

# PIAPPEM

Programa para el Impulso de Asociaciones  
Público-Privadas en Estados Mexicanos



## Challenges of Implementation of a PPP Program in Mexico

### PROGRAM TO PROMOTE PUBLIC-PRIVATE PARTNERSHIPS IN MEXICAN STATES (PIAPPEM)

Initiative sponsored by the Multilateral Investment Fund of the Inter-American  
Development Bank



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***PPP International Experiences Workshop***

***Minas Gerais, Belo Horizonte, Brazil***

***November 5th, 2008***

# Index



- **Background**

- Mexican Toll Road Program (1989-1994)
- Mexican Toll Roads Program Bailout

- **Federal impulse to Public-Private Partnerships**

- New Highway Concession Scheme
- Private Service Contracts (PPS)
  - Cost-Benefit Analysis (“Value for Money”)
- Asset utilization
- Federal PPP Highway Program Results

- **PIAPPEM**



## Mexican Toll Road Program (1989-1994)



- During this period **fifty-three concessions** were awarded to the private sector to build, operate and maintain approximately 5,000 kilometers of toll roads.
- The program more than doubled the national toll road network from 4,500 kms (1989) to 9,900 kilometers (1994).
- Investment ~ US\$13 billion in limited recourse financing:
  - Domestic commercial banks (52%),
  - Concessionaire equity (29%),
  - Mixture grants/equity contribution from Federal and state government (19%)
- However, miscalculation of investment costs and overoptimistic forecasts of operating income **undermined the viability of the toll roads**



Source: The World Bank Group



## Mexican Toll Road Program (1989-1994)



- The **financial equilibrium of the sector** was further undermined by the **Mexican Currency Crisis** of December 1994:
  - The government devalued the peso in December 1994 losing 66% of its value by the end of the month;
  - GDP fell 6.2%;
  - Inflation annual rate reached 52% by December 2005;
  - Short term interest rates reached 71.5% on April 1995;
  - Severe recession intensified by political events and the peso devaluation;
  - Significant liability increases due to financing in dollars;
- The combination of these factors, **severely hampered** the performance of toll road projects



Source: The World Bank Group



# Program collapse

## Major issues and sector performance:



### Insufficient terms to recoup costs:

- Awarding criterion: smallest concession period (average 10 years);
- Significant pressure over toll fees; (US\$0.16 a US\$0.62 / km, vs. US\$0.02 a US\$0.09 / km in the USA);
- Significant impact of competition from toll-free roads: traffic and revenues were far below projections (50% traffic, 15 to 25% revenues);

### Inadequate tendering process and concession design:

- Lax pre-qualification rules (for example bidders were not required to submit a detailed financing plan);
- Project award criteria limited to domestic construction sector and thus potential competition for the market;
- Construction companies more interested in the construction work than in the long-term financial viability of the projects



Source: Standard and Poor's 2006. Revisión crediticia del sector de carreteras de cuota en México



# Program collapse

## Major issues and sector performance:



### Inflexible tariff adjustment mechanism:

- Biannual increase linked to the inflation index (CPI);
- Government approval necessary for further adjustments;
- Restriction to the ability of operators to use price to manage demand risk and to maximize project revenues;
- In addition to the short terms of concessions, this explains the initial establishment of high toll fees.

### Inaccurate traffic and revenue forecasts:

- Relatively unsophisticated traffic models that incorporated unrealistic macro and microeconomic assumptions;
- The models did not establish an accurate price elasticity of demand;
- Use of motorways in average fell short of expectations 30% below expectations;
- Cash available for debt service has been far below base case expectations as a result of traffic shortfalls and higher than expected costs.



# Program collapse

Major issues and sector performance:



## Main reasons for cost overruns and delays:

- Projects often broke the ground with only very preliminary engineering and design work (Cuernavaca-Acapulco toll road led to cost overruns of 200 percent and time delays of thirty months);
- Construction often began without securing the right of way;
- Resistance from community groups, environmentalists resulted in delays and even rerouting some projects



Source: The World Bank Group



## Toll roads program bailout



- Most tolls roads went into default following significant cost overruns, overoptimistic traffic forecasts and 1995 peso devaluation adversely affected the toll road's ability to service dollar denominated debt.
- FARAC (Fideicomiso de Apoyo al Rescate de Autopistas de Cuota): Trust fund owned by the Mexican Government was set up to rescue 23 failed toll roads projects, and assumed performing bank loans for about U.S. \$ 5 billion through the National Bank of Public Works and Services (Banobras). Other estimates: U.S. \$ 7 and U.S. \$ 12 billion (1% to 1.7% of Mexico GDP).
- No compensation for shareholders; some estimates suggest that they lost about U.S. \$ 3 billion. Major construction Mexican companies disappeared and downsized.
- Once under government control, tolls for these roads decreased significantly to encourage the use of the assets and revenue generation.
- Terms for the other 32 concessions that remained under the control of the private sector were extended (on average by 20 years more).



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# Federal drive for implementing PPPs in the Highway Sector

Investment needs:



- Each year, Mexico needs about 5 billion US dollars for investment in road construction and maintenance
- Public funds allow federal government to annually invest less than half the required amounts
- To close this gap, Mexico has put together three public-private partnership models that seek to attract private capitals to highways investment:
  - New Highway Concession Scheme
  - Private service contracts (also known as PPS projects)
  - Asset utilization



Source: SCT



# Federal drive for implementing PPPs in the Highway Sector

## Objectives:



- Through its public-private partnership models, SCT seeks:
  - To allow an earlier development of Mexico's toll and free roads
  - To increase the amount of highway investments with private participation
  - To better distribute and manage highway project risks
  - To create jobs in highway construction
  - To increase the efficiency and productivity of public service provision
  - To take advantage of existing highways as a source of resources for new toll roads



Source: SCT



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# New Highway Concession Scheme:

## Main characteristics:



- Concessions are granted through international public bids
- SCT provides final designs, permits and rights of way
- SCT sets maximum average tolls and the rule for updating them
- The time of concession can be the maximum allowed by the law (thirty years)
- The government provides an initial contribution of public funds
- The government offers a minimum revenue guarantee (CAS) to facilitate involvement by private banks



Source: SCT

# New Highway Concession Scheme:

## Main characteristics:



- The concession is awarded to the bidder who requests the lowest amount of public funds, measured as the sum of the initial contribution and the net present value of the minimum revenue guarantee
- When projects do not require public funds, the concession is awarded to the bidder who complies with the legal, technical and financial requirements of the bid and offers the largest monetary amount to SCT



