



## **I-SEM Senior Stakeholder Forum**

## The Spanish Electricity Market

María Luisa Huidobro

15th May 2015

#### TABLE OF CONTENTS



- 1. Villar Mir Group
- 2. Energy consumption in Villar Mir Group
- 3. Activity of GVM in energy markets: VME & Enérgya VM
- 4. The Liberalization process in a nutshell
- 5. Energy investment decisions in VME
- 6. Market design and key decisions
- 7. Requirements for becoming market participants
- 8. Types of supply contracts offered by VME and Enérgya VM
- 9. VME & Energya VM Supply activity: types of contracts
- 10. Market agent contracts for renewable generators
- 11. Upsides and Downsides
- 12. Main challenges

#### 1. VILLAR MIR GROUP



 Villar Mir Group (GVM) is a multi-sectorial holding with presence in the construction, fertilizers, ferroalloys, real state and energy sectors.



DIVISIONAL structure, with full autonomy and no group constrains

### 2. ENERGY CONSUMPTION IN VILLAR MIR GROUP



- The consumption of energy (gas and electricity) of the companies of GVM is 9 TWh, similar to the energy consumption of 6 CCGT of 400 MW.
  - The fertilizers facilities are very intensive in terms of gas (6.2 TWh).
  - The ferroalloys facilities are very intensive in terms of electricity (2.5 TWh).
- The installed electricity capacity of the consumptions of GVM is more than 400 MW, with a load factor of 6,300 annual hours.

	Voltage (kV)	Power (KW)		
Cee's Factory	220	138.000		
Dumbria´s Factory	220	130.000		
Sabon's Factory	220	74.000		
Boo's Factory	220	84.000		
Monzon's Factory	220	57.000		
Total Ferroatlantica's Group	220	353.000		

	Voltage (kV)	Power (KW)
Avile's Factory	132	7.200
Avile's Terminal	22	640
Huelva's Factory	50	22.000
Plaster Huelva	15	600
Palos´s Factory	66	10.000
Puertollano´s Factory	6	12.000
Sagunto's Factory	20	500
Sefanitro	30	6.800
Total Fertiberia	-	59.740

#### 2. ENERGY CONSUMPTION IN VILLAR MIR GROUP



- Until 2004, gas and electricity were acquired under fixed prices (tariffs) contracts.
- When these tariffs disappeared, the Group decided to establish bilateral contracts with gas and electricity utilities.
- The experience with these bilateral contracts led the company to take the decision of acquiring gas and electricity under supply contracts indexed to market references:
  - Electricity daily market price (OMIE) +ancillary services.
  - NBP (UK) in gas, as a Spanish market has not been developed yet.
- In some cases, the companies of the Group consider the possibility of partially hedging their consumption:
  - Q4 and Q1 products in gas.
  - Q3 and Yr products in electricity.
- Since this market decision was adopted, the energy cost of the Group has been optimized.

## 3. ACTIVITY IN ENERGY MARKETS: VME & ENÉRGYA VM



## **Energy Division of GVM: VME & Enérgya VM**

Additionally, Villar Mir Energía & Enérgya VM develop the following activities:

- In Spain:
  - Gas and electricity supply and trading.
  - Electricity production:
    - First independent producer of hydroelectric energy in Spain: 12 plants with a total installed power of 200 MW (600.000 MWh)
    - Wind farm projects: 150 MW wind farm project under development and other projects in process of acquisition up to 70 MW.
    - Other projects: 800 MW thermal (CCGT) and hydro.
  - Energy management: bidding in the market for renewable generators and cogenerations.
  - Project of an exempted regasification plant in Huelva.
- In Germany:
  - Electricity trading.
  - Energy management: bidding in the market for renewable generators.
- Participation in European electricity and gas interconnection systems.
- Electricity trading in USA.

#### 4. THE LIBERALISATION PROCESS IN A NUTSHELL



## Liberalization process and main milestones

- Law 54/1997 of Spanish Electricity System established the legal base to implant a new electricity system whose central item was the creation of an electricity wholesaler market. The price settled in such a market determines, in general terms, the remuneration of the electricity producers.
- The definition of the Spanish electricity pool is established in Royal Decree 2019/1997 of 26 December. The last objective of the pool is to introduce competition in the generation activity with the consequent effect over electricity prices.
- Since 1 July 2003, retail electricity markets in Spain were fully liberalised as, since that date, all consumers (including domestic consumers) had the right to choose their supplier.
- Since 1 July 2008, high voltage consumers are no longer supplied at a regulated end-user tariff.
- End-user electricity regulated prices disappeared for all consumers on 1 July 2009. From this moment on, a last resort tariff was put in place for consumers with a contracted load capacity below 10 kW.
- From 2015 onwards, small consumers (below 10 kW) may remain in the regulated market with the new system called the Voluntary Price for the Small Consumer (PVPC in Spanish), with no need to do anything on their part.

