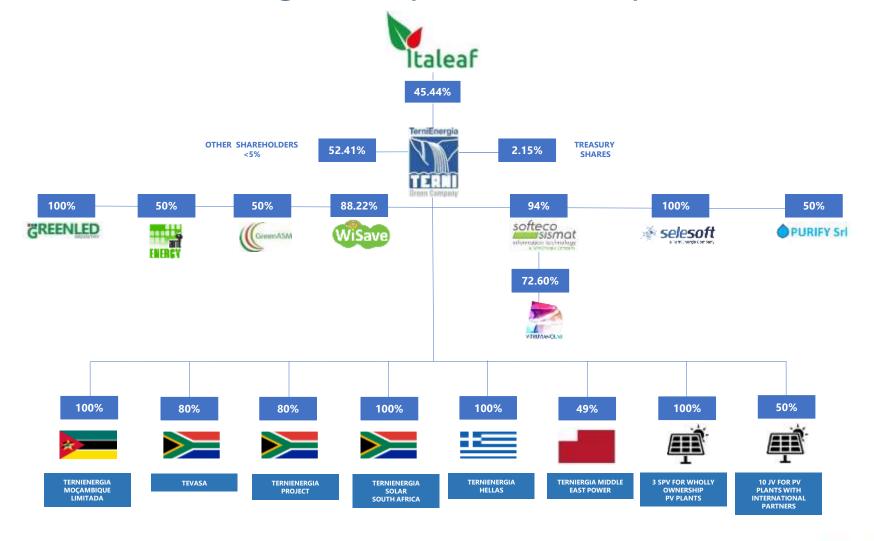


## TerniEnergia simplified Group chart





## Resource efficiency needs in a changing world

RELIABILITY OF SUPPLY

SOCIAL WELFARE

#### **Global megatrends**

- 6 Billion people in 2000
- 3 Billion people more in 2050
- 60% of N2O and CO2 pollution derives from agriculture
- 40% soil degradation
- Climate change and desertification are the main reason for migration
- Increasing logistical problems
- Deregulation, liberalization and privatization taking place



**PROTECTION** 

- Increase per capita food/energy consumption
- Accelerating technological change
- Development of prices
- Structural change in industry
- → Increasing demand and new requirements on energy generation and saving



- New "smart market" based on data economy
- Convergence of Competition (technology, customer, ecosystem drivers)

COMMERCIAL PROFITABILITY

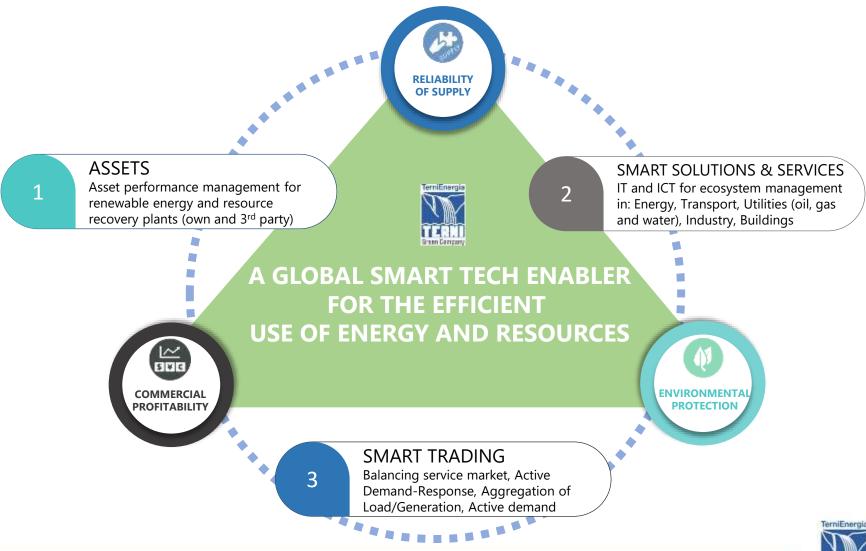
- Intensified global competition for resources
- Improving productivity and efficiency
- → Digitalization impact on earnings

