



# **TÜBİTAK MARMARA RESEARCH CENTER**

May 2012  
Gebze, Kocaeli, Turkey

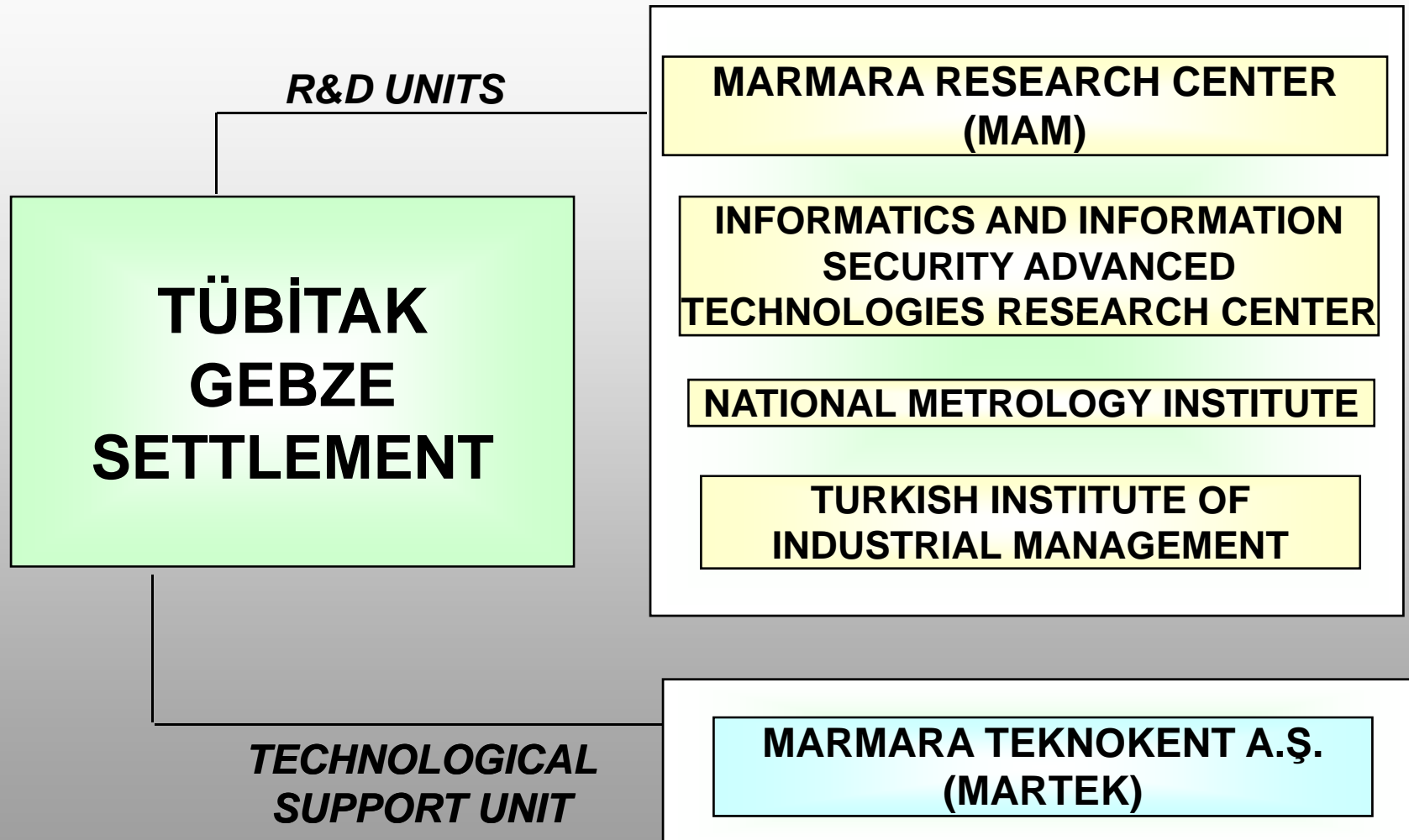
# Outline

- **Introduction**
- **TÜBİTAK Gebze Campus**
- **TÜBİTAK Marmara Research Center**
- **Marmara Technopark**
- **Conclusions**

# History

- Foundation of TÜBİTAK, 1963, Ankara
- Mission; Developing policies for science & technology, Funding and Research.
- Foundation of Marmara Research Center, **1972**, Gebze.
- Area, **8000** acres.
- Some Institutes are separated from Marmara Research Center and report directly to the TÜBİTAK Presidency.

# TÜBİTAK Gebze Settlement



# TÜBİTAK Marmara Research Center

## VISION

To excel in Research, Innovation and Commercialization (RIC) and provide prosperity and high quality of life for People of Türkiye.

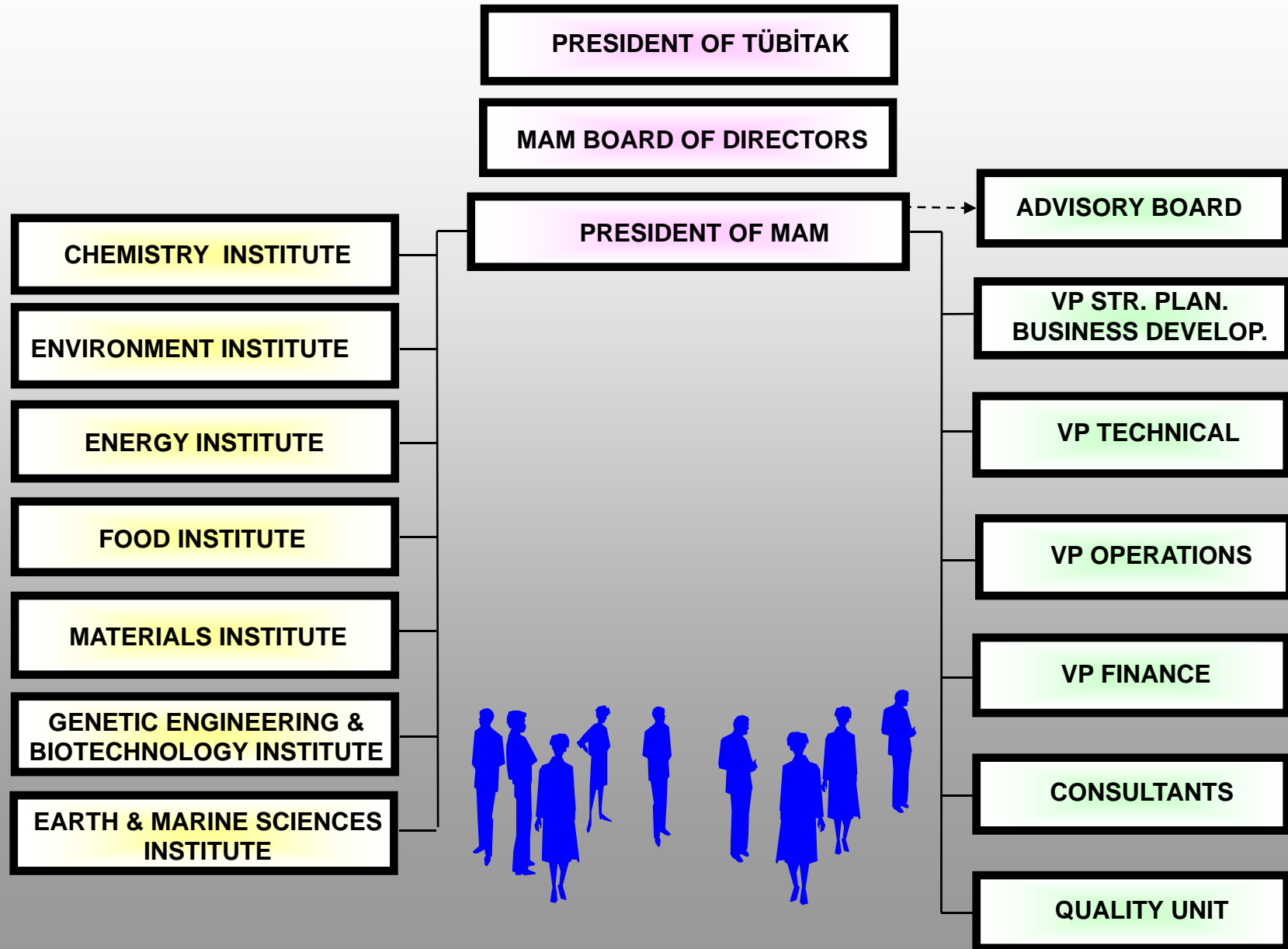
## MISSION

To advance science and technology and develop cutting-edge technologies and high-value products to make Türkiye a world leader.

