

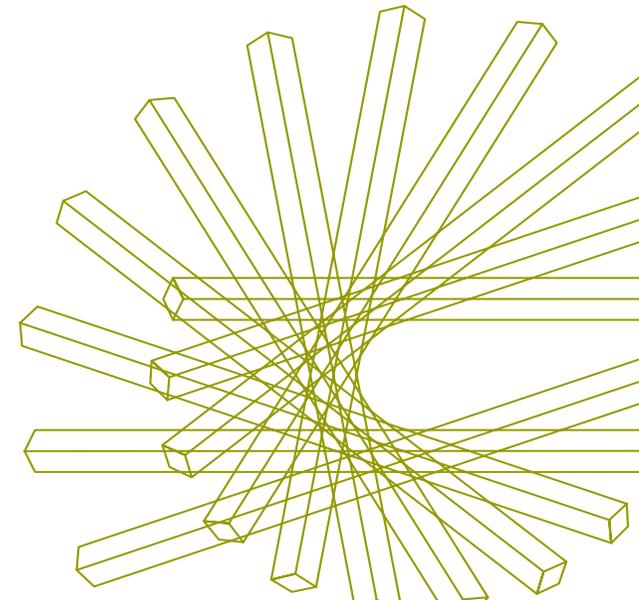


The MOSE project

A Megaproject case study compiled by

Corrado lo Storto

February 2015



MEGAPROJECT Case Study

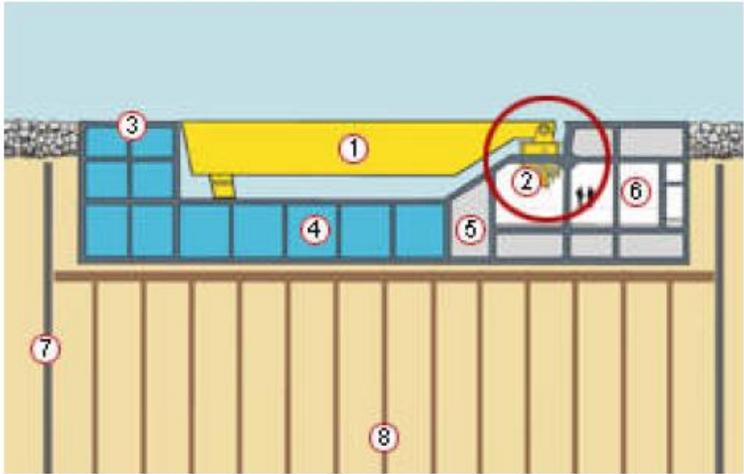
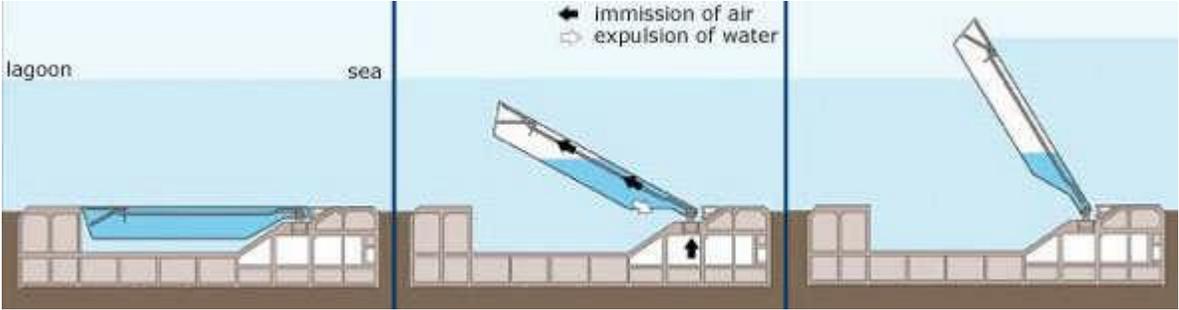
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Basic Project Information

Project Title	The MOSE project in Venice (MOSE=Modulo Sperimentale Elettromeccanico – in English, Experimental Electromechanical Module)
Location	City of Venice Lagoon, Italy
Purpose	To protect the city of Venice from floods
Scope	The project is an integrated defence system consisting of rows of mobile gates able to isolate the Venetian lagoon from the Adriatic Sea when the tide reaches above an established level (110 cm) and up to a maximum of 3 m.
Contractual Framework	The project is managed by a concessionaire – the Consorzio Venezia Nuova (in English, The Consortium New Venice) – in trust of the Ministry for Infrastructure and Transport, Venice Water Authority. The CVN is delegated by the Ministry for Infrastructure and Transport (previously named Ministry of Public Works) to design and execute the works to regulate tidal floods in accordance with the Special Law for Venice, L. 798/84
Relevant Physical Dimensions	A total of 78 gates divided into 4 rows installed to protect 3 inlets. Specifically: 2 rows of 21 and 20 gates at the Lido Treporti and San Nicolò inlet respectively, the widest connected by an artificial island; 1 row of 19 gates at the Malamocco inlet; and 1 row of 18 gates at the Chioggia inlet. Length of the single gate is 20m. Total number of people working in the construction of the system is 3,000. Estimated number of people working to manage the system is between 120 and 150

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Constructive details:

- 1. gate
- 2. hinge
- 3. housing
- 4. ballast (water)
- 5. ballast (concrete)
- 6. service tunnels
- 7. containment piling
- 8. soil consolidation piling



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GENERAL PLAN OF INTERVENTIONS

Lines of action:

1. Physical protection: defence from high waters

○ Intervention areas

Start of work
2003

Completion of work
2012

Progress of work
45%



■ Intervention areas

● Works underway
● Works completed

Works completed
(January 2007)

Beach reconstruction
45 km

Dune restoration
8 km

Reinforcement of jetty
11 km



2. Environmental protection of the lagoon ecosystem

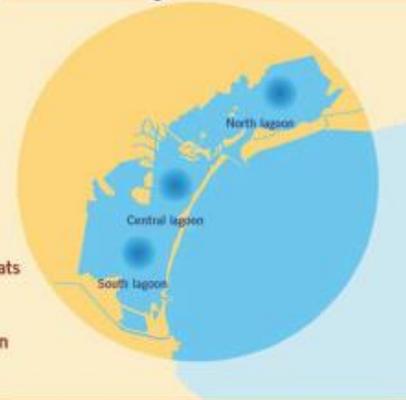
● Intervention areas

Works completed

Channel dredging
176 km

Reconstruction of mudflats
and salt marshes
1,406 hectares

Environmental restoration
of islands
12 islands



3. Special activities: oil traffic risk

The project

● off shore terminals
▲ intermediate station (Malamocco)
■ final station (Isola dei Petroli)



22nd IPMA World Congress - Rome
November 9-11, 2008

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The MOSE Construction Site



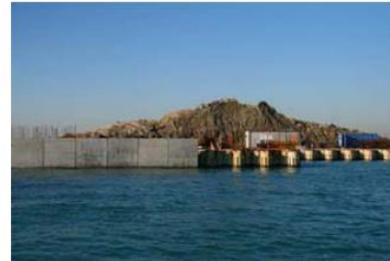
This area is where the immense water barriers are going to be constructed, then floated into position.