#### 4. THE LIBERALISATION PROCESS IN A NUTSHELL



## Liberalization process and main milestones

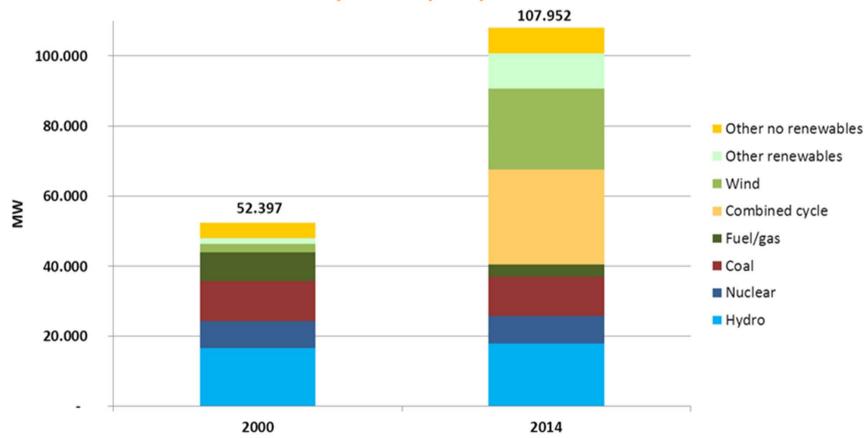
- OMIE manages the daily and intraday markets for the whole of the Iberian Peninsula, and its operating model is the same as the one applied by many other European markets.
  - In January 1998 OMIE began operations for the Spanish market, and in July 2007 it extended them to cover the whole of the Iberian Market.
  - In 2014, OMIE managed transactions amounting to almost 11 billion euros, accounting for more than 80% of the electricity supplied in Spain and Portugal (there are over 800 agents operating in OMIE's markets, being involved in a total of over 13 million transactions per year).
  - The Iberian Market is one of Europe's more liquid ones.
- OMIP is the MIBEL derivatives exchange that ensures the management of the market jointly with OMIClear, a company constituted and totally owned by OMIP, which executes the role of Clearing House and Central Counterparty of operations carried out on the market.
  - OMIP was constituted on June 16th 2003
  - OMIP: i) contributes to the development of the Iberian electricity market (an
    efficient derivatives market is crucial to the development of MIBEL, giving
    participants the conditions to become more competitive in the electric sector,
    independent of size, geographical location or type of activity); ii) promotes
    Iberian Reference Prices; iii) supply clients with efficient risk management
    tools.

### 4. THE LIBERALISATION PROCESS IN A NUTSHELL



## **Evolution of the capacity of generation in Spain**

#### Installed power capacity 2000 vs 2014



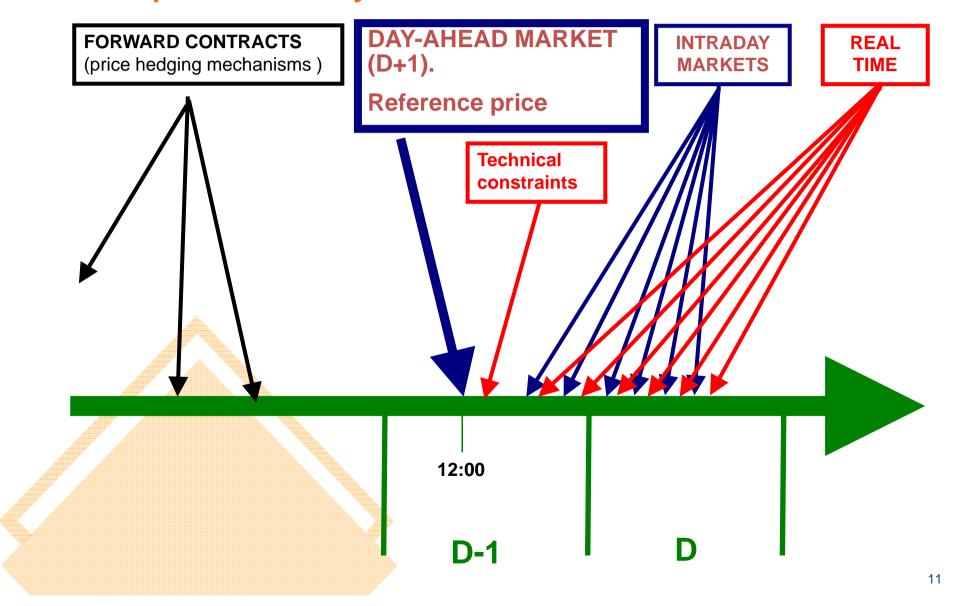
## 5. ENERGY INVESTMENT DECISIONS IN VME



- VME is looking forward to invest in wind power, hydro and CCGT generation.
- VME has decided to build both wind and hydro facilities.
- The main condition is to obtain a sufficient rate of profitability without considering any subsidy.
- There are now projects under development, considering current market prices.
- Regarding CCGT facilities, VME would be open to buy old plants to be used in the future capacity markets and ancillary services auctions.
- As a conclusion, a liquid, open and efficient market is essential for new investment projects.

