Club’s Newsletter
Energizing Knowledge

October 2012

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CLUB’S VISIT TO EUROPEAN COMMISSION DG ENERGY

with Mr. Eric Mamer
Deputy Head of EC DG Energy

Read more about:

Mermaid Project  S.N.F Cultural Center  ISO 50001  WHR Systems in Shipping
AUEB iMBA Energy & Sustainability Club achieved the support and cooperation of European Commission DG Energy after a meeting in EC headquarters (Brussels).

Meeting with Mr. Eric Mamer Deputy Head of Directorate General of Energy European Commission (Commissioner Gunther Oettinger cabinet)

Tuesday 16th of October 2012: Mr. Dimitris Sarantopoulos, director of AUEB Energy & Sustainability Club, had a unique opportunity to meet in European Commission headquarters (Brussels), Mr. Eric Mamer Deputy Head of Directorate General of Energy (Commissioner Gunther Oettinger cabinet) and discuss about the possibilities of further collaboration between AUEB iMBA Energy & Sustainability Club and European Commission DG Energy either through the various research programs and activities of European Commission or through student traineeships.

Mr. Mamer was very interested in hearing about the initiatives of AUEB iMBA Energy & Sustainability Club in Greece and expressed his fervent support and consideration in this attempt which broadens the horizons of Greek AUEB students concerning current tendencies in energy, environment & sustainable development.

Mr. Sarantopoulos described and analyzed to Mr. Mamer the vision of AUEB Energy & Sustainability Club, which is to create a knowledge exchange platform between academia, market players and policy makers regarding the modern research challenges and current hotly debated issues in energy, environment, climate change and sustainable development in Greece and Europe. Mr. Mamer congratulated Mr. Sarantopoulos for this so important activity inside Athens University of Economics and Business and stressed the importance of research and development during these difficult times of crisis. Innovation and competitiveness are two very important parameters in order to approach solutions in the short – term.

Afterwards, Mr. Mamer referred to the challenges of European Energy Policy which are sustainable energy production, the creation of the internal energy market, the smart grids, the energy security, the renewable resources, the energy infrastructures, the energy efficiency e.t.c. Only by working in close collaboration, European Union Member States and European industry can develop energy sectors which best meet the needs of citizens and our economy, whilst minimizing damage to our environment.

Finally, Mr. Mamer found AUEB Energy & Sustainability Club newsletter groundbreaking and promised to communicate with AUEB Energy & Sustainability Club members in the near future, through the forthcoming newsletters, writing an article about the EC innovative energy policies.

Mr. Sarantopoulos thanked and transferred the gratitude, on behalf of all the club mem-
bers, to Mr. Mamer for the constructive meeting which signs a new era in the relationship between AUEB Energy & Sustainability Club and European Commission DG Energy.

Meeting with Mrs. Chrysoula Argyriou Policy Officer DG Energy & Transport, European Commission

Mr. Dimitris Sarantopoulos director of AUEB Energy & Sustainability Club also had a unique chance, Tuesday 16th of October 2012 to meet, in European Commission (Brussels), Mrs. Chrysoula Argyriou, Policy Officer in DG Energy & Transport, responsible for the Internal Electricity & Gas market in Europe.

Mr. Sarantopoulos described to Mrs. Argyriou the vision of AUEB Energy & Sustainability Club, which is to create a knowledge exchange platform between academia, market players and policy makers. Mrs. Argyriou congratulated all the students for this so important initiative which is a clear sign that the AUEB students are committed to new ideas and innovation.

Afterwards, she promised to support this attempt by sharing her experience in energy policy issues with the club members through regularly writing for the monthly newsletter and participating in Energy & Sustainability forthcoming events.

AUEB iMBA Energy & Sustainability Club, the first business school Energy & Sustainability Club in Europe, will continue to build cooperation bridges with European Commission executives in order to create opportunities for its members and all AUEB students.
Research on Innovative Multi-purpose Offshore Platforms in Greece

The Athens University of Economics and Business (AUEB) is one of the leading partners in the newly funded research project MERMAID: Innovative Multi-purpose Offshore Platforms: planning, designing and operation. As the AUEB Scientific Coordinator of this project and Director of RESEES, [Research team on Socio-Economic and Environmental Sustainability (http://www.aueb.gr/users/koundouri/resees/)] that does theoretical and empirical research supporting the understanding and implementation of Sustainable Development defined as the simultaneous achievement of Socio-Economic and Environmental/Ecological Sustainability, I decided to devote this article introducing the readers of Newsletter of the AUEB Energy and Sustainability Club to the aims and scope of this project.