Source: SCT



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# Private Service Contract (PPS) for Highways:

## Main characteristics:



- The model includes a concession awarded through a public bidding process, as well as a service contract to be signed with the concessionaire (investor provider):
  - The term of the service contract is fixed, from 15 to 30 years.
  - The contract establishes an association between the Ministry and a private firm who is in charge to design, finance build, maintain and operate a highway (DBFO)
  - The private firm provides services in exchange for periodic payments
  - Periodic payments are based on availability of the road and its traffic levels and are recorded as current expenditure



Source: SCT

# Private Service Contract (PPS) for Highways:

Main characteristics:



- Each bidder requests a periodic payment determined as a function of:
  - Construction, maintenance and operating costs
  - Rate of return on equity, including financial costs
  - Estimated annual traffic
- The least NPV of periodic payments is the decision criterion used to award the concession, as long as the winner complies with technical, legal and financial requirements
- After construction, the modernized road continues operation as a toll free road
- When the model is applied to a toll road, the periodic payment is made with a combination of toll revenues and budgetary funds (PPS Combined)



Source: SCT



# Private Service Contract (PPS) for Highways:

Payment mechanism:



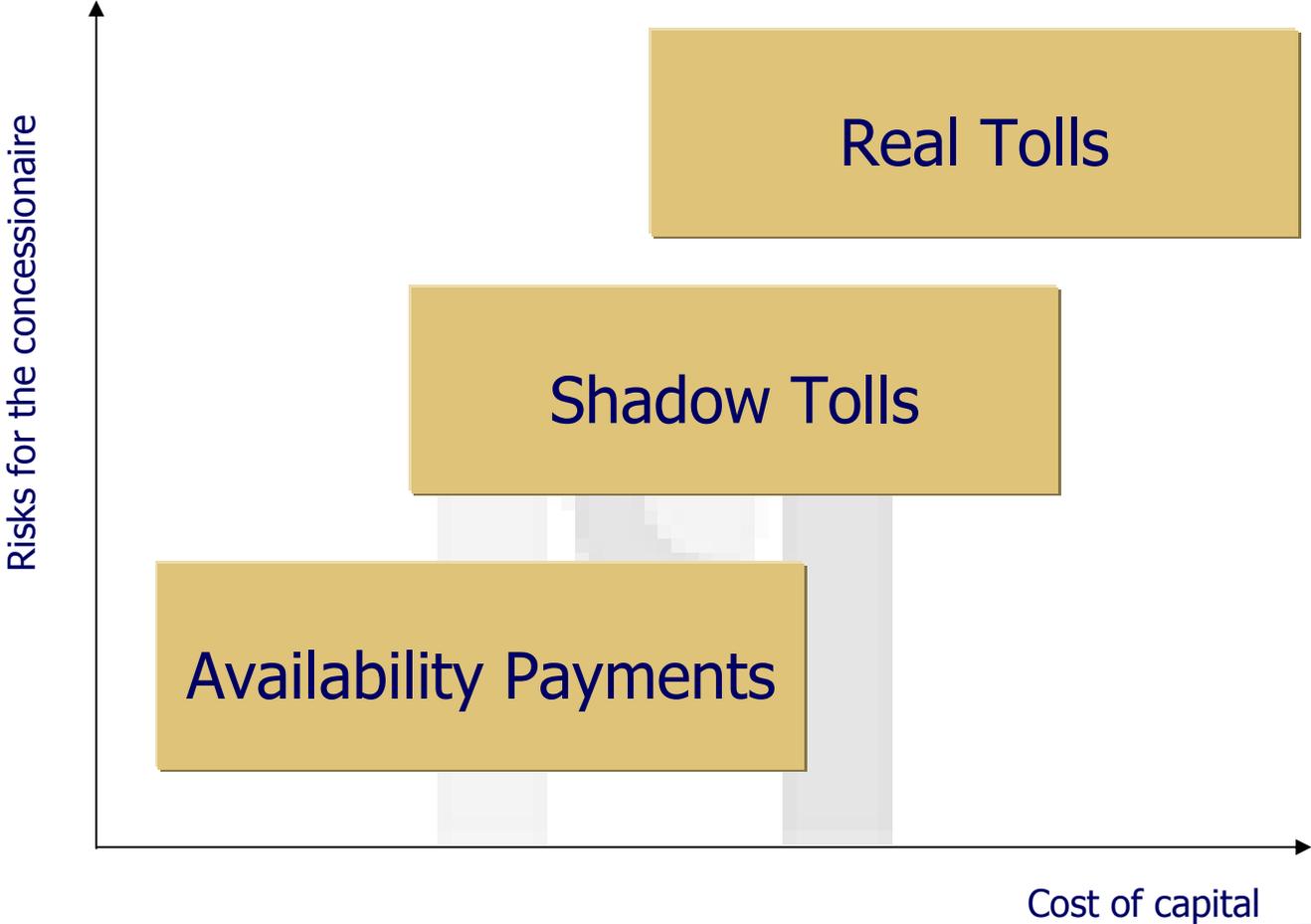
- Payment to the service provider are based on performance
- The payment mechanism considers:
  - The availability of the road
  - Traffic levels and the shadow toll requested by the investor provider
  - Deductions when the road is not available for use
- Payments are scheduled on a quarterly basis and they are applied for each subsection of the road
- If the road is not available, deductions are applied by subsection



Source: SCT

# Private Service Contract (PPS) for Highways:

Revenue risk:



Source: Pricewaterhouse Coopers



# Private Service Contract (PPS) for Highways:

Measurement of service provider performance:



- The service provider will have to design, improve, maintain and operate the road according to SCT'S requirements, which refer to :
  - Physical road characteristics
  - Specifications of operations activities
  - Maintenance requirements
  - Other services on the road
- To follow up, SCT will designate a representative who will be responsible to ensure that SCT's requirements are met throughout the contract's duration.



Source: SCT



# Private Service Contract (PPS)

Other considerations:



- The transfer of assets to the government at the end of the contract can be agreed beforehand.
- The ultimate responsibility for providing public services to end users rests solely in the public sector.
- Payments to the supplier are recorded as current expenditures and have priority in the budgeting process (multi-annuity budgeting).
- Clear risk allocation between the public and private sectors.
- It must demonstrate, through an CB analysis, the added value of carrying out the project under the PPS scheme (rather than traditional public investment), as well as their budgetary feasibility over time.



