



Lessons learned to improve a PPP project. Metro de Sevilla. Spain.

Geneva, November, 23th 2016



**PPP for
CITIES**

Specialist Centre
on PPP in Smart and
Sustainable Cities



UNEP

INDEX

- **The Specialist Centre on PPPs in Smart and Sustainable Cities. IESE Business School (PPP for Cities)**
- **Metro Sevilla Case Study**
- **Lessons learned**



The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities)

The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities)

WHO WE ARE?

Facts & figures



110

FACULTY

#1

IN THE WORLD FOR EXECUTIVE
EDUCATION PROGRAMS (FT)

130

EXECUTIVE EDUCATION PROGRAMS

5

CAMPUSES AROUND THE WORLD

5

MBA MODULES OVERSEAS

2

ASSOCIATED BUSINESS
SCHOOLS IN ASIA

33,000

PARTICIPANTS IN
ALUMNI WORKSHOPS

15

ASSOCIATED BUSINESS SCHOOLS
ON 4 CONTINENTS



The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities)

WHO WE ARE?



The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities) is a research, innovation and advisory center that aims to provide public administrations throughout the world with support in the development of projects involving collaboration between the public and private sectors

PPP for Cities task is to help cities around the world transform themselves into Smart and Sustainable Cities (SSC) by embracing the Sustainable Development Goals (SDG) of the United Nations (UN)

The center is led by **IESE Business School** and is part of the **United Nations' International Centre of Excellence on PPPs program**. It has the support and sponsorship of Barcelona City Hall and other public administrations and private companies.

The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities)

WHY PPP FOR CITIES?

**TODAY, 50%
OF THE WORLD
LIVE IN CITIES...**

**75% OF THE
POPULATION
IN 2050**

**21st century will be
the century of
Cities**

**60-80% OF
ENERGY
CONSUMPTION**

**Some challenges are new...
migration, economic crisis,**

**Others don't...environment,
poverty, climate change**

**75% OF CO₂
EMISSIONS**

Someone has to study and
find good practices.....

**ONLY 2% OF
OUR WORLD'S
SURFACE.**



Business School
University of Navarra

**PPP for
CITIES**

Specialist Centre
on PPP in Smart and
Sustainable Cities

**Smart City is the one that
has a strategy to face these
challenges**

**ICT as a main driver to improve this
strategy**

The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities)

WHAT DO WE DO?

-  **Case Studies of PPP projects & Designing guides to PPP good practices** in urban development and Smart Cities
-  Holding periodic **international conferences** on the development and transformation of cities through public-private partnerships
-  Creating **working groups** to share good practices and communities of innovation
-  **Research** thanks to all the information we collect from the Case Studies, the Working Groups
-  Developing a **database of practical case studies** and a network of specialized experts
-  Holding **seminars** on different aspects of PPP with the participation of both the public and private sectors
-  Hosting **technical workshops** and training
-  **Promoting partnerships among cities**, bringing together the public and private sectors
-  **Independent consultancy** services for public administrations seeking to develop their capabilities and PPP markets
-  **Creating standards for PPP projects** in specific areas through multidisciplinary, multicultural working groups

The Specialist Centre on PPPs in Smart and Sustainable Cities (PPP for Cities)

OUR TEAM

International, multidisciplinary, with extensive experience in public-private partnerships, design strategies for cities, smart cities and sustainable development.



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Metro de Sevilla Case Study

(case study still in working process. Expected final document: January 2017)

Metro de Sevilla Case Study

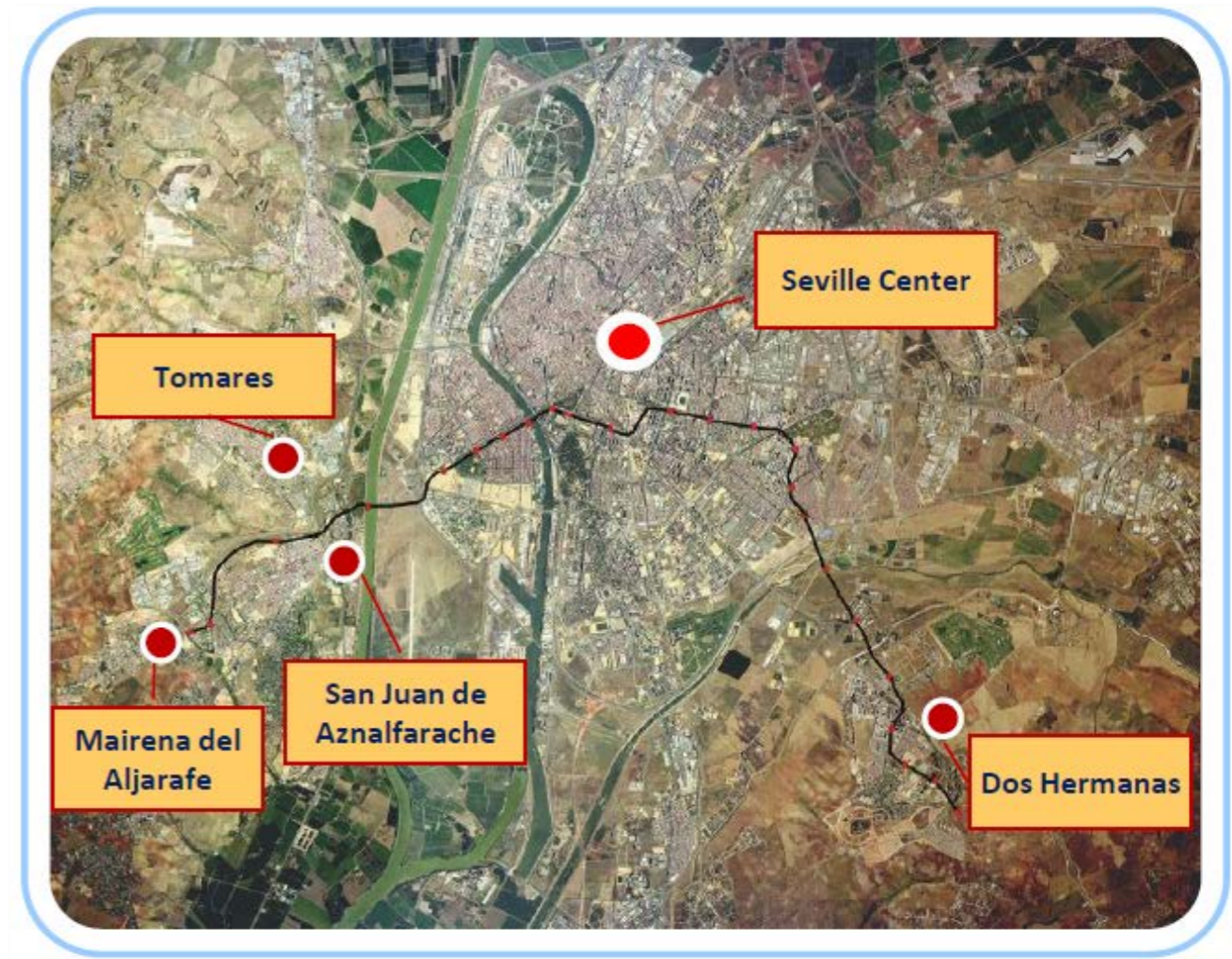
THE PURPOSE OF THE PROJECT

METRO de SEVILLA main goals:

1. **Improve metropolitan mobility** by facilitating mobility particularly from residential areas such as El Aljarafe to the city center and business areas.
2. **Facilitate access to strategic places** such as universities. Sevilla has two universities: Universidad de Sevilla and Universidad Pablo de Olavide, together with around 100,000 students.
3. Limit the use of private vehicles with the objective of **reducing traffic congestion and CO₂**.

