

## Financing the National Capital Integrated Coastal Development (NCICD) Project in Jakarta (Indonesia) with the Private Sector

Van Dijk Meine Pieter

Professor of entrepreneurship, Maastricht School of Management (MSM), Netherland

### Abstract

This paper is about using land and other financial options to finance urban infrastructure, to prevent Jakarta from flooding. It summarizes and criticizes the ideas of the National Capital Integrated Coastal Development (NCICD) project, which wants to protect Jakarta from the sea through a big dam, which would create new land. According to the Indonesian authorities the project should be financed by the private sector. The conditions for a successful private financing of infrastructure at this scale are studied. The framework developed shows that some components can be financed by the private sector, but the government will have to create the conditions and contribute to the initial investments. In particular, a transparent and competitive tendering procedure is required and a functioning land market, allowing the government to capture the value increase due to the project, which is necessary for financing certain components of the project, which the private sector may not want to finance.

**Keywords:** Coastal; Water Treatment; Sanitation; Finance; Equality; Climate Change; Private Sector

### Introduction

Jakarta, the capital of Indonesia, is in trouble. Parts of the city are sinking in the sea, while the sea level may rise due to climate change. As a result each year bigger parts of the city are flooded during the rainy season, as I experienced when I visited Jakarta in January 2014. The problem of land subsidence boils down to sinking at the average 7.5 centimetres per year, but at certain places in Jakarta north it is even more. The National Capital Integrated Coastal Development (NCICD) project tries to find a solution for a very serious problem by suggesting the construction of a big dike. The solution suggested by a consortium of Dutch engineering firms would be to build one big dike 2.5 km from the coast. Such a dike would solve the problem and provide space for new housing projects, for an industrial estate and a new ring road for Jakarta. It would create a big fresh water lake, which could supply the city with drinking water [1]. We were asked to look at the possibility of private financing of the National Capital Integrated Coastal Development program; given the Indonesian government indicated it was not willing to spend money on the project. Other parts of Indonesia deserved more priority. Personally I am convinced that private financing of major parts of the National Capital Integrated Coastal Development (NCID) program is possible, if the project can be structured in such a way that different parts are interesting for private parties, if the right type of Public Private Partnership (PPP) can be found (where land is one of the assets brought in by the public partner) and if appropriate financing mechanisms can be used. Such a process needs to be carefully planned and regulated, however.

### Some details about the NCICD project

The NCICD project tries to find a solution for the problem of land subsidence. The NCICD project has a number of components but the project seems too big for one company to execute it. A number of the components of the project needed to happen anyway (Table 1), also without the new dike, or without private sector involvement (PSI)! The following components are mentioned in the plan:

1. Providing piped water supply, because the reason for subsidence is private wells, which pump up the ground water
2. Stop these illegal water extractions

3. Introduce subsidence monitoring
4. Providing sewerage pipes, sewer treatment facilities and promote private connections to system, because the lack of a proper sewer system leads to pollution of the 13 river flowing through Jakarta and into the newly created lake
5. Improve waste collection and management
6. Reinforcing the current sea wall and river dykes (stage A), given the subsidence of the soil and the increased level of the sea water
7. Build Outer dike B
8. Build Outer dike C
9. Build a ring road
10. Enlarge the port
11. Create additional space for industries
12. Create additional housing and a new sea front
13. Improve the environment in and along the 13 rivers and along the coast

### Some complications and possibilities to involve the private sector

This is an example of a big project to protect Jakarta from the sea. The proposed project is also about the polluted water of the 13 rivers, flowing through the city, which soon need to be pumped into the

**\*Corresponding author:** Van Dijk MP, Professor of entrepreneurship, Maastricht School of Management (MSM), Netherland, Tel: 0031-704260571; E-mail: [dijkm@msm.nl](mailto:dijkm@msm.nl)

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According to the master plan	Corresponding components	Scope for private sector involvement
Land subsidence control	Piped water supply Stop extractions & subsidence monitoring	Concession of BOT Government regulation
Sanitation projects	Providing sewerage, treatment & promoting connections to system	BOT a la Harnasch polder
Strengthen current sea wall & river dykes	Current sea wall & river dykes (A) Outer dike B Outer dike C	Only one example of a contract for a small dike along the British coast where O&M is done by a consortium
Ring road	Ring road	PPP projects, DBFO & bonds
Enlarging the port	Enlarging the port	PPP project including land and capturing land value
Additional space for industries	Additional space for industries	Private project developers using project finance, PPP with land as public asset
Additional housing & new sea front	Additional housing & new sea front	Government task, but studies can be done by PSI
Environmental impact assessment	Improve environment in river & coastal area	