Source: Unidad de Inversiones, SHCP



# Service Private Contract (PPS)

## PPS Highway



- Design, Construction and / or modernization of road;
- Road operation and maintenance;
- Equipment and furnishings;
- Convenience stores, towing, insurance, etc.



- Federal Government / State or private investor.



- Provides population with increased access to quality and secure roads.
- Highway safety forces



Source: Unidad de Inversiones, SHCP



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# Guidelines for the elaboration of the Cost-benefit analysis for the PPS projects



$$VPN_{PPS} = \sum_{t=0}^n \frac{(C_{Ft} + \gamma_t + \Gamma_t)}{(1+i)^t} - \sum_{t=0}^n \frac{(P_{PPSt} + C_{Rt} + \Gamma_t)}{(1+i)^t}$$

$VPN_{PPS}$  = valor presente neto de la opción PPS

$C_{Ft}$  = costo base del proyecto de referencia en el período t

$\gamma_t$  = costo de los riesgos transferibles en el período t

$\Gamma_t$  = costo de los riesgos retenibles en el período t

$i$  = tasa de descuento aplicable al sector público

$P_{PPSt}$  = flujos estimados de pago al inversionista proveedor en el período t

$C_{Rt}$  = costo base que, en su caso, será responsabilidad de la dependencia o entidad contratante en el período t

$n$  = número de años del horizonte de evaluación

$t$  = año calendario, en donde el año 0 será el del inicio de las actividades del proyecto



Source: Unidad de Inversiones, SHCP

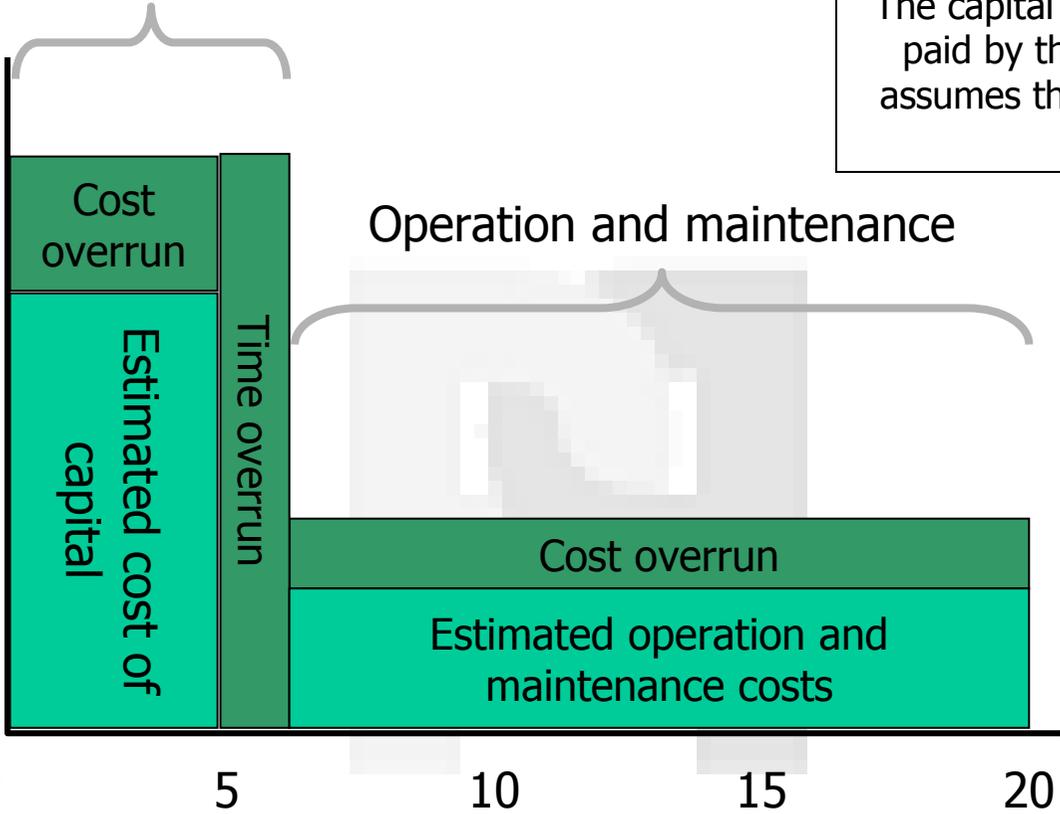


# Public Sector Payment Profile

## Traditional Public Work procurement (PSC or Reference Project)



Construction



The capital and operating costs are paid by the public sector, which assumes the risks of cost overruns and delays.



Source: PriceWaterhouseCoopers (2005)

