

“Identifying the European role in the re-construction projects and modernization of infrastructure in Iraq”

Duration: 10 Minutes



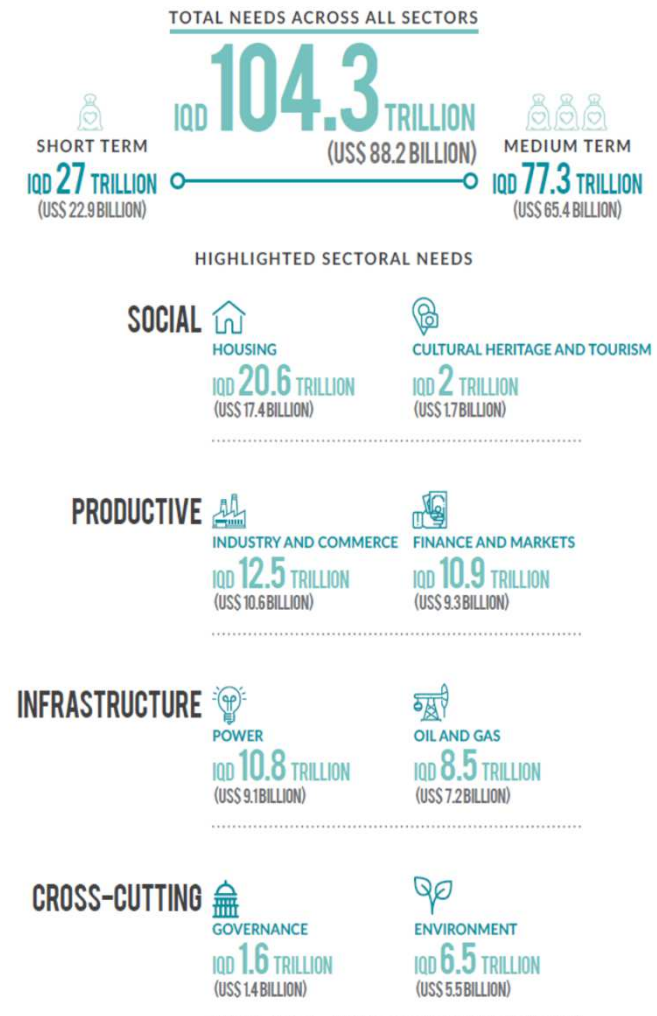
Iraqi Indicators

Main Indicators	2017	2018 (e)	2019 (e)	2020 (e)
GDP per Capita (USD)	4,950e	5,793	6,117	6,210
General Government Gross Debt (in % of GDP)	60	52	49	48
Inflation Rate (%)	0.1	0.4	2.0	2.0
Fiscal balance (% of GDP)	-1.7	6.2	-5.4	-2.6
Current Account (in % of GDP)	2.3	4.9	3.1	-1.7
Real GDP growth, at constant market prices.	-1.7	0.6	2.8	8.1
Private consumption	1.0	8.5	-5.9	6.5
Exports, Goods & Services	-0.2	1.4	2.4	10.1
Imports, Goods & Services	-0.7	20.2	14.5	-0.7



Reconstruction

- The total estimate of the reconstruction programs is \$US 88.2 billion, including \$23 billion for short-term reconstruction and more than \$65 billion for medium and longer-term projects.
- An estimated \$17 billion was suggested for rebuilding ISIS-destroyed homes (40,000 in Mosul alone, by United Nations estimates) and another \$7 billion for the repair of Iraq's oil and gas fields.
- Iraq also needs to take advantage of its abundant renewable energy potential. According to an IEA analysis, expanding the share of solar PV and wind to 30% of electricity supply by 2030 would bring benefits both to the Iraqi consumer, in the form of reduced electricity bills, and to the environment.
- Reducing network losses and moving towards an electricity mix where renewables play a more prominent role would free up 9 billion cubic meters of gas for other uses in 2030, plus 450 kb/d of oil for export.
- Data source: IRAQ. Reconstruction and investment. Damage and Needs Assessment of Affected Governorates. World Bank Group.





