Spain: The World Land-Bridge's Bridge to African Development

by Dennis Small

May 28—Spain, today notorious as the epicenter of the current disintegration of the trans-Atlantic banking system, and for having the highest rates of unemployment in Europe—an official 24.4% overall, with shocking youth unemployment of more than 50%—tomorrow will be one of the key geographic and economic bridges from Europe to Africa, in a recovering world economy. It will play a central role in providing crucial science-driver programs, infrastructure, engineering, and capital goods to North Africa in particular; and in the process it will *productively* employ and re-employ its own massively un-, under-, and mis-employed labor force, most especially its youth, in high-productivity jobs.

In order to create 10+ million new productive jobs in Spain, and to help create further millions of jobs throughout the Mediterranean Basin, Spain—along with its sister nation on the Iberian Peninsula, Portugal—will develop major projects in the following areas:

• **Rail:** Spain will build high-technology industrial corridors on either side of some 15,000 kilometers of new, high-speed rail lines (including magnetically levitated systems) that will crisscross Spain and Portugal, and link up with the World Land-Bridge in southern France.

• **Strait of Gibraltar Tunnel:** A 40 km tunnel built under the Strait of Gibraltar, from Spain to Morocco, will allow European rail corridors to be connected to future North African rail systems. This will be a project on the scale, and of the significance, of the Bering Strait tunnel and the Darién Gap project, because like them, it will link an entire *continent* into the World Land-Bridge.

• **Water:** Spain will dust off existing, viable water-transfer projects, such as the Ebro River project, to transfer about 1 cubic kilometer of water per year to the semi-arid Mediterranean coast; and it will also produce some 1.5 km^3 of fresh water yearly with nuclear-powered desalination plants.

• **Nuclear energy:** In addition to the nuclear plants needed for desalination, Spain will build modern nuclear power plants to produce about three times the 7,500 MWe per year that the country currently gets from its eight aging nuclear plants. This will allow Spain to rid itself of the economically destructive (and scientifically incompetent) emphasis on wind and solar power, which has been imposed on it by the British Empire's fascist Greenie movement, led by the World Wildlife Fund (WWF). Where is Don Quixote when we need him?

• **Space science:** The Canary Islands is an ideal location for a new Euro-African space center, including a major satellite-launching facility and related science city. This will be coordinated with critical work being done in Greece, Italy, and other nations around earthquake precursor detection and other endeavors involved in the Strategic Defense of the Earth program, in furtherance of the common aims of mankind.

This will not be the first time in its history that Spain will play a catalytic role at the crossroads of cooperating civilizations. Under the personal guidance of Alfonso X, "The Wise," King of Castile and Leon from 1252-82, the Castilian capital of Toledo was built into Europe's most important scientific center of the time, and the nexus for the transmission of the Greek Classics and the highest achievements of the Arab Renaissance into continental Europe. Alfonso was especially known for his work in astronomy, and for his Toledo school of translation, which brought together the outstanding scholars of the world's three major monotheistic religions—Islam, Christianity and Judaism—to render the most advanced religious and scientific texts of each culture, into the languages of the others.

It is past time for a new "Alfonsi Era."