#### Parameters in worldwide Environmental scenario

- Growing pressures on ecosystems
- Increasingly severe consequences of climate change
- Increasing environmental pollution
- Towards a more urban world
- → Green replaced by smart



## Repositioning into a new playing field

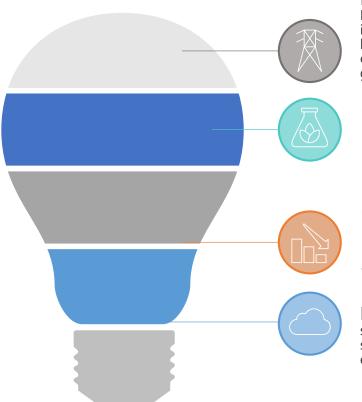




## The results of Softeco and Selesoft integration

In November 2016 TerniEnergia acquired Softeco Sismat and Selesoft consulting. The digital companies provide consultancy, solutions, services and products for energy, transport and industry. These include Energy Efficiency, Building Management Systems, ERP for electricity and gas, Interruptibility, Smart Cities and Smart mobility for public and private transport

An ecosystem becomes "smart" and "sustainable" through strategic deployment of ICT solutions and services to achieve objectives on some key areas: energy efficiency, smart grids, transportation, utilities (oil, gas and water) and buildings (areas where IT intersects industry). "Exponential improvement in core digital technologies is fueling exponential innovation across industrial sectors".



#### **ENERGY AND RESOURCE EFFICIENCY**

ICT deployed to increase energy efficiency in industry, commercial, transport, buildings and beyond, including urban planning; Digital optimized water and waste management, oil & gas, etc.

#### **CARBON NEUTRALITY**

ICT deployed to decrease carbon footprint of private and public real estate, to feed distributed renewables into the grid, to optimize traffic management, to manage public lighting, etc.

#### COST-EFFECTIVENESS

ICT deployed to achieve savings through reduced peak energy demand, to turn consumers into prosumers, to optimize logistics; to reduce technical complexity in services, etc.

#### FURTHER EMERGING OBJECTIVES

such as cybersecurity, open data, interoperability, simulation, gamification, prediction, hybridization, etc.



# A flexible approach to drive strategic change

WHAT WE WERE

Research and innovation have a critical role to play in making TerniEnergia a smart technology enabler capable of shaping the digital energy market and setting trends in circular economy

WHAT WE ARE BECOMING

#### STRATEGIC BUSINESS UNITS







**ASSETS** 

- Power generation
- Waste treatment and recycling

#### **LOB**

- Consulting
- Solutions
- Management
- On-site engineering and operations
- · Smart trading

- 2 new strategic business units
- Transitioning from EPC player to provider of onsite engineering and operations services
- Leveraging on O&M expertise (in PV and Cleantech) to become a leading asset performance manager
- Making technology central to the energy market
- Implementation of truly innovative smart energy concepts ranging from microgrids, demand respond and capacity aggregation to virtual power plants (VPPs)
- Strengthening smart energy trading activities
- Giving industry access to the latest technologies for energy efficiency (advanced BMS, software development, hardware supply, IoT)
- Providing consultancy services to allow our international partners to develop innovative solutions across industrial sectors
- Contributing to the development of smart mobility with digital, ITS and EV solutions which are the forefront of market innovation





## TerniEnergia Group's References









































































## PV power generation assets









- 45 PV plants in Italy
- All the plants entirely built and operated by TerniEnergia
- 42 MW of total capacity
- 12 MW in full ownership
- 30 MWp in JV with funds, investors and industrial partners
- The total power generation is equal to around 60.4 million kWh/year
- The energy produced is sold to trading companies and to the national energy services management company (GSE)