EU & Reconstruction

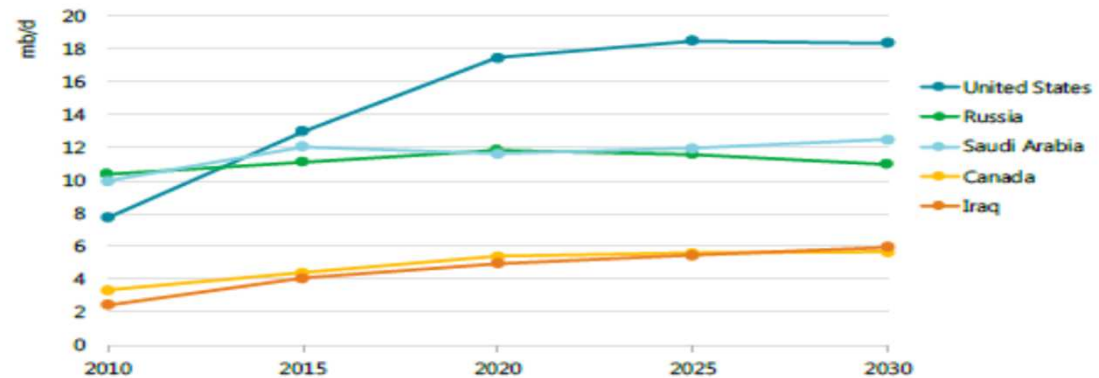
- A stable, strong, and democratic Iraq is paramount for the stability of the region.
- The EU has a long history of cooperation with Iraq, working together in fields ranging from political reform and security to education, energy and migration.
- According to the 2018 EU strategy for Iraq, the EU must:
 - a) Preserve the unity, sovereignty and territorial integrity of Iraq, as well as its ethnic and religious diversity.
 - b) Strengthen the Iraqi political system by supporting Iraqi efforts to establish a balanced, inclusive[,] accountable and democratic system of government.
 - c) Support the Iraqi authorities in delivering humanitarian aid, support for early recovery, stabilization, development and reconstruction.
 - d) Promote sustainable, knowledge-based and inclusive growth and job creation.
 - e) Promote an effective and independent justice system and ensuring accountability.
 - f) Establish a migration dialogue with Iraq.
 - g) Support Iraq's good relations with all its neighbors.
- In a country where the energy sector accounts for more than 90% of central government revenues, addressing energy sector challenges is an essential and complementary action to any public finances related reforms, an area in which the European Union and the World Bank are also partnering in Iraq.
- The country is also the world's 3rd largest exporter of oil and its untapped natural gas reserves are the 12th largest in the world, yet it is forced to import fuel to meet its domestic energy demand, which imposes significant economic and fiscal strain on public finances.
- "As pledged in the Kuwait Conference, the European Union is committed to help Iraq's reconstruction efforts and economic and political reforms to secure a better future for its citizens."