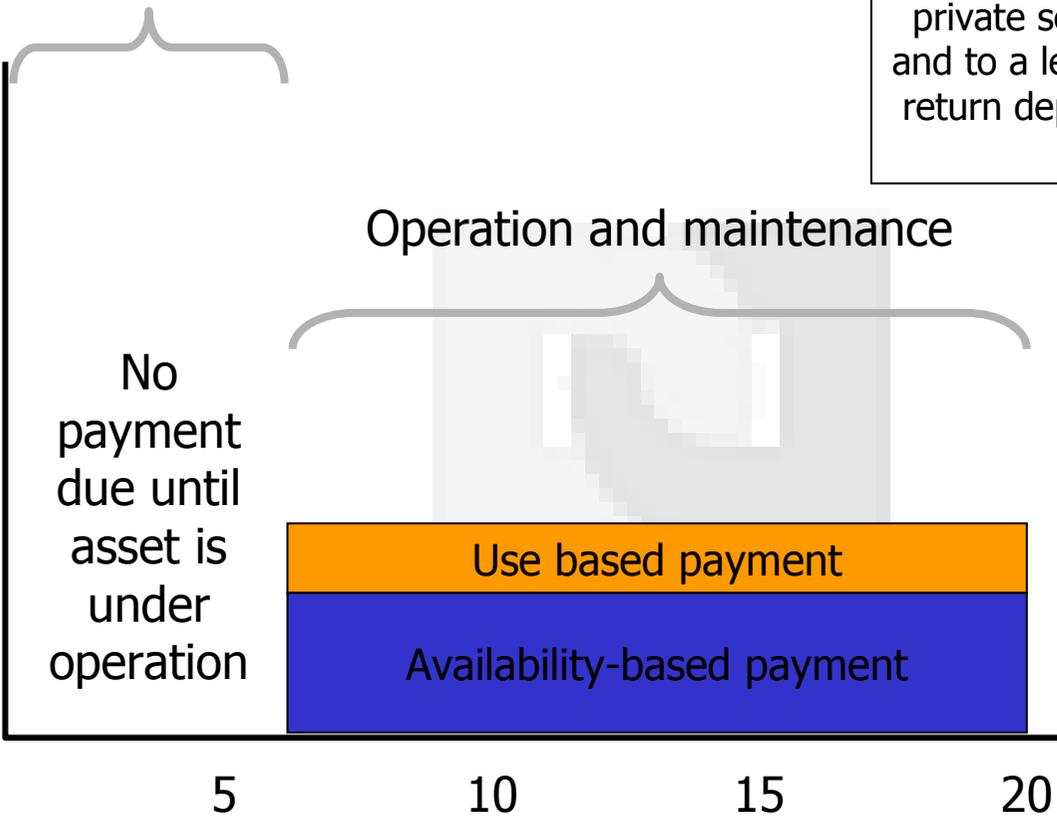


# Public Sector Payment Profile

## PPS Procurement



Construction



The public sector only pays in the long term as the services are delivered. The private sector is financed through debt and to a lesser extent, equity. The equity return depend on the quality of services provided



Year

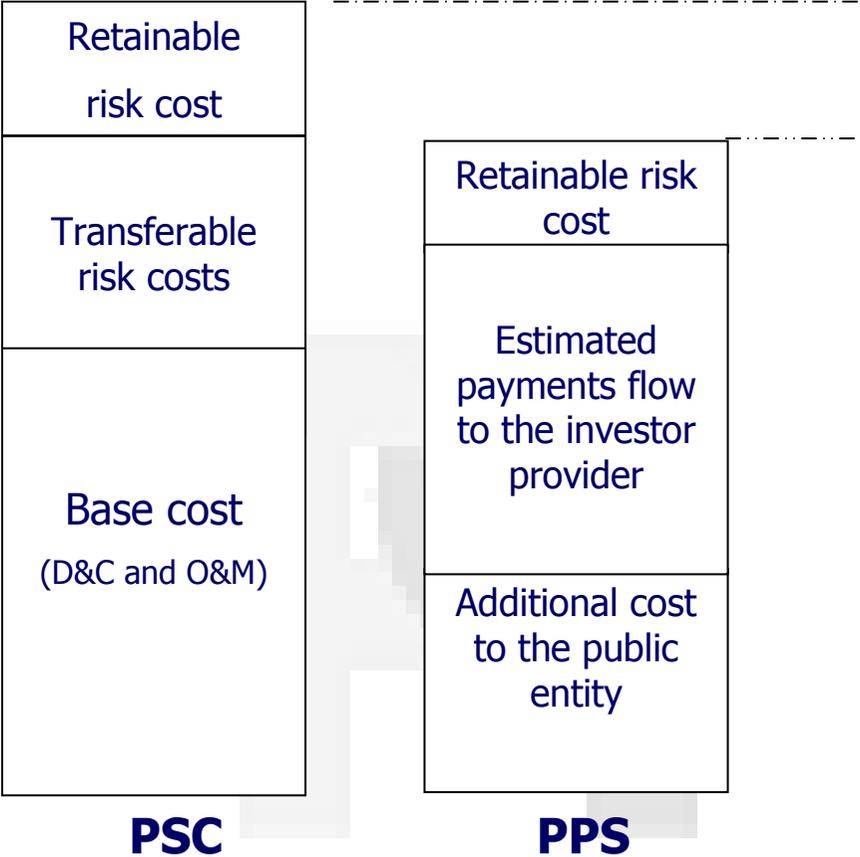


Source: PriceWaterhouseCoopers (2005)



# Cost-Benefit Analysis

## Comparison PSC vs. PPS: "Value for Money"

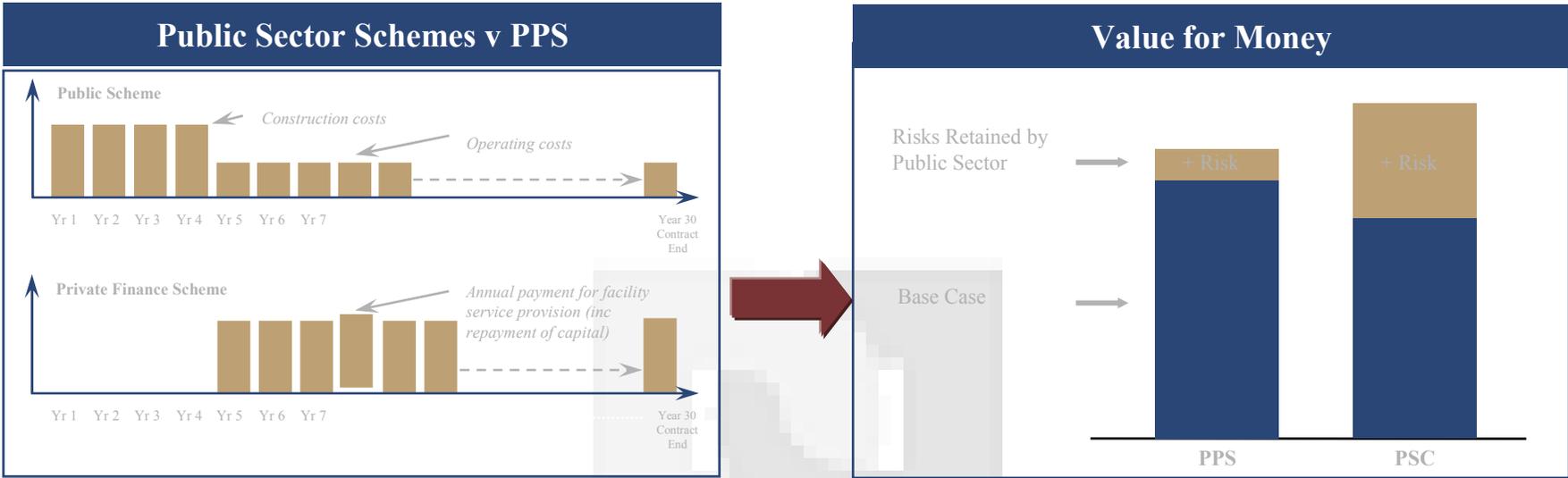


Source: Unidad de Invsiones:SHCP



# Cost-Benefit Analysis

## Comparison PSC vs. PPS: "Value for Money"



PPS delivers "Value for Money" when it brings net benefits greater or equal to those to be achieved under a traditional public work procurement.