Other goals considered:

4. **Revitalize retail commerce** in historical city districts
5. **Modernization of the image** of the city of Sevilla



Metro de Sevilla Case Study

1975's project



THE PROJECT

The **first metro project** dates from 1975.

Construction works were awarded in 1976.

The metro was only projected for Seville city.

The project however was stopped in 1983 due to construction problems, expected large over-cost, and experienced delays.

Additionally the population growth in the city resulted to be much lower than the estimates limiting the potential number of users of metro and consequently the project economic feasibility.

Seville is actually the fourth most populated province in Spain with a population of around **1.9 million inhabitants**.

2002's project



The **current project** was originally designed in 2002 to have four different lines.

The Metro project involved **four municipalities** in the metropolitan area of Seville whose City Councils agreed with the regional government, Junta de Andalucía, to finance the infrastructure.

Metro de Sevilla Case Study

BASIC PROJECT INFORMATION

Title	<ul style="list-style-type: none">• DBOFT of Metro de Sevilla. Line 1
Location	<ul style="list-style-type: none">• Sevilla. Spain
Type	<ul style="list-style-type: none">• Greenfield
Client	<ul style="list-style-type: none">• Agency Public Works Regional Government of Andalucía, AOPJA
Sponsors/Bidders	<ul style="list-style-type: none">• JV: (11,77% AOPJA– 88,23% SACYR, Dragados, Gea21, CAF, Salvador Rus López Construcciones)
Terms of Transaction	<ul style="list-style-type: none">• 35 years (3 years Construction + 32 years Operation)
Payment Method	<ul style="list-style-type: none">• Mixed Payment (Technical fare = User fee + Public subvention)
Size & Scope	<ul style="list-style-type: none">• 17 trains, 18 km, 21 metro stations• 14, 45 million passengers in 2014
Investment & Finance	<ul style="list-style-type: none">• Initial investment: 428,5 M€ (VAT not included). 23,81M€/km• Final investment: 673 M€ (VAT not included). 37,18€/km

Metro de Sevilla Case Study

TIMELINE



THE TENDER PROCESS. BIDDING

The regional government invited companies to participate in an **open tender** to design, build and operate the Metro de Sevilla under a PPP scheme in which the private company would bear the **design, build, financial and operating risk** of the project.

Procurement method used was open procedure . Previously to the tender was done the bidding companies had to set a **temporary guarantee** in favor of the regional Ministry of Public Works and Transport of 7,19 M€, the 2% of the initial estimated budget. This temporary guarantee was to prove economical capacity.

The **regional government estimated the cost at 359,9 M€, much less than the lowest bid** (423,85 M€).

Bidders	Leading company and bid	Country
Bidder # 1	Dragados Conces.: 382 million infrstr. + 41.85 rolling stock (423.85 million). Technical fare subvention: 433 m. Total: 865.85	Spain
Bidder # 2	FCC: 393 million infrstr. + 68.40 rolling stock (461.40 million). Technical fare subvention: 755 m. Total: 1,219.4	Spain
Bidder # 3	Ferrovial: 445.7 million infrstr. + 63.80 rolling stock (509.50 million). Technical fare subvention: 1.015 m. Total: 1,524.5	Spain

THE TENDER PROCESS. AWARDED BIDDER

The awarding committee decided to award the project to the Special Purpose Vehicle (SPV) Guadalquivir Sociedad Concesionaria de la Junta de Andalucía-Guadalmetro S.A. led by **Dragados Concesiones de Infraestructuras S.A.**

The **criteria** used by the committee to award the contract was based not only on the **economic bid and financial plan** (400 points) but also on **technical bid and works execution** (260 points), **technical bid for the service provision** (240 points), and **coordination commitments with other public transports** (100 points).

Those firms, which had not been awarded the project and obtained more than 500 points, will be compensated with 15,000 euros for bidding cost.

Bidders	Leading company and bid	Country
Bidder # 1	Dragados Conces.: 382 million infrstr. + 41.85 rolling stock (423.85 million). Technical fare subvention: 433 m. Total: 865.85	Spain
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Metro de Sevilla Case Study

THE BUILDING PROCESS



Over-cost:

Initial estimated cost (awarded): 428M €

Final cost (Dec. 2013): 673 M€ + 63,6%

Delay during the building process:

The construction process started on January 14th, 2004 and finished in April 1st, 2009, **more than two years after the initially expected finishing time.**

Reasons:

Several project modifications occurred. Also a bad design concerning the streams of the Guadalquivir river and the findings of archaeological remains increased time and costs.

Metro de Sevilla Case Study

THE PPP PAYMENT METHOD

In order to keep the project financial balance the **payment system should cover the capital expenditure** (the % of construction cost paid by the SPV), the **operation expenditure**, and **SPV's internal rate of return of the capital**. To reach this purpose the project included a technical fare (or technical tariff).

The total cost are paid by **user's fare** (ticket price) **plus a subventions of the administration equal to the gap between the technical fare and the ticket fare paid by users**. The contract includes yearly 100% Consumer Price Index update.

Technical fare	
Costs	Income
Capex + Opex + IRR 100% CPI update	Subvention regional government Parameter A: 36.1% Parameter B: 38.5%
	User's fare 23.7%

Regarding the payments of the regional administration to the Metro de Sevilla S.A. during operation time includes two different amounts:

Parameter A (36,1% of total 2015 revenues): **guaranteed revenue paid** by the Grantor obtained by applying the Technical Tariff (100% CPI indexed) to the **traffic projections** agreed in the concession contract

Parameter B (38,5% of total 2015 revenues): revenue paid by the Grantor obtained by **applying the Technical Tariff** (100% CPI indexed) **to actual traffic**.

Technical fare 2003	Technical fare 2009	Technical fare 2013	Increase 2003-2009	Increase 2003-2013
2.65 euros	3.52 euros	3.88 euros	32,8%	46,4%

Other Revenues (1,7% of total 2015 revenues): mainly renting of photovoltaic plants on the roof of the maintenance buildings, commercial activities (vending machines, street-display ads) and collection fee for CTAS cards.