Iraq Energy

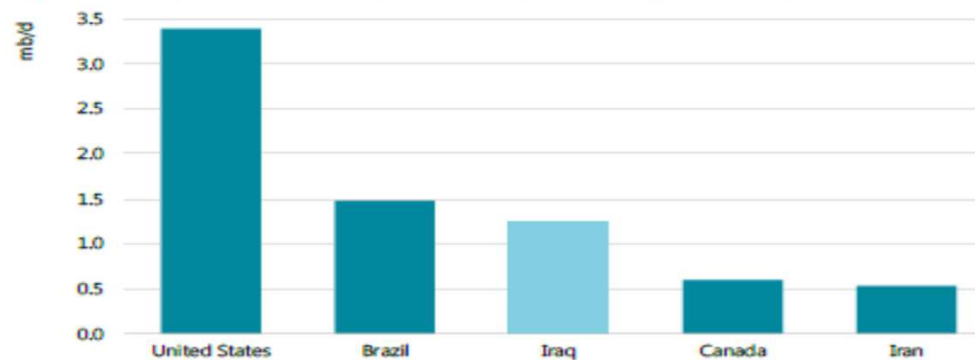
- Iraq holds the world's fifth-largest proved crude oil reserves (142,503 million barrels) and its proved natural gas reserves at the end of 2017 were the 12th largest in the world, (135 trillion cubic feet).
- About three-quarters of Iraq's natural gas reserves are associated with oil, most of which lie in the supergiant fields in the south.
- Iraq's capacity is now about 5 million barrels a day. Consultant Wood Mackenzie Ltd. forecasts Iraq could pump 6 million barrels a day by 2025 and that its output is set to grow faster than for all countries but the U.S. over the next six years.
- Iraq's economy is heavily dependent on crude oil export revenues. (estimated 89% of Iraq's total government revenues in 2017). Asia is the main regional destination for Iraq's crude oil, importing 54% of total Iraqi crude oil exports in 2017.

Figure 5. Iraq strengthens its rank as a leading oil producer



Iraq could overtake Canada to become the fourth-largest oil producer by 2030.

Figure 6. Top-five countries by increased oil production, 2018 to 2030



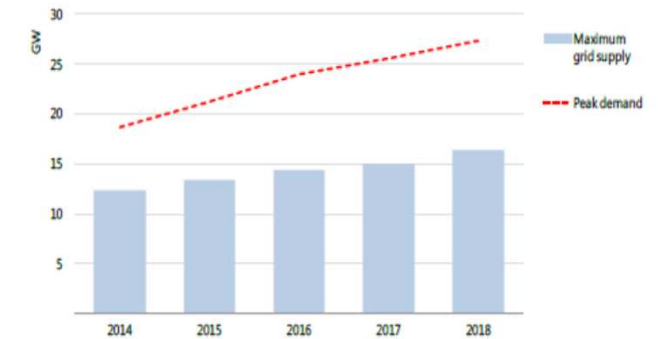
Iraq makes the third-largest contribution to global oil supply in the period to 2030.



Iraqi Electrical Energy

- The Iraqi generation and transmission systems underwent a \$7 billion in damage at the hands of the Islamic State.
- Electricity demand is climbing by about 7% annually, a pace expected to remain steady for the foreseeable future. The capacity of the Iraqi power sector, now is at 16,000 MW.
- Peak summer demand typically exceeds actual generation, resulting in power shortages that have sparked protests, particularly in southern Iraq. In the summer of 2018, the situation became acute when a summer drought reduced the availability of hydropower, and Iran cut off 1.4 gigawatts (GW) of electricity exports.
- Most of Iraq's electricity is generated by old-style gas turbine and steam turbine power plants that use natural gas or diesel as a fuel source.
- There is an approximate 50% loss in the transmission and distribution network. A typical loss in a healthy electrical grid is below 20%.
- Iraq ranks as the second-largest source country of flared gas in the world behind Russia. Efforts have been made to capture more gas at the wellhead, through the Basra Gas Company, a \$17 billion joint venture set up in 2013 with Shell and Mitsubishi.
- The current electricity generation mix is heavily slanted in favor of thermal plants relying on fuel oil, crude oil, refined gasoline (30%), gas turbine generation (around 48% of MW generated), and some limited hydroelectric capacity from the country's eight dams (14%), with remaining generation handled by diesel generators.