Source: PricewaterhouseCoopers



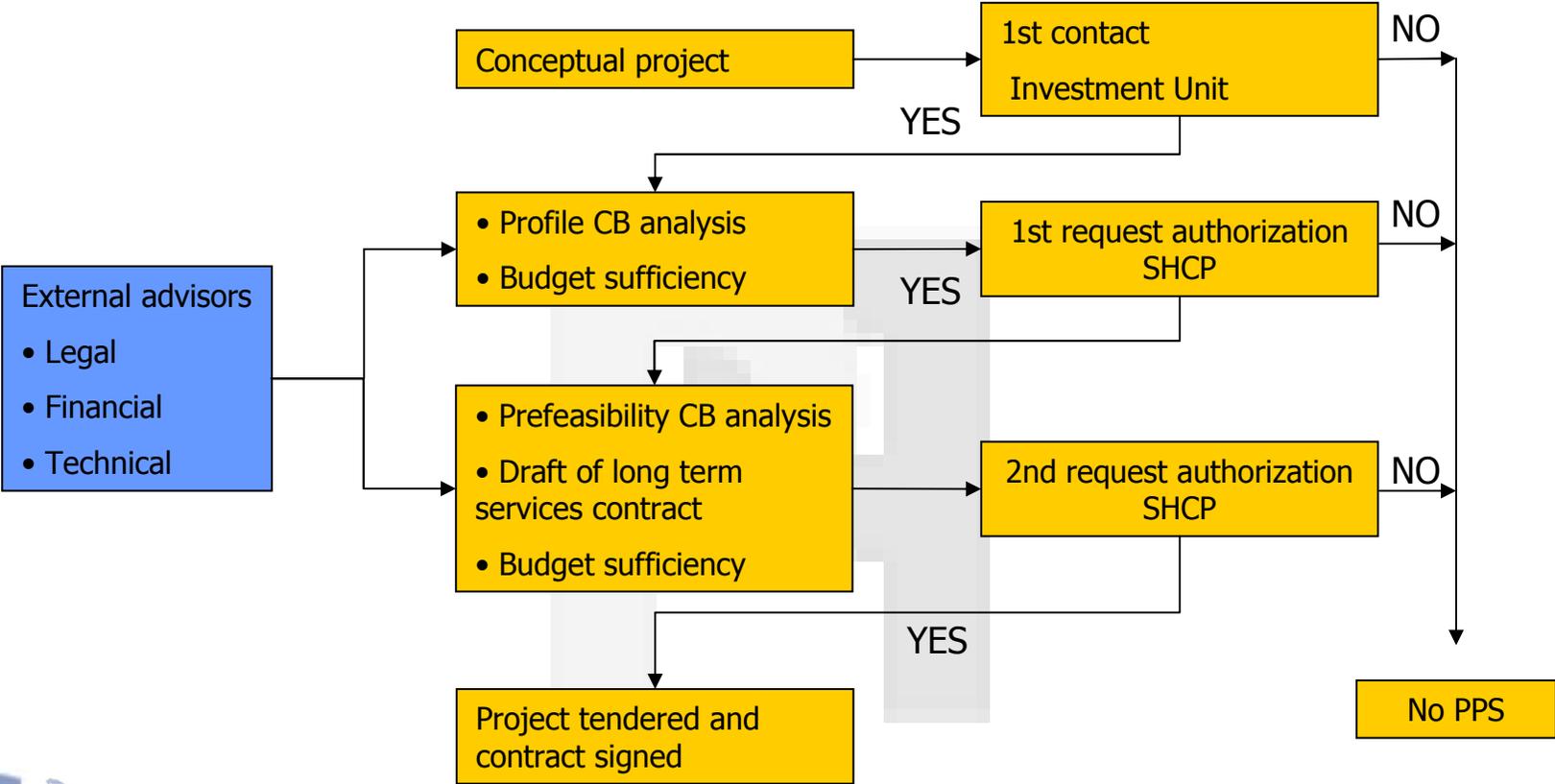
# PPS authorization procedure: SHCP



## SPECIALIZED ADVICE

## PRODUCTS

## AUTHORIZATIONS



Source: Unidad de Inversiones, SHCP



## Key elements for PPS authorization: SHCP



- **Cost-benefit analysis (“Value for Money”)**

Economic evaluation of the project to determine the added value of implementing a project through the PPS scheme, compared with the best public investment alternative available.

- **Budgetary impact (“Affordability”)**

Analysis of the financial impact of future payments commitments on the budget of the agency involved over time, and its long-term sustainability.

- **Legal feasibility**

Review of the consistency of the PPS, its service contract and other legal acts within the legal framework of the entity or unit responsible.



Source: Unidad de Inversiones, SHCP



# Private Service Contracts (PPS)

## Legal Framework



The provisions regulations to be subject to the highway PPS are:

- Law of Roads, Bridges and Federal Trucking
- Law of Acquisitions, Leases and Services of the Public Sector and its Regulation;
- Law of Budget, Accountancy and Federal Public Expenditure and its Regulation;
- Rules for the Implementation of Private Service Contract (SHCP-SFP) 2004;
- Guidelines and complementary methodologies issued by the SHCP.



Source: Unidad de Inversiones, SHCP



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# Assets utilization:

## Main characteristics:



- SCT terminates the concession of highway assets in exchange for an compensation
- SCT prepares concessions formed by existing highways with more than 10 years of continuous operation, and new highways to be constructed
- SCT grants the concessions to the private sector through public bids and pays Farac (Fonadin)
- The concessionaire is responsible to operate, maintain and exploit the existing toll roads, as well as to build and later operate, maintain and exploit the new highways in the concession



Source: SCT



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# Federal PPP's Highway Program Results



- After almost 10 years of not concessioning roads to the private sector, the model has reopened the possibility of involving private resources for highway development in Mexico
- Investors and commercial banks are participating in the sector with near investment to 8,636 billion of dollars in 22 projects
- The results of the bidding process show that participants have reduced their risk perception and that they are willing to participate in highway projects
- The participation of an increasing number of commercial banks also reveals greater confidence by the financial sector
- The PPS's model is a viable mechanism for toll free roads and toll roads development in Mexico