**Table 1:** Components of the NCICD project which need to happen anyway.

sea. The government would like the 50 billion dollar necessary to be provided fully by the private sector! The National Capital Integrated Coastal Development (NCICD) project tries to find a solution for this very serious problem of Jakarta, the problem of land subsidence, which at certain places in Jakarta north causes already serious floods. Other possible complications in the project:

1. The population continues to use ground water and dump sewer and waste in the already polluted rivers.
2. 13 heavily polluted rivers flow into the sea and would pollute the new lake, unless they are cleaned up
3. The whole project would cost US\$ 50 billion.
4. The Indonesian government does not want to finance it, but would rather see the private sector picking up the bill.
5. The legal and governance framework for tendering such a big project, even if it is cut up in pieces, may not be in place.

For this project private sector involvement (PSI), is sought and can be achieved through Public Private Partnerships (PPP). What are the different types of PPPs, which financing mechanisms can be used and what are the experiences in the water sector in other countries than Indonesia? We try to apply the international experiences of private financing in the water and sanitation sector to the issues of Northern Jakarta: soil subsidence, polluted surface water and no proper piped drinking water and sewer system. After an introduction in the terminology, the factors making PPP a success and the choice of financial instruments, the tool kit of PPP instruments will be applied to the plans developed so far for the coast of Jakarta [2].

It states that Public Private Partnerships (PPP) are the best-known type of partnerships, but the other forms of Private Sector Participation (PSP) or Private Sector Involvement (PSI) are more important in terms of number of examples in developing countries. We defines a partnership as a form of cooperation between parties with

similar objectives but different (complementary) qualities, which each contribute resources and share in the investment risks. It is necessary to separate the basic characteristics, or defining factors from the empirical traits of the partnership. In Table 2 the two are separated.

In dealing with private sector involvement in water projects there are a number of key concepts which need to be clear:

- Which legal formula is used: PPPs, concession, JV, contract?
- Which financial instruments are available?
- What are the necessary institutional reforms?
- How can the concept of cost recovery be implemented
- What about the financial feasibility: is there a Business plan?
- What about the benefits for society at large: has there been a social cost benefit analysis?

The following figure provides insight in the amounts involved in PPPs, based on, a paper which uses EIU-ADB data. We learn from it that there was a dip in the number of deals after 2008, although with a delay of two years. Secondly, the order of importance is first bank loans, then equity or grants and finally bonds, which are considered private financing, since they are bought by private households and investing firms. Finally loans to governments by international financial organizations such as the World Bank are important. However, increasingly private financial institutions, using different legal forms and financial instruments take over their role [3]. The following reasons are often mentioned to involve the private sector: the government has no money, is not efficient, requires complementary expertise and resources, we deal with complicated projects and the government cannot run these risks.

The bottom line is that unbundling, technological progress (innovation) and competition should lead to more efficiency in the water sector as shown in Figure 1.

There are many different ways to involve the private sector:

- Outsourcing and subcontracting
- Make use of service contracts
- Use management contracts
- BOT, BOO, BOOT, BOL, etc.
- Public-private partnerships (PPP)
- Public-private Community partnerships (PPcP)
- Full-fledged privatization (or divestiture, like what happened in England and Wales to the water companies)

However, we have learned from previous experiences with PSI that several issues need to be solved first.

They are listed in Table 3 and will be discussed in the second part of this article.