The construction is happening simultaneously in all 3 of the lagoon inlets.



The gates will lie underneath the water and will be invisible. They will only be raised whenever there is a risk of flooding in the city.



A man made island that lies between two sets of flood barriers at the Lido entryway.



Most of the work on the MOSE project is done by boat.



Dredging the lagoon to prepare for the installation of the flood barriers.

MEGAPROJECT Stakeholder Identification (Internal) 1

	Stakeholder Category	Case-Study	Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)
Supply-Side	Client	Consorzio Venezia Nuova (CVN)	<i>Equity joint venture Consortium specifically formed for this project. CVN is responsible for studying, monitoring, planning, experimenting and implementing measures delegated to the State to safeguard Venice and the lagoon on behalf of the Ministry for Infrastructure and Transport in accordance with the Special Law for Venice (Law n. 798/84)</i>
	Financiers	Public funds from Italian Government , European Investment Bank, and European Commission	
	Sponsors	n/a	
	Client's Customers	The Italian Government through the Ministry for Infrastructure and Transport – the Venice Water Authority	<i>The Venice Water Authority is the local department of the Ministry for Infrastructure and Transport with direct and primary responsibility for the safeguard, security and hydraulic protection of a large area falling within a number of North Italy regions (Veneto, Friuli and Trentino Alto Adige)</i>
	Client's Owners	At the start of the project: Impregilo (39.4%), Consorzio Italvenezia (Società italiana per Condotte d'acqua, Astaldi and Mantelli) (18.5%), Grandi Lavori Fincosit-Mazzi (18.5%), San Marco – Consorzio Costruttori Veneti (Co.Ed.Mar, Cantieri Costruzioni Cemento, Grassetto Lavori, Impresa di Costruzioni Ing. E. Mantovani, Intercantieri Vittadello, Sacaim, Cir, Consorzio Rialto, Consorzio Lepanto) (13.875%), Consorzio Veneto Cooperativo (2.775%), Saipem (2.5%), Società italiana per Condotte d'acqua (2.5%), Società Consortile Venezia Lavori (Impresa di Costruzioni Ing. E. Mantovani) (1.85%), Consorzio Grandi Restauri Veneziani (0.1%)	
	Other internal supply-side categories (please specify)	Category	Case-Study
Public Research Institution		The CNR (National Research Council) in 1980 launched a public contest to collect ideas for Venice safeguard	

MEGAPROJECT Stakeholder Identification (Internal) 2

	Stakeholder Category	Case-Study	Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)
Demand Side <i>(this case has a large number of main and sub-contractors. Here a sample of them is reported)</i>	Principal Contractors	Thetis SpA was in charge of the study and research activity in the marine engineering field in the concept stage of the project	<i>This company was acquired by the Consorzio Venezia Nuova few years ago. According to a recent decision of the Consorzio Venezia Nuova Board, Thetis will change its mission , focusing only on the MOSE facilities maintenance</i>
		Cordioli Costruzioni Metalliche SpA was selected through a public tender to manufacture the first 23 retracting oscillating buoyancy flap gates and the metallic caissons to be placed in the Lido-Treporti inlet. Each caisson has the following dimensions: weight 300 tons, height 20m, thickness 3.60m.	
		Nuovi Cantieri di Chioggia SpA	
		Consorzio Maccaferri per il Progetto Venezia (Maccaferri Venice Project Consortium) – Adanti SpA, Officine Maccaferri Group and Sarti SpA. The consortium has developed a system for the production of a Ballasted Filter Mattress (BFM), a filter layer that would guarantee the hydraulic performance required, heavy enough to keep the filter in contact with the sea bed at all times and in all sea conditions.	
		FIP SpA was selected to design and manufacture the special large hinges to rotate gates. The company took out a patent for the design of this model of hinge. The total number of hinges assembled in the MOSE is156. The hinge is considered a critical component of the system and the Committee “No MOSE” required major assurances related to reliability of this component.	
	First Tier Contractors	Società Consortile MOSE Treporti (construction), Ing. E. Mantovani (second tier, construction), Trentin Consulting srl (first tier, professional services), etc.	
	Professional Services Providers	Joint venture C. Lotti & Associati SpA and Thetis SpA	<i>This joint venture is responsible for works supervision: a) works management, b) support and control for works realization, material quality control, c) works cost management</i>
		PRINCIPIA was entrusted by the Municipality of Venice the task to test the reliability and the feasibility of the hinge.	
Other internal supply-side categories (please specify)	Category	Case-Study	