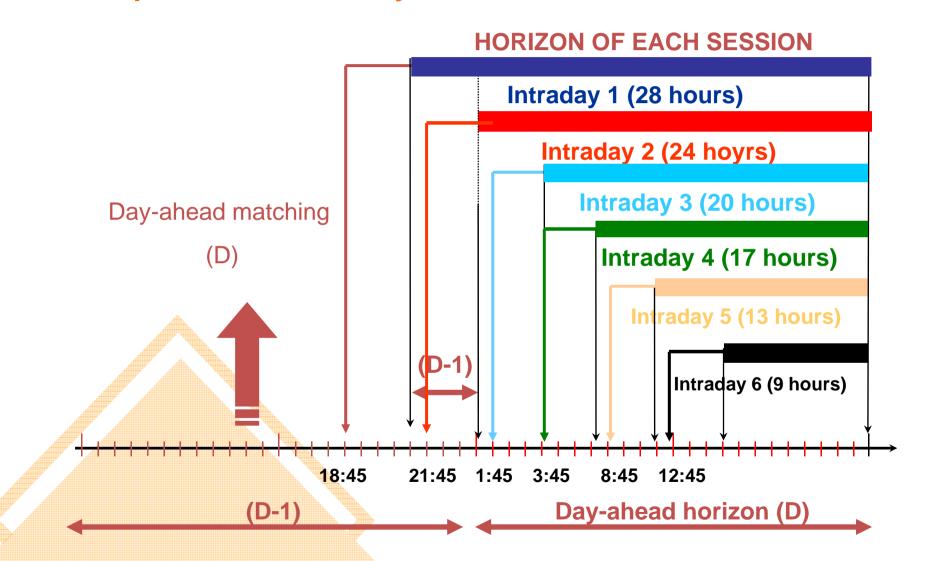


## Market processes: Day-ahead Market





## **Market processes: Intraday markets**



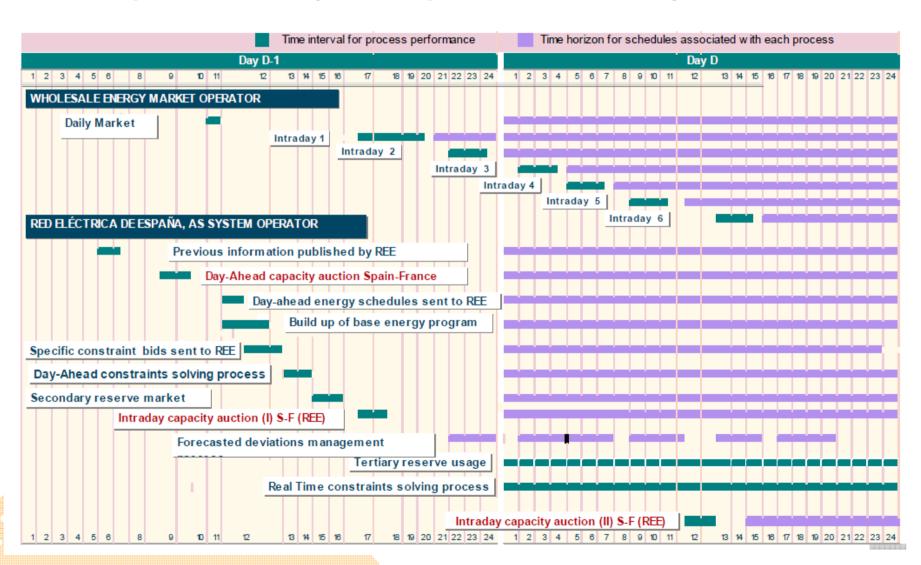


## Market processes: System operation - ancillary services

- The System Operation Services are balance mechanisms of energy and power capacity managed by the Grid Operator (Red Eléctrica de España, REE) to ensure the electricity supply under suitable conditions of security, quality and reliability. These services are managed simultaneously to the spot market, which is composed by daily and intraday auctions.
- The System Operation Services are:
  - Ancillary services: services which are necessary to ensure the electricity supply under the suitable conditions of security, quality and reliability.
    - **Primary control (not remunerated up to date):** automatic response provided by the generator against frequency disturbances.
    - **Secondary control:** its objective is to resolve the deviations between generation and consumption and its temporary action horizon stretches from 20 seconds to 15 minutes.
    - **Tertiary control:** its objective is to resolve the deviations between generation and consumption and the restitution of the secondary control reserve which has been used.
    - Voltage control (not remunerated under market conditions): service whose aim is to guarantee the suitable voltage control in the nodes of the transmission grid.
  - Service restoration (not remunerated up to date): it restores the generation capacity of the system
     after an incidence in the network.
  - Deviation management: Its objective is to resolve the deviations between generation and demand higher than 300 MW which could appear in the period between two consecutive intraday market sessions.
  - Technical restrictions and Real-time technical restrictions: mechanism consisting in the resolution
    of the technical grid restrictions identified in the Daily Base Operating Schedule or during real-time
    operation of the system.
  - Additional upward power reserve: mechanism that manage those technical restrictions associated to the existence of insufficient energy reserve to raise in the system.