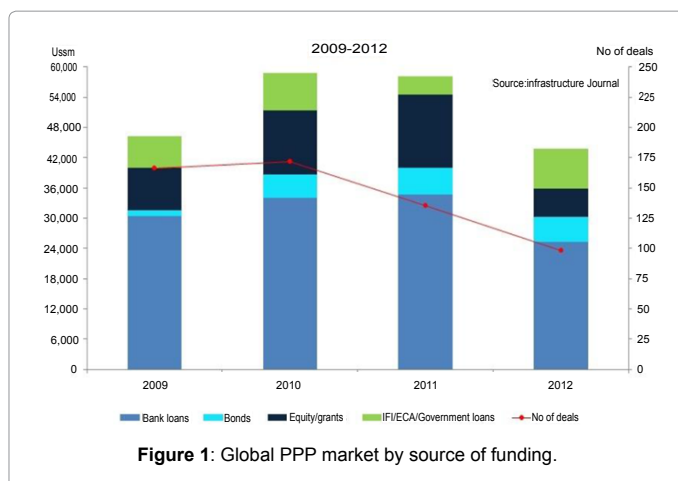
### The need to split the project in components

The National Capital Integrated Coastal Development (NCICD) project has a number of components and seems too big for one company to carry it out on its own (Table 4).

But, most of the components need to happen anyway, also without dike B and C. Questions that could be raised in the case of one private

Basic characteristics	Empirical traits of the partnership
<ul style="list-style-type: none"> <li>• Common objective</li> <li>• Some legal or informal arrangement</li> <li>• Joint activity</li> <li>• Both parties bring in resources</li> <li>• Both share the risks</li> </ul>	<ul style="list-style-type: none"> <li>• Level of equality or hierarchy</li> <li>• Level of trust (try to measure it)</li> <li>• Level of ownership</li> <li>• Expectations (a mismatch?)</li> <li>• Commitment</li> <li>• Complementarity</li> <li>• Resources put in place</li> <li>• Risks run</li> <li>• Drivers (inputs)</li> <li>• Etc.</li> </ul>

**Table 2:** Basic characteristics and empirical traits of the partnership.



**Figure 1:** Global PPP market by source of funding.

partner carrying out the project (as suggested under a Design Build Lease scheme) are:

1. How can the company be pushed to start to work on all components in the right sequence?
2. How can they be effectively regulated?

If this operator would be a failure, the whole project would be a complete failure! The table shows there are two alternatives, just build A, B and C, or just building dike A [4].

The latter choice would mean the water out of the 13 rivers ending here and from the city would have to be pumped into the sea, because the sea level would become substantially higher than the level of Northern Jakarta.

In fact there is one alternative, which is not yet mentioned in the plans and that is to force the existing concessions to build some islands for housing purposes to line up and build the outer dike in a standard way, connected to the other islands and of a similar height and quality.

However, some of these concessions have been given out already and one island is currently under construction. Hence the question is whether such harmonization is still possible at this stage.

Using different parties for different components means:

1. There will be competition
2. This allows for more transparent procedures
3. Such companies are easier to regulate

If the companies fail their component it can be tendered again. As an International example one could think of communal toilets which are built and managed by NGOs, being also part of the local private

Ten issues which need to be solved to allow successful private sector involvement in Jakarta	
1.	How to split the project in components, which can be tendered?
2.	Is private sector finance available for building dikes?
3.	Which financial instruments should be used?
4.	How to mix the use of different financial instruments to bring down the cost of private finance?
5.	How to get the role of the government clear: as an initiator of PPPs and as a regulator of the results?
6.	How to create the right governance structures?
7.	Are the conditions for an optimal functioning of PSI and the Public-private partnership (PPP) formula fulfilled?
8.	How to generate revenues from the investments, how to capture the increased value of the land?
9.	How to achieve sustainable cost recovery?
10.	Under which conditions PSI may be successful in the water sector?

**Table 3:** The issues which need to be solved to allow successful private sector involvement in Jakarta.

sector, but involved on a relatively small scale.

### Private sector finance for a dike, a road, etc.?

If instead of tendering the whole project the government would decide to tender the different components it will find that they are easier to tender. Several parties may be interested, but do they have experience in this field? How can we make the selection procedure transparent?

The international example of building a major dike concerns the Saemangeum Gunsan in Korea. This is a 33.9 km long dike built with help from the private sector. The Korean Rural Community Corporation claims that from the total budget the private sector supply amounted 3533 billion Korean won, while the public sector provided only 101 billion Korean won. It shows it is possible, although some public money is required [1,2].