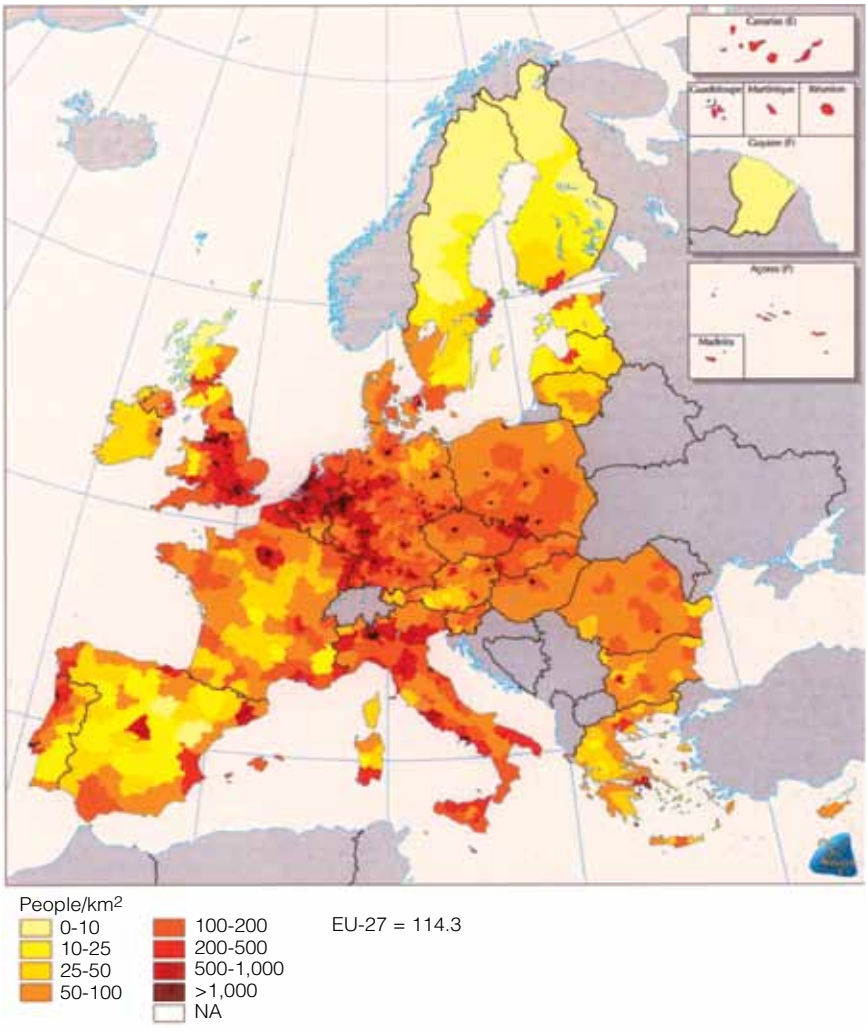
Under-Populated...

Since the development of the productive powers of labor is the only source of true value in an economy, the demographics of Spain's labor force provide the proper starting point for our diagnosis and proposed solutions.

Spain's total population is about 46.2 million people, with an average population density of some 91 inhabitants per square kilometer. But that population is distributed very unevenly across the national territory,

MAP 1

Europe: Population Density



Source: Ministry of Agriculture, Fishing and Food (Spain)

with heavy demographic concentration along the Mediterranean coast and in the capital, Madrid; whereas the entire central area, about half the national territory, has a population density of less than 25 per km^2. So, as usual, mathematical averages don't mean much in the real world of physical economy.

As can be seen in **Map 1**, Spain compares unfavorably to the rest of Western Europe in terms of population density, with the exception of sparsely populated countries such as Finland and Sweden.

Over the course of the 20th Century, Spain's total population tripled, but 11 of its 50 provinces had net reductions in population over that period, as it became increasingly impossible to survive in traditional agriculture, and there was inadequate internal development to employ people. So people fled to the coasts and the larger cities, where they are now unemployed in huge numbers.

A satellite photograph of the Iberian Peninsula by night shows the same picture: a band of light along the Mediterranean coast; bright concentrations in Madrid and Lisbon; and general darkness in the interior.

A map of annual precipitation (**Map 2**) points to the same problem, showing that about half the country—especially the central mesetas area—is semi-arid (less than 500 mm, or 20 inches, of precipitation per year). The lack of any significant water projects to take water (and development and population) to this region, is a key feature of the country's historic lack of development.

A map of railroads shows an interesting contrast. Spain has about 19,000 km of rail which crisscross the country, of which over 2,600 km are high-speed lines. This has made Spain #1 in Europe in total high-speed rail kilometers in service, and second in the world after China.

. . . and Underemployed

Spain's economy is destructively skewed towards tourism and real estate, with 69% of all official employment being in the so-called services sector (including 370,000 "legal" prostitutes). Only 13% is in manufacturing; 9% in construction and mining; 5% in transportation; and 4% in agriculture. In fact, if the British Empire has its way, the whole country will be driven into "whoreticulture."

Most explicit in this regard was the early April 2012 offer by Sheldon Adelson, the biggest owner of gambling casinos worldwide, including the las Vegas Sands Corp., to invest $35 billion in Spain for the construction of 12 casino resorts, of 3,000 rooms each, to attract 11 million tourists per year. This would create 300,000 new jobs in Spain, claimed Adelson, who is also infamous for being the big bankroller of Newt Gingrich's failed Presidential candidacy in the United States, a close friend of war-mon-

FIGURE 1
Economically Active Population (EAP) and Employment
(millions)

	2008	2009	2010	2011
TOTAL EAP	22.8	23.0	23.1	23.1
Employed	20.3	18.9	18.5	18.1
Productively Employed	10.7	9.7	9.4	9.0
—Productively Employed as % EAP	47%	42%	41%	39%
YOUTH EAP (16-24)	2.4	2.2	2.0	1.9
Employed	1.8	1.4	1.2	1.0
Productively Employed	0.8	0.6	0.5	0.4
—Productively Employed as % EAP	35%	27%	24%	20%

Sources: INE, EIR

gering Israeli Prime Minister Benjamin Netanyahu, and an all-around leading light of the circles around Britain's dirty-money and organized-crime syndicate, Dope, Inc.