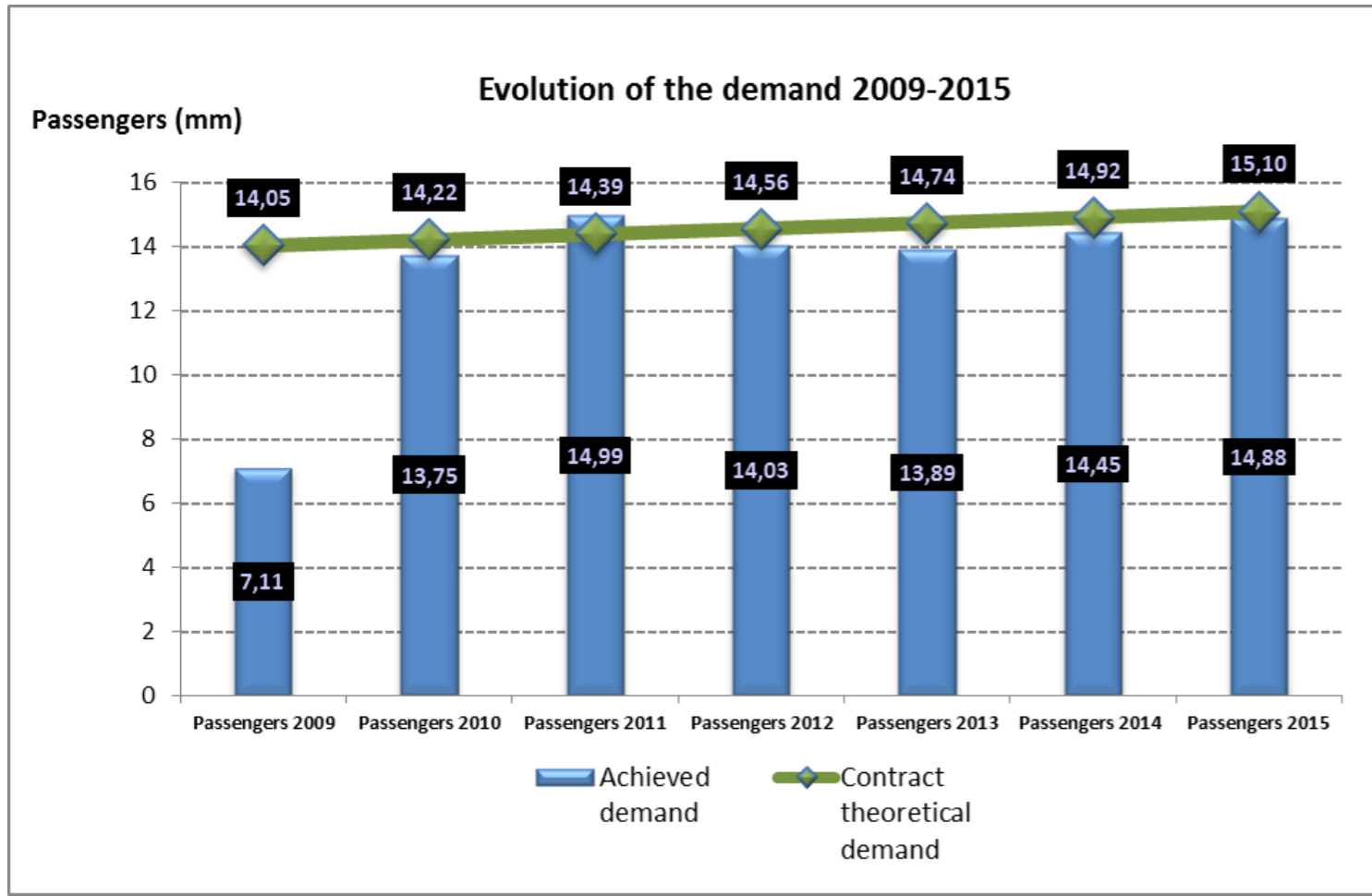
Metro de Sevilla Case Study

THE PPP PAYMENT METHOD (II)

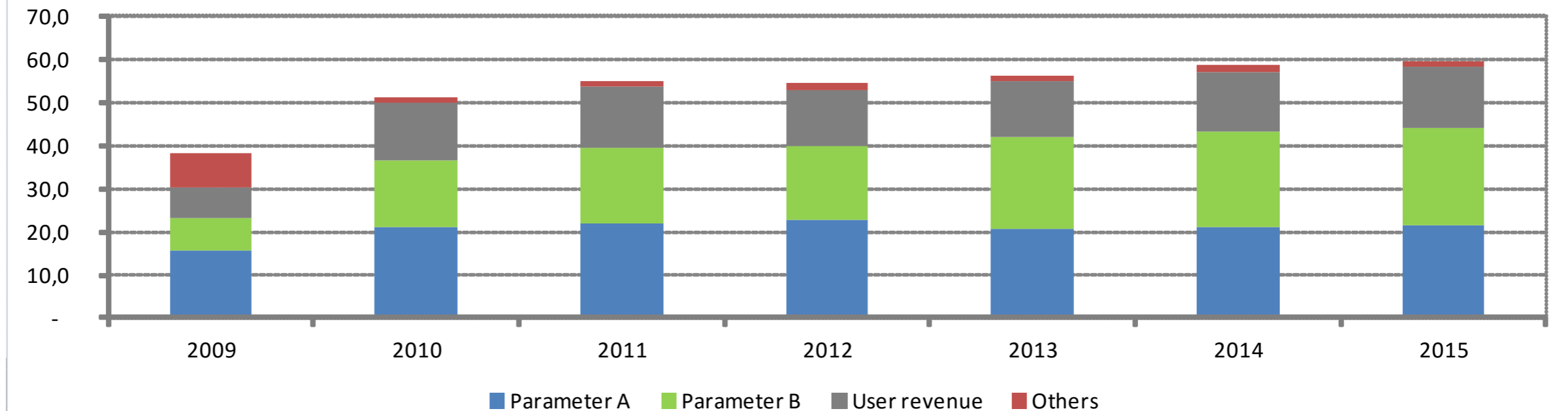
Prices for the different tickets at Seville's Metro in € (2016).

Tickets	0 jumps	1 jump	2 jumps
Simple Ticket	1.35	1.60	1.80
Return Ticket	2.70	3.20	3.60
All-day ticket	4.50	4.50	4.50
Bonometro	0.82	1.17	1.37
Bono plus 45	30.00	42.00	50.00
Bono plus transfer	0.82	1.17	1.37

The increase of the revenue is explained by the increase of the number of passengers, despite the fact that from 2013, the raise of the price of the user's tickets has been frozen (political decision).



Historical revenue performance (EURm)



Metro de Sevilla Case Study

FINANCE & FUNDINGS.

Evolution cost construction

	2003	2004	2005	2006	2007	2008	2009
Cost construction	382	382	408	439	527	549	584
Increase amount			26	57	145	167	202

The over-cost was payed by the SPV (Shareholders contributions), **with 90 M€** and by the Regional Government, **with 154M€**.

Financial structure

Initial construction cost	
	Amounts
Civil work and instalations	382
Rolling stock	46
Rests costs	
Total costs	428

Initial financing	
Amounts	
126	Grant funds from Reg. Govrn.
260	EIB Debt
42	Shareholders contributions
428	Total funding

Total construction cost	
	Amounts
Civil work and instalations	584
Rolling stock	47
Rests costs	42
Total costs	673

Total financing	
Amounts	
280	Grant funds from Reg. Govern.
260	EIB Debt
133	Shareholders contributions
673	Total funding