MEGAPROJECT Stakeholder Identification (External) 1

	Stakeholder Category	Case-Study	Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)
Public	Regulatory Agencies	ISPRA (Istituto Superiore per la Protezione e la Ricerca Ambientale) was identified as an independent institution (according to the European Commission note # 13085, 15.07.2008). In particular, ISPRA validates and control the environmental monitoring activities, evaluate environmental data released, check if environmental targets are met.	<i>The EC was favourable to project.</i>
		European Commission. In April 1999, the European Parliament issued the Resolution on the crisis situation in Venice. Calling on the Italian Government to decide by the end of the year on proceeding to the final design phase of the project. In December 2005, after the claim of some environmental movements, the European Commission started the infringement procedure relative to the lagoon habitat pollution, because the EC Environmental DG retained that the Italian Government had not planned effective mitigation measures to preserve wild birds migration and habitat. In 2008, the Venice Water Authority informed the EC Environment DG about the mitigation measures adopted, thus making available financial resources from the European Investment Banking (circa 750,000 euro)	
		TAR (Tribunale Amministrativo Regionale) and Consiglio di Stato. In total 9 legal petitions have been lodged with the TAR and Consiglio di Stato, all related to environmental issues. All claims have been rejected.	<i>Favourable to project. Decision made on July 14, 2000 was particularly important. On the grounds of breaches of procedure and substance, the Regional Administrative Tribunal for the Veneto (TAR) issued a ruling annulling the Dec. 1998 decree of negative environmental impact of the Ministry of the Environment . The appeals against the decree had been made by the Veneto Region, ASCOM and fish farming companies. TAR also rejected all the appeals made against the MOSE system by a number of bodies including WWF, Italia Nostra, and Provincial Authorities. On Dec. 20, 2004 the Sixth Division of the Judicial State Council (Consiglio di Stato) has turned down all the appeals filed by the Province, WWF and Italia Nostra against the Veneto Regional Tribunal sentence of May 22, 2004.</i>
Local Government		Local Authority of Venice (Municipality of Venice)	<i>Favourable to project., but some concern about the construction of the facilities. On Feb 22, 1999 the Venice Local Authority expressed its opinion on the design, passing an extremely complex resolution inviting the Mayor to call for "...the continuation of design work at the lagoon inlets". That happened after the judgment of negative environmental compatibility of the design expressed by the Ministry of the Environment EIA Commission. The operations necessary to the construction of the prefabricated concrete caissons that will be implanted on the reinforced seabed are presumed to be detrimental to the construction site (the Pellestrina inlet)</i>
		Local Authority of Chioggia (Municipality of Chioggia)	<i>Favourable to project. On Feb. 3, 1999, in a specific vote, the Chioggia Local Authority expressed its opinion, considering it "indispensable for the defence process to continue in its entirety [...] including defence against exceptional high waters" and delegating the Mayor to call for "...the continuation of design work at the lagoon inlets"</i>
		Regione Veneto (Regional Administration of Veneto).	<i>Favourable to project. On Sept. 18, 1998 the full Veneto Regional Technical Commission approved the design</i>
		The Provincial Authority of Venice	

MEGAPROJECT Stakeholder Identification (External) 2

	Stakeholder Category	Case-Study	Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)
Public	National Government	The Ministry of the Environment	<i>Not favourable to the project design when it was released. On Dec. 10, 1998 the Ministry of Environment EIA Commission expressed a negative opinion as regards the environmental compatibility of the design. Thus, on Dec. 24, 1998 the Ministry of the Environment together with the Ministry of Cultural Heritage expressed "...as the situation stands at present, a judgement of negative environmental compatibility ", adding, however, that "the design could be reviewed..."</i>
		The Ministry of the Cultural Heritage	<i>Favourable to project. On Dec. 10, 1998 the Ministry of Cultural Heritage Central Office for the Environment and Landscape expressed a positive opinion as regards the design for mobile barriers, with certain provisions.</i>
		The Ministry of Public Works/The Ministry of Infrastructure and Transport was the promoter of the MOSE project.	
		The Committee for Policy, Coordination and Control (the so called "Comitatone") of all measures for the safeguard of Venice. It is the body for policy, coordination and control of the objectives established by the special legislation (see Art. 4 of Law no. 798/84). This Committee was made up of representatives of the competent authorities and institutions (Ministries of Infrastructure and Transport, Environment and Territorial Protection, Cultural Heritage and Activities, University Education and Scientific Research), the Chairman of the Water Authority, the Chairman of the Veneto Regional Authority, the mayors of Venice and Chioggia and Treporti-Cavallino Local Authority and two representatives of the other local authorities along the lagoon boundary). It is chaired by the President of the Council of Ministers. The secretary of the Committee is the President of the Venice Water Authority.	
Other internal supply-side categories (please specify)	Category	Case-study	
	University and research institutions	CORILA (Consorzio di Istituti Universitari e Enti di ricerca). The Consortium was entrusted to monitor environmental impacts of construction operations in the constructoin site	
	Independent experts	Commission of international experts. To produce the Environmental Impact Assessment of the design for mobile barriers, the water Authority and its concessionary called on the collaboration of, among others, a panel of professors from the Massachusetts Institute of Technology. This panel of experts followed the progress of studies and validated the results.	

MEGAPROJECT Stakeholder Identification (External) 3

	Stakeholder Category	Case-Study	Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)
Private	Local residents	People living in Venice and Chioggia	<p><i>There is a great debate and concern about the real effectiveness of MOSE and its capability to meet the specifications imposed by the Special Law for Venice safeguard. In particular, the Law requires that any intervention is experimental, gradual and reversible in nature. Vice versa, the MOSE project is strongly integrated, definitive and not reversible.</i></p> <p><i>Some political movements still remain not favourable as it is estimated that the yearly operating costs of the MOSE infrastructure is close to 30 million, too much for the municipal finances. The CVN will be in charge of its maintenance and operation only in the first 3 years of the life of the infrastructure.</i></p> <p><i>Some concerns relate to the environmental impact of the infrastructure and its technical effectiveness.</i></p> <p><i>The shopkeepers and traders in the city of Venice were generally favourable to project.</i></p> <p><i>UNESCO was favourable to project.</i></p>
	Local Landowners	n/a	
	Environmentalists	WWF, Italia Nostra, some minor environmental movements	
	Conservationists	n/a	
	Archaeologists	UNESCO	
	Other External Private stakeholders (please specify)	Category	
		Tourists	
		Some political movements	
		ASCOM (association of Venetian Traders and Shopkeepers), fish farming companies	