MERMAID, which came as a result of EU’s energy strategy “Energy 2020”, will develop concepts for the next generation of offshore platforms which can be used for multiple purposes. The project does not envisage building new platforms, but will theoretically examine new concepts, such as combining structures for energy extraction, aquaculture and platform related transport.

AUEB coordinates the socio economic analysis of the project by assessing the socio-economic viability of the proposed novel designs of multi-use offshore platforms integrating all the necessary information generated in various stages of the project.

The funding of this project is a noteworthy success for AUEB, as it was one of the only two successful proposals under the call ‘The Ocean of Tomorrow’, FP7-OCEAN-2011, by the European Union, DG Research and Innovation, 7th Framework Programme, Coordination Programme themes Energy; Environment (including Climate Change); Food, Agriculture and Fisheries, and Biotechnology; and Transport (including Aeronautics).

This project shall have a cost of 7,4 million euro. The European Union has granted a financial contribution of 5,5 million euro. As far as AUEB budget is concerned, its cost is 503,382.40 euro for four years. The European Union has granted a financial contribution of 383,274.00 euro for four years. For further information please access http://www.mermaidproject.eu/

European seas will undergo huge development of marine infrastructure in the near future with the most obvious being the energy facilities e.g. offshore wind farms, exploitation of wave energy, expansion of electricity connections, and also further development and implementation of marine aquaculture. These developments urgently require effective marine technology and governance solutions to facilitate installation, operation and maintenance of these novel offshore activities. Simultaneously, both economic costs and environmental impact have to remain within acceptable limits, in order to increase the feasibility of the use of ocean space.

Most of the growth in wind capacities and generation will be concentrated in Germany, the United Kingdom, Spain, France, Italy and the Netherlands. The main challenges for electricity infrastructure are rising demand and augmenting shares of generation from renewable sources, combined with the additional needs for market integration and security of supply. The following figure outlines the evolution of gross electricity generation by source according to the PRIMES

Figure 1: Gross power generation mix 2000-2030 by source in TWh (left) and corresponding shares of sources in % (right), PRIMES reference scenario

Source: EC, Energy infrastructure priorities for 2020 and beyond—A Blueprint for an integrated European energy network, 2010
To this end, MERMAID will develop concepts for next generation of offshore platforms for multi use of ocean space, for energy extraction, aquaculture and platform related transport.

Different kind of concepts, such as a combination of structures or complete new structures will be examined under different conditions. No new platforms are going to be built during the project wherefore the concepts will be theoretically examined on typical realistic sites. The combination of developing and examining new concepts on a realistic site is called virtual platforms. Using the sites for virtual platforms various concepts for multi-use of the ocean space will be compared and the strengths and weaknesses related to the technical, operational, economical and environmental benefits and impacts will be assessed. Using test sites with contrasting environments specific challenges will be revealed covering the range of offshore environments in EU; such as economical challenges, technical challenges environmental challenges, and also challenges that are site-specific. Addressing the challenges will lead to optimized project development, best technical practices, a minimum of negative environmental impact, and feasibility improvement.

Table 1: Characteristics of Study sites (based on project’s Description of Work)

