



MAKFED

Turkish Machinery Federation

THE TURKISH INTELLIGENT MANUFACTURING SYSTEMS TECHNOLOGY ROADMAP

INTERGUNE+ 2022
Bilbao, 26th – 27th October 2022










MAKFED

Turkish Machinery Federation

	AIMSAD Woodworking Machinery Industrialists Association
	AKDER Fluid Power Association
	AMD Packaging Machinery Association
	ARÜSDER Vehicle and On-Vehicle Equipment and Work Machines Association
	AYSAD Elevator and Escalator Industrialists' Association
	BESİAD Fasteners Industrialists' and Businessmen's Association
	EFSİAD Industrial Heating Equipment Manufacturers and Businessmen Association
	EMOSAD Electric Engines Industrialists' Association

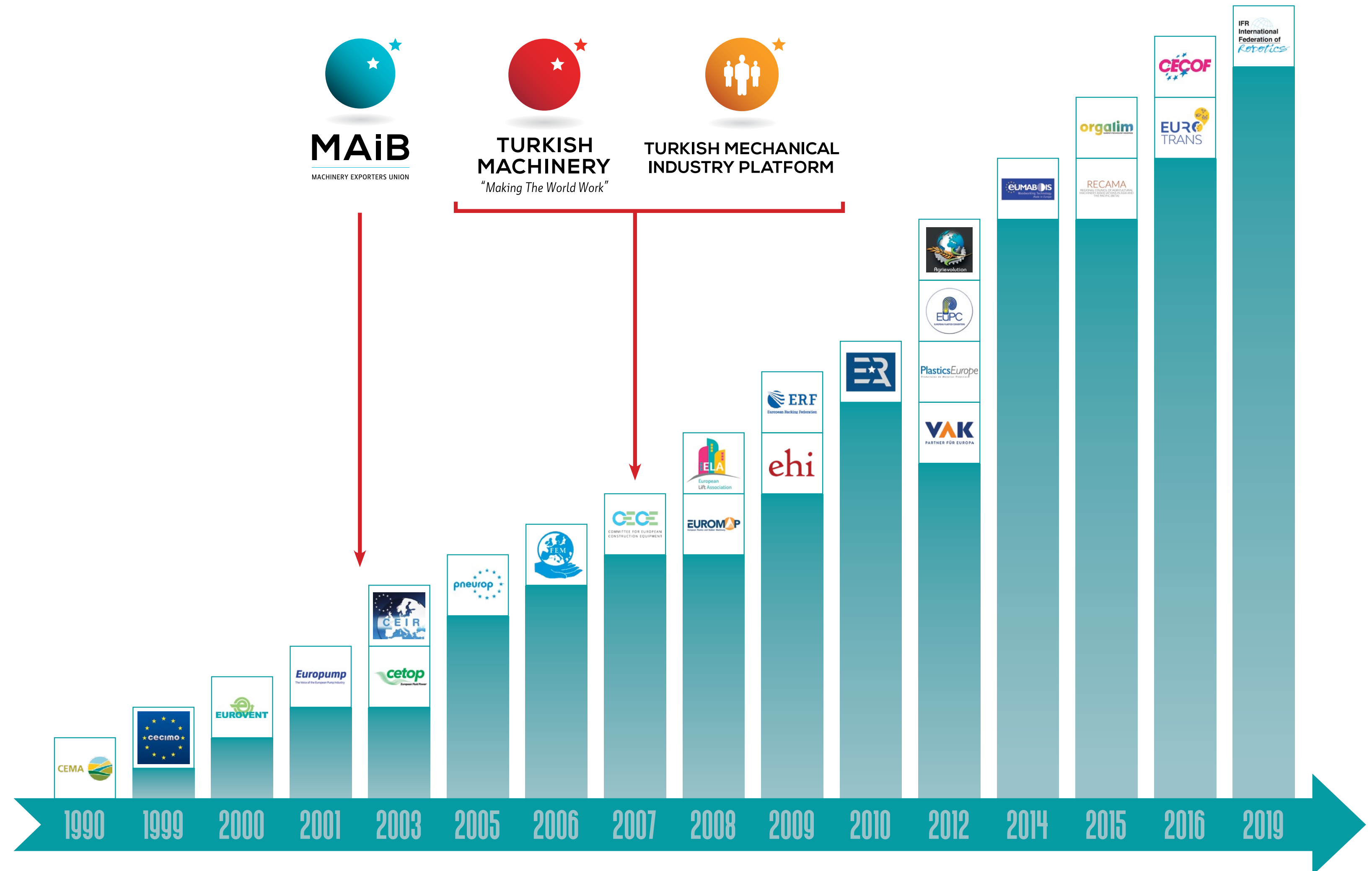
	ENOSAD Industrial Automation Manufacturers' Association
	İNDER Turkish Construction Equipment Distributors' and Manufacturers' Association
	İSDER Turkish Materials Handling, Storage & Industrial Equipments Association
	KBSB Vessel and Pressure Vessel Industrialists' Association
	MİB Machinery Manufacturers' Association
	PAGDER Turkish Plastics Industrialists' Association