MEGAPROJECT External Stakeholder Attitude Analysis

External Stakeholder	External Stakeholder's Attitude to this Project	External Stakeholder's Influence on project	Impact of Project on External Stakeholder
WWF, Italia Nostra, and some minor environmental movements	Not favourable	Attempt to stop project progress. Extension of decision-making time	No impact
European Commission, UNESCO	Very favourable	Stimulated project progress. Some change required as to the construction site management to take into account environmental issues.	None identified
Local Authority of Venice	As the project life-cycle has a long time extension, the likelihood to have changes in the political administration of a body is great. It happened that in the stage of the MOSE project conceptualisation as a system of mobile barriers it was well accepted and supported by the local administration. But, in late 2006, after the change of the political council of the City of Venice, the new political administration opposed the MOSE system, asking for the evaluation of a number of solutions indicated as alternatives.	The Council of Ministers of the Italian Government, after taking into exam the requests from the local authorities and the results presented in a report on project progress and the opinions of major stakeholders (Ministry of the Environment, the Higher Council of Public Works, Venice Water Authority , Ministry of Cultural Heritage, Venice Port Authority, etc.), retained that no new elements have emerged requiring the original project to be modified. However the Committee for Policy , Coordination and Control unanimously approved the agenda presented by the Venice Local Authority confirming the need to guarantee the continuation of extraordinary maintenance work in the lagoon towns and cities, dredging of canals, raising of public paved areas and pollution abatement in the lagoon through re-financing of the Special Law for Venice. In addition, the following were guaranteed: scrupulous monitoring of the effects of all measures being implemented in the lagoon, updating of the morphological plan and rapid availability of all data relating to the activities underway to safeguard the provincial capital of Veneto.	None identified
Local Authority of Chioggia	See comment above		
The Provincial Authority of Venice	See comment above		
Regional Administration of Veneto	Favourable		
The Ministry of the Environment	Not favourable in the first stage of development. Required further efforts and mitigation measures	The Committee for Policy, Coordination and Control considered various opinions expressed during the extraordinary EIA of the design for mobile barriers at the lagoon inlets. In a Resolution, the Committee unanimously delegated the water Authority to undertake directly when responsible, or to coordinate with others when needed a series of interrelated in-depth studies to be completed by Dec. 31, 1999. The Committee also called for the rapid setting up of a specific Planning Office in collaboration with the competent administrations in the hopes that this office could be set up in time to enable it to participate in the review of the general Plan of Interventions.	None identified
The Ministry of Cultural Heritage	Favourable		
The Ministry of Public Works/The Ministry of Infrastructure and Transport	Very favourable. On Feb. 26, 1999 a general meeting of the Higher Council of Public Works expressed its opinion on the EIS of the mobile barriers design, unanimously reconfirming its favourable opinion on the design solution. The Higher Council is of the opinion "...that, on the basis of technical and scientific knowledge and the extensive studies completed and in the light of the reconfirmed indissolubility of the safeguarding measures, it can be stated that the only way to defend the City of Venice from high waters is by regulating the lagoon inlets by means of a system of mobile gates; and that there are no therefore no impediments to developing the final design of this system, partly in order to introduce the improvements and innovations deriving from the development of science and technology during the last six years"	Stimulated progress of project.	None identified
The Committee for Policy, Coordination and Control	Very favourable	Stimulated progress of project.	None identified

MEGAPROJECT Project Management

Project Organisation

Client Project Team Size & Structure	Major role of Consorzio Venezia Nuova in the project management. CVN is a private body, a concessionary entrusted with the task of coordination activities (feasibility study, EIS, executive design, public procurement, works management monitoring, etc.), that acts for the public interest. It interfaces the granting Administration and the executors of the safeguard measures (designers, consultant for special studies and experimentation, companies carrying out works). CVN consists of large private Italian companies, consortia, cooperatives, and local firms. CVN was delegated by the Ministry of Public Works to design and execute the works to regulate tidal floods on the basis of Law no. 798/84 (Agreement no. 6479/85).
Contractor Project Team Size and Structure	
Sub-Contractor Project Team Involvement	

Project Tools and Techniques

Please ✓ if present, x if absent , leave blank if unknown

Life-Cycle Costing Approaches

Project Management Software

Lessons Learnt Transfers

Stakeholder Involvement

Relationship Management Tools

Team Building Tools

Building Information Modelling (BIM)

Project Knowledge Management Tools

Competency framework

Other Tools and Techniques or More Information

The collection of special laws and decrees (> 26) that have been issued by the Italian Parliament and by the Veneto Regional Administration provided the operational and funding framework that enabled the progress of project.

Art. 4 of Law no. 798 of Nov. 29, 1984 set up the Committee for Policy, Coordination and Control of all measures for the safeguard of Venice, the so-called "Comitatone", made up of representatives of the competent local and national authorities and institutions (Ministries of Infrastructure and Transport, Environment and Territorial Protection, Cultural Heritage and Activities, University Education and Scientific Research, the Chairman of the Water Authority, the Chairman of the Veneto Regional Authority, the mayors of Venice and Chioggia and Treporti-Cavallino Local Authority and two representatives of the other local authorities along the lagoon boundary) and chaired by the President of the Council of Ministers. The secretary of the Committee is the President of the Venice Water Authority. The Comitatore is the body for policy, coordination and control of the objectives established by the special legislation issued for Venice and the lagoon.

The control system also included crossed audits and verifications implemented at different levels by a number of bodies: a) the High Council of Public Works (Ministry for Infrastructure and Transport), the Venice Water Authority Technical Committee (The Venice Water Authority), the Venice Water Authority Panel of Experts (The Venice Water Authority Safeguarding Dept.), and the Consorzio Venezia Nuova. The Ministry of Environment, the Ministry of Cultural Heritage and the Veneto Regional Administration have a role in the EIS implementation.

Programme Agreements are also an important operational tool that was introduced by Law no. 139/92 into safeguarding procedures. In the case of strictly interconnected measures involving a number of different authorities and institutions, the programme agreement enabled the identification of a joint action plan, integrating the measures to be carried out by the single different bodies and, if necessary, appointing a single implementing body. Irrespective of the implementing body, responsibility for achieving the individual objectives remains with the legally responsible institution. It is assumed that coordinated and unitary implementation of the various measures within a programme agreement might improve operational efficiency, optimise implementation times, reduce costs and mitigate social costs. Thirteen agreements have been signed.

According to Art. 3 of Law 139/92, funds to implement works aimed at regulating tidal floods may be assigned after the audit and verification of an acceptable progress of other interventions (measures aimed at slowing down degradation of the morphological structures caused by subsidence, eustatism and erosion resulting from wave motion and wash, etc.) by the Comitatore.