<table>
<thead>
<tr>
<th>Site, Sea</th>
<th>Environmental characteristics</th>
<th>Design type</th>
<th>Specific issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krieger flaks, Estuarine site, Baltic sea</td>
<td>• Cold brackish waters with optimum salinities for temperate fish</td>
<td>• Gravity based turbine foundations</td>
<td>• Dredging</td>
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<tr>
<td></td>
<td>• Location on the pathway for exchange flow between Baltic proper and the North Sea</td>
<td>• Extensive mariculture</td>
<td>• Mariculture spills</td>
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<tr>
<td></td>
<td>• High wind energy potential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Sea</td>
<td>• Waters with optimum salinities, temperate and nutrients for seaweed</td>
<td>• Gravity based turbine foundations</td>
<td>• Economic feasibility</td>
</tr>
<tr>
<td></td>
<td>• Area where there is exchange of sediment between the North Sea and the Wadden Sea</td>
<td>• Extensive aquaculture</td>
<td>• Scour and backfilling processes</td>
</tr>
<tr>
<td></td>
<td>• Wind energy potential</td>
<td></td>
<td>• Environmental impact</td>
</tr>
<tr>
<td>Ubarco and Santoña, Far Offshore area, Atlantic Ocean</td>
<td>• Very high wind energy potential</td>
<td>• Floating platform (100 m depth)</td>
<td>• Grid connections</td>
</tr>
<tr>
<td></td>
<td>• Very high wave energy potential</td>
<td>• Multiple energy converters, i.e. wind and waves</td>
<td>• Mooring systems</td>
</tr>
<tr>
<td>Acqua Alta platform, Venice, Mediterranean Sea</td>
<td>• Moderate wind energy potential</td>
<td>• Gravity based foundations (16 m depth)</td>
<td>• Grid connections</td>
</tr>
<tr>
<td></td>
<td>• Moderate wave energy potential</td>
<td>• Multiple energy converters, i.e. wind and waves</td>
<td>• Mooring systems</td>
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<tr>
<td></td>
<td></td>
<td>• Algae culture</td>
<td>• Environmental impact</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Economic feasibility</td>
</tr>
</tbody>
</table>
MERMAID has chosen to focus on four regional seas: (1) Baltic Sea, (2) North Sea and the Wadden Sea, (3) Atlantic coast and (4) Mediterranean. These are prime representatives of regional waters where there are requirements for sustainable and profitable activity for a large number of EU Member States and their governments through multiple sectors including transport, fisheries, renewable energy, tourists, commerce and local stakeholders. The following figure presents the geographical location of the four selected case studies whereas Table 1 (page 5) summarizes their characteristics.

Therefore, novel innovative design approaches should address many different physical conditions in order to make the best use of the ocean space. Going from deep water (north of Spain) to shallow water with high morphological activity (the Wadden sea) and further to inner waters like the inner Danish/Baltic areas and the Adriatic sea, changes the focus from a strong physical aspect to environmental impact on a very delicate marine environment. This will make it possible to develop, test and integrate different technologies through innovative coupling of various activities and services.

The MERMAID research team consists of 28 partners, 25 of which are from 11 Member States and 3 are from Associated Countries (Turkey, Norway). The participants forming MERMAID are Universities, Research institutes, Industry; large as well as SME’s (Small and Medium Enterprises); from many regions in EU and outside

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**Strategic Impacts of MERMAID project**

MERMAID primary contributions to Community social objectives are: sustainable development, preservation and protection of marine environments; improvement of the quality of life, health and safety; improvement of skills and employment prospects within the Community. The methodologies and tools to be developed within MERMAID will directly contribute to improve the knowledge of the performance and design of innovative multi-purpose platforms, to promote enhancing the use of renewable energy resources from the sea, especially wind, and sustainable aquaculture and fishery.

Specific expected impacts are listed below:

- **Optimised and coherent implementation of the MSFD**

The implementation of the Marine Strategy Framework Directive will be a very challenging and potentially costly process for Europe. Of course, the implementation of the directive also comes with considerable benefits in terms of sustainability of sea-related activities, ecosystem services etc. It remains however that a good knowledge base regarding human pressures on the marine environment can help optimise the definition of the GES indicators, develop efficient monitoring techniques and optimise the actions needed to reach GES of the seas. This can potentially result in considerable savings for all countries concerned. Incidentally, it can also promote the development of a new industry for the monitoring of the marine environment based on remote sensors, and smart IT systems that turn raw data into knowledge usable by policy makers. MERMAID will contribute to the development of new monitoring technologies and remote sensing systems to increase global competitiveness of the European industries.

- **Sustainable development of fisheries, aquaculture, maritime transport**

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Figure 3: Map of Europe with close-up at the four sites, with focus on local challenges

Figure 4: Location of Mermaid partners
MERMAID will contribute to the growth of aquaculture industry and to increasing food needs and food security by means of a stronger knowledge base to address the access to space by helping move aquaculture offshore in multi-use offshore platforms to move aquaculture towards environmental and feed sustainability.