+ 154 M€

+ 90 M€

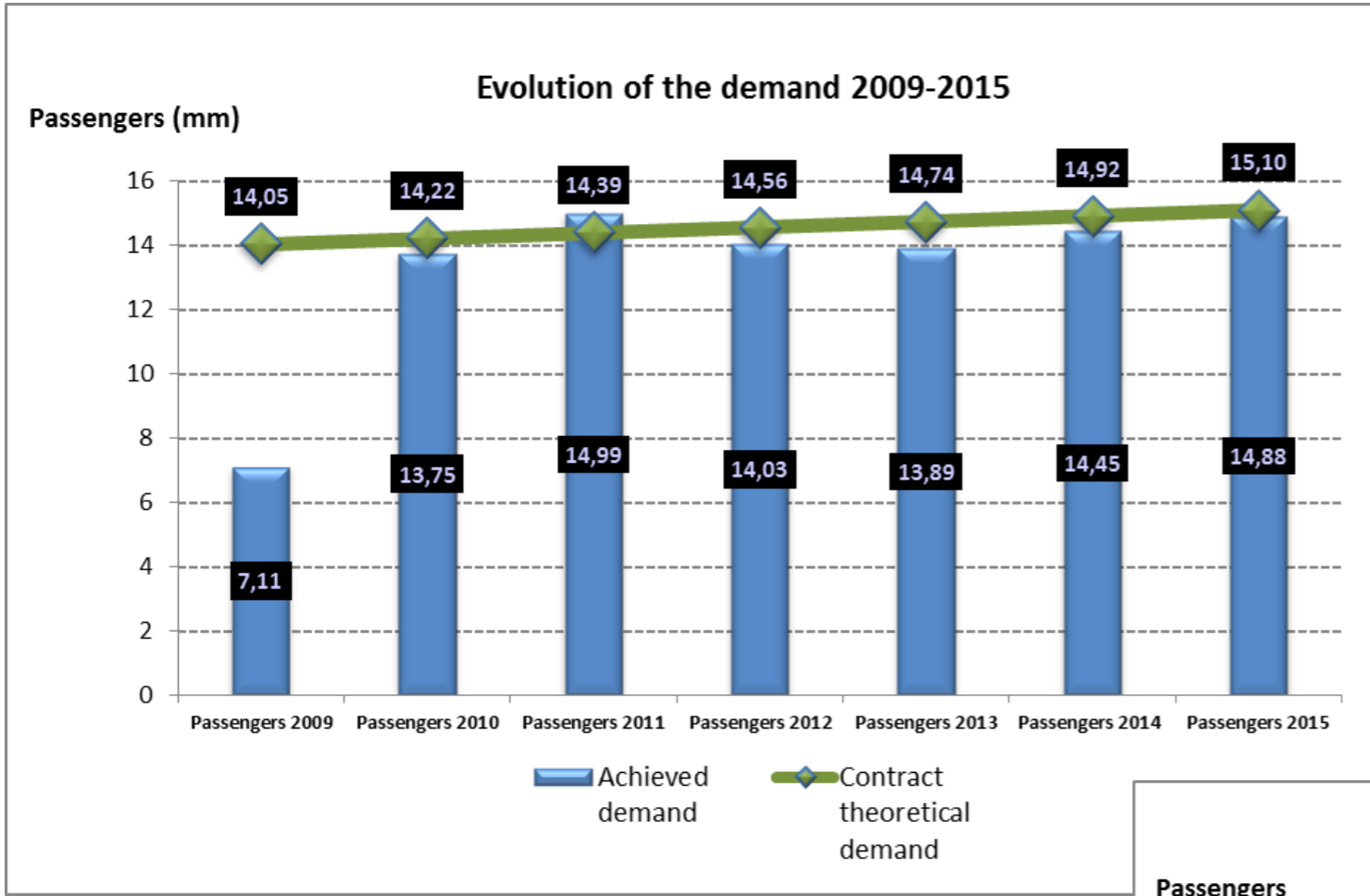
Source: Globalvia Inversiones S.A.U.

To assume the Over-Cost, the SPV and the Regional Government decided to increase the Technical Fare (increase in 2013 is for adapting to inflation)

Technical fare 2003	Technical fare 2009	Technical fare 2013	Increase 2003-2009	Increase 2003-2013
2.65 euros	3.52 euros	3.88 euros	32,8%	46,4%

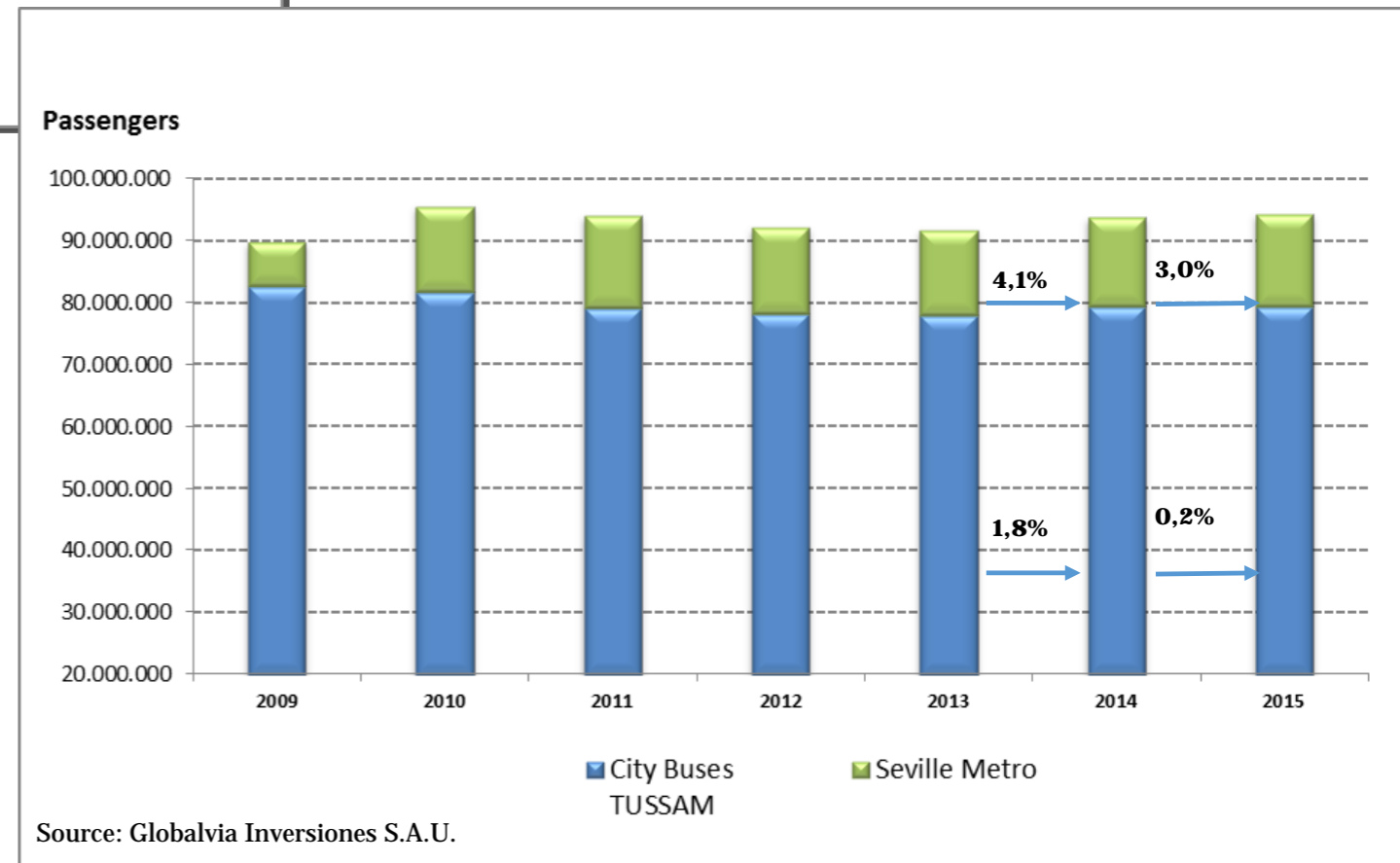
Metro de Sevilla Case Study

THE RESULTS (PASSENGERS)



- On **urban journeys**, Metro de Sevilla's demand has **gained passengers** from Buses lines & Tram
- On **intercity journeys**, demand is attracted from Intercity coaches and private vehicles.
- Demand attracted from private vehicles is due to the congestion levels
- On **interurban journeys**, demand is increasing because of outskirts population growing.