Project Processes

Risk Management Processes	Present (<i>describe below</i>) <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> <ul style="list-style-type: none"> •Detailed and extensive investigation to identify effective solutions to solve the problem of high water •Implementation of agreements among several bodies to improve coordination and procedural efficiency •Involvement of international, independent experts to implement and validate EIS results
HR Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>
Procurement Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> <i>Public tender</i>
Integration Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>
Scope Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>
Time Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>
Cost Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>
Quality management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>
Communications Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input checked="" type="checkbox"/>

MEGAPROJECT Project Performance

Aspects of Performance Concerned with Doing the Project Right

	Original Targets and changes to targets	Actual Achievements Against Targets
Performance relating to time	<ul style="list-style-type: none"> - the conceptualisation and the study in search for feasible solutions that lead to the project began in 1975 - executive design approved and start of the works and the construction site in 2003 - completion of works estimated at the end of 2010 	<ul style="list-style-type: none"> - estimated completion of works at the end of 2017 (completion time was 2012 in 2008) - test of the gates placed in the Treporti inlet in 2013
Performance relating to cost	<ul style="list-style-type: none"> -planned cost of 2,3 billion € -planned annual operating cost from 5 million € to 9 million € 	<ul style="list-style-type: none"> - estimated cost to complete 5,493 billion € - estimated annual operating cost from 12 million € to 18 million € (30 million € according to not official estimations) (including maintenance)
Performance related to specification	<ul style="list-style-type: none"> - no. 4 mobile barriers being constructed at the lagoon inlets (2 at the Lido inlet, 1 at Malamocco and 1 at Chioggia) - no. 78 the total number of gates - no. 1 lock for large shipping at the Malamocco inlet enabling port activities to continue when the gates are in operation - no. 3 small locks (2 at Chioggia and 1 at Lido-Treporti) to allow the transit of fishing boats and other smaller vessels when the gates are in operation - 3 m the maximum tide which the gates can withstand - 60 cm the increase in sea level the MOSE System has been designed to cope with - 9,850 m of rock-fill to complete the visible structures such as the small craft harbours, jetty reinforcement and breakwaters - 4,590 m of vertical wall required to complete the visible structure such as locks and “abutments” for the row of gates - 597,000 squared metres of bed protection and underwater structures required for completion 	<ul style="list-style-type: none"> - no. 0 gates completed and placed - 63% of the work already completed - 4,000 people currently directly or indirectly employed - 9,000 m of rock-fill already completed - 4,100 m of vertical wall already completed - 398,700 square metres of bed protection and underwater structures already completed

Aspects of Performance Concerned with Doing the Right Project

Stakeholder	Original Aims of Project Involvement and Changes to these Aims	Achievement of these Aims
UNESCO, EC	To preserve cultural heritage in Venice and natural habitat in the Venice lagoon	As the project has not yet been completed and infrastructure is not operating, the stakeholder aims are not achieved
National and local Governments	To safeguard Venice, i.e. to guarantee the complete defence of all built-up areas in the lagoon from high waters of all levels, including extreme events, the arrest and reversal of deterioration processes of the lagoon basin, in the same time guaranteeing port activity, water quality, and the safeguarding of lagoon morphology	As the project has not yet been completed and infrastructure is not operating, the stakeholder aims are not achieved
Venice residents, tourists, shopkeepers	To solve the problem of high waters that has afflicted Venice and other towns and villages in the lagoon since ancient times	As the project has not yet been completed and infrastructure is not operating, the stakeholder aims are not achieved

MEGAPROJECT Project Environment

Legal and Regulatory Environment

<p>Legal and Regulatory Project Environment (regionally, nationally and Europe wide)</p>	<p>The legal and regulatory framework that is not strictly related to the project is:</p> <ul style="list-style-type: none"> - Law 349/86: Introduction of the Ministry of Environment and norms related to the environmental damage . This law introduced the procedure to carry on the environmental impact study and the list of infrastructure works needing EIS - Law 443/2001 – Legge Obiettivo: Delegation to the Government for strategic infrastructure and productive settlements and other interventions for the re-launching of productive activities
<p>Specific Legal and Regulatory events impacting on the project</p>	<p>Major legislative milestones:</p> <ul style="list-style-type: none"> - Law 171/73: “The safeguarding of Venice and its lagoon is a matter of pre-eminent national interest” - Law 404/75: Protocol for publishing the international call for tender-competition for preservation of the hydrogeological equilibrium in the Venice lagoon and the reduction of high waters in historic centres - Vote no. 209 of 1982: Positive judgement by the Higher Council of Public Works to General feasibility Plan (the so called “Progettone”) covering all the measures necessary to “preserve the hydrogeological balance of the lagoon and mitigate high waters in the historic city and town centers” - Law 798/84: Identification of a single body which takes responsibility for all activities (studies, experimentation, plans, and activities) associated with physical defence and restoration of environmental balance. This law represents the legal basis for the delegation of these activities to the Consorzio Venezia Nuova through private negotiations exempted from normal procedures - Convention no. 6479/85: on the basis of Law 798/84, CVN is delegated by Ministry of Public Works to design and execute the works to regulate tidal floods - Ministry of Cultural Heritage, Decree of August 1, 1985: Declaration of considerable public interest concerning the ecosystem of the Venice lagoon situated in the local authority areas of Venice, Jesolo, Musile di Piave, Quarto d’Altino, Mira, Campagna Lupia, Chioggia and Codevigo - Regional Law – Veneto Region 27/1990: Regulations for the execution of the responsibilities assigned to the Region by Law 798/84 <p>(this is only a selection of laws, decrees, and decree laws)</p>

Economic Environment

<p>Economic Project Environment</p>	<p>Late 2000 recessions and scarcity of funds.</p>
<p>Specific Economic Events impacting on the project</p>	<p>None identified</p>

Political Environment

<p>Political Project Environment</p>	<p>The last conservative government had a particular interest for the realization of large infrastructure investments.</p>
<p>Specific Political Events impacting on the project</p>	<p>Any change occurred in the political government alliances and structure, both at the national and local level.</p>

MEGAPROJECT Project Key Events and Activities Timeline

TIME

EVENTS IN THE PROJECT

EVENTS IN THE ENVIRONMENT

1966

November 4. Catastrophic sea storm measuring 194 cm on the Punta della Salute tide gauge. Venice and other towns and villages in the lagoon are completely submerged under a meter of water. Incalculable damage. There is a clear awareness that the survival of the city will never again be certain unless action is taken to defend it.

1973

The Special Law n. 171 declares the problem of Venice to be "of priority national interest" and identifies the physical unity and continuity of the lagoon.

1975

International competition-call for tender issued by the Ministry of Public Works for the design and construction of high water defences. Five groups of companies take part. The tender is not awarded, but five projects are used as a basis to draw up the so-called "Progettone".

1981

The "Progettone", the first feasibility study and preliminary design to protect Venice from high water, is drawn up and presented.

1982

The "Progettone" is approved, with specific requirements, by the Higher Council of Public Works.

1984

Law No 798 of 29 November redefines the general objectives of the measures for the safeguarding of Venice. Art. 4 sets up the Committee for Policy, Coordination and Control of all measures, the so-called "Comitatone", made up of representatives of the competent local and national authorities and institutions and chaired by the President of the Council of Ministers.