MERMAID will also facilitate more efficient eco-friendly transport operations by developing decision support systems to support transport infrastructure. The operations shall be optimized through accurate predictions obtained by a combination of high resolution models, remote sensing, data assimilation, which shall be linked to databases with operator’s experiences. This will lead to much better strategies for installation, maintenance and operation of Multi-use platforms such as for instance sharing staff resources for different types of plants. This can be utilised by small as well as large operators and contractors.

- **Boost the development of marine renewable energy**

MERMAID will help ensure that it takes place in an optimal way, by promoting the necessary convergences between the energy industry and government agencies to identify sites for offshore farms with highest potential, safest to manage and to service. It will in this way contribute to offer new opportunities to the shipbuilding industry.

This project will also provide policy makers with tools to optimise marine space allocation for different marine activities and ensure that space for marine renewable energy is maximised, while taking into account other needs and impact on marine ecosystems.

Moreover, MERMAID will provide a strong boost to the development of other sources of marine renewable energy, specifically wave energy. By addressing the key technological challenges, promoting the right cross-thematic cooperation and providing for real test sites, this project can play a significant role in turning the potential of wave energy into a reality. In this way the project will contribute to the development of new emerging green technologies and global competitiveness of the European industries.

- **Boost the development of marine biotechnology**

MERMAID will contribute to this crucial development by pursuing the exploration of the seas, and improving our knowledge of the biological and natural processes that allow the rich marine biodiversity to flourish, particularly in some areas of the deep seas, and where possible the sustainable use of these resources to contribute to new emerging green technologies and global competitiveness of the European industries.

A specific task in MERMAID is dedicated to seaweed gasification and biofuel production that is expected to be one of the most promising "green" techniques to produce energy in the next future. Moreover, seaweeds - among the other advantages over land-based biomass - can absorb up to seven times as much carbon dioxide from the atmosphere as wood. This activity will thus provide a great contribution to the low carbon economy.

- **Optimise the cost of climate change mitigation**

Changes in fish stocks induced by (over-)fishing should be distinguished from those induced by climate change. Poor diagnosis in this field can lead to mismanagement of fisheries. Fine knowledge of climate change can also have an impact on the location of fish farms to optimise the physicochemical conditions for fish growth. By addressing these key issues, MERMAID will contribute to the growth of aquaculture industry and to increasing food needs and food security. It will also strengthen the role of the European maritime transport sector within offshore energy and fisheries development and facilitate more efficient ecofriendly transport operations.

- **Promoting integration between different sea-related scientific disciplines**

MERMAID will significantly contribute to new job opportunities in the shipbuilding, energy and fisheries sector, to innovation in new emerging green technologies and to raise global competitiveness of the European industries.

The societal impact of MERMAID, thanks to its fully multidisciplinary approach, will be felt in many sectors, including the marine environmental authorities and consultancy organisations advising the management of the off-shore area and its living resources; local political, regulatory and enforcement authorities; civil engineering, fishery, ecology, energy, socio-economic communities.

- **Synergies at EU level and within regional seas**

There are essentially two ERA-NETs related to marine research. However they cover essentially marine research (i.e. the marine system) and do not make the link with maritime industries and technologies, marine biotechnology, etc. MERMAID will offer a framework to make this link and boost synergies at EU level to deal with complex cross-cutting issues like "dredging with nature", marine biotechnology and biodiversity, offshore marine energy development, marine space planning etc. It will also recognise the specificities and integration of regional seas (Baltic, North Sea, Atlantic, Mediterranean, Black Sea) and boost cooperation between them. By spreading good cooperation practices acquired in some regional seas, it can help promote further integration in other regional seas.

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**Associate Professor Dr. Phoebe Koundouri**

Director of Research Team on Socio-Economic and Environmental Sustainability (RESEES),

[http://www.aueb.gr/users/koundouri/resees](http://www.aueb.gr/users/koundouri/resees)

Athens University of Economics and Business
Stavros Niarchos Foundation Cultural Center

Overview
A 21st Century Urban Symbol of contemporary Athens will emerge in 2015 with the completion of the Stavros Niarchos Foundation Cultural Center (SNFCC), a sustainable arts, education, and recreation complex built to enrich the everyday lives of Athenians and Greeks and attract millions of visitors from around the world. The striking ecological and architectural achievement includes the 170,000 m² (42 acre) Stavros Niarchos Park, a state-of-the-art, new building for the National Library of Greece (NLG) and a world-class opera house for the Greek National Opera (GNO).