	POMSAD Turkish Pump and Valve Manufacturers' Association
	SAHA Defense, Aerospace and Space Cluster
	TARMAKBİR Turkish Agricultural Machinery and Equipment Manufacturers' Association
	TEMSAD Turkish Textile Machinery Industrialists' Association
	TEVİD Electric Crane Manufacturers' Association
OBSERVERS	ARMATÜR Armature, Valve, Faucet and Plumbing Equipment Industrialists Association

	East Marmara Machinery Industrial Zone
	İMES Machinery Industrial Zone
	İSİM Construction Machinery Cluster
	MAKSİAD Machinery Manufacturers' Businessmen Association
	ROBODER Robotics and High Technology Production System Entegrating Association
	SAMİB Association of Machinery Manufacturers
	TÜMMER Turkish Marble Natural Stone and Machinery Manufacturers Association
	Yalova Machinery Industrial Zone

MAKFED, INTERNATIONAL MEMBERSHIPS

MAKFED	ORGALIM
AİMSAD	EUMABOIS
AKDER	CETOP
ARUSDER	VAK
AYSAD	ELA
EFSİAD	CECOF
ENOSAD	IFR
İMDER	CECE
	ERA
İSDER	FEM
	ERF
İSKİD	EUROVENT
KBSB	EHI
MİB	CECIMO
	PNEUROP
	EUROTRANS
PAGDER	EUROMAP
	EUPC
	PLASTICSEUROPE
POMSAD	EUROPUMP
	CEIR
TARMAKBİR	CEMA
	AGRIEVOLUTION
	ReCAMA