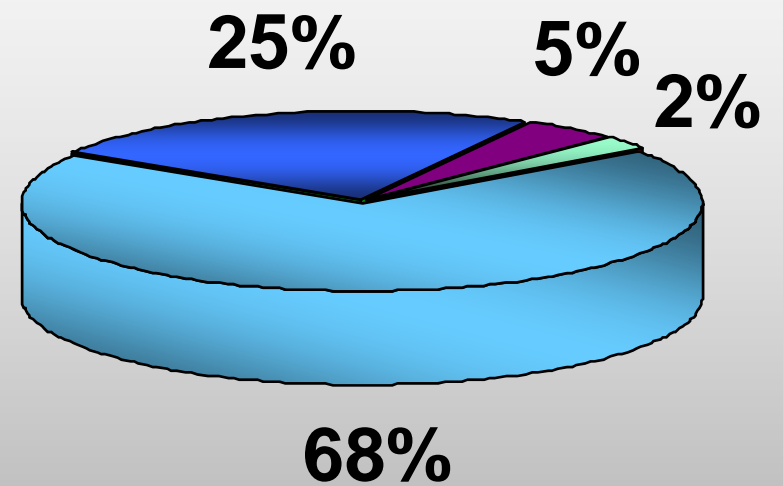
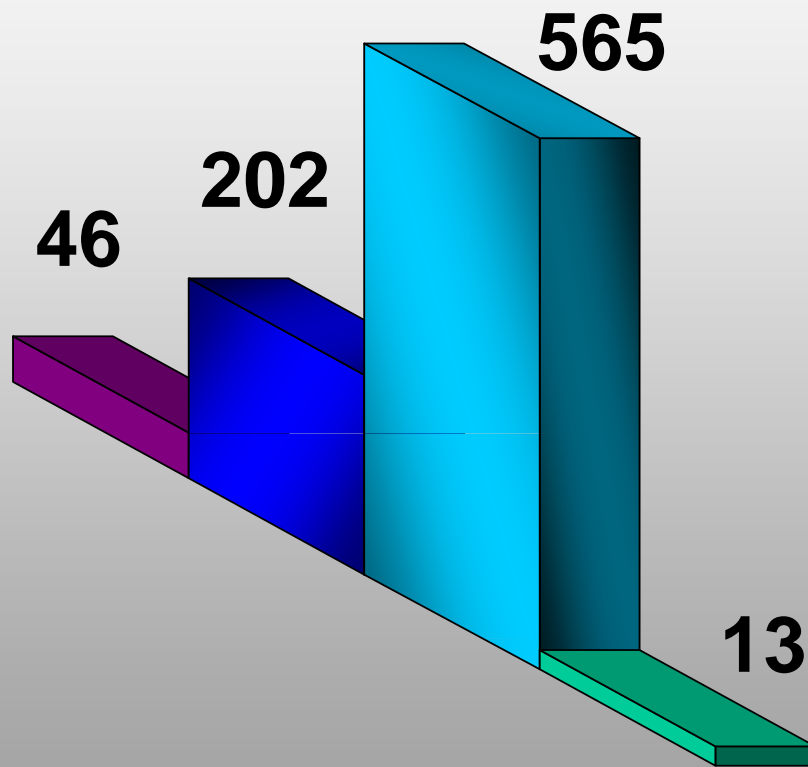
# Goals

- Advancement of knowledge
- Technology development and commercialization
- Sustainable job creation
- Economic growth
- Improved quality of life