A beacon of sustainability is borne out in every aspect of the design—from the Park, which also functions as a green roof for the National Library and Greek National Opera, to the canal which can also function as an additional anti-flooding measure to the whole site, to the photovoltaic canopy which produces energy for the two buildings’ needs and contributes to the goal of low emissions.

Sustainability is one of the SNFCC’s fundamental values. The creation of an environmentally friendly and sustainable infrastructure for the buildings and the Park is an important goal in the design and construction of the Stavros Niarchos Foundation Cultural Center. Soaring above the summit and extending outward from its perimeter is a floating wing—in reality a 100m x 100m Photovoltaic Energy Canopy that provides power for the facility. An engineering and construction wonder, supported by 40 sinewy metal pillars, the canopy will make a fascinating addition to the city skyline. Coupled with other environmentally innovative designs and practices, the project aims to earn Platinum or Gold Leadership in Energy and Environmental Design (LEED) certification, the first such designation in Greece and the first for a project of this scale in Europe.

LEED is a building certification system developed by the U.S. Green Building Council (USGBC) that provides independent verification that a building was designed and built using strategies aimed at improving energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. There are four levels of certification; Platinum is the highest rating awarded, followed by Gold.

Impact Assessment
A study was undertaken to assess the economic, environmental and social impact of SNFCC. This study was commissioned by the SNF but contracted and executed by The Boston Consulting Group (BCG), based on extensive previous track-record, knowledge and information from a variety of sources, interviews, market data sources and expert views. The construction and operation of the SNFCC is expected to have positive impacts in the form of increased capital investments, consumption spending, job creation, attraction of complementary businesses and other enrichments to the economic, environmental and social fabric of the local communities, Athens and Greece.

Source: www.snf.org
The benefits can be fundamentally summarized as follows:

- Approximately **€1 billion of total economic stimulus** will be derived from the upfront donation for the construction of SNFCC, with effects observed in the short- to mid-term horizon.

- The **green surface per capita will double** in the surrounding municipalities.

- Athens will gain a world-class multifaceted cultural institution – with all of the recognition and international attention that comes with it.

- The SNFCC will be the focal point of **redevelopment of a major area of downtown Athens**.

- The ongoing operations and programming of the SNFCC will be a **perpetual economic and cultural engine** for Athens and Greece.

- Special groups of visitors (e.g., people with special needs, senior citizens, immigrants) will be included in all SN Park activities, and social barriers for participating in cultural and educational activities will be removed.

- The SNFCC’s **unique public-private partnership** for social infrastructure development can be used as a **prototype for similar donations** – featuring high transparency, a robust governance structure in place and a ready-to-run organization to be transferred to the State.

- The building is **environment-friendly**, with **highly efficient energy and water use**, and it will save approximately 2,750 tons of CO2 emissions annually.

Moreover, SNFCC will address the need for additional open green spaces, doubling the green surface per capita in the surrounding municipalities of Kallithea, Moschato, Nea Smirni, and Palaio Faliro.

- With approximately **170,000 square meters of green space**, more than a thousand trees, and thousands of shrubs and bushes, the former horse racetrack site will be transformed into a unique and aesthetically pleasing environment with significant benefits for the local community.

- It will **improve air quality** by sequestering 11,000 kilograms of CO2 annually.

- It will **lower the temperature** from that of surrounding buildup areas by about 1°C.

- Its construction will be **green-friendly**, using **recycled materials** and implementing an erosion, sedimentation and dust suppression plan. At least 50 percent of construction waste will be recycled, and at least 5 percent of building materials will be reused.
One of the greatest needs for businesses, governments and the society itself nowadays is the need for provision with practical tools for all three dimensions of sustainable development; economic, environmental and social. These tools often take the form of international standards that are prepared, amongst other bodies, by the International Organization for Standardization, also known as ISO. One of these international standards is the fairly new standard for energy management namely ISO 50001.