MAKFED, INTERNATIONAL MEMBERSHIPS



HOME

ABOUT ORGALIM

OUR INDUSTRIES

POLICY

SERVICES TO CLIENTS

NEWS & EVENTS

RESOURCE CENTRE



National associations



Spain - SERCOBE



Sweden - Teknikföretagen



Switzerland - SWISSMEM



Turkey - MAKFED



United Kingdom - BEAMA



49
Members



8
Corporates



20
Partners

TURKEY, CANDIDATE TO EUROPEAN UNION



TURKISH MACHINERY SECTOR IN FIGURES - 2021



Enterprises
51.062



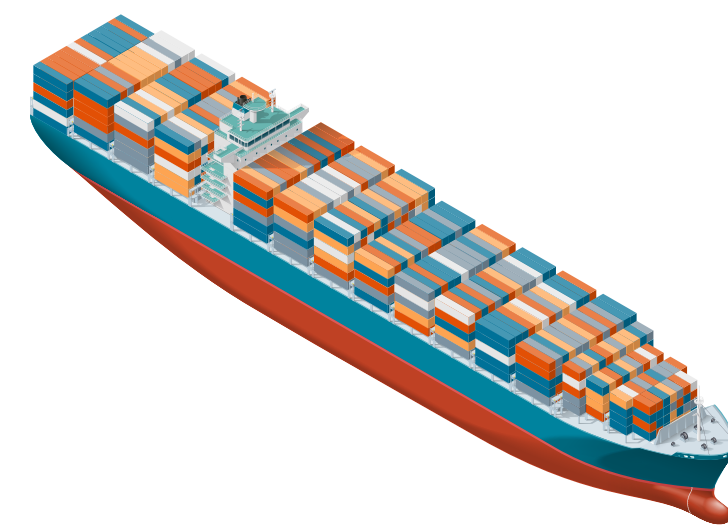
Employment
441.719



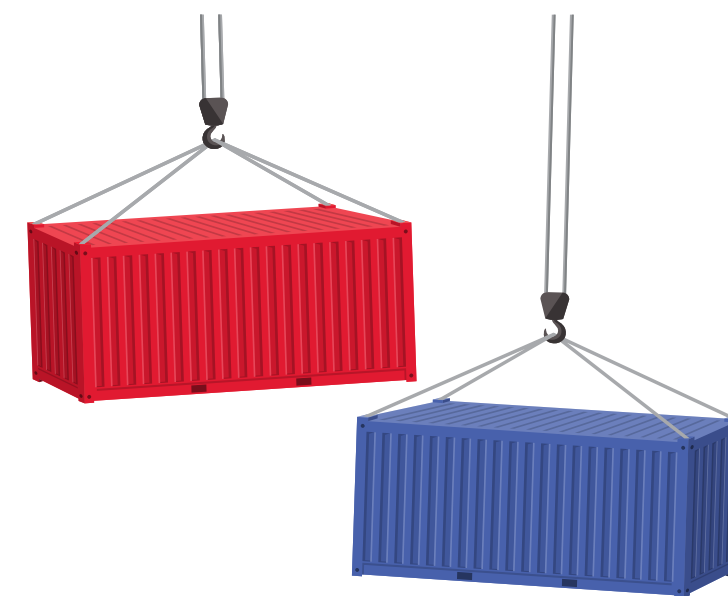
Turnover
38 Billion \$



Added Value
9 Billion \$



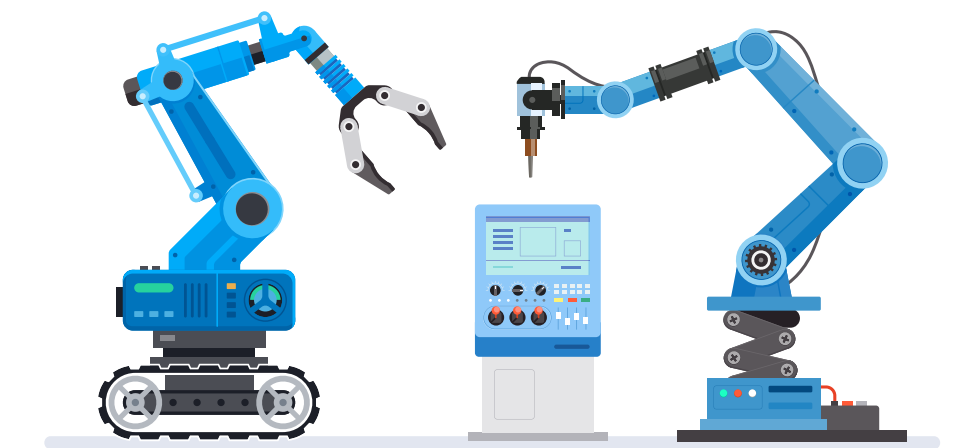
Export
23 Billion \$



Import
34,4 Billion \$



Market
50 Billion \$



R&D Expenditures
380 Million \$

MACHINERY FOREIGN TRADE / PRODUCT GROUPS

	EXPORT					IMPORT			
	2020	2021	Change %	2021 Rate		2020	2021	Change %	2021 Rate
HVAC	1.912	2.519	31,8	11	Internal Combustion Engines and Parts	4.180	4.949	18,4	14,4
Internal Combustion Engines and Parts	2.064	2.205	6,9	9,6	Office Machines	3.147	3.604	14,5	10,5
Washing and Drying Machines	1.644	1.973	20	8,6	Pump and Compressors	2.150	2.573	19,7	7,5
Construction and Mining Equipment	1.385	1.761	27,1	7,7	Textile and Apparel Machines	1.777	2.428	36,6	7,1
Pump and Compressors	1.119	1.467	31,1	6,4	Machine Tools	1.672	2.314	38,4	6,7
Agricultural Machines and Tractors	1.084	1.439	32,8	6,3	Electric Motors and Generators	1.966	1.982	0,8	5,8
Electric Motors and Generators	833	1.105	32,8	4,8	Turbine, Turbojet and Hydraulic Cylinders	1.198	1.445	20,6	4,2
Machine Tools	791	1.026	29,8	4,5	Construction and Mining Equipment	812	1.372	69,1	4
Textile and Apparel Machines	774	986	27,4	4,3	Valves and Fixtures	1.084	1.295	19,4	3,8
Turbine, Turbojet and Hydraulic Cylinders	690	849	23,1	3,7	Lifting, Transporting and Stacking Machines	881	1.119	27,1	3,3
Valves and Fixtures	603	779	29,3	3,4	Heaters and Ovens	787	926	17,6	2,7
Reactors and Boilers	581	738	27,1	3,2	Agricultural Machines and Tractors	491	844	71,8	2,4
Air Conditioning and Systems	528	677	28,3	2,9	Paper and Printing Machines	578	785	35,8	2,3
Food Industry Machines	578	646	11,9	2,8	Rubber, Plastic, Tire Processing Machines	603	684	13,5	2
Lifting, Transporting and Stacking Machines	443	509	14,9	2,2	Air Conditioning and Systems	494	604	22,1	1,8
Heaters and Ovens	407	495	21,6	2,2	Bearings	412	504	22,2	1,5
Rolling and Casting Machines, Molds	366	408	11,4	1,8	Rolling and Casting Machines, Molds	475	462	-2,6	1,3
Packaging Machinery	205	249	21,3	1,1	Packaging Machinery	273	379	38,7	1,1
Rubber, Plastic, Tire Processing Machines	195	232	19,1	1	Reactors and Boilers	461	378	-18,1	1,1
Office Machines	165	178	7,8	0,8	Food Industry Machines	328	360	9,5	1
Bearings	111	151	35,8	0,7	HVAC	295	358	21,3	1
Paper and Printing Machines	107	144	34,8	0,6	Washing and Drying Machines	152	147	-3,1	0,4
Leather Manufacturing Machines	6	7	24,5	0,03	Leather Manufacturing Machines	15	17	7,4	0,05
OTHERS	1.886	2.416	28,1	10,5	OTHERS	4.189	4.906	17,1	14,2