Spain's official unemployment rate is 24.4% overall, and 50+% for youth 16-24, which is the worst in Europe. The regional breakdown in terms of official unemployment shows 3 of the country's 17 autonomous regions with over 30% unemployment: Andalusia (33.2%), Canary Islands (32.3%), and Extremadura (32.1%). Of these, Andalusia is the most populous region in the country, with almost 8.3 million inhabitants.

But as bad as official unemployment is, it is nothing compared to what *real* unemployment is, calculated from the physical economic standpoint of Lyndon LaRouche's bar diagrams pedagogy.[1]

Of the total population of 46.2 million, some 30.7 are working age (16-64). Of these, only 23.1 are considered part of the Economically Active Population (EAP), or labor force. Although 18.1 million are considered to be employed (down from 20.2 million 4 years ago), and 5 million unemployed (up from 2.6 million), the fact of the matter is that fully *half* of those "employed" are unproductively employed, in areas such as tourism, finances, retail trade, administration, etc. (This was calculated according to the official statistics of employment by sector, as provided by the INE, the National Statistics Institute.) (See **Figure 1**.)

Viewed this way, the real unemployment rate in Spain today is probably about 60%. Although some small part of the unproductive employment category is arguably socially necessary, and therefore should fall in the category of real employment, that factor is probably more than compensated for by disguised unemployment within the category of the 16-64 age group who are not formally part of the labor force (EAP)—i.e., those who have gotten so demoralized that they have stopped looking for a job, etc.

If you look at these same categories for the youth segment (16-24), you find that the total youth EAP has dropped from 2.4 million in 2008, to 1.9 million today, a 21% drop. This demonstrates the existence of huge disguised unemployment among the youth, in the form of people simply dropping out of the labor force. Official youth employment has plunged from 1.8 million to 1.0 today (a 44% drop); while productive employment among youth went from 836,000 to 390,000 (a 55% fall). The country is simply devouring its youth, its own future, under the current EU model.

So if the current labor force (EAP) is 23.1 million, and only 9 million of these are actually productively employed, this translates into the need to create up to 14 million new, productive, high-technology jobs in Spain in short order, of which some 2 million will be for youth.

The existing brain drain from both Spain and Portugal must be stopped, and reversed. Current Troika-dictated policies are actively encouraging that the most valuable resource of Spain and Portugal, their youth, be driven to emigrate in order to survive. In the case of Portugal, which is experiencing one of the biggest emigration waves in its history, as citizens look abroad for the jobs they cannot find at home, Prime Minister Pedro Passos Coelho suggested in December 2011 that unemployed teachers should stop "complaining" and go ahead and emigrate to Portuguese-speaking Angola, Mozambique, or Brazil.

Portugal has one of the lowest schooling levels in Europe, with an average of only 7.7 years spent in schooling among its under-25-year-olds, but as far as the current government is concerned, "Portuguese teachers can look at all the Portuguese-speaking market as a whole and find an alternative."

That statement set off a wave of protests in the country around the slogan: "Mr. Prime Minister: *You* emigrate!"

Spain's Prime Minister Mariano Rajoy's policies

1. Lyndon H. LaRouche, Jr., *Dialectical Economics: An Introduction to Marxist Political Economy* (New York: Heath, 1975)

MAP 2

Spain: Annual Rainfall and the National Hydrological Plan

Sources: INE (Spain); EIR

are no different—and they are also dictated by the EU and the IMF. His government has announced a 22% cut in education spending, with 37% cuts to pre-school and primary school budgets. With over 50% youth unemployment, Spanish youth are already leaving the country *en masse* after finishing their education. Spanish scientists warned of a "brain drain" and "collapse" of research in Spain, in a mid-March 2012 Open Letter to the government.

Stopping this deadly brain drain requires a reconstruction plan centered on Spain and Portugal's role within the World Land-Bridge, and its special role as one of the key bridges from Europe to Africa. Spain must be put to work to rebuild its own economy, and to provide crucial infrastructure, engineering, and capital goods to Africa.