Energy is critical to the operations of organizations and may be a major cost to them, whatever their activities. For example, for a company operating ships, energy management has become a critical part of ship operations, in part because fuel is an increasingly major cost factor. If one organization can improve the way it manages energy by maximizing the use of its energy-related assets, then rapid benefits may be realized in terms of both reduction of energy cost and consumption. The overall aim of the new ISO50001 standard is to enable organizations in the heavy industry to establish systems and processes necessary to improve energy performance, including energy efficiency, use and consumption. By correctly implementing the above, the organization can also make positive contributions towards reducing depletion of energy resources and emission of green house gases and mitigating worldwide effects of energy use, such as global warming.

International shipping has been providing the trade which is the lifeline of the global economy. The cost of energy, the international economic environment, the world financial crisis and finally the continuous pressure coming from the new regulations on the emissions control, constitute the basic factors for increased vigilance in the subject of effective and efficient energy management. As being energy efficient will become a legal requirement for shipping organizations, this standard is intended to provide a recognized framework for integrating energy performance into businesses management practices, which in turn will assist in reducing the environmental impact associated with carbon dioxide, nitrogen and sulphur oxides from shipping operations.

An Energy Management System (EnMS) is a set of interrelated and interacting elements that establish an energy policy and energy objectives and the processes and necessary procedures to achieve these objectives. The energy policy has to include a commitment from top management to continual improvement in energy performance. Thereafter, an energy review has to be developed, recorded and maintained by analyzing energy use and consumption and an energy baseline has to be established, which is the quantitative reference that provides a basis of comparison of energy performance. The latter can be measured by the use of energy performance indicators. The ISO 50001 standard, when implemented, can be aligned or integrated with other management systems, such as the 9001 for quality and the 14001 for the Environment.

In connection to the Greek shipping industry, several companies have been awarded with the ISO50001 certification. The very first one was Maran Tankers Management which was certified by Lloyd’s Register and the second one was Arcadia Shipmanagement which was certified by Det Norske Veritas. According to Lloyd’s Register’s regional manager for Europe, Middle East and Africa based in Piraeus, the energy management and the improvement of energy-efficiency levels are clearly key success factors, particularly for achieving compliance with new regulations and gaining a competitive advantage in an increasingly complex shipping business environment.

by Xenofon Varias
AUEB Energy & Sustainability Club Executive Member
Energy saving potential with Waste Heat Recovery (WHR) systems in Shipping

According to the recent comments of a senior engineer from Siemens Marine & Shipbuilding, Kay Tigges, in Tradewinds, waste heat recovery (WHR) systems can result in big fuel economies and thus reduce the fuel costs in the shipping sector.

The current marine power plants normally extract only 50% of the available potential energy from the fuel, and then emit hot exhaust gases in the atmosphere. The WHR systems use the hot exhaust from the ship diesel engines in order to drive turbo generators to produce electric power for the needs of the ship.

In this way, the overall efficiency of the engine of the vessel in terms of shaft power can be increased by about 55% and the fuel consumption can be decreased by approximately 12 percent.

Apart from the energy and cost savings for ship owners, the use of WHR systems in ships can have a great impact in reducing environmental pollution. Most vessels consume heavy fuel oil which has a relevant low cost but contains numerous pollutants like CO₂, sulfur oxides and nitrogen. WHR systems can reduce the emission of these pollutants in the environment.

These innovative systems are among the priorities for engine manufacturers despite the trending focus on cleaner fuels like LNG and low-sulphur bankers which can counter greenhouse gas emissions. After all, according to Tigges, heavy fuel oil will continue to be the primary energy source for lots of vessels, so it is wise to address the energy lost from burning it.
Athens University of Economics & Business (AUEB) Energy & Sustainability Club is the 1st Business School Energy Club in Greece.