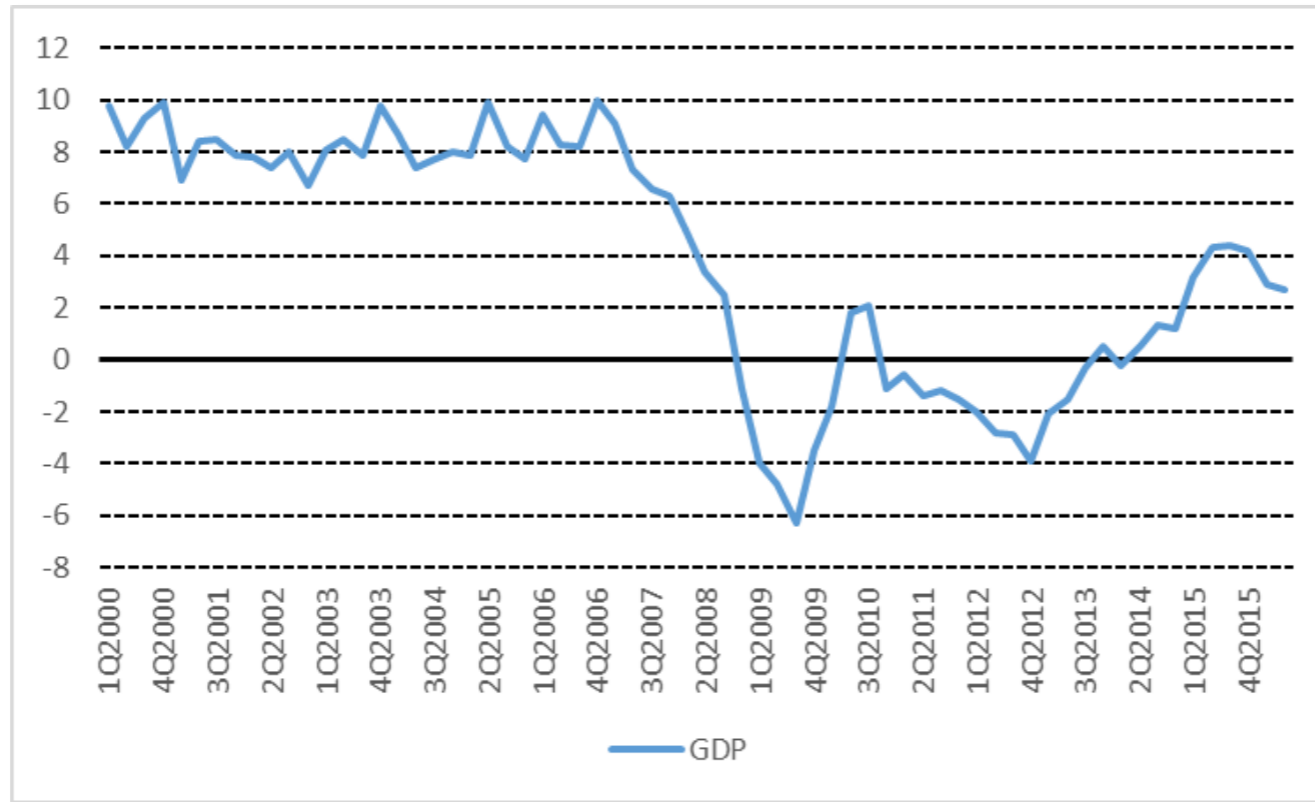
Metro de Sevilla is growing at a higher rate than City Buses



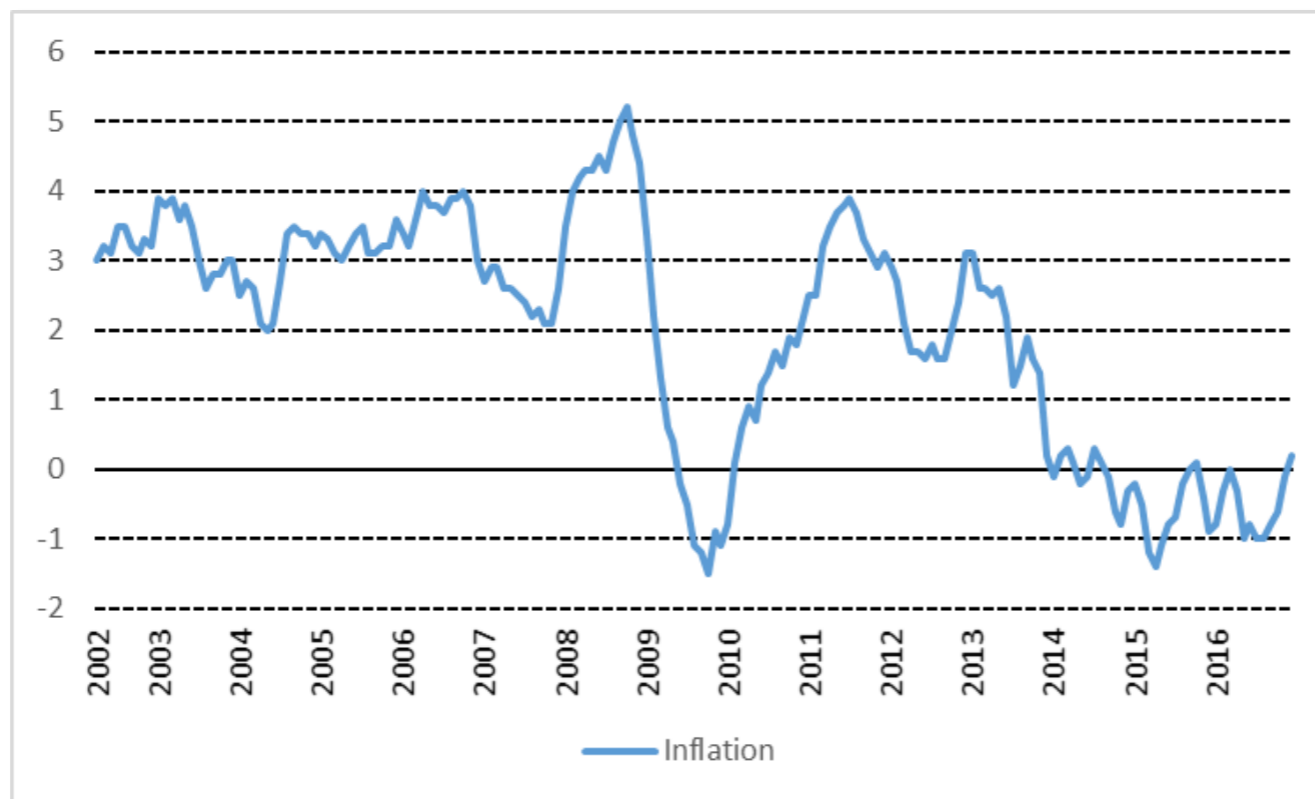
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EXTERNAL CONDITIONS (ECONOMIC CRISIS)

GDP growth in Andalucía



Inflation growth in Andalucía



The Spanish economy, including Andalucía economy, experienced an extended period of economic growth that ended abruptly in 2008 due to the impact of the international financial crisis. In Spain, the sudden lack of credit in the international financial markets, led to the bust of the housing bubble, and a drastic reduction in civil works.