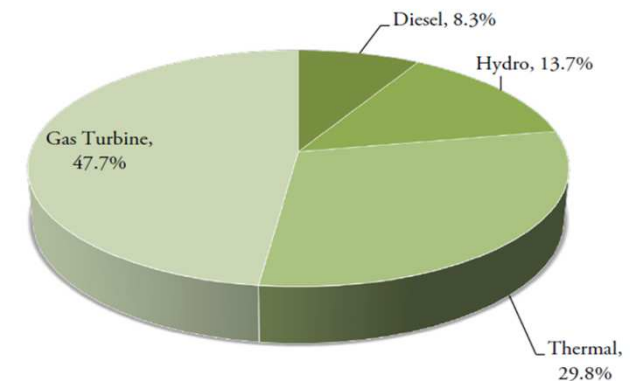
Figure 14. Peak demand and maximum power supply from the grid, 2014-18



Source: Iraqi Ministry of Electricity.

The gap is widening between peak demand and grid supply, even with recent expansion of generation capacity.

Figure 5—Iraq Electricity Generation Profile



Source: Iraqi Ministry of Electricity



Electricity Challenges in Iraq

- According to the Roadmap for the Electrification of the New Iraq what is needed entails the following:
- Reducing energy losses
- Introducing smart grids
- Strengthening the transmission grid
- Modernizing existing power plants
- Adding new generation capacities in deprived areas
- Putting Iraq's national resources to work
- Modernizing the country's energy infrastructure is intended to be completed in stages, from immediate improvement for up to 300,000 people, which can be operational within three months, to medium and long-term projects that require between 10 and 24 months' completion time and beyond.
- Iraq's government will also be securing appropriate finance packages provided by international commercial banks, Export Credit Agencies and supported by the German Government.
- The roadmap lays out plans to use Iraq's valuable natural resources more efficiently by utilizing flare gas capture and treatment technologies to deliver a domestic source of fuel to Iraq's power generation sector, as well as create a long-term source of revenue for the government to finance power generation, transmission, and distribution projects.



Mytilineos S.A Overview

- MYTILINEOS is Greece's leading industrial company with a long track record of successful international growth in the sectors of Metallurgy, EPC & Infrastructure and Electric Power & Gas Trading. Established in Greece in 1990, the Company is listed on the Athens Exchange and has a consolidated turnover in 2018 of €1.5 billion (0.75 of the country's GDP) with an EBITDA of € 284m.
- MYTILINEOS operates the only Europe's leading vertically integrated alumina and aluminum production and trading plant and, together with its mining operations, is a driving force for the Greek and European economy as well as for the Greek regions. It is the second largest bauxite producer in Greece and in Europe, with an annual output of 650,000 tons of bauxite, exclusively from underground sites.
- It is ranked among the Top 10 largest EPC contractors worldwide, with major energy projects under way in the markets of Europe, the Middle East and Africa.
- It is also the largest independent electric power producer in Greece, with 1,200 MW of gas-driven thermal plants in operation in Greece, and a portfolio of RES-based plants (wind farms, photovoltaic parks and small-scale hydropower plants) totaling over 190 MW, exceeding 14% of the country's active and licensed installed production capacity from thermal plants.
- MYTILINEOS has a strong international presence in the sectors of Metallurgy, EPC, Electrical Power and Gas Trading. Today, the Company is present in Europe, the Middle East and North Africa, with activity in 29 countries and a workforce of more than 3.300 employees in Greece and abroad.
- In 2018, revenue of €1,527 mn, EBITDA1 of €290 mn, NPAT1 €144 mn & EPS1 €1.009/share – Market Cap2 €1.42 bn
- MYTILINEOS generates total added value equal to 0.75% of the total GDP of Greece.

Financial Results 2018



TURNOVER €1,526.5 m.



Dividend Increase

€0.36 from €0.32



Adjusted Net Profit

€144.2 m.



Net Debt drops by €390.4 m. from €568.1 m.

¹¹ The Company has repeated its strong performance recording high profitability, strong cash flows and multi -year low leverage ratios under a backdrop of challenging and turbulent markets. As we look towards 2019, the foundations are firmly grounded to support strong growth in each of our three areas of activity.¹¹

Evangelos Mytilineos - Chairman & CEO

METALLURGY BUSINESS UNIT

Alumina Drives Record Profitability
EPALME Acquisition



36%
Of Overall Turnover

92.8%

EBITDA increase in Alumina
Total €83.1 m.