# Organization Chart

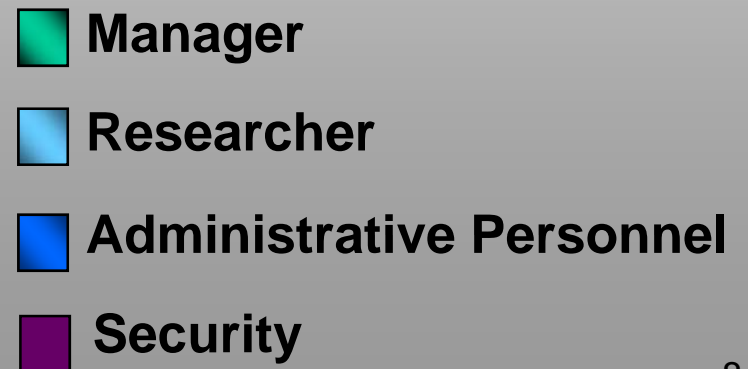


# Personnel Profile



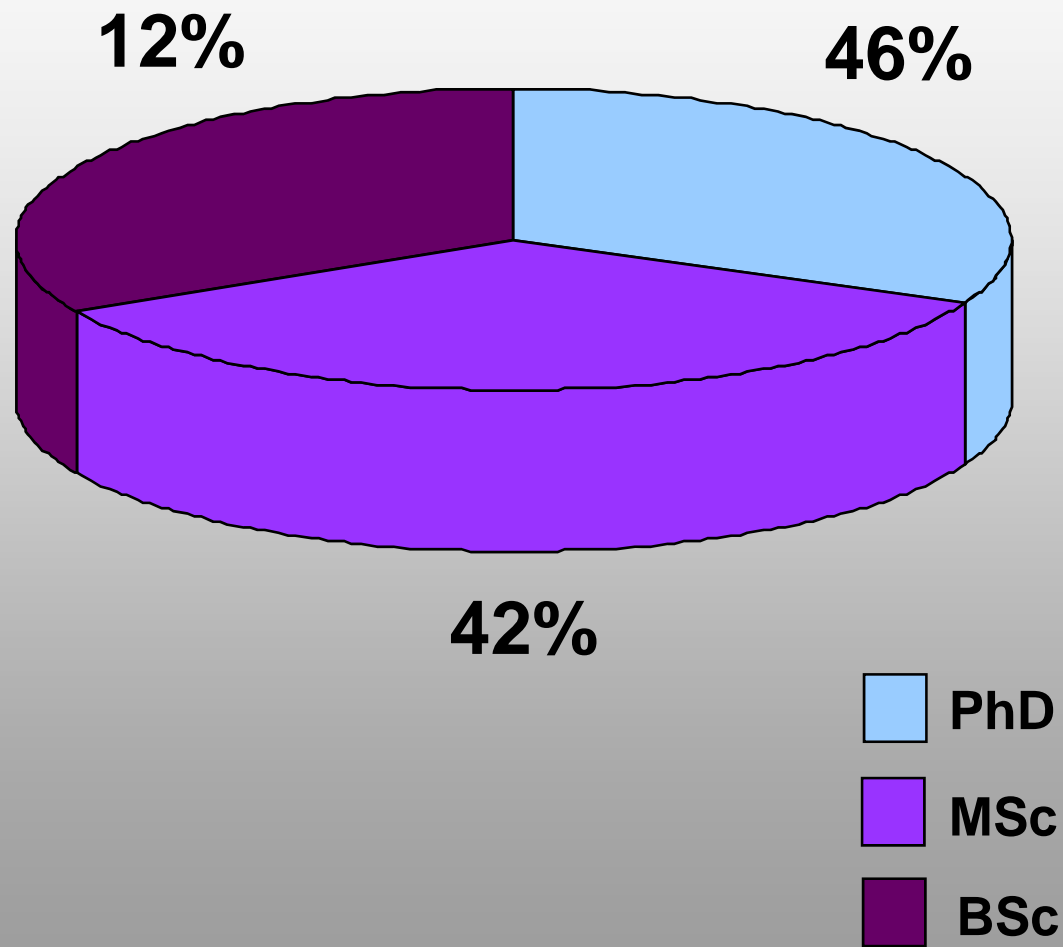
**Total: 826**

\*April 2012

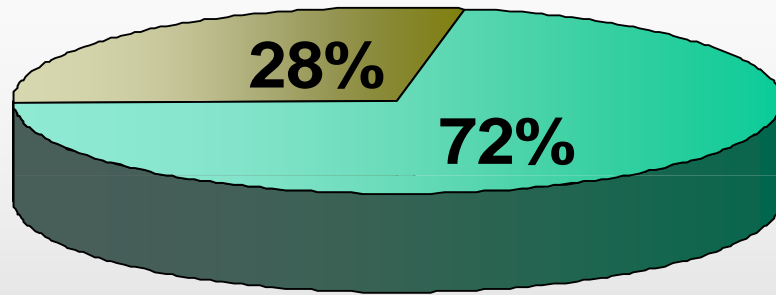




# Researcher Profile



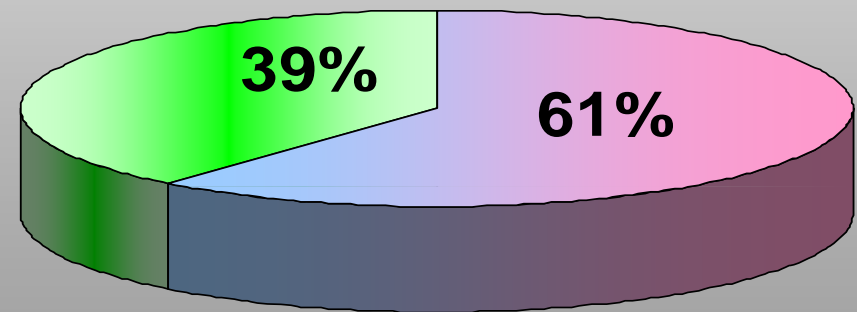
# Personnel



## Total Personnel

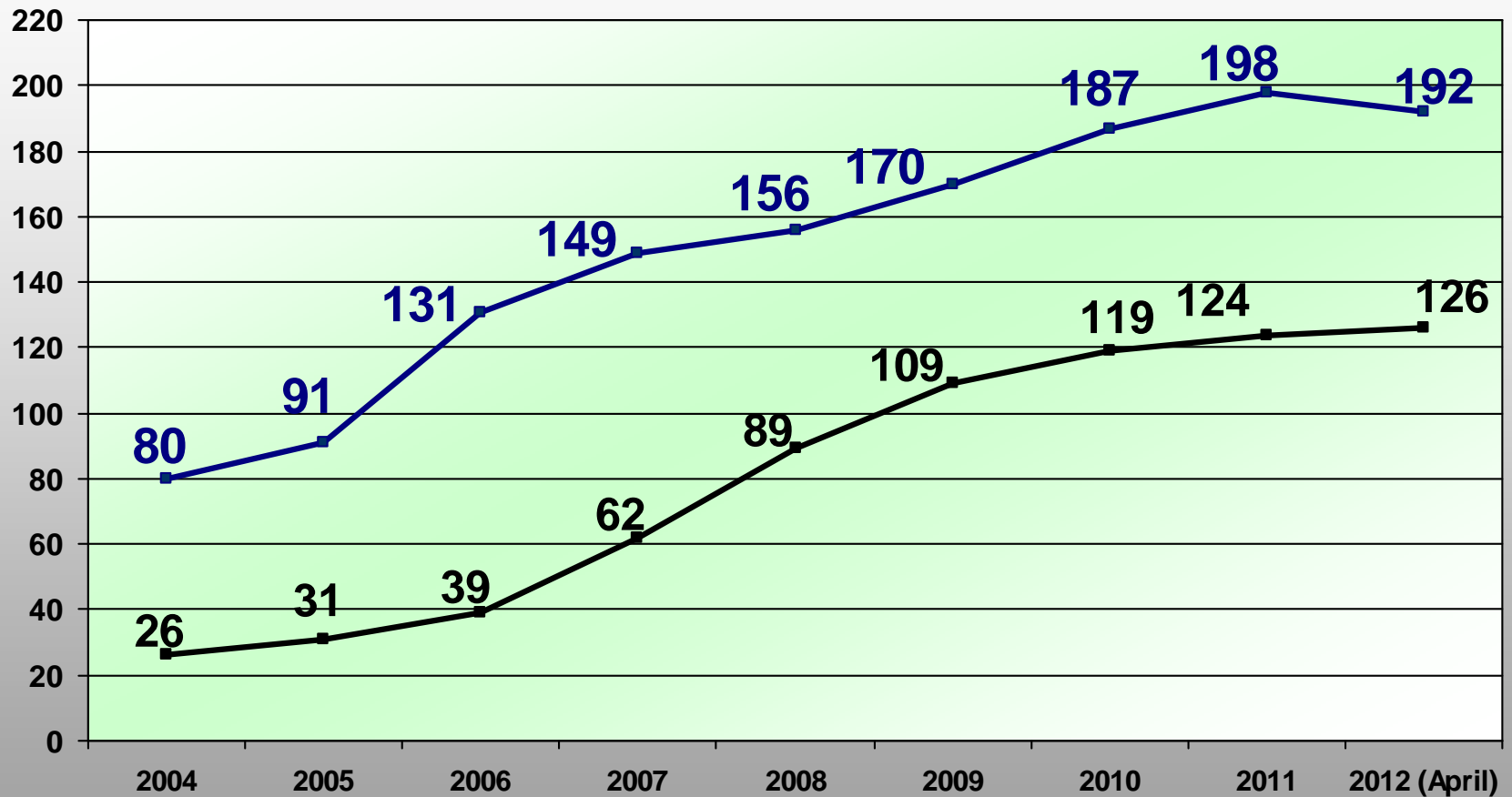
- Permanent (596 people)
- Project (230 people)

## Researcher



- Permanent (345 people)
- Project (220 people)