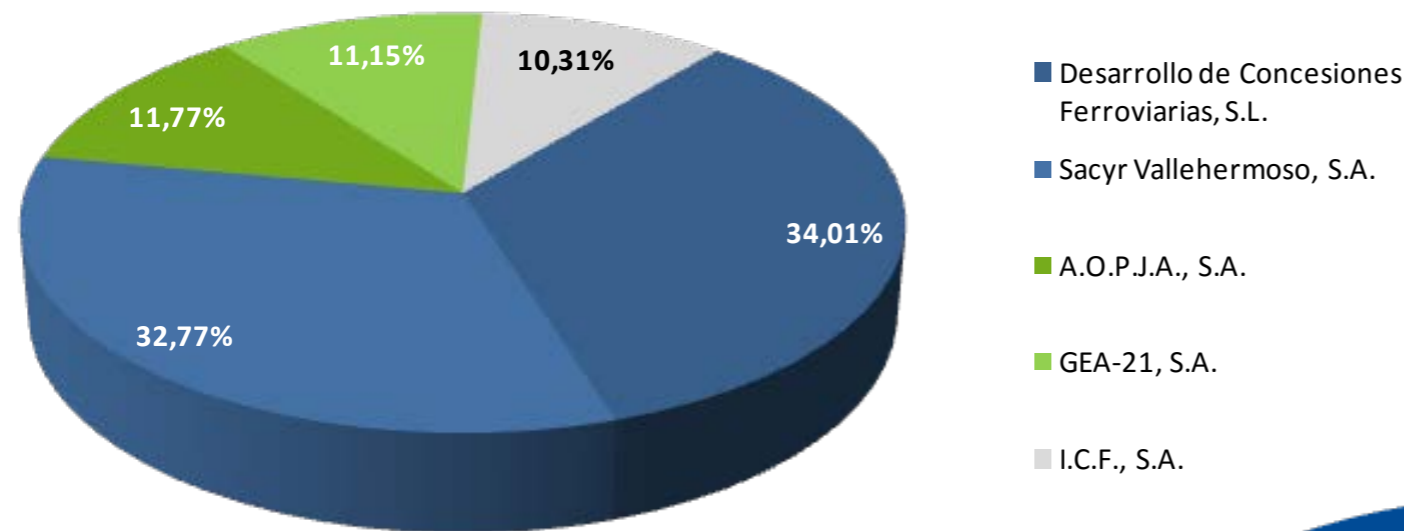
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SPV STRUCTURE & EVOLUTION

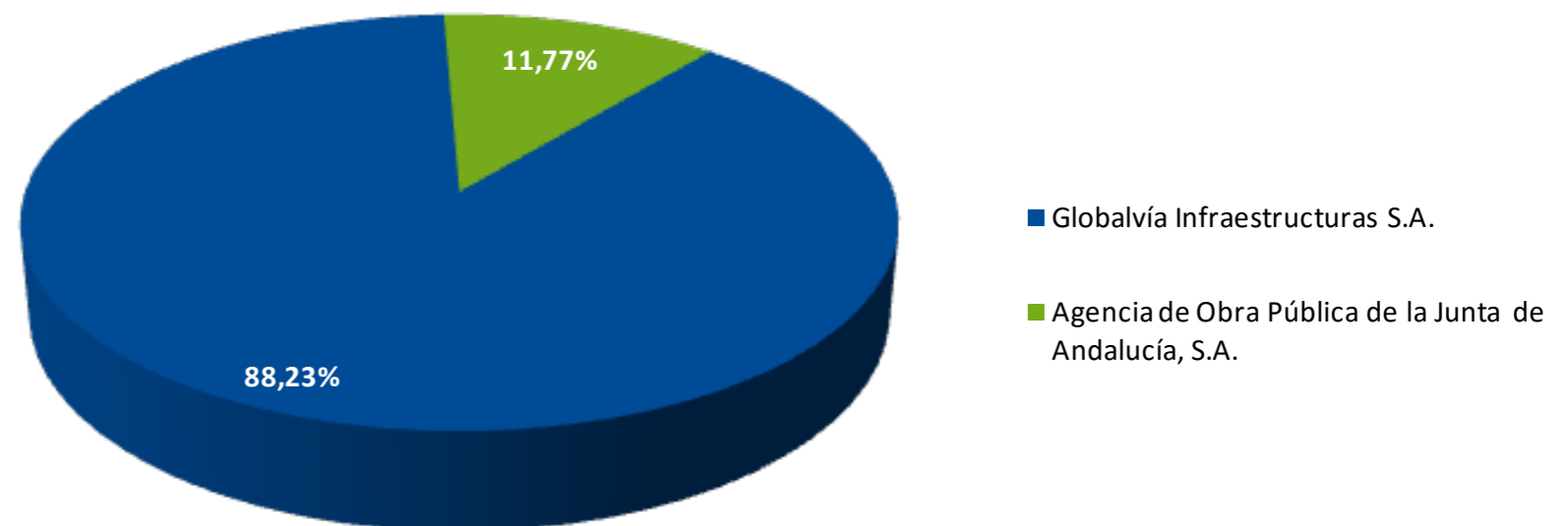
Before 2014, 88.23% of the capital was held mainly by construction companies that were highly affected by the deep economical crisis in Spain and the lack of new public works.

In 2014, Globalvia became the main shareholder after paying 177 million euros for the 88.23% of the capital. The other shareholder was the regional public agency, Agencia Obra Pública de la Junta de Andalucía (11.77% shares).

Formers Shareholders



Current Shareholders



On 10 March 2014

Metro de Sevilla Case Study

THE "NEW OWNER". GLOBALVIA

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MEXICO

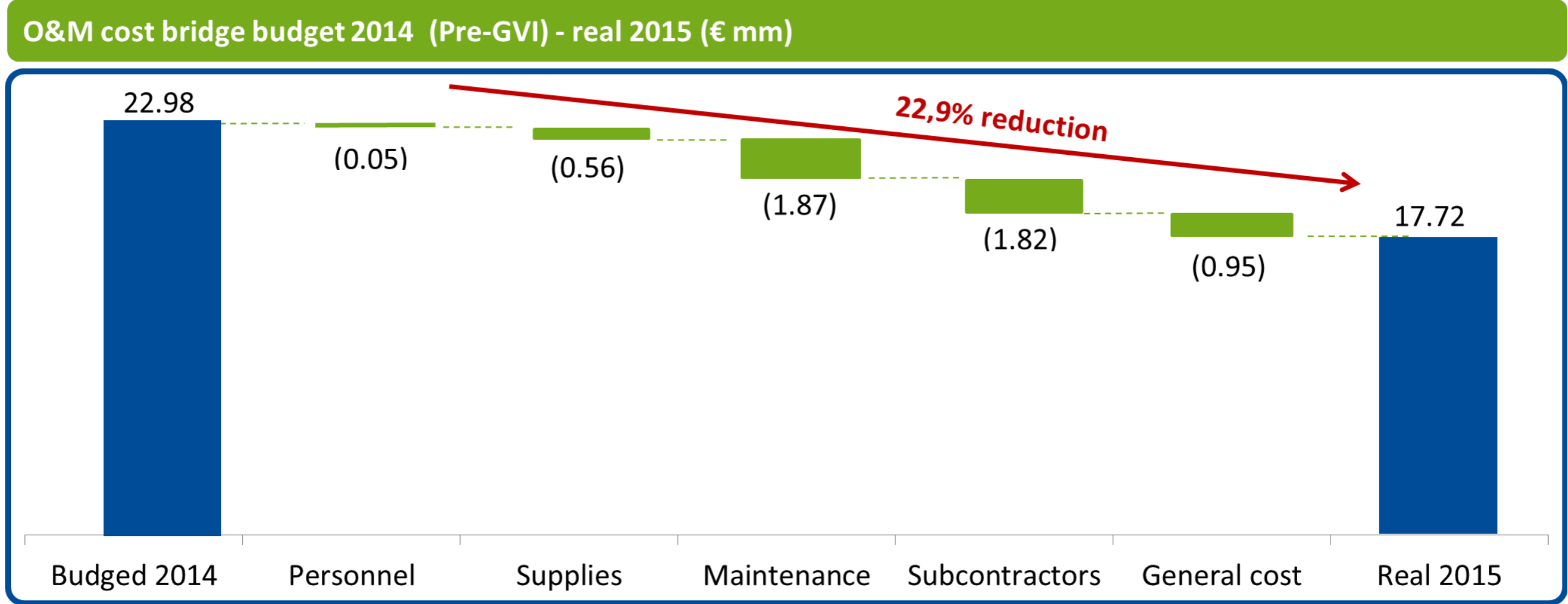
Monte Pelvoux, 220 Int 404
Edificio Virreyes
Col. Lomas de Chapultepec
Del. Miguel Hidalgo
11000 Mexico D.F.
Tel. +52 55 52763430