MACHINERY FOREIGN TRADE / COUNTRIES

EXPORT FROM TURKEY

	2020	2021	Change %	2021 Rate
Germany	2.551	3.137	23	13,7
USA	1.148	1.533	33,5	6,7
UK	1.029	1.253	21,8	5,5
Italy	932	1.201	28,8	5,2
France	866	1.161	33,9	5,1
Russia	654	904	38,1	3,9
Spain	652	746	14,3	3,2
Uzbekistan	387	689	78	3
Iraq	549	657	19,7	2,9
Poland	521	639	22,6	2,8
Egypt	317	526	65,8	2,3
Romania	592	492	-16,9	2,1
Iran	448	435	-3	1,9
Holland	379	416	9,7	1,8
Azerbaijan	347	389	12,1	1,7
Ukraine	295	387	31	1,7
Israel	268	351	31,1	1,5
Morocco	286	338	18,3	1,5
Belgium	247	300	21,6	1,3
Bulgaria	228	288	26,2	1,3

IMPORT TO TURKEY

	2020	2021	Change %	2021 Rate
China	6.802	8.714	28,1	25,3
Germany	5.280	5.961	12,9	17,3
Italy	2.533	3.357	32,5	9,7
UK	1.569	1.832	16,7	5,3
USA	1.381	1.602	16	4,7
Japan	1.121	1.399	24,8	4,1
Poland	876	1.087	24,1	3,2
France	941	1.021	8,6	3
South Korea	768	1.010	31,5	2,9
India	549	726	32,3	2,1
Taiwan	523	658	25,8	1,9
Czech Republic	583	646	10,7	1,9
Spain	508	609	19,9	1,8
Romania	370	573	55	1,7
Austria	317	416	31,4	1,2
Belgium	315	404	28,4	1,2
Sweden	244	347	42,2	1
South Africa	215	345	61	1
Thailand	289	335	16	1
Switzerland	302	333	10,1	1