47.3%

Consolidated EBITDA margin for Alumina

POWER & GAS BUSINESS UNIT

Strong contribution from Renewable Energy Sources



40%
Of Overall Turnover

5.1
m. MWhrs

MWhrs production from thermal & renewable units
corresponding to **10%** of the country's total demand

14.2%

RES production
with total installed capacity increasing to **176 MW**

In the Electricity Retail Market, Protergia increased market share reaching **4.46%**, surpassing **130,000** supplies.

EPC BUSINESS UNIT

Strong presence worldwide through METKA EGN



24%
Of Overall Turnover

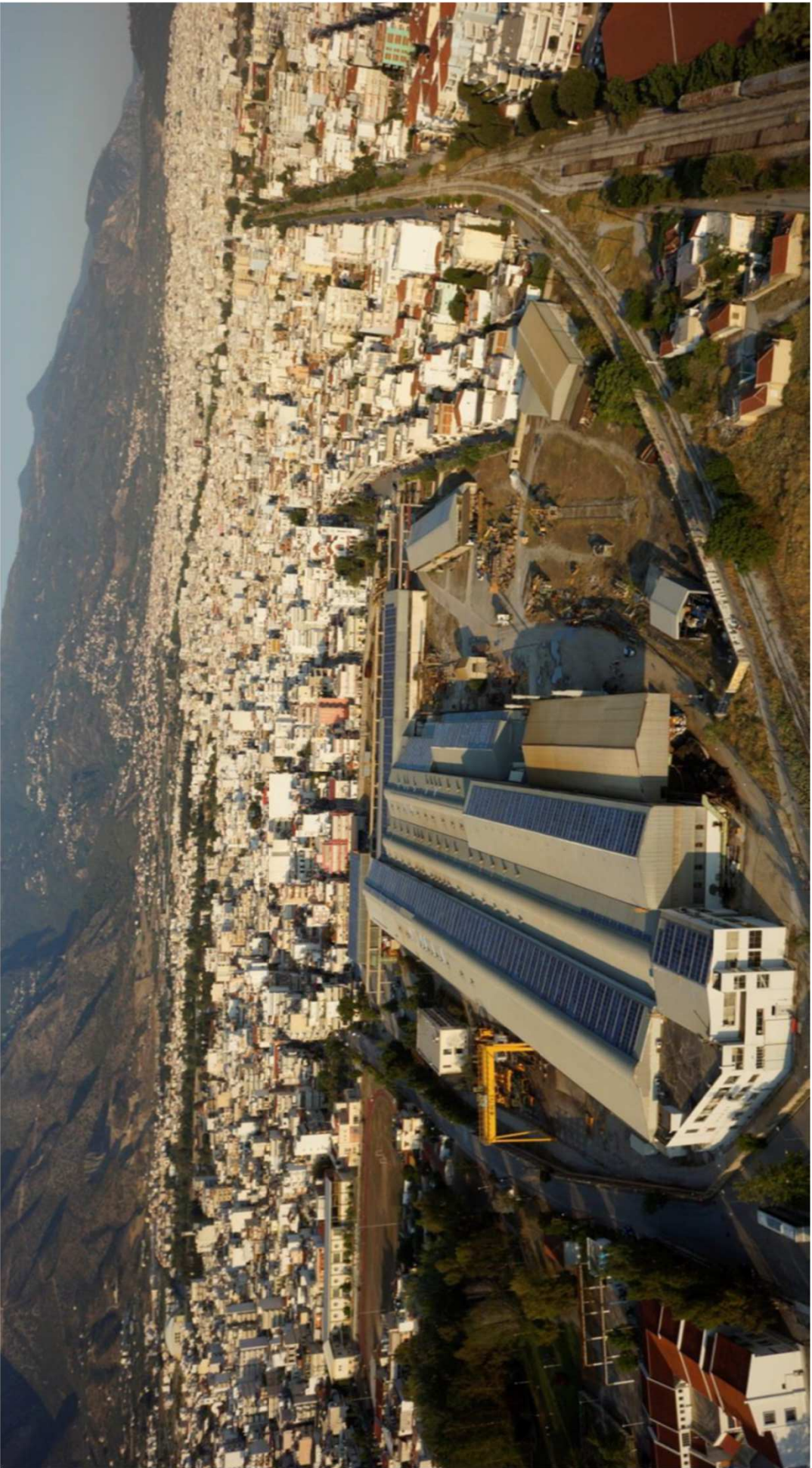
€983.9
m.