- GLOBALVIA is a worldwide concession management leader
- Specialized on mobility PPPs: highways and urban rail
- It operates PPPs such as:
 - Metro Sevilla
 - Tramway Barcelona
 - M45 urban Highway in Madrid
 - Metro Barajas (from Airport to city center in Madrid)
 - Autopista del Aconcagua (Chile)
 - Highway Pocahontas (USA)
 - Urban highway of Dublin

Metro de Sevilla Case Study

THE "NEW OWNER". IMPROVING OPERATIONAL COST

- Total cost reduction is being implemented improving O&M processes.
- Strong operating synergies are achieved while maintaining outstanding quality ratios.
- External maintenance contracts renegotiation and some systems performed in-house.



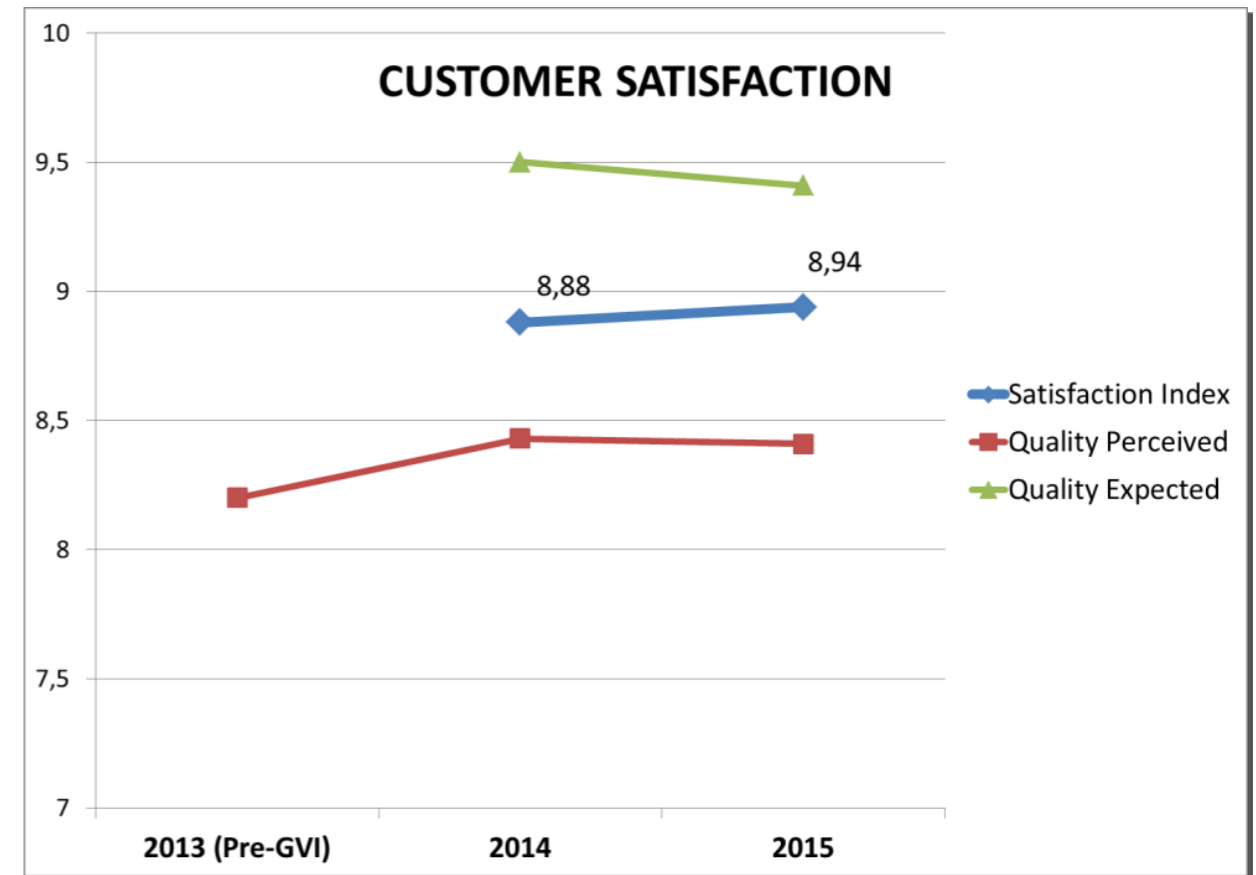
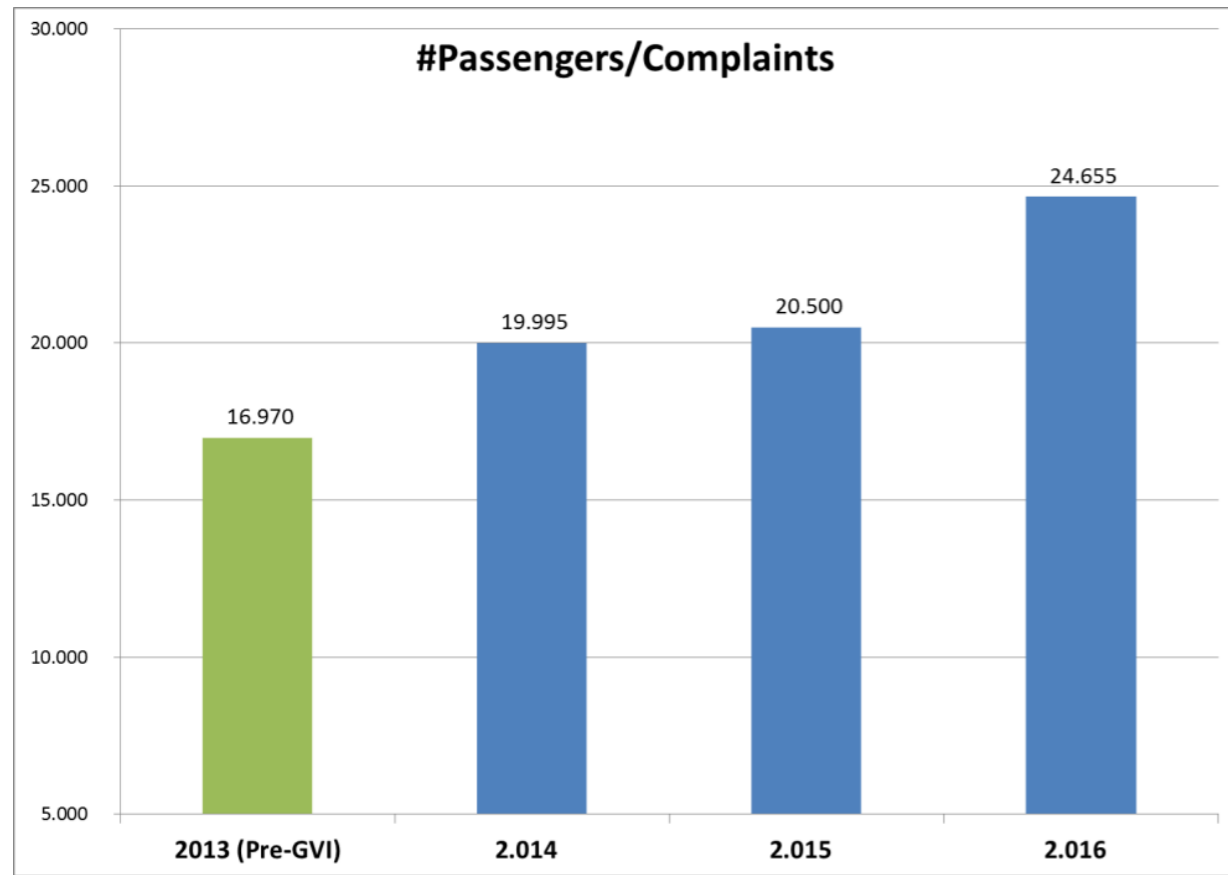
Source: Globalvia Inversiones S.A.U.