Great Water Projects

Spain's precipitation produces about 112 km^3 of water per year, which comes to about 2,700 m^3 per capita per year. That compares to an average of 10,600 m^3 for Europe as a whole. Of that total available, the amount actually used (withdrawals) is 875 m^3 per capita per year, which is pretty much on a par with the rest of Europe. But again, the average conceals the fact that the central mesetas and Mediterranean coast of Spain are desperately short of water. As a result, there is serious over-exploitation of aquifers in these drier regions.

Average precipitation in Spain as a whole is 650 mm, but most of the central mesetas and Mediterranean coast get under 500 mm, and much of that under 300 mm (**Map 2**). The province of Almería in Andalusia is probably the most arid region in all Europe; its Cabo de Gata area receives barely 125-150 mm of rain a year. (Arid or desert areas are conventionally classified as receiving 0-250 mm of precipitation per year; semi-arid is 250-500 mm.)

Spain has constructed a significant number of dams (the total went from 60 at the beginning of the 20th Century, to about 1,000 today), and has reservoirs capable of storing some 54 km^3 of water—almost half the annual runoff, which is the highest proportion in all Europe. About 80% of all Spain's water withdrawal is used in agriculture, especially in the more productive southeast. About 20% of the agricultural land area is irrigated, and it is estimated that that land produces about half of the country's total food output.

In June 2001, the Spanish government proposed to implement a very modest National Hydrological Plan (PHN), which would have transferred about 1 km^3 of water per year from the Ebro River in the northeast of the country, down the Mediterranean coast, complemented by about a half-dozen desalination plants. But it was stopped dead by the British Monarchy's World Wildlife Fund (WWF), and their Greenie allies inside Spain.

Of all Spain's rivers, the Ebro has the highest discharge rate. The average discharge registered in the Tortosa gauging station, located 48 km from the river mouth, was 13.8 km^3 per year from 1960 to 1993 (equivalent to an average flow of 425 m^3/s), which is, however, highly irregular over the course of the year. That amount has also been reduced over the years, as more water has been withdrawn upstream, with the 2000-08 average at Tortosa reportedly being 8.8 km^3 per year, down from 13.8, two or three decades earlier.

Since the 1930s, 138 reservoirs have been constructed in the Ebro River basin, with a total storage capacity of 6.8 km^3—more than half the average annual

discharge from 1960-1990.

The idea of the PHN (see Map 2) was to transfer 1.05 km^3 per year, or about 12% of the Ebro's current annual discharge of 8.253 km^3. Of this total amount, 0.19 km^3 was to be transferred northwards to Barcelona; 0.315 km^3 south to Valencia; 0.45 km^3 south to Murcia; and 0.095 km^3 south to Almería. About 120 new dams were to be built, along with canals and 10 pumping stations. Other than the northward portion for the urban area of Barcelona, the remainder of the transfers were intended for primary use in agriculture.

By international standards, the Ebro project, with its transfer of 1 km^3 per year, is quite modest. For purposes of comparison, the NAWAPA (North American Water and Power Alliance) project would transfer 165 km^3 of water per year; and even the modest PLHINO (Northwest Hydraulic Plan) in northwest Mexico, would transfer 7 km^3 per year.

But by 2004, the Spanish government of José Luis Rodríguez Zapatero had shelved the PHN, and put in its place a program for providing a lesser amount of water to the Mediterranean coast (0.715 km^3) by desalination plants—a project which predictably never materialized. The prime mover in the sabotage of the Ebro project was Prince Philip's WWF, which is explicitly opposed to *any* water transfers from one basin to another, anywhere in the world.

The WWF published a report in 2004 which classified Spain as among the three worst countries in Europe in terms of water management, and in a press release headlined "Seven reasons to stop the Spanish National Hydrological Plan," denounced the PHN as "illegal under EU legislation," "not economically justified," and—of course—"environmentally damaging." This led to a European Parliament inquiry (i.e., inquisition), which likened the planning involved "to the old Soviet-style of water management," and demanded the Spanish government answer the WWF's accusations. The upshot was that the project was shelved.

Under our Marshall Plan for the Mediterranean Basin, Spain will immediately restart the stalled National Hydrological Plan's Ebro water transfer project, which will require expelling the WWF, and its influence, from the country. This will produce numerous side benefits, such as ending Greenie mental pollution of the youth, as well as possibly putting an end to the Spanish monarchy—after all, King Juan Carlos is also the honorary president of WWF Spain.

However, the Ebro project alone is insufficient to put a serious dent in the water shortfall in most of the country. An ambitious nuclear desalination project should also be initiated, with which fresh water will literally be *manufactured*.