Backlog of projects
Including €265.7 m. of PV Projects

€54.9
m.

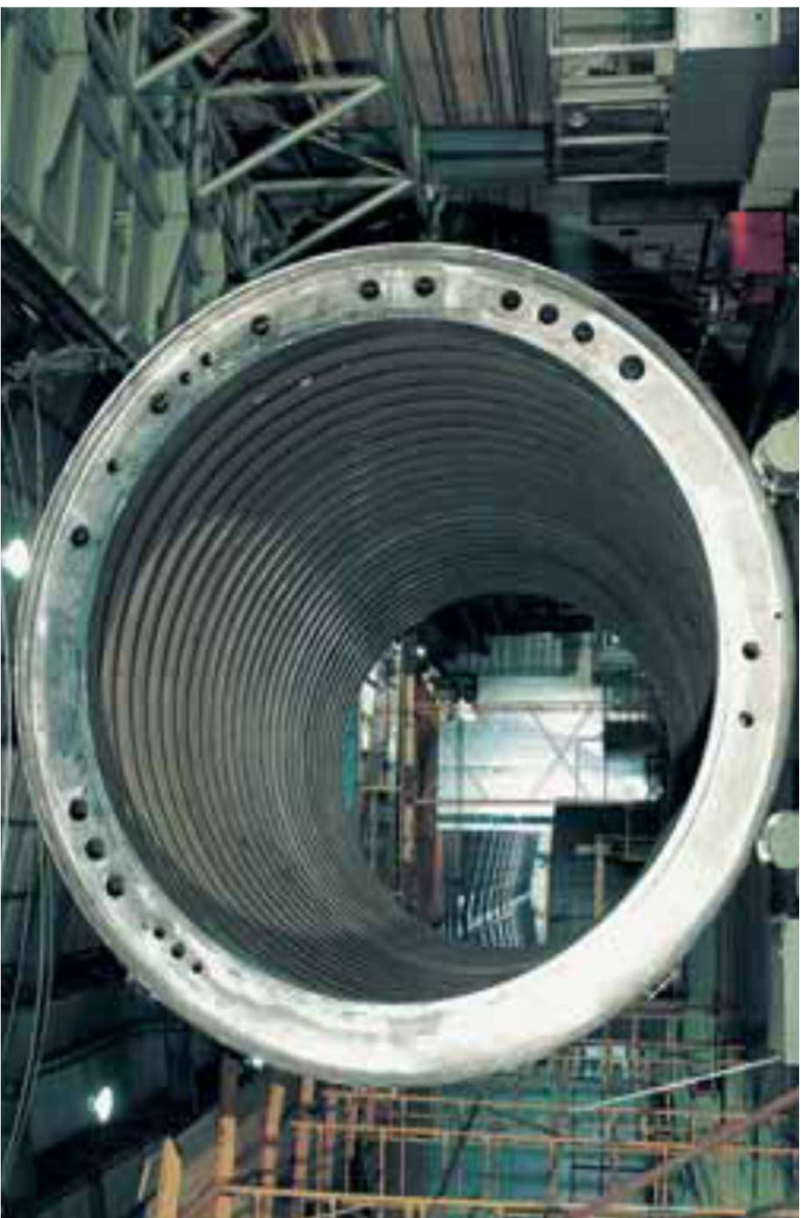
Consolidated EBITDA













METKA at a Glance



GLOBAL CAPACITY

Engineering and construction experience in **17 countries** – approx. **15GW** of thermal and **1200MW** of solar/energy storage projects