MACHINERY FOREIGN TRADE / REGIONS

EXPORT FROM TURKEY

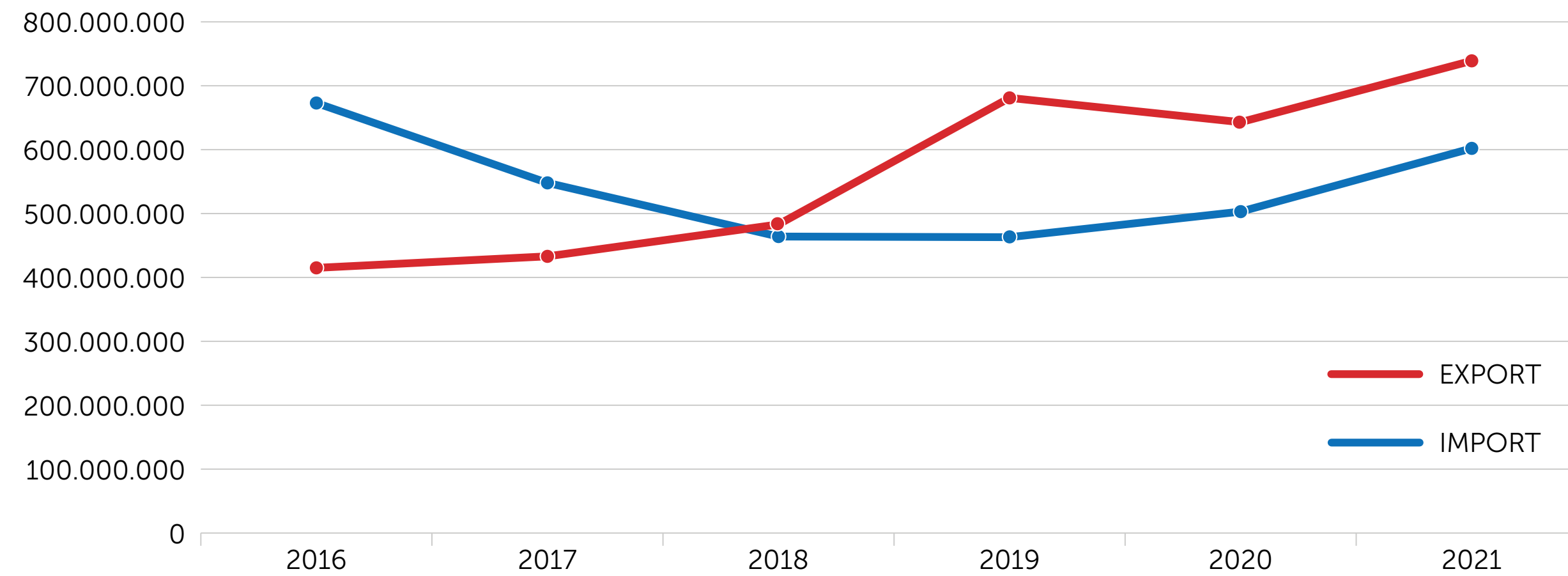
	2020	2021	Change %	2021 Rate
Europe	10.876	13.436	23,5	58,5
EU 27	8.361	10.157	21,5	44,2
Other Europe	2.515	3.280	30,4	14,3
America	1.537	2.096	36,4	9,1
North America	1.229	1.637	33,2	7,1
Latin America	308	459	48,9	2
Asia	4.172	5.059	21,3	22
Near and Middle East	2.560	2.708	5,8	11,8
Center and South Asia	1.111	1.727	55,4	7,5
East Asia	327	385	17,8	1,7
Southeast Asia	173	238	37,6	1

IMPORT TO TURKEY

	2020	2021	Change %	2021 Rate
Europe	15.714	18.602	18,4	54
EU 27	13.484	15.965	18,4	46,4
Other Europe	2.230	2.637	18,3	7,7
America	1.651	1.889	14,4	5,5
North America	1.447	1.671	15,5	4,9
Latin America	204	217	6,5	0,6
Asia	10.617	13.385	26,1	38,9
Near and Middle East	196	164	-16,4	0,5
Center and South Asia	555	735	32,5	2,1
East Asia	9.222	11.786	27,8	34,2
Southeast Asia	644	700	8,7	2

TURKISH & SPANISH MACHINERY TRADE

EXPORT & IMPORT (USD)