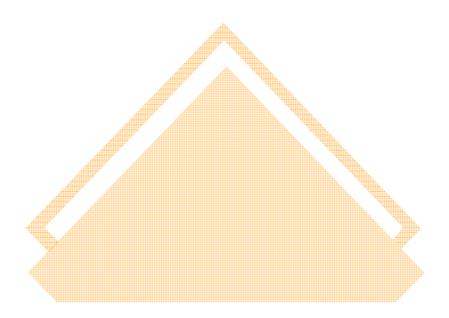
## Market processes: System operation - ancillary services





# Market processes: ancillary services markets managed by the System Operator (REE)

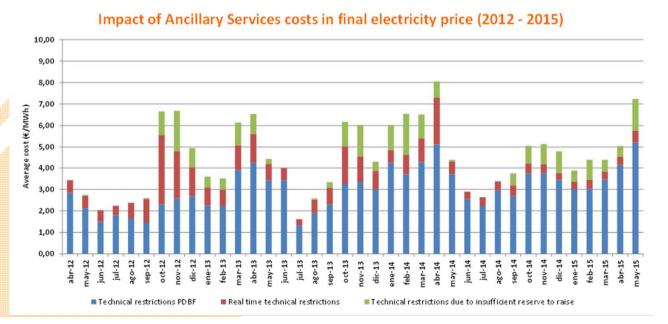
- Nowadays, ancillary services markets in Spain are dominated by a few agents.
- Renewable energies are practically not allowed to provide ancillary services to the electricity system.
- Consumers are not allowed to participate in ancillary services.
- Demand aggregators do not exist in Spain.





# Market processes: ancillary services markets managed by the System Operator (REE)

- Thus, it is necessary to open the participation of renewable energies to ancillary services in order to:
  - Increase the potential incomes of renewable energies obtained from the ancillary services markets, supporting their integration in energy markets.
  - Reduce the ancillary services costs to consumers, through the increase of competitiveness in those markets.
- This is a problem for consumers, as the final electricity cost increases significantly.





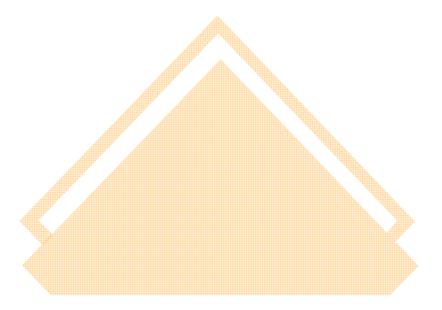
## **Key design decisions**

- 1. Allow the coexistence of big agents, with dominant positions, and independent small agents.
  - Form the sellers side; At a given hour of the previous day (currently 10 a.m.) all producers need to know what they are going to do the next day with their plants, and they also need to declare the situation:
    - Unavailable (SO verification and Regulator inspections)
    - Declare a bilateral contract (prior to 11 a.m.)
    - Send a bid to the day-ahead market
  - The DAY-AHEAD market is not a mandatory market, but it is a "physical" energy market
  - From the buyers side. Different options for obtaining their energy at the same hour.
  - The market agent activity for renewables and cogeneration is limited to utilities that can only represent their own plants. There is a limit of 10% share for a market agent to represent third parties.
- 2. The market price is the reference price for forward contracts and for all kind of electricity transactions.
  - Market liquidity
  - Accessibility.



## **Key design decisions (cont.)**

- 3. Price convergence inside the internal market.
  - Market coupling model +
  - Capacity auctions.
- 4. Last resort tariff for domestic consumers is the market price.
- 5. The complete integration of renewables in ancillary services markets will be a milestone in the future.
- 6. In addition the creation of a gas hub will be essential for the correct participation of thermal units in the electricity market.



## 7. REQUIREMENTS FOR BECOMING MARKET PARTICIPANTS



## Requirements for daily and intraday markets

- Market participants are undertakings authorized to act directly in the electric power market managed by OMIE as buyers and/or sellers of electricity. The following can be market participants:
  - Electric power producers.
  - Resellers.
  - Qualified direct consumers in the market.
  - Representatives.
- In order to operate on the market, it is necessary to register as a market agent. Prior prescriptive requirements are to be fulfilled in order to acquire the status of market agent. Main steps for doing so are as follows:
  - 1. Obtaining the status of subject of the electric power system (it needs to be done through Spain's national system operator –REE-, pursuant to article 4 of Royal Decree 2019/1997, which organizes and regulates the electrical power production market). This process can be carried out parallel to the process of obtaining the status of market agent.
  - 2. Completing a preliminary first form requested by OMIE: general information from the applicant wishing to acquire the status of market agent.
  - 3. Through the OMIE's "agent's private Website", which is accessed exclusively by having an electronic certificate issued by OMIE, providing specific information, which varies depending on the type of agent and the manner in which they participate in the market.
  - 4. Having expressly adhered to the "rules and conditions of operation and settlement of the daily and intra-day electrical power production markets" by executing the corresponding adhesion contract.