TURN-KEY SOLUTIONS

Complete power plant solutions configured specifically for your project needs and with **flexible financing structures**



FINANCIAL STRENGTH

Consistently **solid financial performance** and strong balance sheet, combined with financial capacity and appetite to make projects happen

Broad International Presence

Countries with projects completed, under execution or awarded / committed

- | | |
|----------------|-------------|
| LATAM | Africa |
| Chile | Algeria |
| Puerto Rico | Ghana |
| | Libya |
| Europe | Nigeria |
| Bulgaria | Tunisia |
| Cyprus | Uganda |
| France | |
| Greece | Middle East |
| Romania | Jordan |
| Slovenia | Iraq |
| Spain | |
| Turkey | Asia |
| United Kingdom | Afghanistan |
| | Australia |
| | Kazakhstan |
| | Korea |
| | Pakistan |

- RES projects
- Thermal power projects

With Strong Partners

SIEMENS



- Major power plant projects throughout Europe, the Middle East and Africa
- Strong emphasis on highly-efficient power plant technology
- Strong ties with major technology providers
- Excellent track record of projects delivered to top tier clients
- Geographically Diverse



Selected EPC Projects

TURKEY



OMV, SAMSUN

- Location: Samsun, Turkey
- METKA as main contractor
- **870MW** combined cycle power plant
- Configuration 2 x GE 9FB single shaft
- Direct sea cooling



RWE & TURCAS GÜNEY ELEKTRİK ÜRETİM A.Ş

- Location: Denizli, Turkey
- METKA as main contractor
- **775 MW** combined cycle power plant
- Configuration 2-2-1 with Siemens SGT5-4000F
- Air cooled condenser

Selected EPC Projects

JORDAN



SAMRA ELECTRIC POWER CO. (SEPCO)

- Location: **Jordan**, approx. 35km north of Amman, at the outskirts of Al Hashmia/Al Zarqa
- 143 MW** combined cycle project
- Expansion to an existing power plant, by addition of a combined cycle plant of Alstom technology to the existing open cycle gas turbines
- Project assigned to METKA in 2012



- Location: **Jordan**, Al Zarqa
- 146 MW** Natural Gas/LDO Fired Open Cycle Power Plant, with 1 x GT13E2 Alstom gas turbine and generator unit
- Project assigned to METKA on November 2012, on fast-track basis
- Commercial operation completed on July 2013, ahead of schedule

ALGERIA



SOCIÉTÉ ALGÉRIENNE DE PRODUCTION DE L'ELECTRICITÉ «SPE SPA»

- Location: Hassi R'mel
- Consortium: GE - METKA
- Two separately awarded contracts for open cycle gas turbine power plants, **total approx. 1GW**:
 - Hassi R'Mel I** - 2 x GE 9FA gas turbines, total output **368 MW** at site conditions
 - Hassi R'Mel II** - 3 x GE 9FA gas turbines, total output **590MW** at site conditions



- Three separate contracts for fast-track mobile gas turbine power plants, commissioned in 2012, 2013 and 2014
- 38 mobile gas turbines** - total capacity approx. **1GW** (ISO conditions)
- trailer-mounted, fully mobile balance of plant (BOP) solution
- Installation at 8 different locations in **Algeria**

Selected EPC Projects

GHANA



AMANDI ENERGY

- Location: Takoradi
- Scope includes design, engineering, procurement, construction, commissioning and testing of an up to **192MW** dual fired combined cycle power plant
- Project awarded to GE-METKA consortium
- Construction began in 2017



BRIDGE POWER

- Location: Tema
- The scope of the project includes the engineering, procurement, construction and commissioning of a **200 MW fast-track LPG power project** in combined cycle (CCGT) configuration
- Project awarded to Power Projects Ltd. in 2017