Source: SCT

# Federal PPP's Highway Program

## Current status



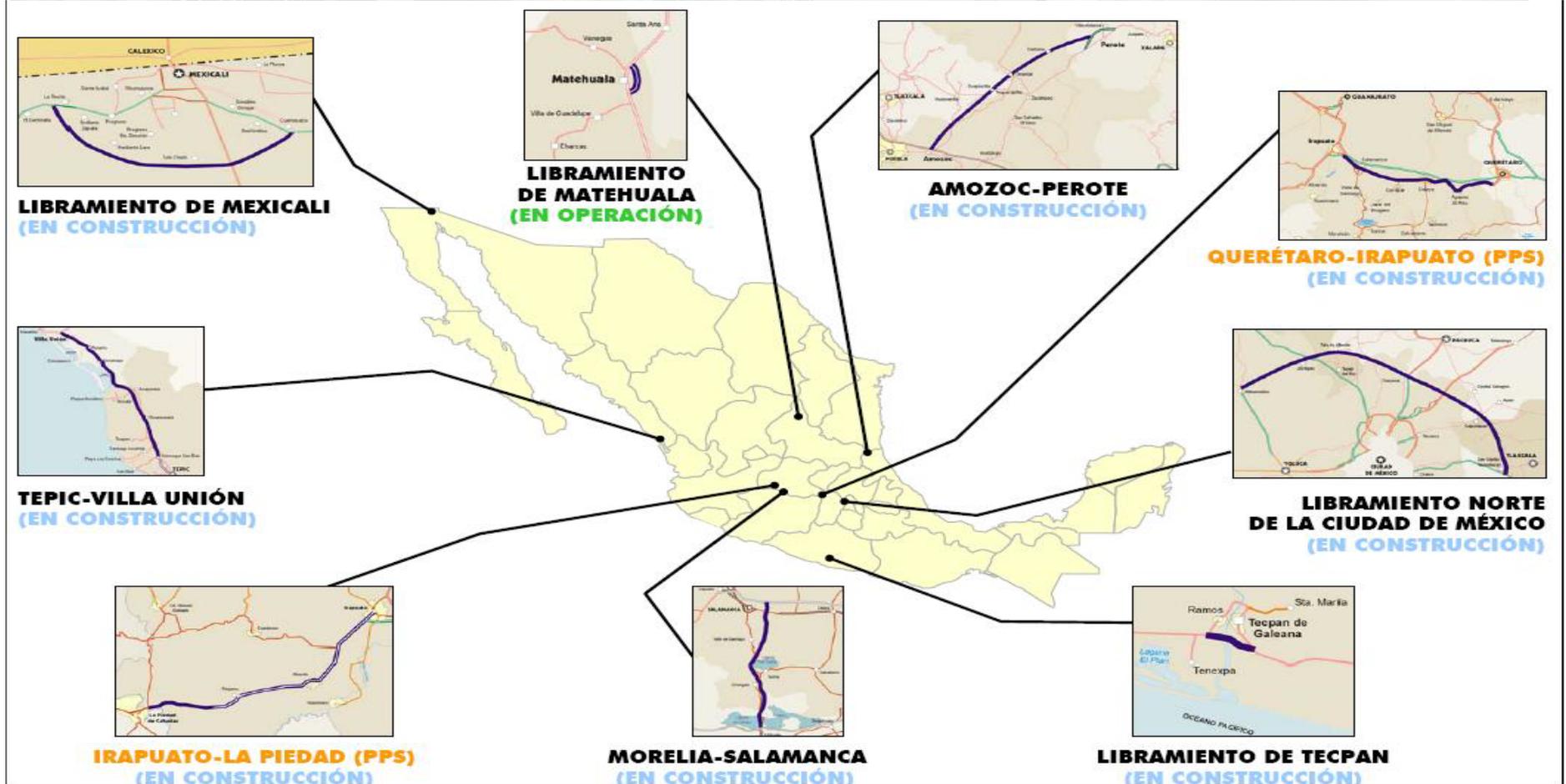
| PPS  | New Concession Scheme   | Combined Scheme (PPS+Concessions)                        | Asset utilization   |
|--|---|--|---|
| <b>Irapuato – La Piedad<br/>(Under Construction)</b>                         | <b>Matehuala Bypass<br/>(In Operation)</b>                              | <b>Río Verde-Ciudad Valles<br/>(Under Construction)</b>  | <b>First package formed by four toll roads<br/>(In operation)</b> |
| <b>Querétaro – Irapuato<br/>(Under Construction)</b>                         | <b>Morelia –Salamanca<br/>(In Operation)</b>                            | <b>Nuevo Necaxa-Tehuacán<br/>(Under Construction)</b>    |   |
| <b>Tapachula – Talismán con ramal a Cd. Hidalgo<br/>(Under Construction)</b> | <b>Mexicali Bypass<br/>(In Operation)</b>                               | <b>Mitla-Entronque Tehuantepec<br/>(Bid in Progress)</b> |   |
| <b>Nueva Italia-Apatzingán<br/>(Under Construction)</b>                      | <b>Northern Bypass of Mexico City<br/>(Under Construction)</b>          |  |   |
| <b>Aayucan-LaVentosa<br/>(In Preparation)</b>                                | <b>Amozoc Perote<br/>(In Operation)</b>                                 |  |   |
| <b>Zacatecas-Salttillo<br/>(In Preparation)</b>                              | <b>Monterrey-Salttillo and Saltillo Bypass<br/>(Under Construction)</b> |  |   |
|  | <b>Tecpan Bypass<br/>(In Operation)</b>                                 |  |   |



Source: SCT



# Awarded Projects



Source: SCT





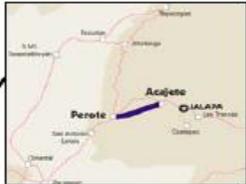
# Bids in progress



**LIBRAMIENTO DE CHIHUAHUA**



**LIBRAMIENTO DE IRAPUATO**



**PEROTE-ACAJETE**



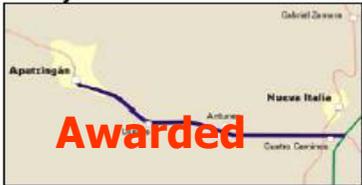
**ZACATECAS-SALTILLO (PPS)**



**ARRIAGA-OCOZOCOAUTLA**



**COMPOSTELA-LAS VARAS-PUERTO VALLARTA**



**NUEVA ITALIA-APATZINGÁN (PPS)**



**LIBRAMIENTO DE LA PIEDAD Y ACCESO A ZAMORA**



Source: SCT



# Federal PPP's Highway Program

## Project Portfolio



Expected private sector participation in these projects:

- New concessions from 2 to 19 billion USD; from 538 to 6500 kilometers.
- PPS: from 2.2 to 5.7 billion USD; ~ 1129 kilometers.
- Asset utilization: 27.5 billion USD; ~ 1500 kilometers.