TECHNICAL FEASIBILITY ANALYSIS & ALTERNATIVE EVALUATION

DESIGN & PROCUREMENT

MEGAPROJECT Project Key Events and Activities Timeline

TIME

EVENTS IN THE PROJECT

EVENTS IN THE ENVIRONMENT



November 17. The new conceptual design of the mobile barriers at the lagoon inlets to protect Venice from high water is presented and then approved as part of a general plan of interventions to safeguard Venice.

The conceptual design of mobile is approved by the Higher Council of Public Works.

July. The preliminary design for the mobile barriers at the lagoon inlets is completed.

November. The preliminary design for the mobile barriers at the lagoon inlets is approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works.

A Committee of Experts from leading international engineering companies appointed by Consorzio Venezia Nuova, the Concessionary of the Venice Water Authority, give a positive opinion on the preliminary design.

October 18. The preliminary design is approved by the Higher Council of Public Works.

July 4. The Committee for Policy, Coordination and Control (the "Comitatone"), considering the requests of Venice Local Authority, pass a resolution calling for the preliminary design for the mobile barriers to be submitted to an Environmental Impact Assessment (EIA), delegating the Water Authority (as the body proposing the plan) the task of producing an Environmental Impact Study (EIS) and establishing a schedule. But the uniqueness of the Venice case also led to the adoption of an "extraordinary" EIA procedure. The Committee, in fact, decided to flank the Ministry of the Environment EIA Commission by a Panel of international experts. Members of the Panel are: Prof. Philippe Bourdeau (coordinator) IGEAT Université Libre de Bruxelles, Bruxelles, Belgio; Prof. Jean-Marie Martin, Environment Institute, Joint Research Centre, European Commission Ispra, Italia ; Prof. Chang C. Mei, Massachusetts Institute of Technology, Cambridge, MA, USA; Prof. Ignazio Musu, Facoltà di Economia, Università di Ca' Foscari, Venezia, Italia; Prof. Pier Vellinga, Institute for Environmental Studies, Vrije Universiteit, Amsterdam, Olanda.

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1998

July 7. The Panel of international experts consign its Report to the President of the Council of Ministers, the Minister of Public Works and the Minister of the Environment. In its conclusions, the document states that the project is effective, does not cause large scale impacts and has minimal and mitigable influence on the local scale. It also states that "the system of mobile barriers" integrated with local defences, "responds adequately to current problems, while leaving options for the future open". At the end of the Report, the Commission of experts indicated a number of specific provisions and additions.

July 21. The commission of five international experts expresses a favourable opinion.

September 18. The Veneto Region Technical Commission expresses a favourable opinion on the design.

December 10. The Directorate General of the Ministry of Culture expresses a favourable opinion with certain reserves. On the same day the Ministry of the Environment Environmental Impact Assessment Commission expresses a negative opinion on the design.

December 24. The Minister of the Environment together with the Minister of the Cultural Heritage, considering the position of the Ministry of the Environment EIA Commission, expressed, "as the situation stands at present, a judgment of negative environmental compatibility", adding, however, that "the design could be reviewed..."

February 3. In a specific Vote, the Chioggia Local Authority expresses its opinion, considering it "indispensable for the defence process to continue in its entirety [...] including defence against exceptional high waters" and delegating the Mayor to call for "...the continuation of design work at the lagoon inlets".

February. The Venice Local Authority expresses its opinion on the design, inviting the Mayor to call for "the continuation of design work for mobile barriers at the lagoon Inlets".

February 26. A general meeting of the Higher Council of Public Works expressed its opinion on the EIS of the mobile barriers, unanimously reconfirming its favourable opinion on the design solution.

March 8. The Committee for Policy, Coordination and Control (*Comitatone*) considered the various opinions expressed during the extraordinary EIA of the design for mobile barriers at the lagoon inlets. In a Resolution, the Committee unanimously delegated the Water Authority to undertake directly when responsible, or to coordinate with others when needed a series of interrelated in-depth studies to be completed by December 31.

July 12. The Committee for Policy, Coordination and Control (*Comitatone*) considers the results of the development work carried out and, in light of differences of opinion between the Ministry of Public Works and the Ministry of the Environment, refers the decision regarding continuation of design work to the Council of Ministers.

July 14. On the grounds of breaches of procedure and substance, the Regional Administrative Tribunal for the Veneto (TAR) issued a ruling annulling the December 1998 decree of negative environmental impact of the Minister of the Environment in agreement with the Minister of the Cultural Heritage.

March 15. Meeting at Palazzo Chigi, in Rome, the Council of Ministers concludes the EIA procedure. Its Resolution calls for work to begin on the definitive final design of the mobile high water protection barriers at the inlets. Specific provisions and additions are also required, as the "dissipative capacity of the lagoon inlets channels to be increased".

December 6. The Committee for Policy, Coordination and Control (*Comitatone*) expresses the opinion that design of the Mose system should go ahead and that at the same time "measures aimed at increasing the dissipative capacity of the lagoon inlet channels should be developed".

2000

2001

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2001

December 18. The Venice Water Authority instructs its concessionary, the Consorzio Venezia Nuova, to draw up a plan of activities resulting from the *Comitatone* resolution of 6 December 2001.

February 22. The programme is presented and approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works.

2002

September 30. The Consorzio Venezia Nuova consigns the final design for the whole Mose system, with adaptation of the design for mobile barriers and introduction of the complementary structures and and the navigation lock at the Malamocco inlet.

November 4. The Environmental Impact Assessment Commission of the Veneto Region approves the design for the complementary breakwaters at the Malamocco and Chioggia inlets and the design for the navigation lock at the Malamocco inlet; the design for the breakwater at the Lido inlet will be re-examined after being reviewed on the basis of given observations.

November 8. The final design of the Mose system is approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works.

November 29. The CIPE (Interministerial Committee for Economic Programming) finances the first tranche of the Mose system amounting to € 450 million.

February 25. Meeting in Rome, the *Comitatone* postpones conclusion of the decision-making process until the 3 April meeting, allowing the local authorities of Venice and Chioggia more time to present their opinions on the final design for the Mose system.

April 3. A unanimous resolution of the *Comitatone* give the go-ahead to executive design work and construction of the Mose system, at the same time taking on board specific requests from Venice and Chioggia Local Authorities. These requests do not, in fact, interfere with the structure of the system as defined in the final design and do not therefore represent a constraint to its implementation.

2003

April 15. The Water Authority Technical Committee approves the final design for the complementary breakwater at the Chioggia inlet.