## Circular economy assets

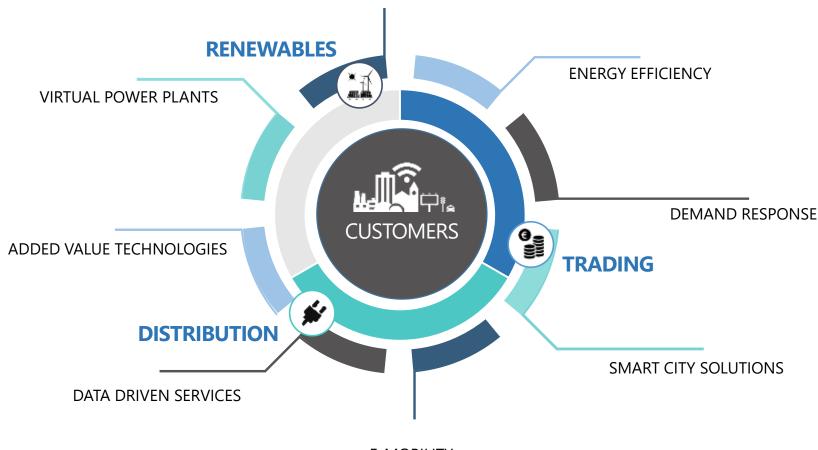






## Our evolution: the central role of customers

#### DISTRIBUTED GENERATION



**E-MOBILITY** 



# On-site engineering and operations



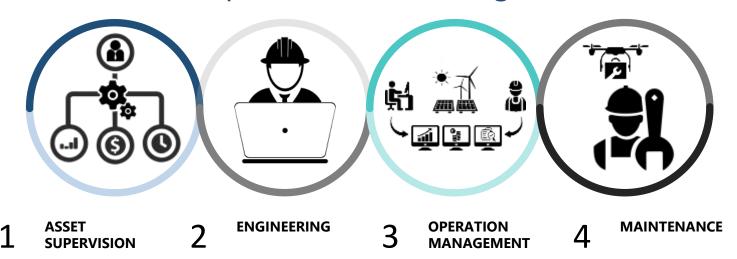
As an EPC contractor and a system integrator TerniEnergia has built over 420 MW of solar PV globally.

Two further PV plants are currently being completed:

- 10 MW PV plant in Tunisia in Tozeur, Tunisia
- 34 MW PV plant in Lusaka, Zambia

Solar PV remains an area of activity in this transitional phase from EPC player to provider of on-site engineering and operations services. These services ensure maximized energy production, minimal downtime, reduced O&M costs and, ultimately, highly performing assets.

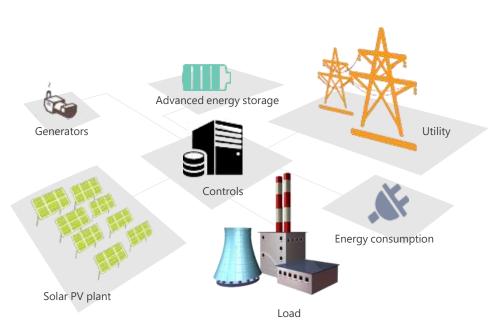
## Asset performance management





# Microgrids, a future TerniEnergia is ready for

As a pioneer in digital energy solutions, TerniEnergia is increasingly focusing on activities with a highly innovative technological content. By combining its considerable track record as a system integrator and the proven world class expertise of Softeco and Selesoft, TerniEnergia is perfectly prepared for the emerging microgrid market



- Intelligent energy storage, based on special weather-related or process needs;
- Full optimization of combined heating and power (CHP);
- DER functionality without a dedicated generator control system, because the EMS will dispatch only voltage and power;
- Microgrid operation based on the energy market predictions for both gas and electricity;
- Optimization of heating, ventilation and air conditioning (HVAC) through advanced control strategies;
- Minimized pollution based on sophisticated algorithms that consider CHP and displaced emissions;
- Enhanced power quality where, for example, a loss of grid power causes a seamless transfer to standalone power involving only a loss of non-critical loads within the microgrid;
- Support of the future grid through an array of ancillary services, such as voltage regulation and reserve power.