## 7. REQUIREMENTS FOR BECOMING MARKET PARTICIPANTS



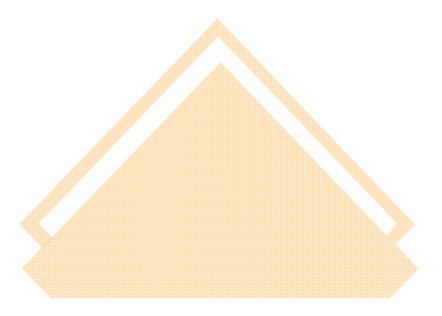
- 5. Particular requirements depending on the type of market Participants:
  - In the case of producers, being the owner of installations that are properly registered in the Administrative Registry of Electrical Power Production Installations of the Ministry of Industry, Energy and Tourism.
  - In the case of retailers, direct market consumers and recharge managers, having presented a authority statement and a start of activity statement to the Spanish Ministry of Industry, Energy and Tourism. (Refer to Royal Decree 198/2010 of 26 February, which implements certain provisions relative to the electricity sector to what is provided in Law 25/2009, relative to the modification of certain laws to adapt them to the law of free access to services and exercising this right, and Royal Decree 647/2011, dated 9 May, which regulates the charge management activity of the system for carrying out energy recharge services.).
  - **In the case of representatives**, prove their status as representative of any of the previous entities.
- Additionally, to be able to make purchases in the market, sufficient guarantees
  must be in force at all times, which acceptance will correspond to the Market
  Operator (currently accepted forms of collateral: bank guarantees, line of credit,
  assignment of collection rights and insurance guarantee).
- In the case of applicants that intend to carry out their activities from Portugal, the actions before REE and the Spanish Ministry referred to, must be carried out before the Portuguese entities responsible for the equivalent functions.

## 7. REQUIREMENTS FOR BECOMING MARKET PARTICIPANTS



## Requirements for ancillary services

- Currently there is a test for the general participation in ancillary services markets.
- In addition, there are redundant tests in order to be allowed to take part in each ancillary service.
- Our experience with the hydro plants is that this testing process is duplicated for all the services with the exception of Secondary Regulation Market.
- There is a reform ongoing based on the Royal Decree 413/2014, which opens the ancillary markets to renewable and cogeneration facilities.



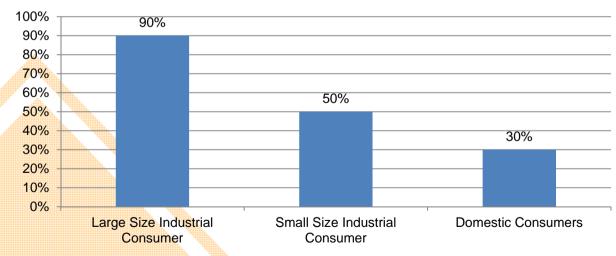
## 8. TYPES OF SUPPLY CONTRACTS OFFERED BY VME AND ENERGYA VM



## Electricity supply contracts: indexed prices or fixed prices

- There are different types of supply contracts offered by VME & Enérgya VM depending on the size of the consumer:
  - For large consumers: Indexed price with/without TPA.
  - For SMEs: Indexed price with TPA or Fixed Price including TPA (discount of regulated price).
  - However, more than 90% of the contacts offered by VME & Energya VM are indexed contracts.





 Large size industrial consumer pay a market price component which represents 90% of total electricity costs.

## 8. TYPES OF SUPPLY CONTRACTS OFFERED BY VME AND ENERGYA VM



- Royal Decree 216/2014 was enacted last year, setting the Last Resort Tariff for consumers. This price is indexed to daily market and ancillary services prices, plus TPA costs.
- Energya VM had been offering this type of contracts to all workers of the Group.
- Although this new last resort prices is in the good direction, the full benefits of this contract cannot be obtained for the following reasons:
  - Independent retailers cannot compete with the utilities for domestic consumers.
  - Existing share of Last Resort Retailers owned by the incumbents.
  - Switching.
  - Monopoly in meter reading activity.

## 9. MARKET AGENT CONTRACTS FOR RENEWABLE GENERATORS



- There are different types of contracts:
  - Indexed market prices + fee
  - Hedging
  - Fixed price contracts
  - Energya VM is waiting for the approval of the new legislation to start participation of wind and cogeneration facilities in ancillary services auctions.
  - There are some hydro plants and cogenerations that are allowed in these markets. This is the case of the generation of the Group, which takes part in tertiary control and deviation control markets.

#### 10. UPSIDES AND DOWNSIDES



#### UPSIDES

- Very liquid day ahead market session + Very liquid intraday auctions.
- Transparency: Day ahead and real time full transparency on detailed unit scheduling + Full disclosure of bids/offers with 90 day-delay + Comprehensive system information from TSO.
- Day ahead market coupling with the European market + Long term and intraday explicit access to the capacity of the France-Spain interconnector.

#### DOWNSIDES

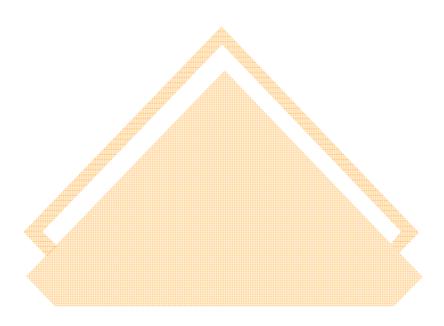
- Legal certainty: i.e renewable generation (OVERREGULATED + Increasing amount of legal actions filed against the Spanish government)
- Overwhelming cumulated historic tariff deficit
- Still large market share concentration among the three major incumbents: Local market power yielding from network congestion + Strong market barriers to independent new entrants in balancing markets
- Ancillary services markets remain closed to demand agregators and renewables.
- It does not exist a gas hub yet.