June 6. The Water Authority Technical Committee approves the "Plan of studies, designs and measures following the decisions taken during the 3 April 2003 session of the Committee as per Art. 4 of Law no. 798/84".

October 17. The Water Authority Technical Committee, a branch of the Higher Council of Public Works, approves setting up of a series of trial areas at the Lido inlet to verify the operational systems designed to consolidate the seabed near the rows of gates.

January 20. The Safeguarding Commission expresses a favourable opinion on the final project of the Mose system.

2004

January 30. The Water Authority Technical Committee, a branch of the Higher Council of Public Works, approves the design for: the construction of the refuge haven at Lido – Treporti; the reinforcement of the Lido south jetty; the construction of the navigation lock at the Malamocco inlet and the refuge haven at the Chioggia inlet.

February 13. The Plan Office is set up. Setting up of the Office was agreed on 6 December 2001 by the *Comitatone*. The tasks of the Plan Office is to harmonise the plans of the individual authorities (State, Regional, Local) responsible for the safeguarding activities and optimise the resources.

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February 27. The final design for the work to construct the navigation lock at the Chioggia inlet is approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works.

May 22. The Veneto Regional Tribunal rejects all the appeals made against the Mose system by a number of bodies including the WWF, Italia Nostra and Venice Local and Provincial Authorities.

June 7. The provincial secretaries of the Italian trade unions C.G.I.L., C.I.S.L. and U.I.L. and the Consorzio Venezia Nuova sign a Framework Agreement covering work already underway or planned for the near future as part of construction of the mobile barriers at the inlets.

June 22. The final design for the first phase of the protection of the sea bed along the San Nicolò channel, at the Lido inlet, is approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works.

July 19. The final design for the first phase of the works for the reinforcement of the Forte San Pietro area, at the Malamocco inlet, is approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works.

September 29. The CIPE (Interministerial Committee for Economic Programming) finances the second tranche of the Mose system amounting to € 709 million.

November 4. The Committee for Policy, Coordination and Control meets in Rome. The agenda includes the progress of work, in particular on the Mose system, the "eleven points" requested by Venice Local Authority and the one point requested by Chioggia Local Authority. Transfer of a contribution for Venice, Chioggia and Cavallino Treporti local authorities from funds financed by the CIPE (Interministerial Committee for Economic Programming) (arts. 80 L. 289/2002 and 23-quater D.L. 355/2003 conv. L. 47/2004).

December 20. The Sixth Division of the Judicial State Council has turned down all the appeals filed by the Province, Venice Local Authority and a number of associations including the WWF and Italia Nostra against the Mose system and the Veneto Regional Tribunal sentence of 22 May 2004.

January 28. the Regional Environmental Impact Assessment concluded with a favourable opinion on the environmental compatibility of the project to set up sites at the Malamocco and Chioggia inlets to prefabricate the caissons for the mobile gates and abutments.

April 29. In accordance with the Framework Agreement between the provincial secretaries of the Italian trade unions C.G.I.L., C.I.S.L. and U.I.L. and the Consorzio Venezia Nuova signed in 2004, a round table is set up with the participation of representatives of the trade unions and the consortium and procedures are established for communicating between the individual groups of companies operating at the three lagoon inlets. The parties jointly agree to meet with the local authorities to discuss the matter of accommodating the workforce employed in construction of the barriers.

May 20. The final design for the preparation of two new parallel cable pipelines across the inlet channel at the Chioggia inlet, is approved by the Water Authority Technical Committee, a branch of the Higher Council of Public Works. The cable pipelines are being constructed using the remote controlled horizontal boring technique.

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2005

June 20. The Minister of Infrastructure and Transport, Pietro Lunardi, visited the work sites where construction of the tidal regulation barriers at the lagoon inlets is underway. The Minister, together with the President of the Veneto Region Giancarlo Galan, Deputy Mayor of Venice Michele Vianello and President of the Venice Water Authority Maria Giovanna Piva inspected the work sites at the Lido, Malamocco and Chioggia inlets. He then went to the Arsenale where he met representatives of local institutions and visited the dry docks in the historic dockyards of the Serenissima. During the meeting, the President of the Venice Water Authority put forward a proposal to set aside part of the north area of the Venice Arsenale for management and maintenance of the Mose system.

July 21. The Water Authority Technical Committee approves the final design for the following projects: at the Lido inlet, designs for preparation of the work site at the south San Nicolò abutment (construction of wharfs for vessels to come alongside, a logistics area in support of site activities and a temporary platform for storing materials, etc) and the second phase of work to construct the intermediate island between the rows of gates (creation of a navigational channel to the rear of the island to connect San Nicolò and Treporti when the inlets are closed and filling of the nucleus of the island with dredged material); at the Malamocco inlet, designs for the navigation lock (civil engineering work for the door housing structures on the sea and lagoon sides and for the guide structures) and preparation of the work site at the north abutment (construction of a temporary platform for storing and selecting materials, wharfs for vessels to come alongside, a logistics area in support of site activities, etc); at the Chioggia inlet, designs for construction of the north abutment (civil engineering for the wharf and hard standing linking the barrier abutment and lock embankments) and construction of the lagoon side basin of the refuge haven (construction of the breakwater on the channel side of the harbour, the inner bank of the north side of the harbour, dredging of the inner basin, etc).

September 28. A meeting of the Committee for Policy, Coordination and Control took place in Rome. The Committee coordinates the activities to safeguard Venice and its lagoon. The Committee, chaired by the President of the Council of Ministers Silvio Berlusconi, decided to continue the realization of the Mose system. The progress of the requests expressed by the Municipalities of Venice and Chioggia (11 points) has been verified, and the technical controls will be considered by the Plan Office. Furthermore, the financing of contributions to the State, Region and Municipalities has been requested.

March 29. The CIPE (Interministerial Committee for Economic Programming) finances the third installment of the Mose system to regulate tidal floods amounting to 380 million euro.

2006

July 20. A meeting of the Committee Coordination and Control (Comitatone) for the safeguarding of Venice and the lagoon, chaired by the President of the Council of Ministers Romano Prodi, took place in Rome.

The Comitaton decided to enlarge the composition of the Committee to the Province of Venice and the Municipality of Cavallino-Treporti. Besides, it confirmed the commitment to carry on the financing of the Mose system by the Cipe, and, at the same time, to re-establish the financing of the Special Law for the other safeguarding measures. The possibility of transfer 50 million euro from 380 deliberated by the Cipe on March 20, 2006, to the others measures foreseen in the Special Law, has been discussed.