Source: SCT



# PPS Program

## Project Portfolio



- Bajio Regional High Specialty Hospital
- University of San Luis Potosi
- 7 projects under study for regional hospitals and medical units
- 4 projects under study for higher education institutions
- Sports Centers
- Public safety facilities



Source: SCT



## Prevailing weaknesses



- SCT has not been able to give proper supervision to PPP's projects operation due to insufficient personnel.
- Tenders declared void for lack of clarity in the bidding terms, reduced time to prepare complex proposals.
- Problems in the timely release of rights of way, which leads to modifications to the original routes, and therefore to the executive project (design) project, thus affecting construction times and raising the costs.
- Request for additional works by communities modify the original design, affecting times and increasing costs.
- Lack of specialized technical project teams: at Federal, State and Municipal Levels.

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# PIAPPEM



The PIAPPEM is an initiative sponsored by the Multilateral Investment Fund of the Inter-American Development Bank which provides non reimbursable and technical assistance to Mexican states.

## Objective:

To help Mexican states strength their legal and institutional frameworks, as well as their institutional and technical capacity, in order to successfully implement sub-national PPP models.



# PIAPPEM

## Main Components



**Diagnostic assessment**

**Legal**

**Institutional**

**Projects**

**Disseminate lessons & best practices**



# PIAPPEM

## Legal Component



**Improving legal and regulatory framework** that provide private sector with certainty and confidence an that will allow states governments.

- **The implementation of PPP models**
- **Approvals by competent governmental authorities**
- **Multiyear budgets**
- **Payments qualify as current spending rather than public debt**
- **Methodologies for the elaboration of cost-benefit analysis and authorization procedure of the projects and contracts**
- **The implementation of clear and transparent tendering processes**



# PIAPPEM

## Institutional Component



**Definition and institutional strengthening of the government state** to increase institutional, technical, operational capacity to structure PPP projects.

- **Definition of a institutional framework**
- **Creation of a Public-Private Promotion Projects Unit (UP3/State) formed by one Coordinator and three specialists. Two of these specialists will be financed by PIAPPEM**



# Public Private Project Promotion (UP3/Sate)

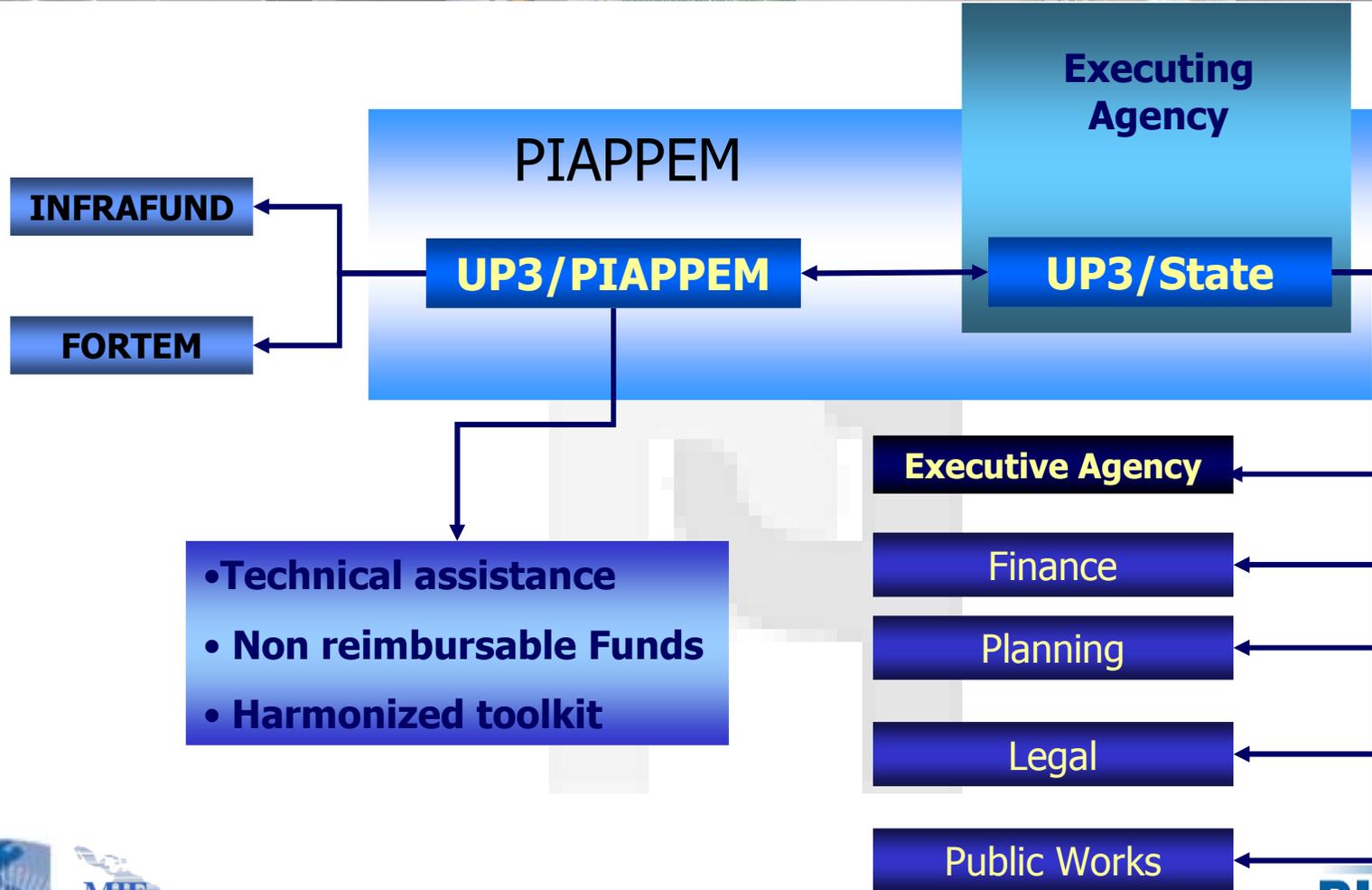
## Purposes



- To define the mechanics of interagency coordination within the state government for structuring PPP pilot project
- To identify, formulate, evaluate and prioritize a pipeline of PPP projects
- To serve as a technical counterpart during the process of design, structuring and implementation the PPP pilot project to gain institutional and technical experience
- Demonstrate and provide objective criteria for justifying institutionalization of the unit