# Researcher Profile (PhD)



— PhD

— PhD Student

# Activities

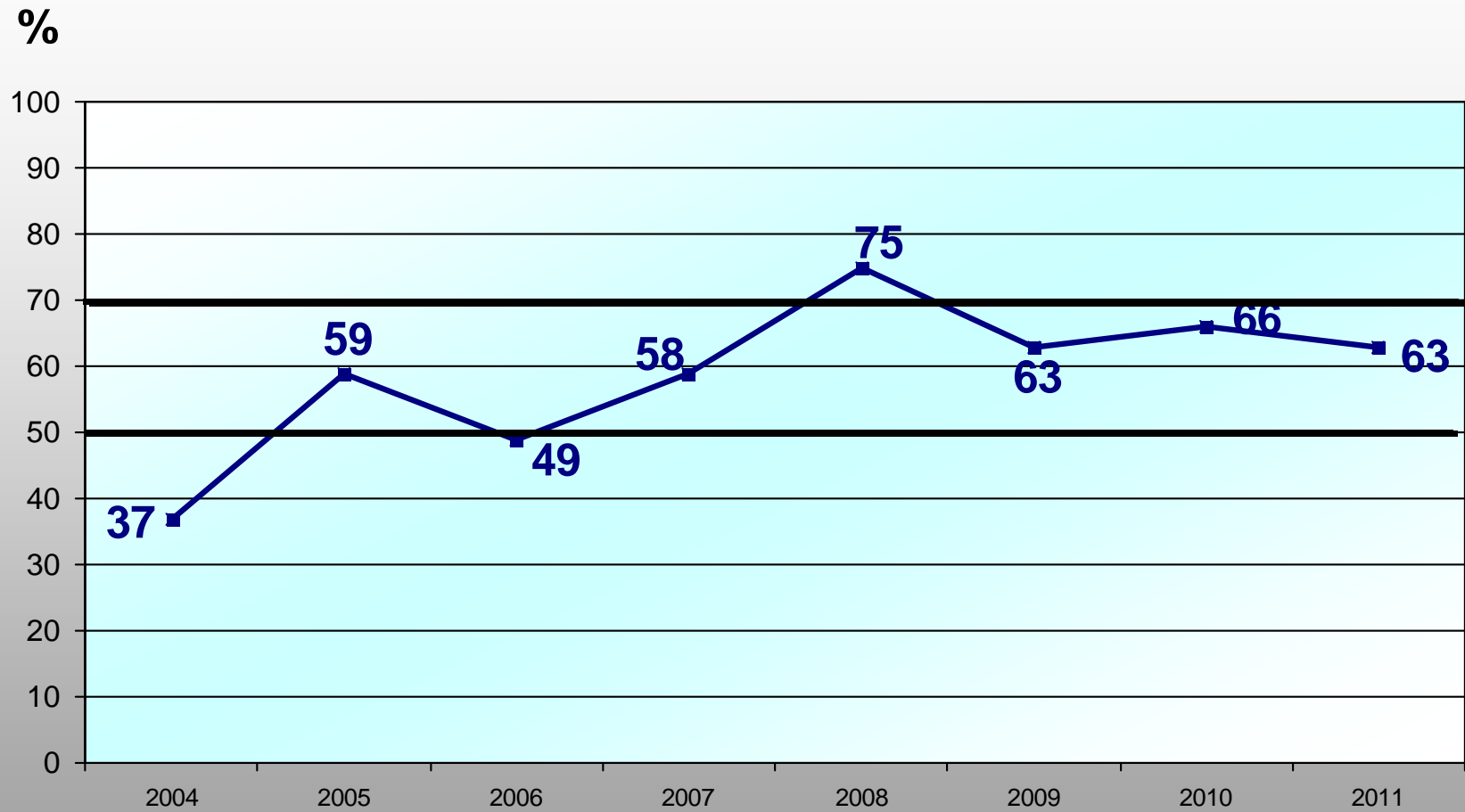
## Projects

- **Basic research**
- **Applied research**
- **Innovative**
- **Partnership**
- **Collaborative**
- **Technology transfer**

## Services

- **Testing**
- **Analysis**
- **Consultancy**
- **Training**

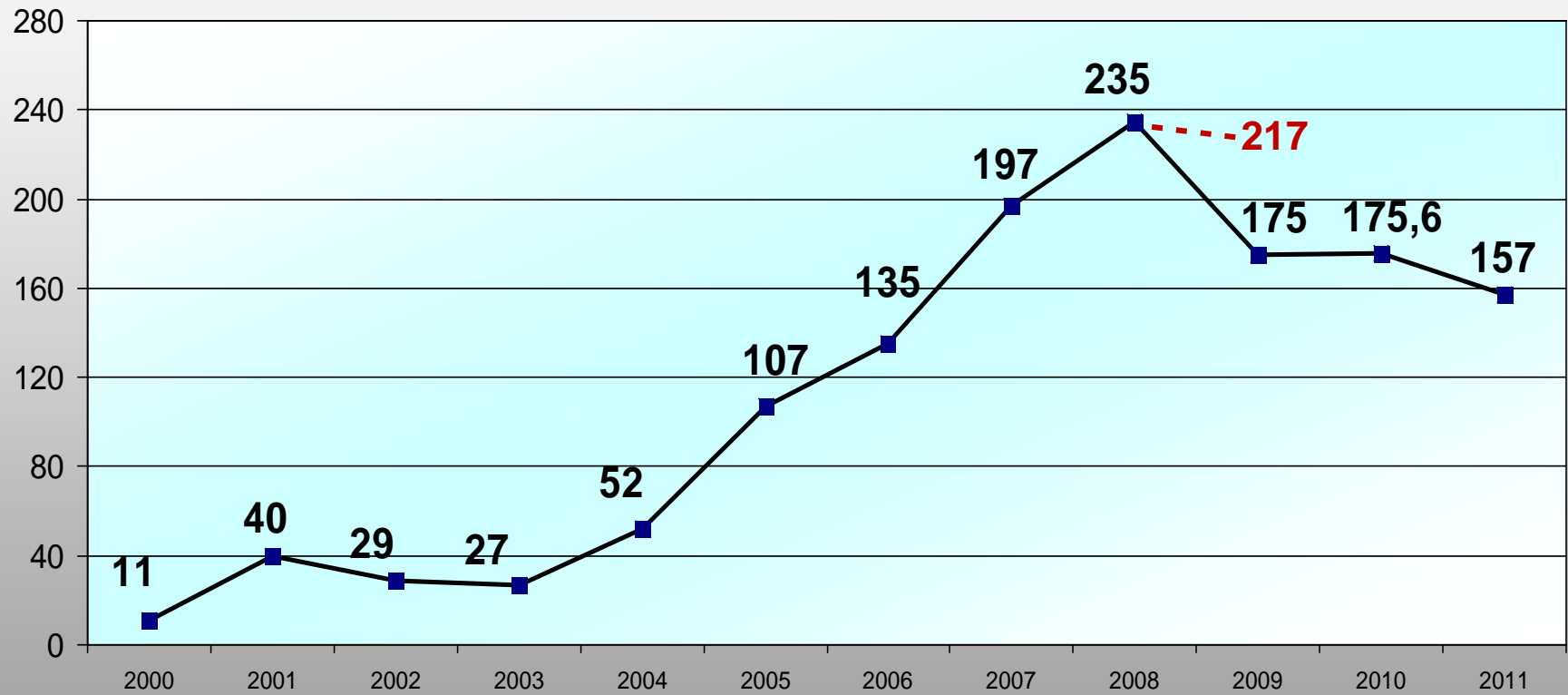
# Self Sufficiency Ratio



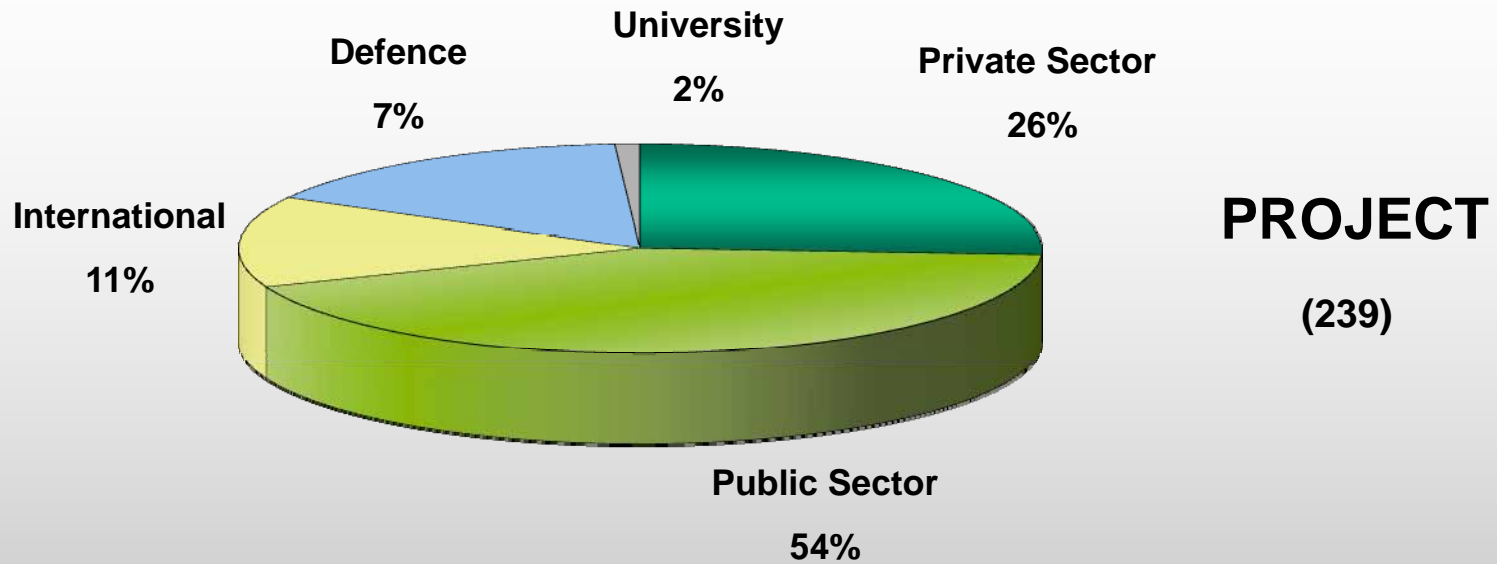
**Self Sufficiency Ratio: Project Income / All Expenses**