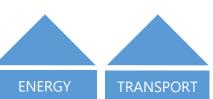
## Softeco and Selesoft: the smart side of the Group

- System integration
- Smart processes
- Digital services
- IT and ICT Solutions
- Mission critical applications

CONSULTING

- Technology market partnership with leading companies
- Data Integration
- SCADA (Supervisory Control and Data Acquisition)
- Firmware and hardware development in embedded systems
- Embedded systems
- Image processing and remote diagnostic
- loT

## MARKET









#### **VERTICAL MARKETS**



**SMART** Smart City Smart Grid



NGAN Network Engineering Network Services



Wireless Sensor Networks (WSNs) and Internet of Things (IoT)



ENERGY & UTILITIES

Transmission Grid, Distribution Network, Process Control, Energy Efficency



INTELLIGENT TRANSPORT SYSTEM

Large Infrastructures



INDUSTRY
Process Control

Systems Oil & Gas Data mining

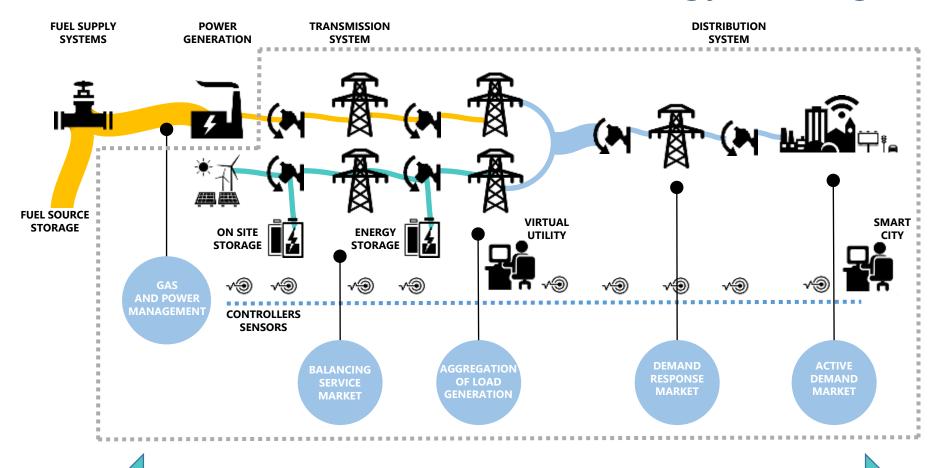


LOCAL & CENTRAL GOVERNMENT

Tailored solutions to migrate apps in a cloud environment RESEARCH & DEVELOPMENT



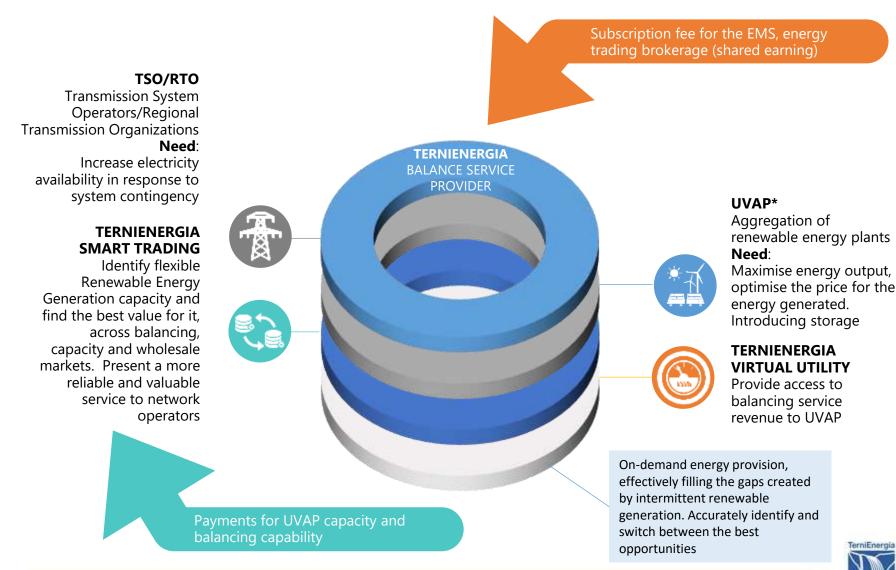
## A first mover in Italian smart energy trading