### Which financial instruments to use?

There are many financial instruments available, ranging from more traditional to more unconventional. One can think of using official development assistance (ODA) or involving multilateral agencies like the World Bank or the Asian Development Bank. Although expensive, international commercial lending is also possible, either as recourse or non-re-course lending. Non-recourse lending (project finance) is lending to a special purpose vehicle with no or limited recourse back to the parent company. Finally private investments and operations via PPP constructions are possible, just like community owned and managed facilities. However, the available ODA for the water sector has been declining in recent years partly because the general decline of aid, partly because of the sharp drop in aid for large dams and water storage schemes. Furthermore, there are different ways of financing the infrastructure:

- Encourage new investments from the international and local private sector
- Develop pricing and charging schemes that will ensure the financial sustainability of infrastructure investments
- Encourage local development banks to invest
- Develop capital markets

According to the master plan	Corresponding components	As stand alone
Land subsidence control	Piped water supply	Needs to happen any way
	Stop extractions and subsidence monitoring	Needs to happen any way
Sanitation projects	Providing sewerage, treatment and promoting connections to system	Needs to happen any way
	Current sea wall and river dykes (A). Additional:	
	Outer dike B	
Strengthen current sea wall and river dykes	Outer dike C	Needs to happen any way
	Ring road	
Ring road	Enlarging the port	Short term option
Enlarging the port	Additional space for industries	Medium term option
Additional space for industries	Additional housing and new sea front	Needs to happen any way
		Needs to happen any way
Additional housing and new sea front	Improve environment in river and coastal area	Needs to happen any way
Environmental impact assessment		Will happen anyway, given concessions already supplied
		Needs to happen any way

**Table 4:** Number of components of the NCICD project.

There are also different legal formulas possible: a special purpose vehicle (SPV), a joint venture (JV), using the Project finance formula (non-recourse lending), or some lease or concession contract as shown in Table 5. The challenge is to mix different formulas in an optimal way. Different sources of financial instruments are loans, bonds, using development funds, or some Build Operate and Transfer (BOT, but also BOO, BOL, DFB, etc.). A good example of this is the WWT plant in The Hague in the Netherlands: Harnas polder [7].

### The challenge is to mix different instruments

We have learned that in practice the best formula is to mix different types of financial instruments. In particular if soft loans can be obtained of even ODA the total cost of lending would go down.

### The role of the government

The government should create the conditions for successful private sector involvement and see to it that the sector does what it is supposed to do (the regulatory function).

### Create the right governance structures

We notice a proliferation of management models in the water sector: from municipal corporations to community-managed supply and from public utilities to private providers, with different sources of finance. It will not be useful to impose one model: different models may converge towards a model with more outsourcing and closer regulation in the future [2,3].

### The conditions for PPP fulfilled?

Introducing PPP usually requires introducing new practices, which require reforms. Unit should for example become financially autonomous. The cost recovery principle needs to be applied: there should be revenues from the investments. This means a charge or tariff which should cover O and M costs and investment costs and provide return on capital. Finally, the real tariff levels should not go down over time and external support or subsidies may be necessary. We identified the conditions for access of private capital in the case of Indian municipalities [4].

### How to generate revenues from your investments?

There may even be unexpected benefits, such as increased tourism and recreation and more possibilities for fishing. Finally the plan will create a huge water front and through a new ring road improved opportunities for car drivers to go to other parts of the city. The challenge

Who pays	Financing infrastructure through
Consumers	User tariffs, betterment or other taxes or fees
Government thanks to the taxpayers	Government subsidies, loans or guarantees, resulting in public debt
Project developers	Lease or sale of newly created land
Industries	Lease or sale of newly created land
Companies involved in providing infrastructure and services	Lease or sale of newly created land
Private households and investors	Private debt

**Table 5:** Who pay for the improved infrastructure?

will be to fully commercialize these additional benefits of the project.

### Sustainable cost recovery

Engaging with urban water utilities must have an impact long after the engagement has ended. Three dimensions relating to the sustainability of utility reform are, long-term planning of the utility, the capacity building in the utility and the political commitment to the reforms. These three elements are very much interdependent. Sustainable cost recovery can then be introduced, but relies on a series of factors that range from the:

- Tariff design to the design of an appropriate strategy
- Application of sound financial management principles
- Optimization of costs and revenues
- Promotion of willingness to pay
- Capturing the additional value of the new land to finance the dike

### Under which conditions PSI may be successful in the water sector?

We will develop a framework summarizing the conditions for a successful private financing of infrastructure at this scale. The framework developed will then be applied to find out whether the conditions for full private financing by the private sector are fulfilled and what the government should do to create the conditions for PSI in the water sector in Jakarta.