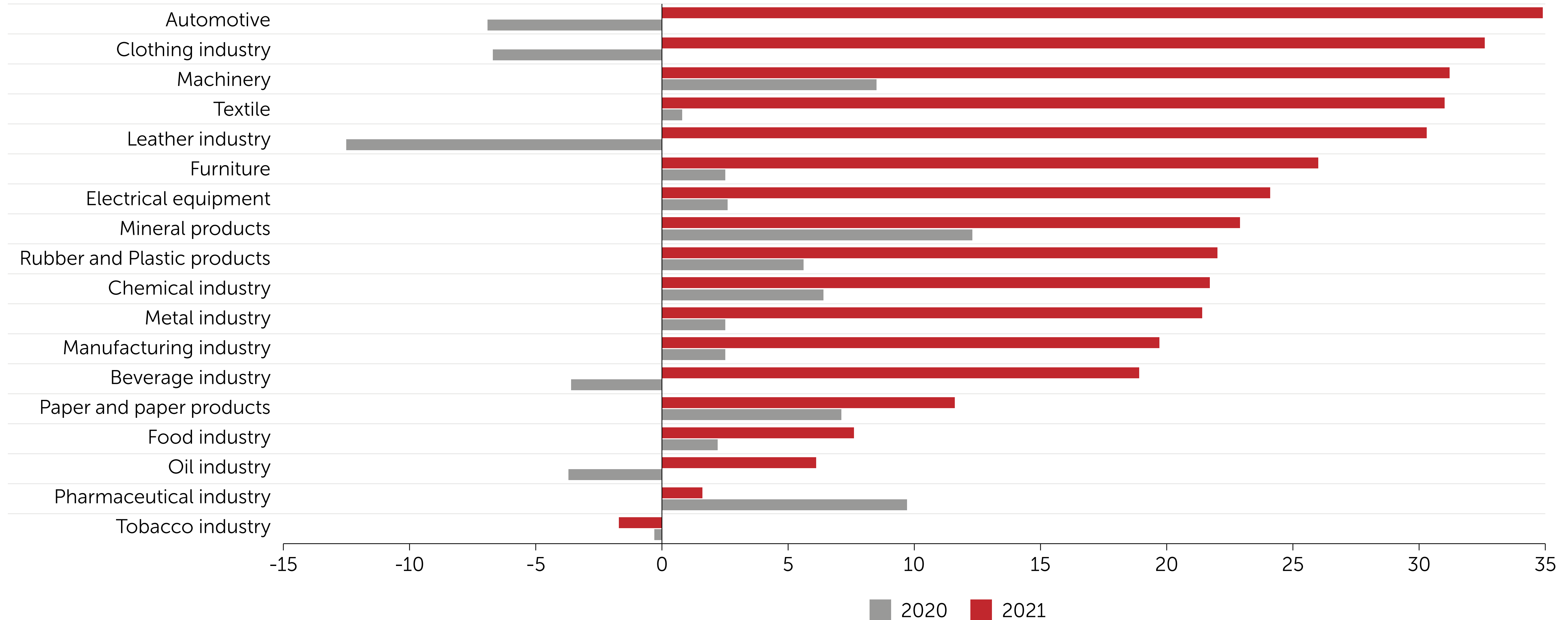
MACHINERY EXPORT TO SPAIN (USD)

HSC	2016	2017	2018	2019	2020	2021
8418	72.153.524	80.618.937	79.800.639	90.097.834	92.209.385	96.308.968
8407	3.034.637	5.123.274	3.815.761	1.185.713	71.739.712	92.542.774
8422	46.263.459	51.232.835	55.520.651	57.176.296	57.603.494	78.930.120
8450	83.407.447	79.222.432	96.701.553	89.748.488	77.384.670	78.844.439
8415	14.462.199	7.795.042	10.476.581	48.329.451	48.272.283	73.168.879
8409	30.701.249	36.763.404	17.980.054	73.643.301	69.823.427	69.683.557
8403	31.557.518	30.182.275	34.091.067	29.316.419	27.877.643	30.248.811
8429	2.572.243	7.547.906	9.742.910	15.696.724	14.162.194	25.403.232
8451	9.856.697	11.968.501	16.197.546	17.672.015	19.092.171	21.215.681
8483	12.812.814	15.399.793	23.607.456	25.768.547	17.550.873	18.756.551
Others	108.041.149	107.613.083	134.953.271	232.736.844	146.857.133	153.725.178
TOTAL	414.862.936	433.467.482	482.887.489	681.371.632	642.572.985	738.828.190