# Magnitude of Ongoing Projects

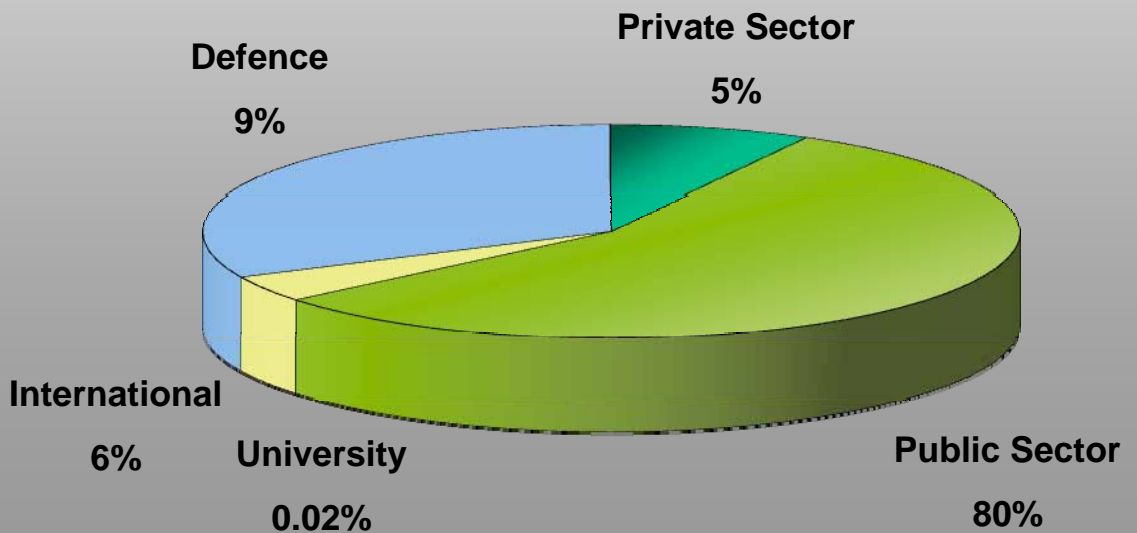
Million USD



# Sectoral Distribution of Projects (2011)



**BUDGET**  
(157 Million \$)



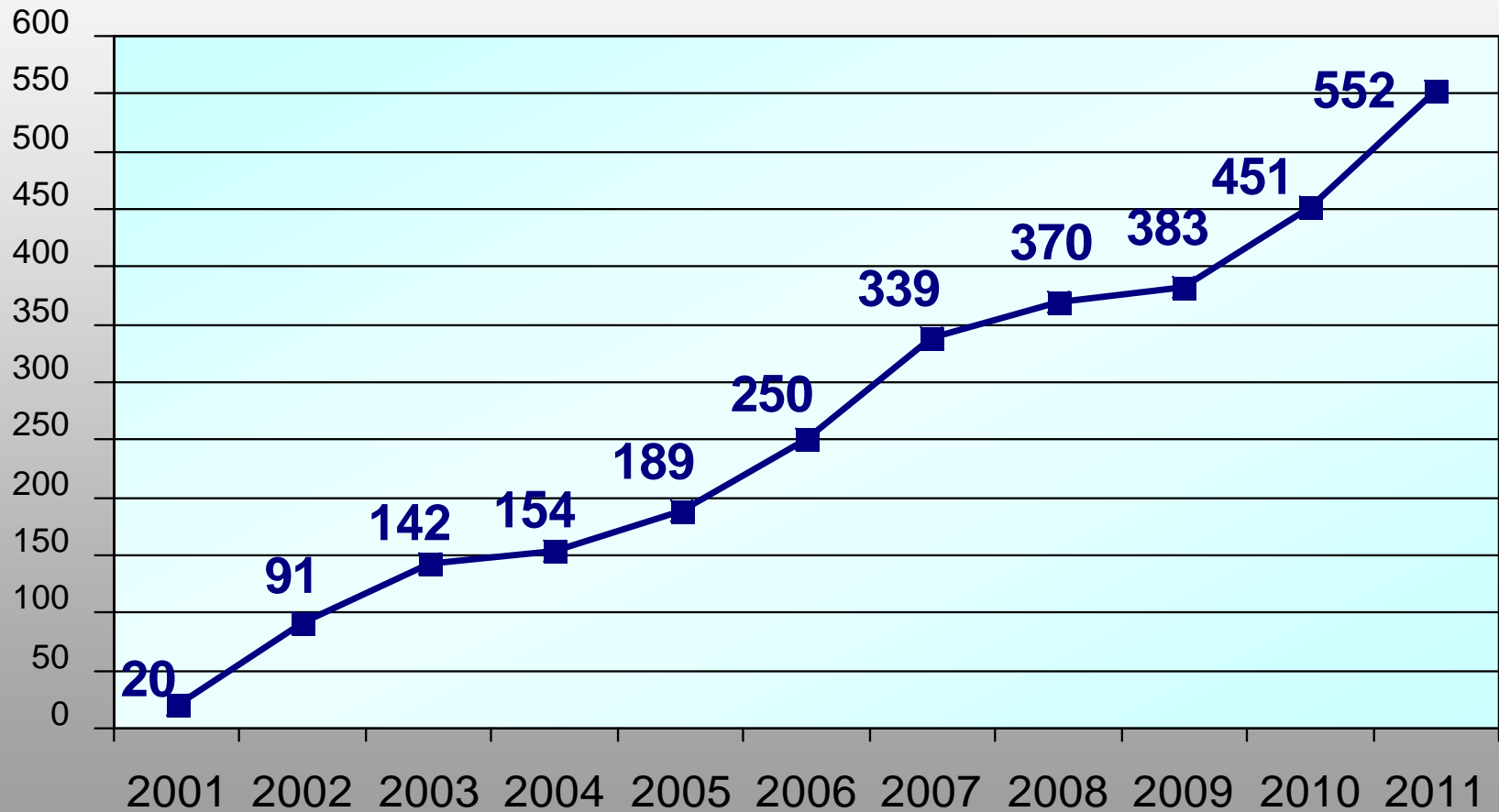
# Certificates

- ★ **National Facility Security Certificate**
- ★ **NATO Facility Security Certificate**
- ★ **Manufacturing Authorization Certificate**
- ★ **ISO 9001-2008 The Certificate of Quality Management System for all the Institutes and the Departments of MAM**
- ★ **ISO 14001-2004 The Certificate of Environment Management System for all the Institutes and the Departments of MAM**
- ★ **ISO 17025 The Accreditation Certificate of Service Laboratories (EI,FI,MI,CEI)**