MONITORING, MODELING, ANALYSIS, FORECASTING, RISK MANAGEMENT, COORDINATION & CONTROL, ACTIVE TRADING



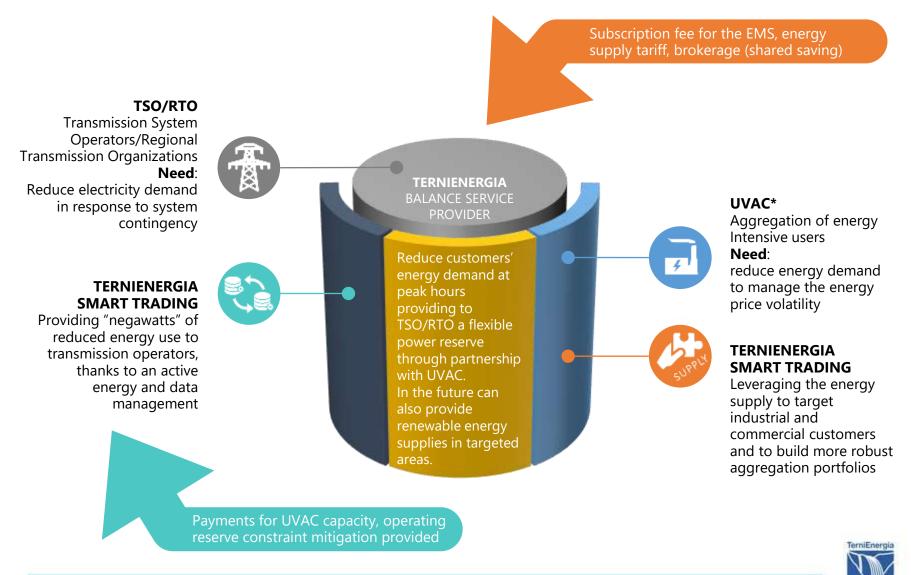
## Distributed energy management on balancing



\*UVAP: Unità Virtuali Abilitate di Produzione.



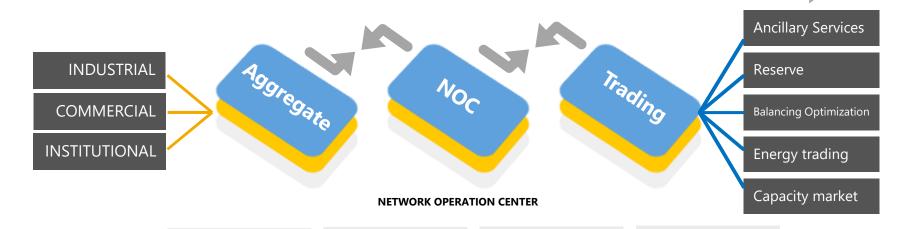
# Aggregated electricity management on balancing