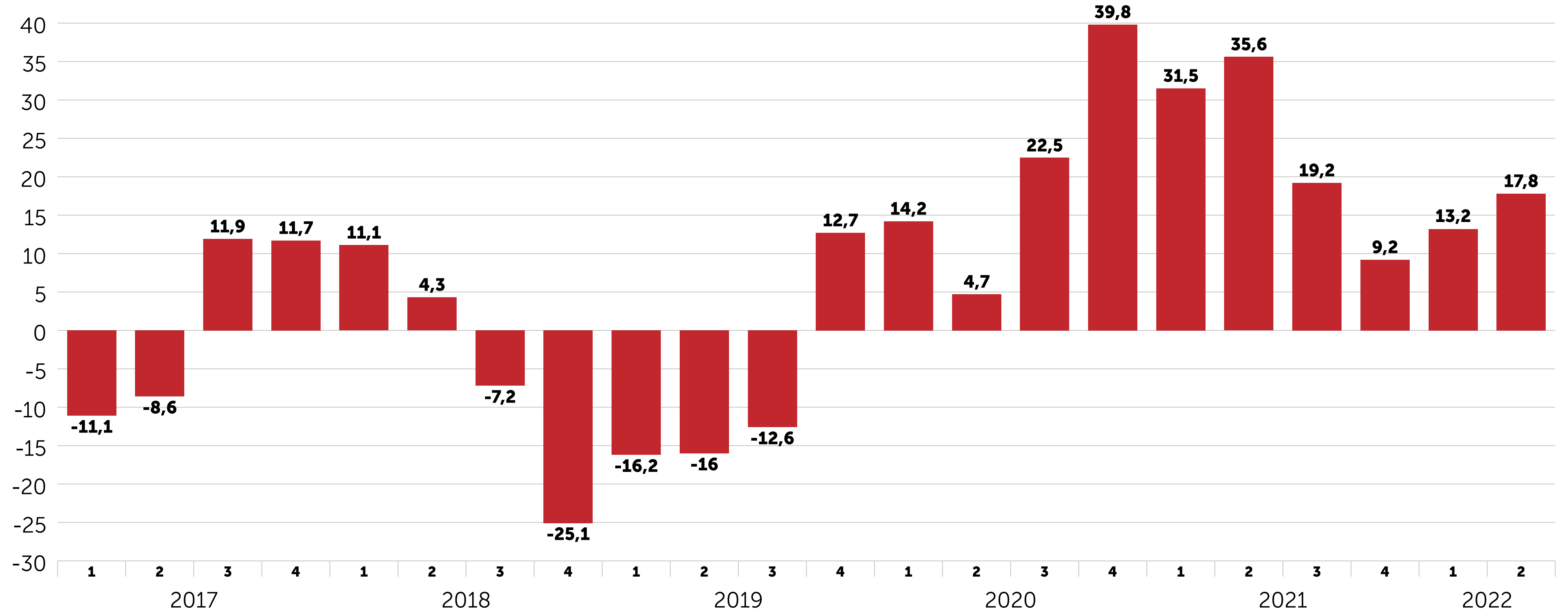
IMPORT FROM SPAIN (USD)

HSC	2016	2017	2018	2019	2020	2021
8408	21.739.722	2.460.739	750.249	19.689.552	1.051.519	94.650.714
8407	38.491.903	43.844.286	29.889.844	55.028.019	108.987.839	92.550.950
8481	37.433.514	41.197.528	35.761.195	41.351.139	41.469.222	53.079.864
8462	8.957.393	14.822.898	5.516.206	11.510.269	9.324.238	33.109.275
8421	12.187.419	8.395.378	14.035.957	17.144.110	23.401.807	28.833.630
8419	19.323.755	13.055.728	14.766.641	19.727.319	24.583.315	22.069.949
8443	11.150.250	11.187.175	10.383.238	6.021.783	8.425.463	18.301.073
8409	81.510.238	78.371.954	47.056.518	56.081.353	44.423.831	17.630.132
8483	21.096.885	24.162.991	17.814.485	30.193.513	20.781.012	16.932.141
8479	14.420.167	36.498.176	33.589.047	12.291.382	9.291.573	15.383.742
Others	406.832.263	274.109.288	254.579.206	194.413.071	211.587.037	209.491.202
TOTAL	673.143.509	548.106.141	464.142.586	463.451.510	503.326.856	602.032.672