The most efficient power source to drive desalination plants is nuclear power. One leading type of reactor is a modular High-Temperature Gas-Cooled Reactor (HTGR), capable of producing 350 megawatts. One "island" of four modular HTGR reactors can produce a total of 1,400 megawatts of power. This level of power, when transmitted to a multi-stage flash distillation desalination plant, will generate about 145 million cubic meters of fresh water per year. It will also generate, beyond that, 446 MW of net electrical output.

If Spain were to build, initially, 10 such nuclear islands, principally along the Mediterranean coast, each hooked up to water desalination plants, it will generate about 1.5 km^3 of new fresh water per year—50% more than the amount to be transferred from the Ebro. That will allow for high-technology agriculture to really take root in the country, along with the numerous downstream industries that this implies.

In this way Spain will become a net food exporter not only to Europe, but to Africa as well.

Full Tilt for Nuclear

Spain will never develop unless it rids itself of the British Empire's green ideology which has taken over the country, especially the youth, and has transformed Spain into a world leader in the clinically insane policy of fostering solar panels and windmills.

Spain got a good start in nuclear energy, beginning construction on its first nuclear plant in 1964, which went into operation in 1968. Over the course of the 1970s and early 1980s, eight nuclear reactors were put into operation. But then in 1983, a moratorium on further nuclear plant construction was adopted under the London-run government of Prime Minister Felipe González (1982-96), which reaffirmed the moratorium in 1994 and abandoned five units that were then under construction.

Today, the country has eight aging nuclear power plants, which in 2010 provided 21% of the country's electricity generation. Natural gas produced 32%; coal 9%; and a stunning 15% came from windmills, and 5% from solar and other so-called renewables (see **Figure 2**). In other words, wind and solar—with their destructively low energy-flux densities—today produce as much electricity in Spain as nuclear energy!

FIGURE 2
Total Electricity Generated, 2010
(thousand GwH)

	Amount	% of Total
Natural Gas	96	32%
Nuclear	62	21%
Wind	44	15%
Solar, Other Renewables	17	5%
Hydroelectric	39	13%
Coal	26	9%
Fuel Oil-Gas Oil	16	5%
TOTAL	300	100%

Source: INE

FIGURE 3
Primary Energy Consumption, 2010
(millions TPE)

	Consumption	% Cons.	Production	% Prod.	% Self-Sufficiency
Petroleum	62.5	47%	0.1	0%	0%
Natural Gas	31.0	23%	0.1	0%	0%
Nuclear	16.2	12%	16.2	47%	100%
Renewable Energy	14.7	11%	14.7	43%	100%
Coal	8.5	6%	3.0	9%	36%
TOTAL	132.1	100%	34.3	100%	26%

Source: INE

Over the last few years, vast financial subsidies to wind and solar led to huge increases in the installed capacity in these sectors. But in 2010, the government reneged on its rate subsidies for solar, when budget austerity became the order of the day.

Total electricity consumption in Spain had been rising steadily until 2008, but since then has declined to the current level of about 5,600 kwh/year per capita. Total energy consumption also peaked in 2007, and since then has fallen by 15% per capita. In terms of energy self-sufficiency, Spain is extremely dependent on oil imports: Oil is 47% of total energy consumption, and natural gas another 23%, and in both categories it is all imported. Nuclear is 12% of the total energy consumed, and it is 100% produced in Spain. All in all, Spain only produces about one-quarter of all the energy it consumes (**Figure 3**).

Under our plan, nuclear energy will replace the insane current emphasis on windmills and solar power, which produce neither the energy output nor the energy-flux density levels required by modern society. Even the addled Don Quixote knew that it made sense to get rid of windmills.

Currently, nuclear produces about 7,500 MWe per year, one-fifth of the total electricity produced in the country. The proposed 10 nuclear islands required for desalination are a good start on improving that situation, generating about 14,000 MWe per year, which will nearly triple the current level. Of this, 9,500 MWe will be "earmarked" for desalination, and 4,500 MWe will be available as net electrical output. A dozen or more fourth-generation nuclear plants will also be built in the interior of the country, to produce some 20,000 MWe per year. This will allow Spain to immediately phase out the economically destructive wind and solar emphasis, and to gradually reduce Spain's enormous dependence on imported oil and natural gas.

In Portugal, at least three such nuclear islands will also be built along the southern coast, to similarly desalinate water and produce net electrical energy.

Building the Bridge to Africa…

One of the bright spots of Spain's physical economy is its rail sector, both in terms of existing infrastructure as well as world-class engineering and production capabilities. High-speed trains now run on 2,600 km of track in Spain, with significant additional lines under construction. The existing government plan—which can never be executed within the euro straitjacket—projects having 10,000 km of high-speed track by 2020.