The question to what extent will private finance play a role in achieving the MDGs and eventually the SDGs should be rephrased as under which conditions can private sector involvement in the water



sector be expected to be successful, contributing to the achievement of the SDGs. The bottom line is that in a decade the debate on PSI has moved from “against privatisation” to “OK, but under which conditions”. Research has indicated the conditions under which PSI can be effective (achieving its goals).

The leading ideas are that there are many sources of finance and financial modalities, but it is important to create an appropriate economic environment or what is sometimes called an enabling environment allowing private initiatives to come forward, but regulate these operators at the same time! Subsequently all kinds of economic instruments can be used to achieve the goals formulated for IWRM and different legal formulas or delivery mechanisms can be chosen [6].

If money for investments of Operations and Maintenance (O and M) needs to be borrowed or if new investments are necessary, it is important to speak the language of the financial world. Bankers can be convinced if you show project results in a cash flow because users pay small fees and this flow allows reimbursement of the loan taken to finance project. The credit crisis may make it more difficult for developing countries to gain access to international credit markets for this type of projects, but recently there has been a rebound.

What are the lessons learned from PSI in the water sector? One, promote flexible arrangement (management, service delivery, payment, etc.) and different service levels for consumers. Secondly, calculate an appropriate and equitable tariff and billing structure. As part of the design and implementation process, establish and promote sources of local finance to help users pay for improved levels of service. The Willingness and ability to pay for infrastructure services should be assessed, not assumed. Finally, subsidies can be more effective if used to increase access to specific services: For example subsidising connection fees.

Research has indicated the conditions under which PSI can be effective (achieving its goals; Table 3). There are major developments taking place in the sanitation sector and their effectiveness can be enhanced through more government support and appropriate financing mechanisms. Initiatives at the household level and private finance can be an alternative for inefficient public schemes to provide sanitary facilities in the slums of Third world cities, which rarely achieve cost recovery. Table 6 gives an overview of more traditional and more unconventional financing instruments, which can be used in PPPs.

The bottom line is that unbundling, technological progress (innovation) and competition should lead to more efficiency in the water sector as already argued in my inaugural address, but is not enough! They could bring the price of water down like these forces did in the case of the telephone sector. My research summarizes how to engage with PPP in emerging markets. A better basis to pay special attention to poor consumers can be derived from philosophy [8].

I am convinced that partial private financing of the National Capital Integrated Coastal Development (NCID) program is possible if the project can be structured in such a way that different parts are interesting for private parties, if the right type of Public Private Partnership can be found and appropriate financing instruments and delivery mechanisms can be used as shown in Table 7.

They are listed in Table 6 and range from joint ventures to Build Operate and Transfer (BOT) constructions. Not mentioned were Export Credit Agencies (ECAs), which may help to obtain a certain technology at a lower price. In recent years, the export credit agencies

of OECD countries have collectively provided about US\$ 70 billion annually of long term credit to developing countries (both public and private sectors) for purchasing goods and services in OECD countries. Probably less than 1% of this amount has been for water and renewable energy projects [4].

The National Capital Integrated Coastal Development (NCICD) project has a number of components and seems too big for one company to carry it out on its own. The advantages of using different parties for different components are that there will be competition, this allows for more transparent procedures and such companies are easier to regulate. Instead of dealing with one big company if the individual companies fail their component it can be tendered again. It is important to determine which components would be interesting for PSI. I have tried to fill in the table based on my knowledge of similar experiences. What comes out is that the government will have to play a role, if only by providing guarantees for very risky investments [1].

### Applying the framework

We applied the framework to learn the lessons about under which conditions PSI may be successful in the water sector as shown in Table 8 and take the interesting case of building a dam for the coast of Jakarta, the capital of Indonesia, to solve the problem of Jakarta sinking in the sea without an intervention.

### Potential and complications

The 13 rivers and canals flowing into the sea in Jakarta are heavily polluted because they serve as sewers and as places where people dump their solid waste. The government would like the 50 billion dollar necessary to be provided fully by the private sector.