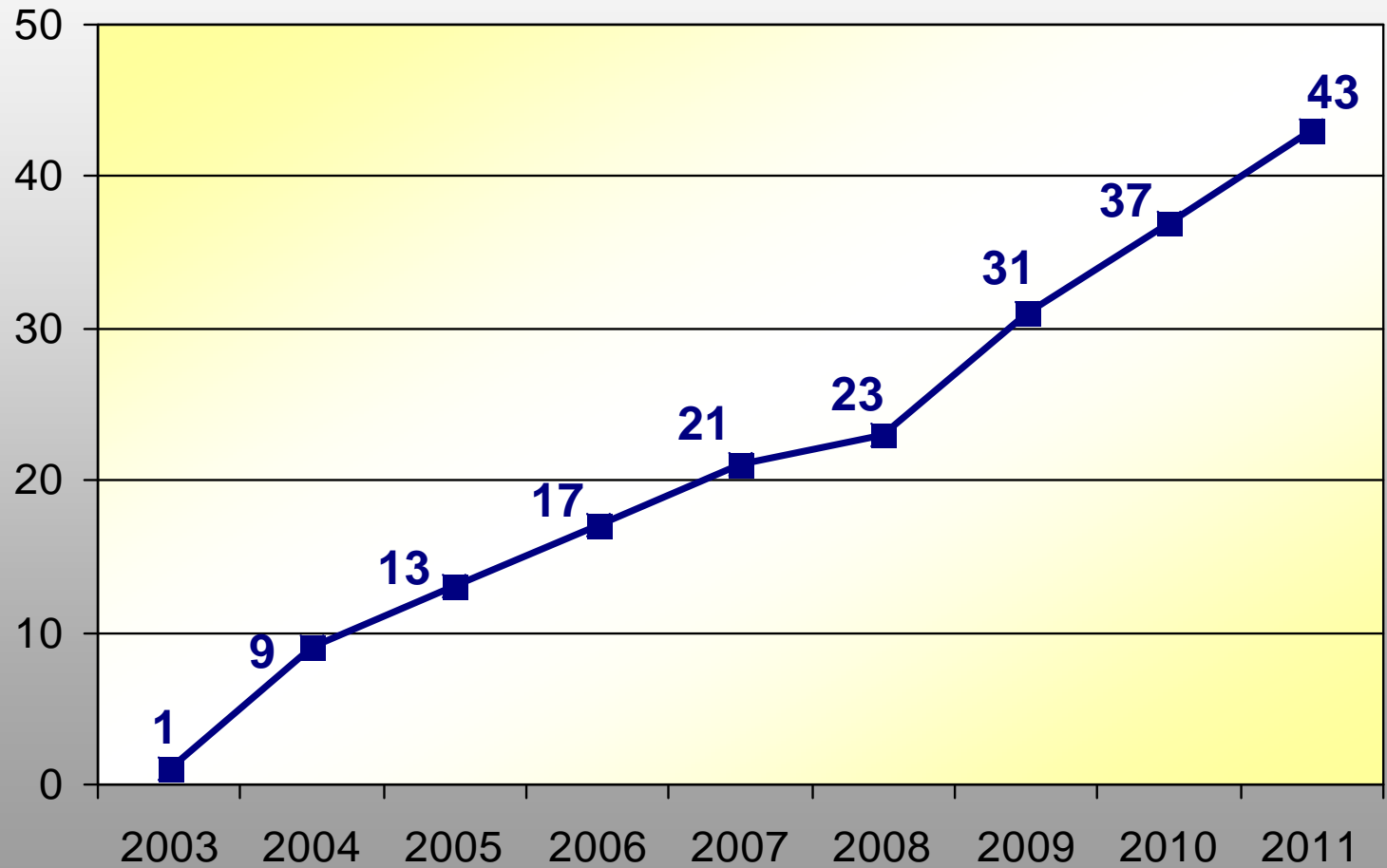
# Accreditation

## Number of Accredited Tests



# EU FP6 – FP7 Projects

PROJECTS



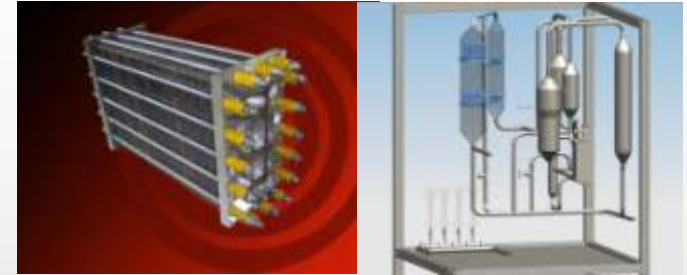
# TÜBİTAK MAM Institutes

- **Energy Institute**
- **Food Institute**
- **Genetic Engineering & Biotechnology Institute**
- **Materials Institute**
- **Chemistry Institute**
- **Environment Institute**
- **Earth & Marine Sciences Institute**

# Energy Institute (EI)

## Advanced Energy Technologies

- Fuel Cell Technologies
- Gas Technologies
- Combustion and Gasification Technologies
- Fuel Technologies
- Solar Energy Technologies



## Power Electronics and Control Technologies

- Power Electronics Technologies
- Vehicle Technologies
- Battery Technologies
- Wind Power Technologies



# Energy Institute (EI)

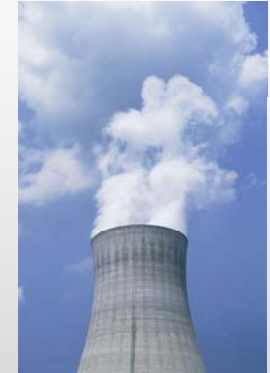
## Some Ongoing Projects

- **Molten Carbonate Fuel-Cell (TU-IT), 500 kW**
- **A 500 kW MCFC test system will be established inside MAM Campus.**
- **Fuel Reformer for Fuel Cells (TU, NL, GE, UK), 250 kW,**
- **Power Electronics (RTP 16.06) (TU-IT)**
- **NEDISS (RTP 16.14) (TU-IT)**
- **All Electric Combat Vehicle (RTP 16.02) (TU, GR, NL, IT, SW, FI)**
- **All Electric Ship (JP 16.01) (TU, IT, NL, UK, FR, DK)**
- **Sea Systems Integration (CEPA 16)**
- **Energy Storage Systems (CEPA 16)**
- **ELIT-1 Hybrid Electric Vehicle (TOFAŞ)**
- **Hybrid Electric Combat Vehicle, (FNSS)**
- **Advanced Silicon Solar Cell and PV Modules (NATO SfP Project)**
- **Biomass Cogeneration Network, EU- 5th FP**
- **IRMATECH, EU- 5th FP**
- **MOCAMI, EU-5th FP**

# Environment Institute (ENVI)

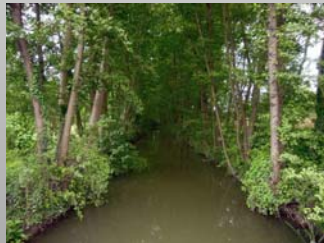
## Water and Wastewater Management

- Water Resources Management
- Water and Wastewater Treatment Technologies



## Marine and In-land Water

- Marine and In-land Water Monitoring and Management
- Modeling, Geographical Information Systems and Remote Sensing



## Air Quality Management

- Measurement, Analysis and Characterization
- Modeling and Mapping

## Solid and Hazardous Waste

- Solid and Hazardous Waste Management
- Persistent Organic Pollutant Inventory Studies



# Chemistry Institute (CI)

## Process and Inorganic Technologies

- Process Engineering
- Electrochemistry Technologies
- Industrial Mineral Technologies



## Polymer and Organic Technologies

- Polymer Technologies
- Organic Chemistry Technologies



# Chemistry Institute (CI)

## Sample Projects

- Determination of Toxic Phytoplankton Species in Ömerli Lake and Establishment of Results for Water Quality Improvement
- Carcinogenic Polycyclic Aromatic Hydrocarbons (PAH's) Entering the İzmit Bay: Determination of Sources and Contamination levels
- Impacts of Land Based Sources and Natural Phenomenon to coastal waters: A Case Study of the İzmit Bay and Dil Deresi Stream
- Integrated Environmental Pollution Control Study of Simav River Basin Investigation of the Seismic Ground Amplification in the Avcılar District of Istanbul by Seismological Methods