Historically, Spain has had a different gauge (1,668 mm) from most of Europe (1,435 mm, also called the UIC gauge), which has created major bottlenecks requiring—until relatively recently—transfer of passengers and freight at the French border. Portugal's slightly larger gauge of 1,774 mm is inter-operable with Spain's, so the two are often referred to as the "Iberian gauge." This is also a major problem as you move east into Ukraine, Belarus, and Russia, which have a third gauge (1,520 mm).

The very *raison d'être* of the World Land-Bridge, especially as you move into maglev and other high-speed rail lines, demands a solution to this problem. New lines can and should be standardized, but interim solutions to link existing rail networks of different

MAP 3

Spain and Portugal: High-Speed Rail Lines (EU Project 19)

Source: EU

gauges are also required. Rather than transferring passengers and cargo between trains (and switching out locomotives), which is highly inefficient, there is now technology, pioneered by Spanish companies, to automatically change the gauge of the existing axles while the cars are in motion (at about 15 kph). This requires axles specially constructed for this purpose.

Spain's Talgo company pioneered work internationally in this area, developing the first commercial application of a track changeover system in 1969. A second Spanish company, CAF, developed its own system in 2003. Other countries now producing similar systems include Poland (SUW 2000, in 2000), Japan (in 2007), and Germany (Rafia, no commercial application yet).

In 1988, Spain decided to construct all of its new high-speed rail corridors at the European (UIC) gauge. There are currently four principal high-speed corridors: Madrid-Barcelona; Madrid-Valencia; Madrid-Valladolid; and Madrid-Sevilla/Málaga (**Map 3**).

There are a number of Spanish companies involved in high-speed rail today, including Talgo, Renfe, CAF, AVE, etc. CAF recently signed contracts for building five high-speed rail lines in Turkey. And Talgo has built and runs rail lines in Kazakstan, Argentina, the United States, and the Portugal-Spain-France-Switzerland-Italy corridor in Europe. They also just sold 17 cars and one locomotive to Russian Railways, which will now be able to run continuously between Moscow (standard gauge) and Berlin (UIC gauge). Existing high-speed rail lines also link Berlin to Paris and Perpignan, and from there they will go under the Pyrenees Mountains through a new tunnel, to Figueras on the Spanish side, and down to Barcelona and Madrid.

The success of the entire Marshall Plan for the Mediterranean Basin will rely on Spain building on strength, and assuming a leading role in engineering, building, and exporting high-speed rail systems. It will simultaneously develop related downstream industries, including construction, steel, metalworking, electrical and electronic components, telecommunications, etc., while leapfrogging ahead into magnetic levitation (maglev) technologies. The new, productive, high-technology jobs so created will make a serious dent in today's unemployment problem.

There are some existing rail links connecting Spain and Portugal with the rest of Europe, and these will be improved and broadened (see Map 3). In addition to the Barcelona-Madrid corridor (which is operational), this will include:

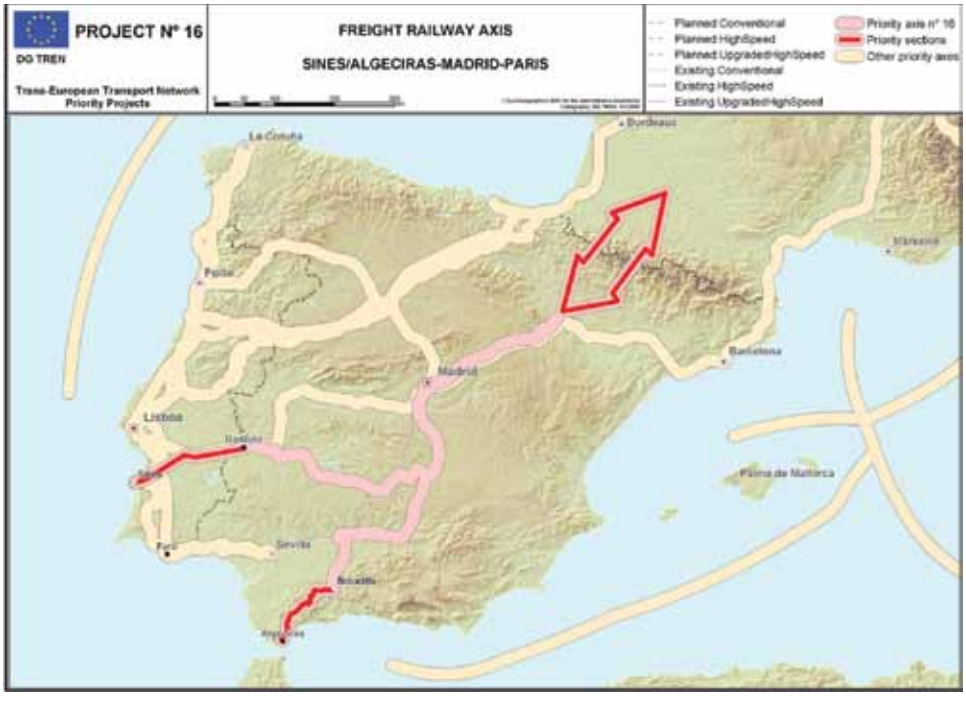
- An Atlantic branch: Madrid-Valladolid (operational)-Burgos-Vitoria-Bilbao/San Sebastián-Dax-Bordeaux-Tours (Paris).
- An Iberian branch: Madrid-Lisbon-Porto.