## Demand Response and Active Demand

#### **Collecting and trading spare electricity / MW-MWh**



#### CONSUMERS/ PARTICIPANTS

- Factories
- Commercial
- Buildings
- Institutions
- E-Mobility

- Recruiting
- Sign-up
- Provisioning
- Maintenance

- Procesting
- Packaging
- Monitoring
- Controlling

- Sales
- Trading
- Reporting
- Balancing mechanism

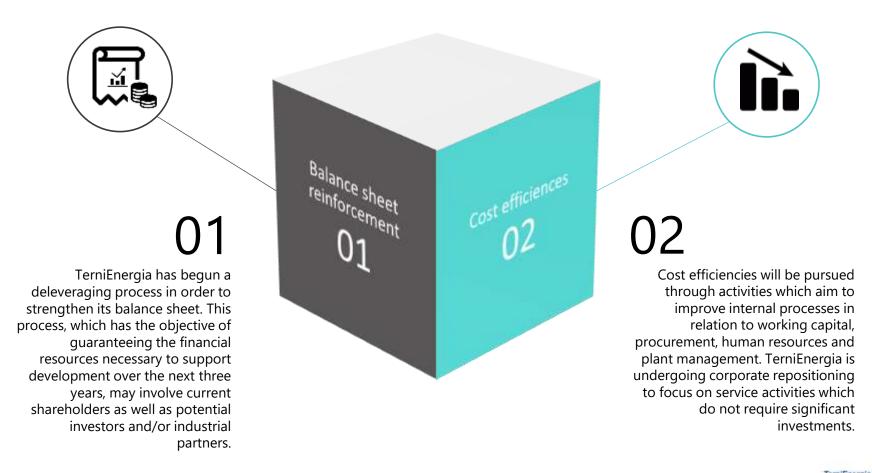
#### **Revenue stream**





# SOLID FINANCIAL FOUNDATIONS ON WHICH TO BUILD

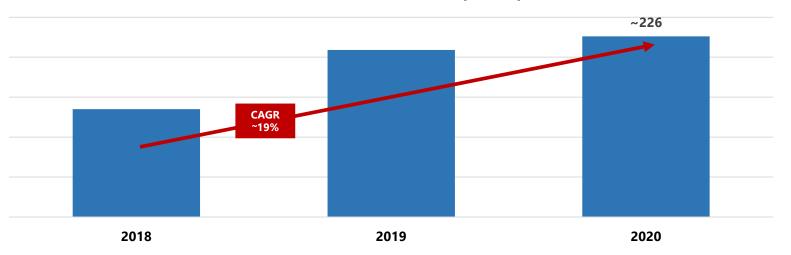
## Deleveraging and cost efficiencies



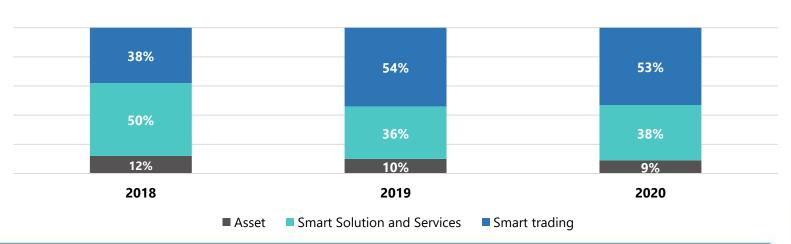


# Revenue growth and breakdown

#### **Revenue trend (€ Mio)**



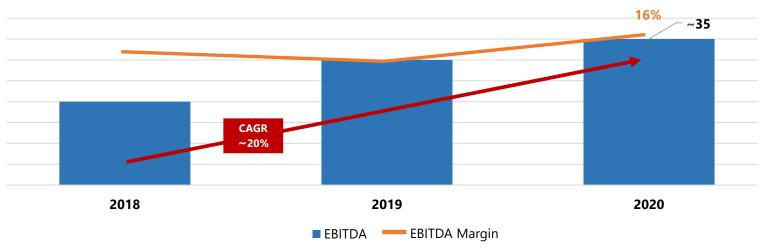
#### Revenue breakdown



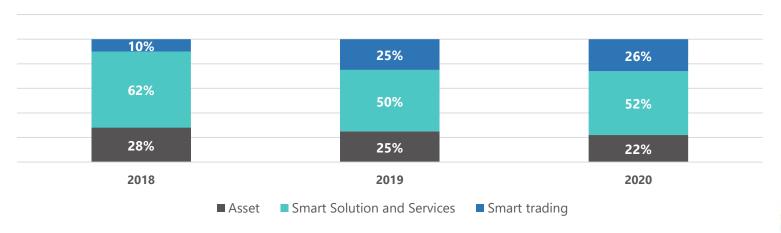


## Ebitda and breakdown

#### **EBITDA** evolution (€ Mio)



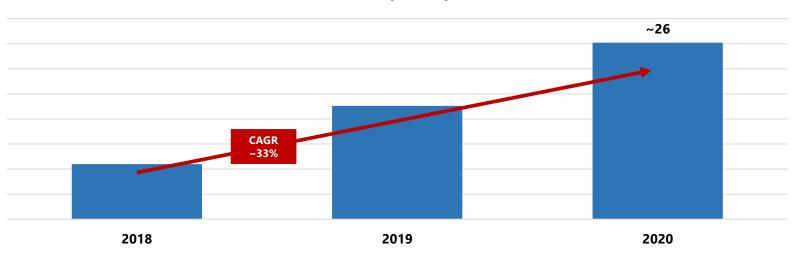
#### Ebitda breakdown





## Ebit trend

EBIT (€ Mio)





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Forward-looking statements involve inherent risks and uncertainties. We caution you that a number of important factors could cause actual results to differ materially from those contained in any forward-looking statement. Such factors include, but are not limited to: changes in global economic business, changes in the price of certain commodities including electricity and gas, the competitive market and regulatory factors.

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