# Food Institute (FI)

## Food Science and Technologies

- Food Processing Technologies
- Food Science
- Food Preservation

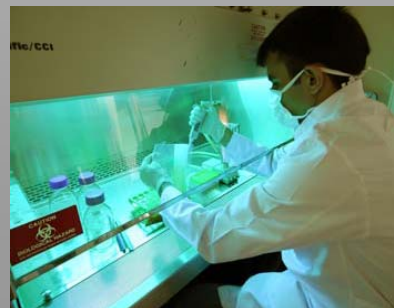
## Nutrition and Functional Foods

- Food Composition Data
- Clinical Researches
- Functional Foods



## Food Microbiology and Biotechnology

- Food Microbiology
- Biotechnology
- Food Safety Establishment Systems and Hygienic Conditions

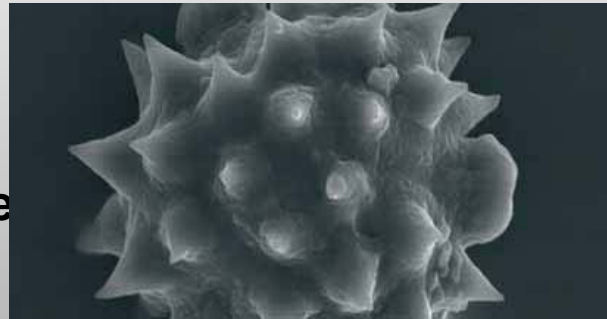


# Materials Institute (MI)

- **Ceramics**
- **Coating**
- **Sensors**
- **Electromagnetic-Electronic Materials**
- **Nanotechnology- Composite**
- **Metal**

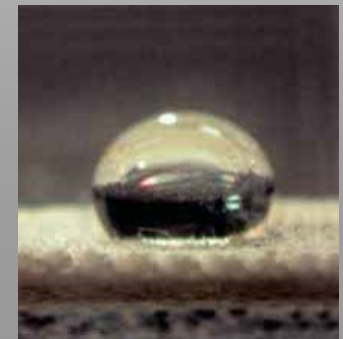


- **Aluminum**
- **Casting**
- **NDT-Acoustic Technologies**
- ☐ **Technological Supports**



➔ **Ceramics, Coating, Sensor, Electromagnetic- Electronic Materials, Nanotechnology-Composite**

- **Ceramic technologies**
- **Functional coating technologies**
- **Sensor technologies**
- **Electromagnetic-electronic materials**
- **Nanotechnology-Composite**



# Materials Institute (MI)

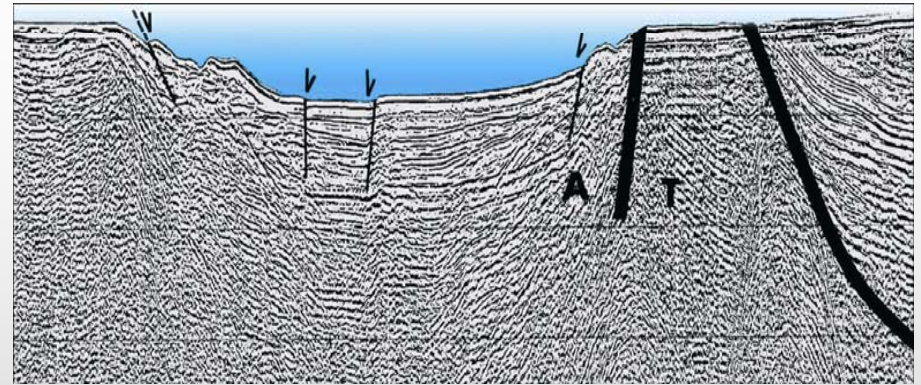
## Sample Projects

- Research and Optimization of Production Technologies for İznik Tiles
- Sub-Surface Microwave Detection System Project
- Development of Gas Turbine By-Pass Case
- Determining the Design and Production Parameters of Composites for Seismic Retrofit Reinforcements
- Hybrid Coatings on Aluminum Foils With Sol-Gel Techniques
- Magnesium Casting and Die-casting
- Hamitabat Plant Gas Turbine Components
- Development of Special Alloy Materials
- Development of Confocal Raman Micro-Spectrometer and Applications
- Molecularly Imprinted Polymers for Trace Explosive Detection
- Development of New Generation Friction Composite Materials

# Earth & Marine Sciences Institute (EMSI)

## Earthquake Processes

- Earthquake Seismology
- Seismic Micro-zonation
- Crustal Deformation and Structure
- Earthquake Risk Studies
- Active Tectonics



## Geophysical Processes

- Seismic Data Acquisition, Processing, Monitoring and Modeling
- Marine Geophysics
- Landslide Researches
- Geodetical Applications



## Geological and Geochemical Processes

- Petroleum, Earth Gas, Coal Gas Research
- Burial and Thermal History of Sedimentary Basins
- Quantitative Sedimentary Basin Analysis and Modeling
- Hydro-geochemical Studies
- Medical Geology

# Earth & Marine Sciences Institute (EMSI)

## Sample Projects

- Testing New Methods for the Prediction of the Earthquakes in the Marmara Region
- Seismological Network Calibration Between Israel and Turkey
- High Resolution Long Term Earthquake Monitoring Project for the Sea of Marmara
- Dynamic Characteristics of the West and Middle Parts of the North Anatolian Fault
- Installation and Feasibility of DGPS Stations
- Seismological Data Quality and Continuity Studies
- A Wide Angle Seismic Refraction, Reflection Profile in the Adapazari Basin
- Underwater Ambient Noise Measurement and Interpretation and Sea Bottom Classification
- Sea Surface Platform Detection by Satellite Technologies
- Tsunami Risk in Marmara Sea



# Genetic Eng. & Biotechnology Institute (GEBI)

## Animal Biotechnology

- Animal Genetics and Proteomics
- Reproductive Biotechnology
- Diagnostic Technologies
- Animal Cell Technologies



## Medical Biotechnology

- Human Genetics and Proteomics
- Molecular Diagnostic Technologies
- Vaccine Technologies
- Tissue Engineering



## Enzyme and Microbial Biotechnology

- Enzyme Engineering
- Microorganism Genetics Technologies
- Microbial Process Technologies
- Microbial Proteomics



## Plant Biotechnology

- Biological Diversity
- GMO Technologies
- Gene Mapping in Plants
- Plant Genetics and Proteomics

# EU FP6 – FP7 Projects

## Energy Institute

1. EU-DEEP (IP)
2. NATURALHY (IP)
3. HY-PROSTORE (SSA)
4. BIGPOWER (SSA)
5. MC-WAP (IP)
6. NETBIOCOF (CA)
7. CASES (CA)
8. TERMISOL (STREP)
9. TyGre (CP)
10. MCFC-CONTEX (CP)
11. EPHESTUS (CP)
12. BRISK

## Environment Institute

1. ANVOC (SSA)
2. SPICOSA (IP)
3. PREPARED (CP)
4. HEISST (CP)
5. PROMITHEAS-4 (CSA)
6. SEAS-ERA (CP)
7. SeaDataNet II
8. MicroB3

## Genetic Eng. & Biotechnology Institute

1. FAD (IP)
2. BRIDGE (CP)

## Food Institute

1. Quality Low Input Food (IP)
2. HEATOX (STREP)
3. SAFEFOODERA (CA)
4. FOODLINK (SSA)
5. MYCOGLOBE
6. EUROFIR (NoE)
7. FERBEV (CRAFT)
8. SAFEFOODNET (SSA)
9. MONIQA (NoE)
10. SAFETechnoPACK (REGPOT)
11. MYCRORED (CP)
12. EAST-NMR (CP)
13. APIFRESH (CP)
14. EuroFIR-Nexus
15. GREENFOODEC