#### 11. MAIN CHALLENGES



- Sustainability of renewable support schemes
  - Strong entry barriers to independent new players in balancing markets (a potential alternative to traditional support systems)
  - Legal certainty
- Demand side management on the line (current TPAs and Smart metering do not send the adequate market signals to consumers + European directive on self-consumption not yet transposed)
- Interconnection (it has been enhanced but still room for improvement): taking advantage of the oversized generation assets portfolio.
- Keep on fostering the liquidity in future markets.







## **General description**

- Grupo Villar Mir (GVM) is one of the largest privately owned Spanish industrial groups, with a very important international presence and a diversified portfolio of activities.
- Positioned 15th "Actualidad Económica" Turnover Ranking in 2012 among all Spanish companies.
- The largest and most significant subsidiary of Grupo Villar Mir is Obrascón Huarte Lain (OHL), one of the biggest construction and concessions corporations in the world, in which the Group is voluntarily limited to own 61 % of the shares . . .
- . . . and the Group also has an important presence in several other industrial sectors and countries, besides OHL.



## **Group Highlights**

- **FAMILY-OWNED:** 100% owned by its founder (Mr. Juan-Miguel Villar Mir) and his three sons. Founded in 1987.
- INDEPENDENT: No shares are held by any other institution, either financial or of any other nature.

#### INDUSTRIAL:

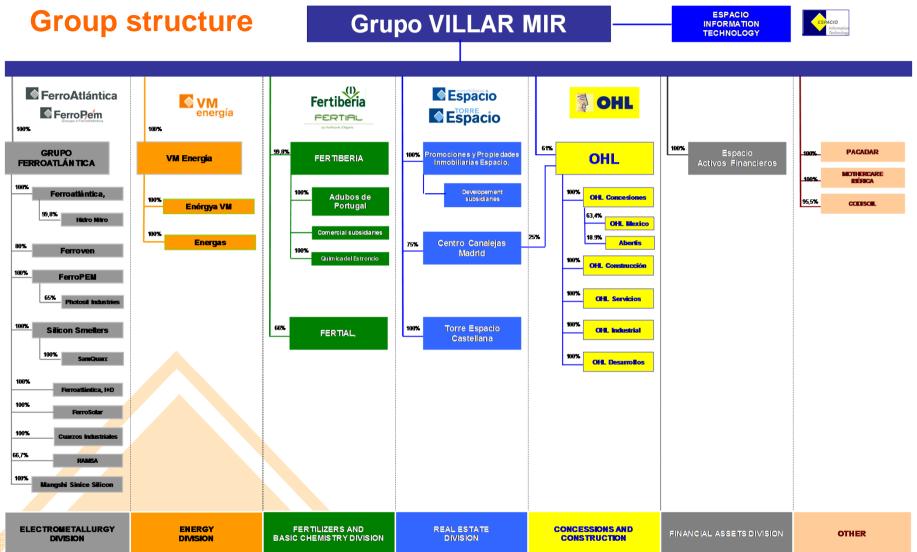
- Basic industrial sectors, construction, concessions, real estate and services.
- Long-term action criteria. No sales of companies.

#### DIVERSIFIED

#### DECENTRALIZED:

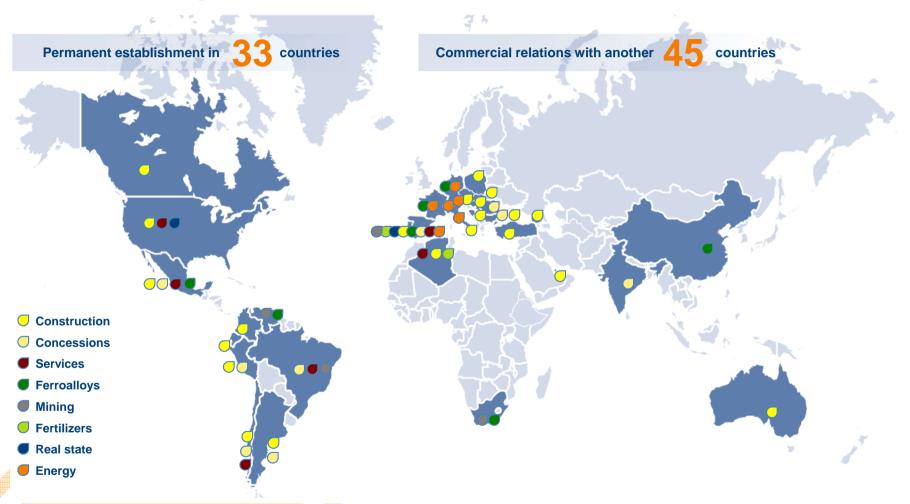
- No Group constraints: each company is fully responsible for its Balance
   Sheet and Income Statement.
- The Group is designed as the sum of individual companies with their own entity and great autonomy. Very reduced corporate structure.
- INTERNATIONAL: Permanent presence in 33 countries on 5 continents.
- Ongoing activities in R&D&i.