Similarly, the EC's Priority Project 16, for a freight railway axis Sines/Algeciras-Madrid-Paris, links the key ports of Sines (southwestern Portugal) and Algeciras (southern Spain), with the center of Europe (**Map 4**). This requires the construction of a high-speed freight corridor, including a new high-capacity rail link for freight across the Pyrenees, which would involve a long-distance tunnel through the Pyrenees.

Although technically viable, these EU projects are financially and politically frozen, and will never be implemented under the current Maastricht diktat.

MAP 4

Spain and Portugal: High-Speed Freight Rail Lines (EU Project 16)



Source: EU

As for *Portugal*, the agreement with Spain to build a high-speed rail line from Madrid to Lisbon was suspended by the current government of Passos Coelho in 2011, on Troika orders. Not only should that line be built, but existing Spanish plans to link the two countries with four high-speed rail lines (Vigo-Porto; Salamanca-Porto; Madrid-Badajoz-Lisbon; and Seville-Huelva-Faro) should go ahead, and internal Portuguese high-speed lines connecting Lisbon with Oporto, and Lisbon with Faro—all at international UIC gauge—must also be built (see Map 3).

The southernmost point of this network in Spain is Algeciras. From here, a new high-speed rail line will be constructed to Tarifa and Cádiz, since Tarifa will be the Spanish terminus of a tunnel with high-speed rail going under the Strait of Gibraltar to Tangiers, Morocco, and from there will link to the whole Africa leg of the World Land-Bridge.

The idea of a tunnel was first proposed in Spain in 1930, and since that time, various options have been considered, including a fixed bridge (ruled out because of the impossibility of building supporting pillars in 300 meters, or more, of water), a floating bridge (discarded because of the strong cross-currents in the strait), and a tunnel bolted to the seabed (not viable, both because of the strong currents and the seabed's instability in that region).

In 2003, Spain and Morocco agreed to explore the construction of a fixed tunnel, and in 2006, their SECEGSA (Spain) and SNED (Morocco) state companies hired the renowned Swiss tunnel engineering company Lombardi to draft a design for the project. In 2009, the Lombardi proposal was presented to the EU—after which absolutely nothing has been done, because the entire Eurozone and world financial system is collapsing.

The Lombardi plan considered the option of a bridge at the narrowest point between the two continents (14 km), but since the seabed there is a very deep 900 meters, it was discarded as impracticable. The selected route instead runs at a more western point, from Tarifa, Spain, to Tangiers, Morocco, a route where the sea floor is "only" 300 meters deep—which would make this the deepest undersea tunnel in the world. The length of the tunnel would be about 40 km (see **Map 5**). It would consist of two tubes for train lines for both passengers and freight, with an emergency or service tunnel running between them.

