Euro	30 years
	EGSA	Exploitation and management	E.Airport of Algiers	E.Airport of Paris	Management contract (2006)	-	4 years renewable
	EMA Algiers metro	Exploitation and management	E.Algiers metro	RATP France	Management contract (2011)	-	8 years

Source: Made by researchers based on companies' websites

The PPP program carried out between 2005 and 2015 particularly in water desalination area could be considered a rich experience for the Algerian government. After all this experience PPP contracts are, in fact, a real strategic choice for the government to develop others sectors and resolve the major problems related to the cost, quality of investments in public sector, then achieving the following goals:

- Establish an integrated management, participatory, economic and environmental framework for projects;
- Streamline and economize the use of the state's budgetary resources;
- Improve the cost, quality and schedule of projects;
- Improve the assessment of the projects' maturation;
- Increase the performance and economic viability of projects;
- Improve the quality of services produced by the projects; and
- Increase the life of the project by establishing an effective policy of exploitation and maintenance of infrastructure.

However, the absence of bylaws regulating and framing PPP contracts is a big hurdle to develop more PPP. Thus the Algerian government, despite the major reforms initiated during the past decade, it is called to accelerate the process of developing bylaws related to concessions and PPP contracts. Knowing that, actually, PPP contracts are regulated by both



the Investment Code n° 09-01 and the specific legislation of each sector, for instance PPP contracts in the water sector are regulated by Investment Code and the new water law n° 05-12, which sets the conditions of private sector participation using management contract forms

### **3-2. The experience of seawater desalination PPPs:**

To develop the sector of drinking water and meet its increasing demand either for domestic or industrial uses particularly in principal cities such as Algiers, Oran, Tlemcen, Tipaza etc., the Algerian government drew an ambitious program to build 28 large-scale desalination seawater stations along the 1.280 km-long Algerian coast to attain a volume of 4,000,000 m<sup>3</sup>/day by 2020. To insure the successful implementation of the program, the Algerian government assigned the program to the national energy companies namely SONATRACH and SONELGAZ, for the following reasons:

- SNEELGAZ will use desalinated water to produce the electricity, then will be the first client of the project.
- SONATRACH is known for its experience to contract and operate PPP project in the energy sector and already helped public authorities to develop a well-structured model of PPP contracts of this program (FEMIP, 2011).

This program is of great importance for the Algerian government. In addition to the high cost of the program, it is the first PPP experience using the Design-Build-Own-Operate (DBOO) scheme involving the national banking system to funding its different projects then contributing to minimize financial risks of the program particularly exchange risks. Moreover, the program aims at contributing to acquire more expertise and know-how from potential foreign partners whom will participate in the implementation of the program. Indeed the program will be used as benchmark to develop other sectors such as transportation, housing, industry...etc.

After the official adoption of the program, the two principal partners namely SONATRACH (50%) and SONELGAZ (50%) proceeded to the creation of the Algerian Energy Company (AEC) in 2001 which will be responsible for the implementation of the program. AEC worked closely with international investors to many create joint-ventures which will play the role of project companies then will be in charge of producing water according to the agreed contract clauses. The table 3 bellow lists the 13 seawater desalination projects constructed under PPP contracts initiated by the Algerian government between 2005 and 2012.

**Table N° 4: Desalination seawater PPP program (2005 and 2013) in Algeria**

Location (Province)	Capacity (m <sup>3</sup> /day)	Cost MUSD	start	Foreign Partner	AEC	Banks
SoukTlaa - Tlemcen	200,000	251	2011	Hyflux (Singapore)/Malakouff (Malaysia)	51%	49% BNA
Honaine (Tlemcen)	200,000	291	2012	BEFESA/SADYT (Spain)	51%	49% CPA
Beni Saf (A. Temouchent)	200,000	240	2010	COBRA (Spain)	51%	49% BNA
Magtaa (Oran)	500,000	492	2012	Hyflux (Singapore)	49%	51% BNA
Arzew (Oran)	90,000	400	2006	Black & Veatch (S. Africa)	05%	95% SH/SG
Plage Chlef (Mostaganem)	200,000	227	2011	INIMA/AQUALIA (Spain)	51%	49% BNA
Ténès (Chlef)	200,000	231	2013	BEFESA (Spain)	51%	49% CPA
Oued Sebt (Tipaza)	100,000	-	-	BIWater (UK)	51%	49% BNA
Fouka (Tipaza)	120,000	180	2011	SNC LAVALIN (Canada) ACCIONA (Spain)	51%	49% BNA
El Hamma (Algiers)	200,000	258	2008	GE Water (USA)	70%	30% OPIC
Cap Djinet (Boumerdes)	100,000	138	2012	INIMA/AQUALIA (Spain)	51%	49% BNA
Industrial Zone (Skikda)	100,000	136	2009	BEFESA/SADYT (Spain)	51%	49% BNA
El Chatt (El Tarf)	300,000	-	-	In the partner selection phase	-	-
<b>Total: 13 stations</b>	<b>2,510,000</b>			<b>Number of inhabitants: 13 million</b>		