NIGERIA



AFAM III

- Location: Port Harcourt
- 227 MW** power project with 8 units of TM 2500 mobile turbine generators operated with natural gas.
- Project awarded to METKA in consortium with GE
- Construction started in 2017



NIGERIAN UNIVERSITIES

- Location: Nigeria
- Solar hybrid power plants which will electrify four Nigerian universities
- The scope includes solar PV, battery storage and diesel gensets as well as the required control systems - one power plant of 3MW, two of 2MW and one of 0.5MW
- Construction started in 2018

· MYTILINEOS received two major distinctions at the "2019 Partnership Awards" for its contribution to the 400MW CCGT Bridge Power Project in Ghana, during a ceremony held in London on May 9 th, 2019



Utility Scale Solar Power Projects

EPC and O&M contractor for the full range of solar and storage applications

Experienced project developers, with a track record of **200MW+** successfully developed projects

Customer portfolio including some of the **leading investors** in the PV sector



Portfolio of approx. **800MW** of medium – large scale projects in several countries



Actively developing presence in new markets such as **Africa**, the **Middle East** and the **Americas**

Selected References

BURNOYE II (KAZAKHSTAN)

- Client: Samruk Kazyna United Green Energy Ltd.
- Large scale solar power plant, with installed capacity of **50 MWp**, in Burnoye, Kazakhstan
- Scope includes the engineering, procurement and construction (EPC) of the BURNOYE II
- This complex grid-connected project includes a fixed tilt mounting structure and **16 central inverters/production substations**



ORIANA ENERGY (PUERTO RICO): THE LARGEST PV PLANT IN THE CARIBBEAN

- Client: Sonnedix
- **Total PV capacity 57MW** on two nearby sites
- Includes installation of **24MW batteries** for grid stabilisation and plant output optimisation
- Full turn-key scope including **electrical lines and substation**
- Scope includes **operations & maintenance** contract for up to 20 years





Selected References

- United Kingdom.
- Project: **Solar PV EPC & BOT Projects**
- Lightsource UK is major global player in Renewable Energy with over 1.3GW in PV projects
- **15 projects with total capacity over 100MWp:**
 - **8 EPC & O&M**, during 2014-2016
 - **6 in BOT model** (Build - Operate - Transfer), during 2017





METKA Infrastructure

CORE BUSINESS AREAS INFRASTRUCTURE PROJECTS

- Capability and capacity to undertake large-scale complex civil infrastructure and industrial projects
- Classified in the highest category of construction contractors for major public works projects in Greece
- Main activities include: railways, private concessions, certified buildings, wind farms, environmentally friendly waste management solutions, among others





METKA Industrial Manufacturing

CORE BUSINESS AREAS INDUSTRIAL MANUFACTURING

- World-class heavy industrial manufacturing expertise
- State-of-the-art industrial facilities and equipment
- Compliance with the most stringent international quality standards
- The factory is exclusively working for export markets





Mytilineos S.A in Iraq

- 2 projects (Shat Al Basra & Al Anbar).
- Client: Ministry of Electricity
- Scope of the Shat Al Basra project: 10 x GE gas turbines, total 1250MW (the gas turbines were supplied directly from GE by MoE. METKA in close collaboration with an Iraqi partner did the rest including supply of all other equipment, civil works, installation of the gas turbines etc.)
- Scope of the Al Anbar project: two combined cycle blocks with Alstom gas turbines and steam turbines. The entire project has been assigned to the Chinese company SEPCOIII.



ΕΡΓΑ ΥΠΟ ΕΚΤΕΛΕΣΗ - 2015

2015 > Κυριότερα Έργα υπό εκτέλεση > Ιράκ



Shat Al Basra

Basra
1250 MW



Anbar

Central Iraq
1642 MW
Consortium METKA-
METKA Overseas Ltd.