Achieved: 22,9% O&M cost reduction in 2 years.

Metro de Sevilla Case Study

THE "NEW OWNER". IMPROVING CUSTOMERS SATISFACTION.

- The number of registered complaints is declining, while demand is increasing.
- Customer satisfaction is growing, according to annual quality surveys



Source: Globalvia Inversiones S.A.U.



Lessons Learned

Lessons learned

PPP FOR CITIES EVALUATION

Línea 1 Interurbana - Metro de Sevilla

Sustainable Development Goals	Línea 1 Interurbana - Metro de Sevilla	
	High Impact	Moderate impact
1 No Poverty		
2 Zero hunger		
3 Good Health & Well-being		
4 Quality Education		
5 Gender Equality		✓
6 Clean water & Sanitation		
7 Affordable & Clean Energy		✓
8 Decent work & Economic growth		✓
9 Industry Innovation & Infrastructure	✓	
10 Reduced inequalities		✓
11 Sustainable cities & communities	✓	
12 Responsible consumption & production		
13 Climate action	✓	
14 Life below water		
15 Life on land		
16 Peace, Justice & Strong Institutions		
17 Partnership for the Goals	✓	

Línea 1 Interurbana - Metro de Sevilla

Smart City Evaluation	Línea 1 Interurbana - Metro de Sevilla	
	High Impact	Moderate impact
1 Human capital		
2 Social cohesion	✓	
3 Economy	✓	
4 Public management		✓
5 Governance		
6 Mobility and transportation	✓	
7 Environment	✓	
8 Urban planning	✓	
9 International impact		
10 Technology		✓

Línea 1 Interurbana - Metro de Sevilla

PPP Methodology	Línea 1 Interurbana - Metro de Sevilla	
	Existing	Details
1 Procurement method & Bidding process		
1.1 Value for Money analysis or CBA*	No	
1.2 Real Competition for the Contract	Yes	3 Bidders
1.3 Tender evaluation committee	Yes	Internal
2 Contractual issues & incentives		
2.1 Bundling	Yes	DBFOT
2.2 Quality verifiable	Yes	Service interruptions / punctuality
2.3 Externalities	Yes	Positives
2.4 Duration		35 years
3 Risk, finance & payments		
3.1 Construction & Operation Risk	Transferred	If contract enforced
3.2 Demand Risk	Partially transferred	
3.3 Policy & Macroeconomic Risk	Partially transferred	Eco activity / Govt. fiscal constraints / adjustments for inflation
3.4 Payment Mechanism		Technical fare (Users + Public subvention) Metro de Sevilla S.A.
3.5 Special Purpose Vehicle (SPV)	Yes	Globalvia (88.2%) & Agencia Obra Pública de la Junta de Andalucía (11.8%)
4 Governance		
4.1 Transparency	No	
4.2 Participatory decision-making process	Not observed	
4.3 International/External monitoring	Partialy	Junta de Andalucía oversee the activity of Agencia Obra Pública (contracting authority)
4.4 Legal framework	Not at the beginning	Royal decree 1098/2001, Regulation for Law of contracts with PPAA
4.5 Distribution of tasks	Contracting	Agencia Obra Pública
	Monitoring compliance	Agencia Obra Pública
	Renegotiation	Agencia Obra Pública & Junta de Andalucía
	Regulation	Junta de Andalucía
	Operation & Quality	Metro de Sevill S.A. & Agencia Obra Pública
5 Construction process		
5.1 Cost Overrun	Yes	Construction 637,6%
5.2 Delayed deadlines	Yes	More than two years (designed by parts, project modification, cosntruction mistakes)
6 Potential Benefits		
6.1 Possible Price Certainty	Yes	If contract enforced
6.2 Transfer of responsibilities to private	Yes	If contract enforced/ partially
6.3 Scope & Incentives for innovation	Yes	
6.4 Savings in public payments	No	Technical fare increased due to construction overcost
6.5 Life-cycle approach	Yes	If contract enforced
6.6 Incentive to be on time	Yes	

ACHIEVEMENTS

- **Increasing the number of users of Public transport.** Previously to the start of the Metro service (2009), public transport had less than 19 million trips per year while in 2015 the number of trips per year almost reached 25 million.
- **Reducing the use of private transport.** 44.1% of Metro de Sevilla users will be using private transport if there was no metro service.
- **Increase of commuting.** About 86% of the Metro users on week days are commuting to the office or University in many cases benefiting from the intermodality tickets.
- **The retail commerce has been revitalized** in the historical city districts.



REACHING UNSDG

METRO de SEVILLA may have reached the following UN SDGs:

Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation

Goal 11: Make cities inclusive, safe, resilient and sustainable

Goal 13: Take urgent action to combat climate change and its impacts

Goal 17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.



Lessons learned

IS IT A GOOD PPP?

Negative



- Just one line out of 4
- Total over-cost (+63,6%)
- Delay in the building process (+2 years)

Positive



- Reaching UNSDG
- Improved quality of life and mobility in the center of Sevilla, while improving retail commerce
- Created 300 new permanent jobs.

WHAT HAVE WE LEARNED?

- **Prepare a good project** (that will reduce over-costs)
- **Improve the bidding process** (More precise estimation of the construction cost by the contracting authority)
- **Need of better Governance and cost control** (that will reduce the delays and over-costs)
- **Public authorities must have previous knowledge** (over-cost could have been financed through the capture of increases on commercial and residential value around metro stations).
- **An industrial Partner is crucial** to improve performance, as seen with Globalvia.

Lessons learned

METRO DE SEVILLA. A SUCCESSFUL PPP PROJECT



At the end, because it reached some UN SDG, and therefore improved quality of life for residents in Sevilla metropolitan area, we can deduce that it was a successful PPP project.

Thanks for your attention



PPP for Cities, an ICoE at UNECE

&

an International platform of collaboration between public and private sector in cities arena



UNECE

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