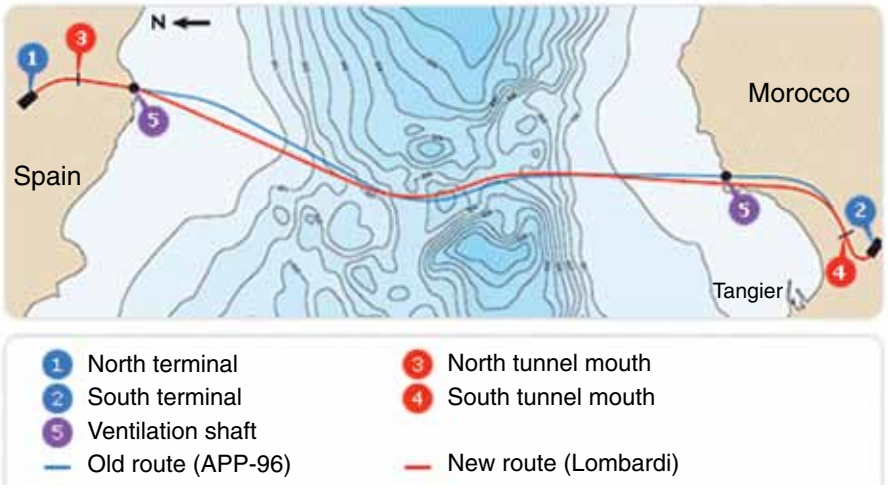
Lombardi estimated that it would take about 15 years to build, given the engineering problems to be solved—including the fact that it would run through a highly active seismic area (the Azores-Gibraltar Transform Fault), and difficulties in the stratification of the seabed there, described as a virtual "cocktail of sand, stone, and mud that make for a digger's nightmare." In fact, engineers have had to invent new boring methods just to drill exploratory holes, given the rock formations and the fierce underwater currents.

For purposes of comparison, the Channel Tunnel is only 50 meters below sea level, and is 49 kilometers long. The Bering Strait Tunnel would be at about the same depth (54 meters), and run 85 km in total, but it would make use of the Big Diomede and Little Diomede islands as "stepping stones," making the longest stretch only about 35 km long.

Once completed, and linked to high-speed rail lines,

MAP 5

Projected Tunnel Under the Strait of Gibraltar



Source: SECEGSA (Spain)

SECEGSA/SNED calculate that it would take 1.5 hours to get from Casablanca to the tunnel terminus in Tangiers; 30 minutes to cross to Tarifa, Spain; under 3.5 hours to then get to Madrid; and then 2.5 hours more to get to Barcelona. In other words, it would take less than 8 hours to get from Casablanca to Barcelona!

The joint SECEGSA/SNED website summarizes their concept of the project as follows: "The Fixed Link Through the Strait of Gibraltar can be considered the decisive connection between two continents and two great seas, which will articulate a heretofore unknown system of transportation between Europe and Africa and the Mediterranean surroundings."

As part of this project, it would be appropriate to return the island of Gibraltar to Spain, from which the British stole it in the 1700s.

On the Morocco side, the Strait of Gibraltar tunnel will link up with high-speed rail lines in North Africa. The French are already helping to build high-speed rail lines in Morocco, and the entire North Africa rail project is a perfect area for French-Spanish cooperation.

. . . and on to Other Planets

Achieving these ambitious projects on planet Earth, however, depends on inspiring coming youth generations with mankind's true mission, his extraterrestrial imperative. The scientific breakthroughs, and the related cultural optimism, that is so sorely lacking today, will only come with such a focus and mission.

With that in mind, our Marshall Plan for the Mediterranean Basin will also construct a world-class Euro-African spaceport and associated science city on the Canary Islands. This location—100 km off the western coast of Morocco, at the same latitude as the U.S.'s Cape Kennedy—is ideal for such a project.

There is, in fact, already advanced scientific work underway in the Canaries. The Canary Islands are the site of a number of observatories, the latest and biggest of which, the solar telescope GREGOR, was inaugurated on May 21, 2012 on Tenerife. There, on the plateau at the foot of the 3,718-meter-high Teide volcano, the telescope, Europe's biggest, is being run by a consortium of researchers from the Kiepenheuer Institute for Solar Physics, the Astrophysical Institute Potsdam, the Institute for Astrophysics Göttingen, the Max Planck Institute for Solar System Research, and other international partners, who began constructing the GREGOR solar telescope there in 2000.

Scientists at GREGOR will not look directly at the Sun; this will be done using electronic detectors, such as spectrographs, polarimeters, interferometers, and cameras. GREGOR's rotating-fold mirror deflects the bundled beam generated by the adaptive optics system to the various instruments. Their purpose is to measure various physical solar parameters with an unprecedented level of precision, in particular, the Sun's magnetic field, and in doing so, reveal small structures down to a scale of 70 kilometers—an astounding resolution capacity, given that the Sun is located approximately 150 million kilometers from Earth.

Tenerife is already the site of numerous astronomical observatories, and will become the site of a larger scientific complex, a space city, which will be connected to the existing airport by a maglev train—especially since the area is mountainous and not suited for traditional train systems. A feasibility study for a maglev track connecting the south and north of the island has already been done by the German Railway Research Institute in Berlin.

The island of Lanzarote, a lava-dominated landscape that strikingly resembles the surface of the Moon and of Mars, could serve as a testing site for coming Euro-African space missions—mankind's true destiny.