Can private finance be expected to develop the water and sanitation sector in Indonesia? However, most of the components need to happen anyway, also without building new dikes. Indonesia will have to become the owner of the project and the Indonesian government will have to come with some money for the initial investment and to provide guaranties. Under the current conditions it cannot be expected that the private sector will foot the bill. However, if the activities are cut up and put in the proper sequence, private partners will be interested, but the government will have to play a role as well. This case may have given a better understanding of the complexity of PSI, trying to establish under which conditions it may be successful [7].

### Conclusion

The framework developed shows that some components can be financed by the private sector, but the government must create the conditions and contribute to the initial investments. What are some of the conditions for success of PPPs. Introduce repayment mechanism, go for the right scale of the project, introduce transparent procedure,

Insurance	Microcredit
Account overdraft	Rotating savings and credit associations
Loans	Linking traditional savings
With credit	With credit
Development funds	Public private partnership
Investment/capital, or	Project finance
Trust or endowment fund	Hedging futures/options
Subsidized entry fees	Socio-economic
Build operate & transfer	Development funds
(BOT, but also BOO, BOL, DFB, etc.)	City challenge fund

Table 6: Financing instruments, from more traditional to more unconventional.

Condition	Examples
Legal conditions in place	BOT law Gujarat (2002)
Regulatory framework available	OFWAT in the UK
Cost recovery system in place	Prepaid cards for drinking water in Uganda
Realistic tariffs, betterment tax or user fees	Water utilities in the Netherlands
Real competition (sufficient private operators), or quasi-competition (benchmarking)	In France a plethora of private operators, in England and Wales (inset agreements), or the Netherlands (Harnaschpolder) and benchmarking (Vewin)

**Table 7:** Conditions for successful PSI in the water sector.

macro-economic conditions and insist on accountability. In particular a transparent and competitive land market is required, allowing the government to capture the value increase due to the project, which is necessary for financing components of the project.

The leading ideas were:

1. It is important to create an appropriate economic environment or what is sometimes called an enabling environment allowing for private initiatives, but regulate!

2. Subsequently all kinds of economic instruments can be used to achieve the goals formulated for IWRM.

3. If money for Operations and Maintenance (OandM) needs to be borrowed or if new investments are necessary, it is important to speak the language of the financial world.

4. Bankers can be convinced: if you show project results in a cash flow because users pay small fees and this flow allows reimbursement of the loan taken to finance project.

5. There are many sources of finance. Different sources are: bonds, venture capital, shares, loans, etc., each coming with their own rules, procedures and conditions.

6. The credit crisis may make it more difficult for developing countries to gain access to international credit markets.

7. Capture the additional value created by the project to finance the components (like the dike), which the private sector will not finance.

From the examples analysed a number of conclusions can be drawn. In the first place that often a combination of different economic and financial tools is necessary to analyse an issue and to come up with appropriate solutions. It is important that technicians have a feel which combination of economic tools to use to analyse an issue. A number of useful quantitative water models are available. However, in the context of developing countries models may quickly be too complicated. The data may not be available or no local expertise is available to update and run the model.

The lessons learned about the role and contributions of private water operators in the water sector show that we have to go toward more sustainable forms of PSI that can improve service quality and operational efficiency. There is a need for more realistic design and implementation plans. Direct private investment in water and sanitation

Conditions for successful PSI in the water sector	In the Indonesian case
<ul style="list-style-type: none"> <li>• Are legal conditions in place</li> <li>• Is a regulatory framework available</li> <li>• Cost recovery system in place</li> <li>• Realistic tariffs, betterment tax or user fees</li> <li>• Real competition (sufficient private operators), or quasi-competition (benchmarking)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, some laws exist</li> <li>• On paper it exists</li> <li>• Will be required by strategic partners</li> <li>• Important requirement, but now not the case</li> <li>• There may not be enough independent private parties</li> </ul>

**Table 8:** How does Indonesia score on these conditions?

has been less than expected and the financial contribution of the private sector has been mostly indirect, For example: through people who have been buying the bonds issued for water related projects.

The bottom line is that in the last decade the debate on PSI has moved from “against privatization” to “OK, but under which conditions”. Looking back it may be observed that the discussion on the role of the private sector in the water sector has gone through three stages:

- Polarization and emphasis on efforts to privatize which failed: Cochabamba, Buenos Aires, etc.
- Confusion what divestiture means compared to PSI.
- A better understanding of the complexity of PSI, trying to establish under which conditions it may be successful.

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