## Materials Institute

1. NanoStrBioSens

## Earth & Marine Sciences Institute

1. FORESIGHT (STREP)
2. SCHEMA (STREP)
3. BlackSeaHazNet (IRSES)
4. EPOS (CP-CSA)
5. PRE-EARTHQUAKES (CP)

# Ready To Market Technologies

- **Enrichment of foods by some vitamins and minerals**
- **Development of olive production process for export**
- **Apricot halva and paste**
- **The formulation of fried oil from mixture of palm oil & vegetable oil**
- **Starter cultures for especially fermented products**
- **Wine production**
- **Development of trans-fatty acid free margarine formulation**
- **Development of formulation for long shelf life bread, ready-to-eat meals and ready-to-cook meals prototype production**
- **Development of trans-fatty acid free shortening formulation**
- **Pulse laser harmonic generator**
- **Chemical gas adsorbing purifying and decontamination powder**
- **Rescue and security radar prototype**
- **Microwave non destructive testing tomography prototype**
- **Confocal laser raman photoluminescence microspectrometer**
- **Ultrasonic non destructive testing transducers**
- **Under surface tomography system prototype**

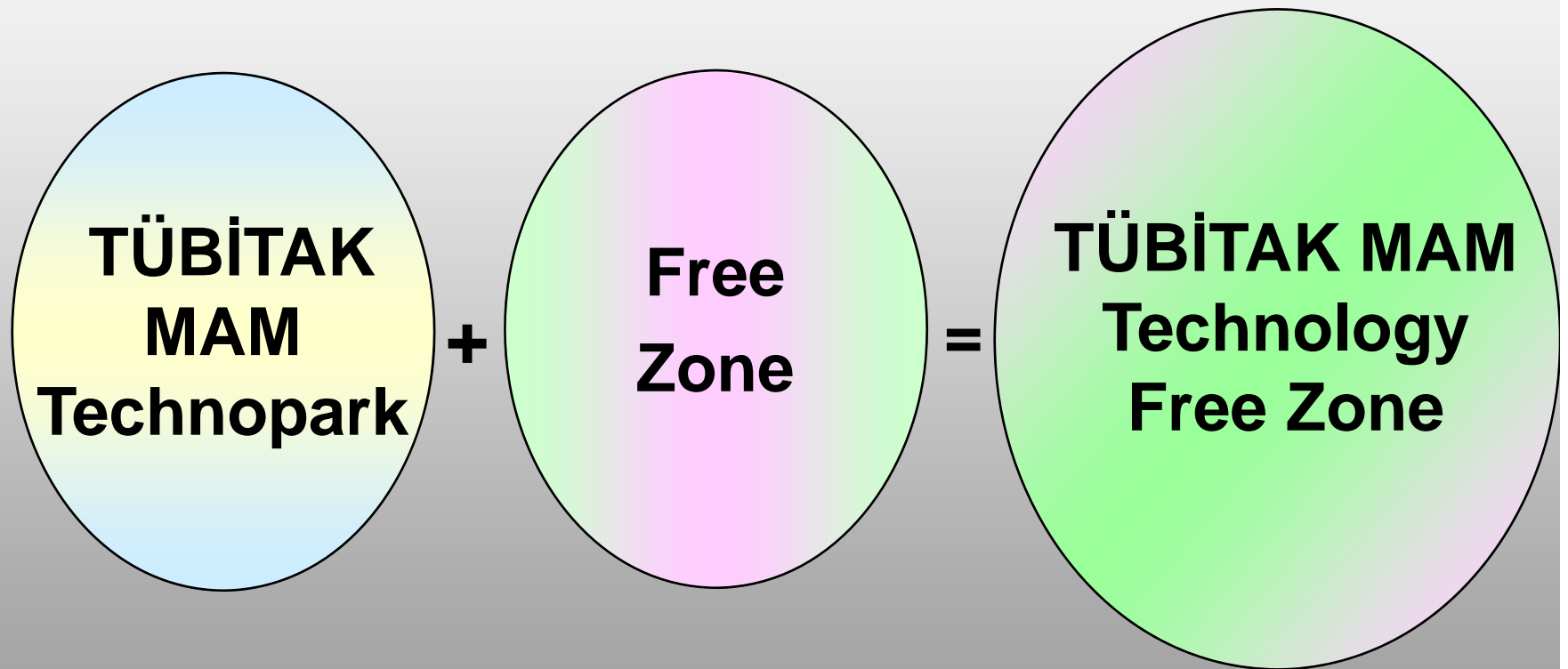




MARMARA  
TEKNOKENT A.Ş.

# MARMARA TECHNOPARK (*MARTEK*)

## Technopark and Technology Free Zone



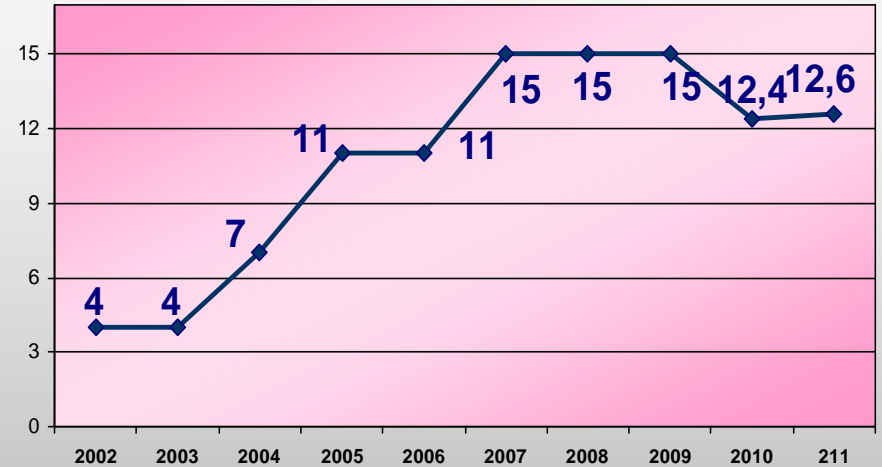
# MARTEK

## ➤ High Quality and Cheapest Technopark

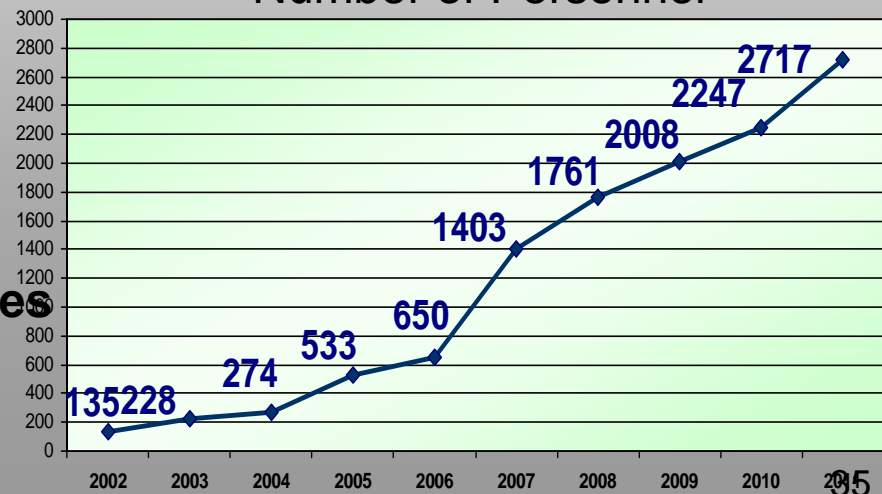
- **600.000 m<sup>2</sup>**      **Total Area**
- **77.000 m<sup>2</sup>**      **Total Open Area**  
**60.540 m<sup>2</sup>**      **Open Area Rented**
- **13.785 m<sup>2</sup>**      **Total Closed Area**  
**12.600 m<sup>2</sup>**      **Closed Area Rented**

- **114 ongoing R&D projects**
- **58 R&D Companies**
- **Nearly 7 Projects carried on in collaboration with TÜBİTAK Institutes**

Closed Area Rented (1000 m<sup>2</sup>)



Number of Personnel



# Conclusions

- **Research:** path to innovation
- **Innovation:** prerequisite for technology development
- **Technology development:** prerequisite for economic independence
- **Commercialization:** key for industrial development
- **Goal:** prosperity and quality of life

*Thank You*

**Prof. Dr. Ibrahim Dincer**

**Acting President**

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