The target of the AUEB Energy & Sustainability club is to create:

- A **knowledge exchange platform** between academia, companies and policy makers regarding the modern research challenges in energy, environment and sustainable development sectors. Researchers (professors, ph.d candidates e.t.c.) can communicate their research through Club’s newsletter to the market or the policy makers.
- A **forum of discussion** concerning the hotly debated energy and environmental topics of modern societies.
- A **communication channel** between different disciplines such as engineering, economics, public policy, environment, sustainable development where students, alumni, faculty and energy professionals can shape and share ideas concerning the upcoming new Energy Era.
- A **cell of innovation** inside university producing breakthrough ideas and collaborating with top AUEB laboratories.
- An **international academic hub** collaborating with other Energy Clubs from all over the world.
- An **entrepreneurship vehicle** by promoting new ideas and encouraging start-ups in energy, environment & sustainability business.

AUEB Energy & Sustainability Club operates under the umbrella along with the fervent support of AUEB Department of Management Science & Technology and AUEB MBA International program.

The executive members (organizing team) of the Club are only MBA students from full time or part time MBA International program.

AUEB Energy & Sustainability Club has over 200 members (Professors, researchers, business executives, MBA students e.t.c.) and over 250 subscribers to its monthly newsletter.

The academic advisory board of the Club is:

- **Professor George Ioannou**: Director of MBA International, AUEB Department of Management science & Technology,
- **Professor Spyros Lioukas**: Director of Master in Public Policy & Management, AUEB Department of Management science & Technology,
- **Professor Efthimios Tsionas**: Director of Econometrics Laboratory, AUEB Department of Economics,
- **Assoc. Professor Phoebe Koundouri**: Director of the Research Team on Socio-Economic and Environmental Sustainability, AUEB Department of International & European Economic Studies,
- **Assoc. Professor Christos Tarantilis**: Director of "Operations Research and Decision Systems" Center (Management Science Laboratory), AUEB Department of Management science & Technology.
AUEB IMBA Energy & Sustainability Club pursues interests in a wide variety of areas such as:

- Energy corporate finance, private equity & venture capital
- Energy markets, commodity and derivative trading, energy risk management
- Energy policy and strategy
- Oil & gas exploration, transportation and distribution economics (upstream, downstream)
- Environmental/ ecological sustainability, socio-economic sustainability
- Renewable energy: wind, solar, geothermal, and biomass
- Clean tech and smart grid systems
- Fossil fuel power generation

AUEB Energy & Sustainability Club provides its members with the following services:

- Monthly newsletter (with research articles, news, hotly debated energy issues)
- Events: Conferences/Seminars
- In house events: Energy Leaders speeches in university
- Executive visits: in leading energy companies & organizations
- Career Development for MBA students

Official Member of Collegiate Energy Association:
From May 2012 the Club was accepted in the Collegiate Energy Association (http://collegeenergy.org), the biggest worldwide Business Schools Energy Club Association, with more than 80 undergraduate and graduate student organizations around the world, and member Universities such as Harvard, MIT, Wharton, BERKELEY, INSEAD, HEC, London School of Economics, London Business School e.t.c..

Indicative AUEB Energy & Sustainability Club past events:

⇒ **Conference:** Last academic year we organized our 1st conference with title “Doing Business in Energy: Challenges & Opportunities in Greece” where the distinguished speakers were Dr. Yiannis Maniatis, Deputy Minister of Environment, Energy & Climate Change, Mr. Dimitris Georgantonis, C.E.O. of HERON S.A (GDF SUEZ & GEK TERNA group), Dr. Dimitris Dimitriou Chairman of the BoD & Managing Director of the Athens Urban Transport Organization, Mr. George Spyrou, Director of Terna Energy, Mr. Ioannis Papadopoulos C.E.O. of Attica Ventures and Mrs. Maria Kartalou Principal Consultant at the Boston Consulting Group and Mr. Dimitris Sarantopoulos President of AUEB Energy & Sustainability Club.

⇒ **Energy Speakers Series:** AUEB Energy & Sustainability Club had the honor during the course “Project Finance” with prof. Dimitris Psychogios to attend an invited presentation of Mr. Eddie Foster, General Director in Greece and Mrs. Stella Smerou, Country Manager of URS Corporation.
You can find more information about the AUEB iMBA Energy & Sustainability Club, like previous articles, past and upcoming events, the Team etc. in our website: http://www.imba.aueb.gr/node/184/full-time

Send us your opinion at: imbaenergyclub@aueb.gr

SHAPE THE NEXT... by Energizing Your Knowledge!