## **International presence**



- 13 countries in EUROPE: Germany, France, Czech Rep, Slovakia, Croatia, Bulgaria, Bosnia, Montenegro, Romania, Portugal, Poland Russia & Spain
- 10 in AMERICA: Canada, the US., Mexico, Colombia, Peru, Brazil, Chile, Venezuela, Honduras & Panama
- 7 in ASIA: China, Turkey, Qatar, Kuwait, Azerbaijan, Kazakhstan & Saudi Arabia
- and 2 in AFRICA: Algeria & South Africa and 1 in OCEANIA: Australia



## Main Figures 2013 (EUR M)

Ferro Atlántica











			•				
	Electrometallurgy Division	Energy Division	Fertilizers Division	Real Estate Division	Concessions and Construction	GRUPO VILLAR MIR Consolidated	
	EUR M 13 vs 12	EUR M 13 vs 12	EUR M 13 vs 12	EUR M 13 vs 12	EUR M 13 vs 12	EUR M 13 vs 12	
TURNOVER	1.048,4 (4,6%)	598,4 +47%	1.106,1 (10%)	51,2 (28%)	3.684,2 (8,6%)	6.421,5 (5,0%)	
EBITDA	103,9 +1,3%	45,2 +22%	147,7 (54%)	(52,4) n.d.	1.215,1 +15%	1.482,4 (2,2%)	
EBIT	51,7 (1,3%)	40,3 +22%	98,2 (64%)	(58,3) n.d.	1.031,4 +56%	1.184,9 +17%	
ЕВТ	17,0 +42%	36,3 +20%	78,9 (64%)	(107,4) n.d.	627,9 × 2,2	640,8 +39%	
NET INCOME	8,5 (47%)	<b>25,2</b> +19%	(2) <b>45,2</b> (65%)	(61,6) n.d.	270,4 (73%)	<b>270,8</b> <sub>(1)</sub> (76%)	
CASH FLOW	<b>56,0</b> (15%)	30,1 +20%	127,8 (48%)	(60,2) n.d.	588,6 (61%)	726,7 (60%)	
NET attributable INCOME	8,5 (47%)	<b>25,2</b> +19%	45,2 (65%)	(61,6) n.d.	165,1 (73%)	165,5 <sub>(3)</sub> (78%)	

<sup>(1)</sup> Before OHL minority interests.

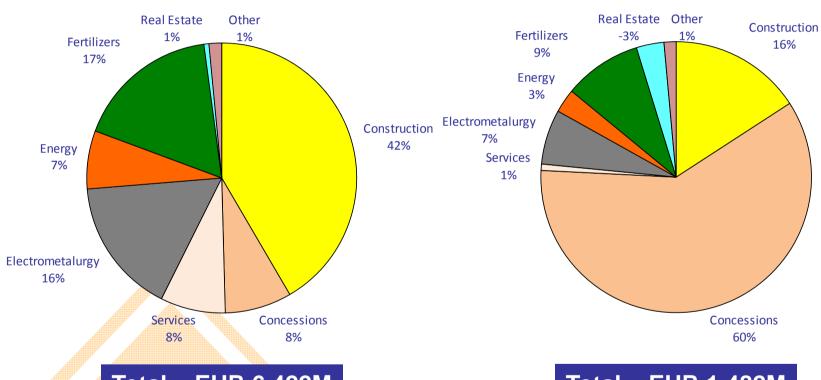
<sup>(2)</sup> After minority interests at Fertial.

<sup>(3) 2012</sup> Net attributable Income includes EUR 24.5M after-tax profits obtained from the sale of Inima.



## Sales and EBITDA breakdown by activity 2013

SALES EBITDA



**Total = EUR 6,422M** 

**Total = EUR 1,482M** 



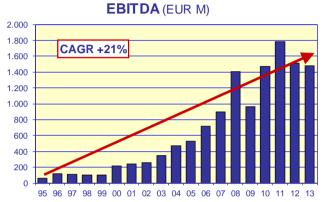
## Balance Sheet as of Dec 31st, 2013 (EUR M)