# UP3/State Operational Scheme



# PIAPPEM

## Projects Component



### Identification of a pipeline of projects suitable for PPP arrangements and Structuring of a PPP pilot project

- Will serve as a “practical learning experience”
- The UP3/State will take the lead in identifying, structuring, promoting, tendering and awarding the pilot project
- The technical, economic and financial feasibility studies will be financed by the executing agency using resources other than those committed under this technical cooperation project



# PIAPPEM

## Technical Coordination (UP3/PIAPPEM)



- Formed by four members with experience in the development, management and structuring of PPP projects at the international, national and sub-national level.
- Will provide a kit of harmonized tools to all participating states of the program:
  - Diagnostic assessments of PPP capacities
  - Technical assistance during the process to set up PPP's
  - PPP specialization course ("Curso PIAPPEM")
  - Publications & Guidance



# PIAPPEM

## Selection of Participating States



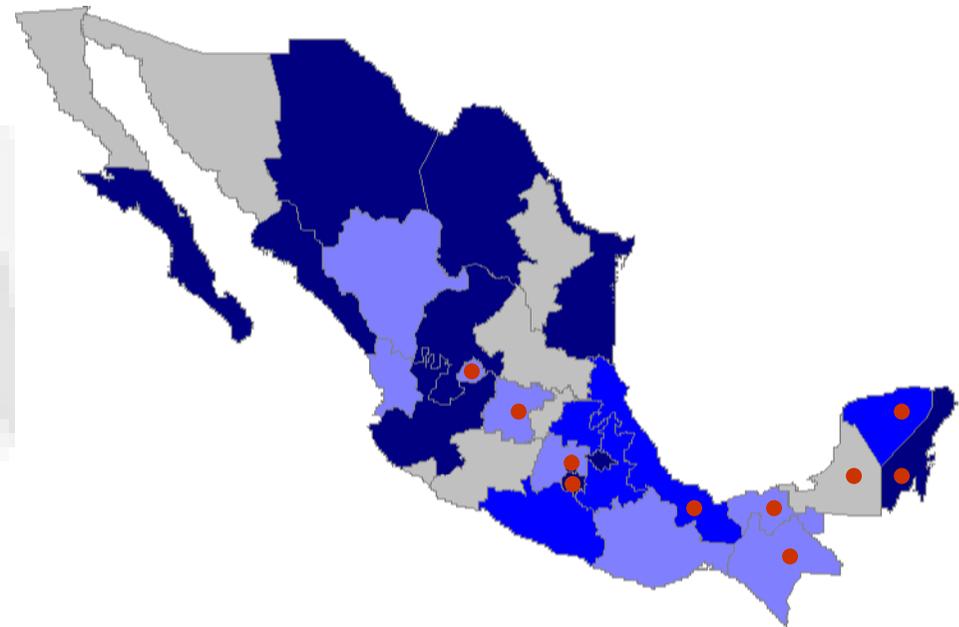
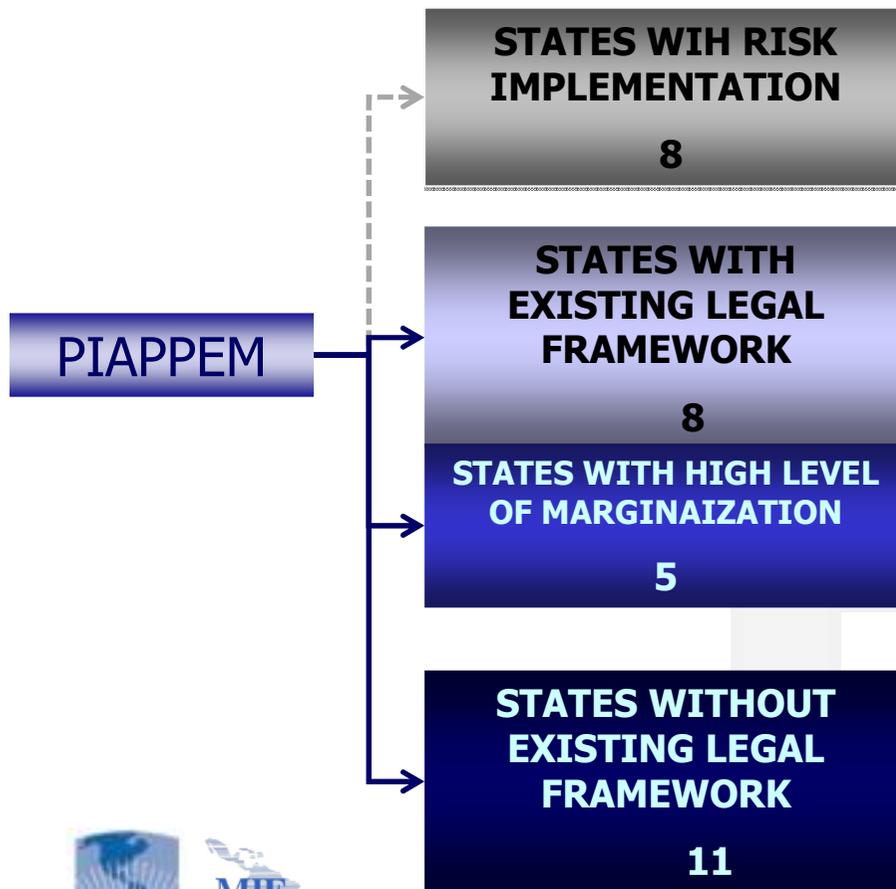
Due to:

- Limited resources of PIAPPEM and
- Different levels of political will and capacity to implement the program

A competitive selection methodology was developed based on economic impact, rating of the states debt, political conditions, real capacity for implementation and level of marginalization



# States classification according to types of support



# Types of support and Participating States

PIAPPEM is now supporting eight Mexican states



| Classification  | Adequacy of the legal framework | Definition and institutional strengthening | Structuring of a pilot project |
|---|---------------------------------|--|--------------------------------|
| States with existing legal framework<br><b>(one participating state)</b>    | ✗                               | ✓  | ✓                              |
| States with high level of marginalization                                   |                                 |  |                                |
| Individual<br><b>(three participating states)</b>                           | ✓                               | ✓  | ✓                              |
| FIDESUR<br><b>(three participating states)</b>                              | ✓                               | ✓  | ✗                              |
| States without existing legal framework<br><b>(one participating state)</b> | ✓                               | ✓  | ✓                              |