With regard to the Mose system, the Committee decided to verify the proposals that the Municipality of Venice will arrive at the Presidency of the Council of Ministers before July 31, 2006. The DICA (the Administration of the Presidency of the Council of Ministers Department) will prepare the proceedings for the next meeting of the Committee. Until that date, the realization of work at the lagoon inlets, will follow the foreseen programming.

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- 2006
- November 10. The Council of Ministers approves, by a majority of votes, the report on the Mose system drawn up by the Minister for Infrastructure Antonio Di Pietro.
- November 22. A meeting of the Committee of Coordination and Control for the safeguarding of Venice and the lagoon, chaired by the President of the Council of Ministers Romano Prodi, took place in Rome. With regard to the defence of Venice from the high water (Mose), which is under realization since 2003, the Committee decided to complete the Mose system work and the morphological measures connected, giving assurance of financing, and complying with engagement and programme defined by the agreement between the State and the concessionary Consorzio Venezia Nuova.
- 2007
- August 3. The CIPE (Interministerial Committee for Economic Programming) financed 243 million of euro for the Mose work.
- 2008
- January 31. The CIPE (Interministerial Committee for Economic Programming) financed 400 million of euro for the Mose work.
- December 18. The CIPE (Interministerial Committee for Economic Programming) approved the financing of 800 million of euro.
- 2010
- November 18. The CIPE (Interministerial Committee for Economic Programming) approved the financing of 230 million of euro.
- 2013
- June. The Consorzio Venezia Nuova has been implicated in an investigation into allegations of corruption, extortion, bid rigging and miscellaneous tax offences. The investigation uncovered a large scale criminal conspiracy aimed at diverting public funds allocated to the MOSE project through slush funds set up using fake invoices and price manipulation. The preliminary results of this investigation raised cast many doubts about the bid management, the consultants earnestness, the trustworthiness and reliability of engineering checks and inspections that took place, and finally the pertinence of the design and technical decisions made to deliver the project.
- 2014
- June. A new scandal for corruption in the MOSE project was made public. The results from a new investigation reported that tens of millions of euros have been skimmed off the funds allocated to the project (about 5 billion euros) and transferred into foreign bank accounts for financing political parties on a local, regional and national level.

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- 1-<http://www.consorziovenezianuova.com/corporate.htm>
- 2-<http://mediateca.consorziovenezianuova.com/>
- 3-<http://www.magisacque.it/ilmav.htm>
- 4-<http://www.salve.it/banchedati/Documenti/uk/Accordi.htm>
- 5-<http://www.salve.it/banchedati/Leggi/uk/decreti%20legge.htm>
- 6-<http://www.salve.it/banchedati/Leggi/uk/leggi.htm>
- 7-<http://www.salve.it/banchedati/Letteratura/uk/Risultati.asp>
- 8-<http://www.salve.it/uk/soggetti/soggetti.htm>
- 9-http://www.salve.it/uk/soluzioni/acque/mose_avanzamento.htm
- 10-http://www.salve.it/uk/soluzioni/acque/mose_studi.htm
- 11-N. Doni and R. Signorelli, “Le Tecniche di Project management applicate al progetto Venezia”, available in <http://www.salve.it/banchedati/Letteratura/uk/Risultati.asp>
- 12-M. Gentilomo and G. Cecconi, “Flood protection system designed for Venice”, available in <http://www.salve.it/banchedati/Letteratura/uk/Risultati.asp>
- 13- P.A. Moro, “Profilo del Consorzio Venezia Nuova”, available in <http://www.salve.it/banchedati/Letteratura/uk/Risultati.asp>
- 14- http://www.marinadiliogrande.eu/mose_sistem.html
- 15- <http://www.salvemose.it/?area=2&menu=3&page=53>
- 16- <http://www.calcolostrutture.net/il-mose.html>
- 17- Lucia Vergano, Georg Umgieser and Paulo A.L.D. Nunes, “An Economic Assessment of the Impacts of the MOSE Barriers on Venice Port Activities”, Fondazione Eni Enrico Mattei and Ca' Foscari University of Venice, 2010, <http://www.bepress.com/feem/paper407>
- 18-“CASE HISTORY: MO.S.E. PROJECT, VENICE, ITALY”, Ref: UK-IT/CH/EP027 — Rev:01, July 08, available in www.maccaferri.co.uk
- 19-<http://www2.comune.venezia.it/mose-doc-prg/>
- 20-A. Vitucci, “La visita nei cantieri del Mose: cassoni alti come grattacieli”, April 2011, available in <http://nuovavenezia.gelocal.it/cronaca/2011/04/29/news/la-visita-nei-cantieri-del-mose>
- 21-<http://www.drytech.ch/new/svbreferenzegenio06.php?lang=en>
- 22-G. Dallaporta, “Il MOSE: un progetto che nasce dal CNR”, <http://www.fi.cnr.it/r&f/n12/dallaporta.htm>
- 23-<http://www.ilvelino.it/articolo.php?idArticolo=1434671>
- 24-http://www.italiamiga.com.br/noticias/artigos/prima_pietra_per_il_mose.htm
- 25-<http://www.maccaferri.co.uk/PAGES00648.html>
- 26-E. Della Frattina, “Mose, l’eterno incompiuto che costa molto e serve a poco”, <http://www.patrimoniosos.it/rsol.php?op=getarticle&id=85118>
- 27-<http://www.cooperativasanmartino.it/pagina.aspx?ID=2101>
- 28-http://www.edilportale.com/news/2003/04/aziende/mose-impregilo-in-consorzio-veneziana-nuova_3738_5.html
- 29-Consorzio Venezia Nuova and Magistrato alle Acque, “Nuovi interventi per la salvaguardia di Venezia: studio di impatto ambientale, sintesi non tecnica”, 2004.
- 30- Giampaolo Bonzio, “Mose, fatture gonfiate per acquisti in Croazia: fondi neri scoperti in Austria”, in *Il Gazzettino*, 13 luglio 2013.
- 31- “Mose, inchiesta sugli appalti: arrestato il sindaco di Venezia. Chiesta custodia cautelare per Galan”, *la Repubblica*, 04 giugno 2014, available in http://www.repubblica.it/cronaca/2014/06/04/news/mose_35_arresti_per_tangenti_anche_il_sindaco_di_veneziana-88004605/?ref=HREA-1