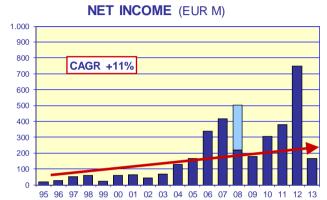
	Electrometallurgy Division		Energy Division		Fertilizers Division		Real Estate Division		Concessions and Construction		GRUPO VILLAR MIR Consolidated	
	Dec 31, 13	13 vs 12	Dec 31, 13	13 vs 12	Dec 31, 13	13 vs 12	Dec 31, 13	13 vs 12	Dec 31, 13	13 vs 12	Dec 31, 13	13 vs 12
Non Financial Fixed Assets	413	(55)	68	(3)	451	(3)	796	+39	7.930	+532	9.872	+522
Investment in Group Co.	0	0			0		(37)	(11)	2.034	+974	1.971	+954
Financial Fixed Assets	46	2	14	(5)	15	(76)	2	(20)	194	+29	492	+134
Fixed Assets	459	(53)	81	(7)	466	(78)	761	+7	10.158	+1.536	12.335	+1.610
Inventories	340	(35)	4	+3	215	(28)	422	+18	173	+29	1.189	+23
Debtors	282	(25)	227	+25	314	(23)	130	(42)	2.319	(19)	3.109	(140)
Cash and Cash Equivalents	40	(21)	38	(5)	304	+58	7	+2	1.084	(19)	1.475	+0
Current Assets	662	(82)	269	+22	833	+7	559	(23)	3.576	(9)	5.773	(117)
TOTAL ASSETS	1.122	(134)	351	+15	1.299	(71)	1.320	(15)	13.734	+1.527	18.107	+1.494
Shareholders Equity	508	(40)	96	+12	399	(47)	277	+26	2.312	+177	2.559	+116
Minority Interest	16	(5)	0	+0	104	(35)	8	(5)	1.024	+438	2.052	+460
Total Equity	524	(45)	96	+12	504	(82)	285	+21	3.336	+615	4.611	+576
Recourse Bank Loans	165	+63	101	(10)	104	(30)	(249)	(265)	1.250	(48)	1.823	(46)
Non Recourse Bank Loans & Leasings						-	293	(11)	4.466	+1.005	4.784	+1.019
Other Liabilities	56	(5)	21	(2)	81	(5)	377	+15	1.595	(31)	1.946	(46)
Long Term Liabilities	220	+57	121	(11)	186	(35)	421	(262)	7.310	+927	8.552	+927
Recourse Bank Loans	155	(135)	10	(6)	181	+28	460	+228	323	+159	1.435	+155
Non Recourse Bank Loans & Leasings						-	111	+14	587	+154	698	+168
Trade Payables	81	(4)	101	+28	174	+7	12	+1	1.492	(233)	1.922	(187)
Other Liabilities	141	(7)	23	(8)	255	+11	31	(19)	685	(94)	889	(146)
Short Term Liabilities	377	(147)	133	+14	610	+46	614	+225	3.087	(14)	4.944	(10)
TOTAL EQUITY AND LIABILITIES	1.122	(134)	351	+15	1.299	(71)	1.320	(15)	13.734	+1.527	18.107	+1.494

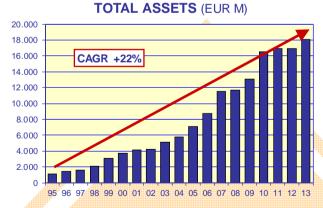


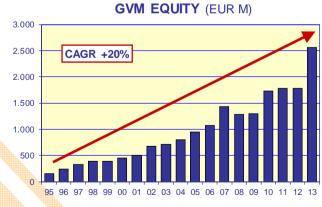
## 1995-2013 Group Evolution

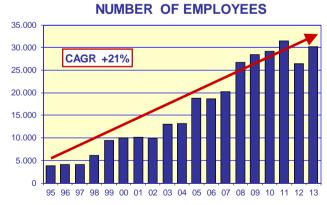








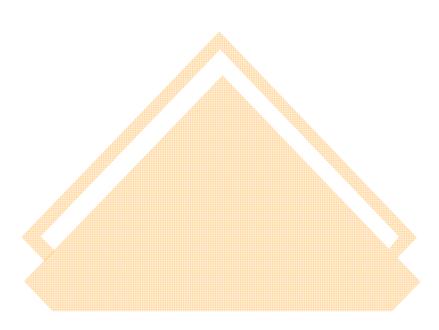




Note: 1995 was the first year to reach sales of 500 MM€



## **ANNEX 2: MAIN FIGURES**

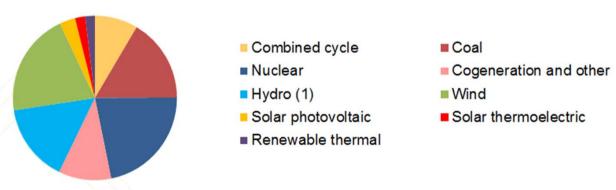


#### **ANNEX 2. MAIN FIGURES**



- Main figures of the Spanish electricity system during 2014.
  - The peninsular demand for electrical energy closed the year at 243,486 GWh, (1.2 % lower than that in 2013).
  - The maximum hourly demand recorded in the year occurred between 8:00 pm and 9:00 pm on Wednesday 4 February when it reached a value of 38,666 MWh.
  - Regarding demand coverage, nuclear covered 21.9 % (21.2 % in 2013), wind 20.4 % (21.2 % in 2013), coal 16.4 % (14.6 % in 2013), hydroelectric 15.4 % (14.2 % in 2013) and cogeneration 10.4 % (12.5 % in 2013). Technologies with a contribution of less than 10 % were combined cycle at 8.5 % (one point less than the previous year), and solar thermal and renewable thermal which have jointly covered 7 % of the demand, a contribution similar to that of 2013.

#### Spanish peninsula electricity demand coverage 2014



(1) Pumped storage not included

Renewable energies have continued to maintain a prominent role in the overall production of energy in the electricity system covering 42.8 % of the total production (42.2 % in 2013).