Source: AEC database, 2013

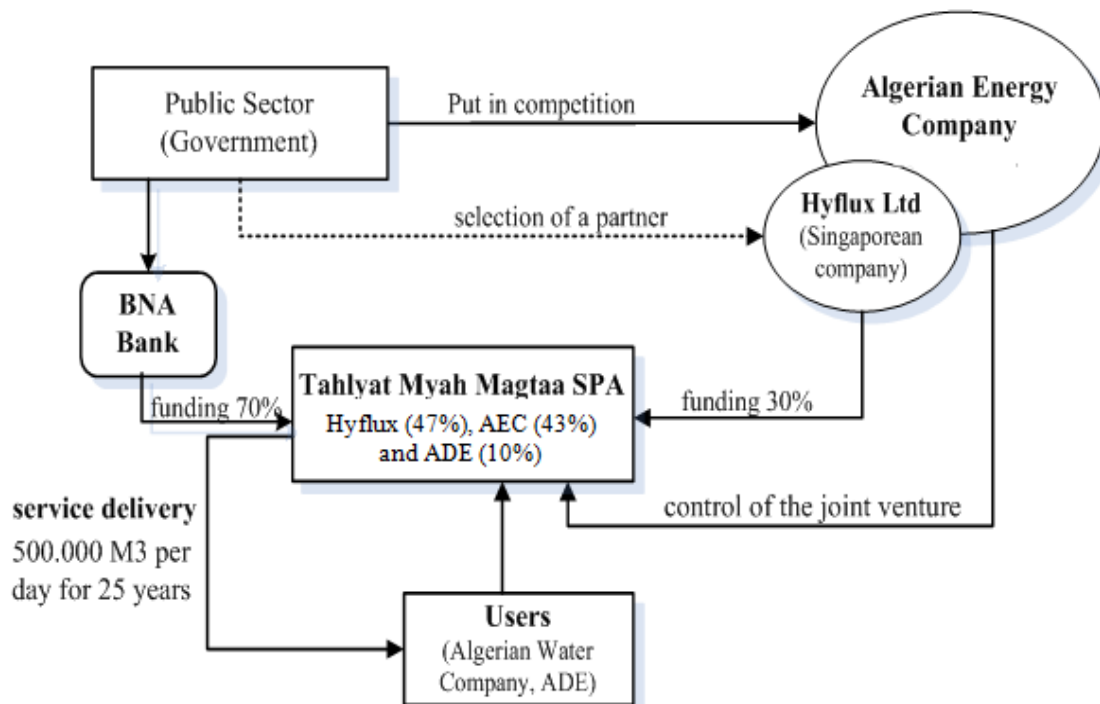
The table 3 indicates clearly the importance of the Algerian seawater desalination PPP program which consists of 13 large projects with a total capacity of 2,510,000 m<sup>3</sup>/day covering the needs of approximately 12 million people in only a few years (between 2005 and 2013). With this capacity, the program seems to be one of the highest capacities of seawater desalination in the world and the first one in the Mediterranean region according to of the International Desalination Association database (2012).

### 3-3. Magtaa water desalination project:

Magtaa is a region located in Oran province 400 km west of Algiers. Magtaa project is the largest seawater desalination station in the worlds. The project was launched in October 2008 to be closed by 2012. It will use Reverse Osmosis a Process to produce up to 500.000 m<sup>3</sup> of drinking water per day to supply nearly 4 million people with drinking water in Oran region. This mega-project costs 492 million USD financed AEC (43%), Algerian water company ADE (10%) and Singaporean company, Hyflux Ltd (47%) in which, the foreign company paid 30% of the global amount and 70% given as credit by bank BNA Bank. The contract was

signed in local currency for 25 years at a very favorable fixed interest rate (3.75% per year). The long-term financing package offered by BNA Bank has enabled the project to initially avoid exchange rates risks.

**Figure N°3, summarizes the general structuration of the project:**



Source: Made by researchers

#### 4. Conclusion and recommendations

The Public-Private Partnerships contracts, regardless their schemes (BOT, DBOO, BOOT, Concession etc.), are admittedly a strategic choice for the Algerian government to achieve developmental goals. The referred to above projects witness clearly that the association of private partners either national or foreign is an effective economic model which allows public authorities to transfer, to certain extent, risks inherent to public service projects and/or infrastructures to the private sector then involve this latter in the sustainable development. In addition, the PPP model is the appropriate frame allowing public authorities to take advantage of the private know-how in running effectively and efficiently complex or mega projects.

Nevertheless, the successful implementation of PPP projects and the extension of this economic model to other sectors unlike water, requires from the Algerian government to engage additional reforms to improve the investment climate. These efforts include particularly the following action:

- Setting up a clear bylaws and a well-defined regulatory frame which insure the good governance of PPP projects particularly in case of the involvement of foreign partners. Such frame will encourage private investors to react positively to any governmental call for projects and minimize certain kind of PPP risks.

- Establishment of a Council responsible for promoting PPP projects in different sectors. This council will be also responsible for monitoring PPP governmental policy, organizing discussions related to PPP issues sponsoring scientific researches publishing standards, guidelines for key PPP subjects.
- Development of a Risk Allocation Guidelines which assist governmental agencies in different sectors to establish well-structured contracts.
- Encouragement of scientific research to address issues related PPP contracts management in Algeria.
- Finally, for a successful a PPP program, the government must initiate the development of local market and banking system to encourage more potential foreign and local investors to participate in different PPP programs.

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