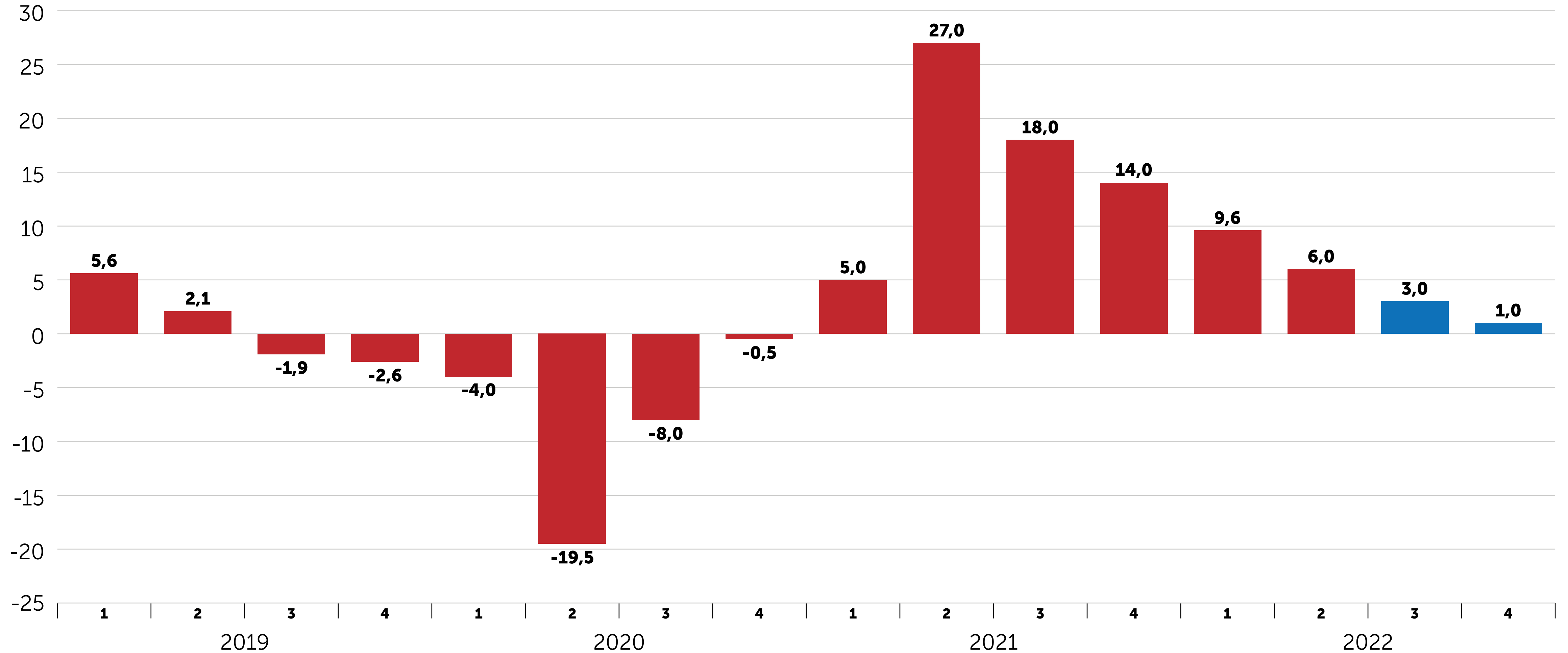
PRODUCTION CHANGE IN MANUFACTURING INDUSTRY SECTORS IN TURKEY %



GROWTH IN MACHINERY AND EQUIPMENT INVESTMENTS IN TURKEY %



GROWTH IN MACHINERY AND EQUIPMENT INVESTMENTS IN THE WORLD %



GLOBAL TRENDS IMPACTING THE MACHINERY INDUSTRY IN 2021

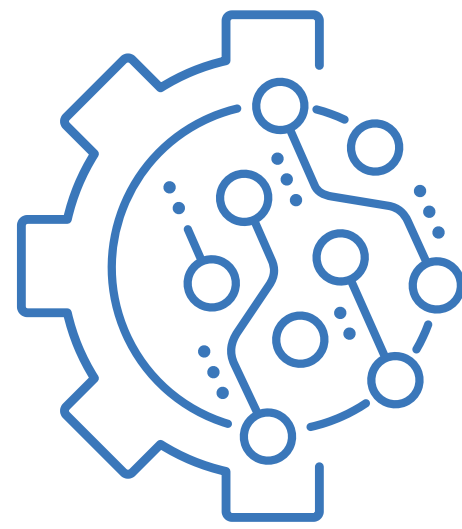
- NEW CAPACITY INVESTMENTS FOR SUPPLY SECURITY
- CAPACITY INVESTMENTS WITH CLOSE SUPPLY TENDENCIES
- SAFE PRODUCTION AND HYGIENE FOCUSED INVESTMENTS
- ELECTRONIC COMMERCE FOCUSED INVESTMENTS
- SUSTAINABILITY COMPLIANCE GREEN INVESTMENTS & CIRCULAR ECONOMY
- INDUSTRY 4.0 COMPLIANCE; DIGITAL-SMART-AUTONOMOUS SYSTEMS
- PRODUCT TECHNOLOGY INVESTMENTS FOR RENEWAL (MATERIALS TECHNOLOGY)
- INVESTMENTS FOR ENERGY TRANSFORMATION

CRITICAL TECHNOLOGY AREAS AFFECTING THE MACHINERY INDUSTRY

- ARTIFICIAL INTELLIGENCE
- QUANTUM COMPUTER
- SEMICONDUCTOR TECHNOLOGIES
- HYPERSONIC WEAPONS AND VEHICLES TECHNOLOGIES
- LITHIUM BATTERIES
- SPACE TECHNOLOGIES
- CYBER SECURITY TECHNOLOGIES
- HYDROGEN TECHNOLOGIES
- COMMUNICATION & 5G

THE TWIN GREEN AND DIGITAL TRANSITION IN TURKEY

TURKEY'S 2023 INDUSTRY AND TECHNOLOGY STRATEGY



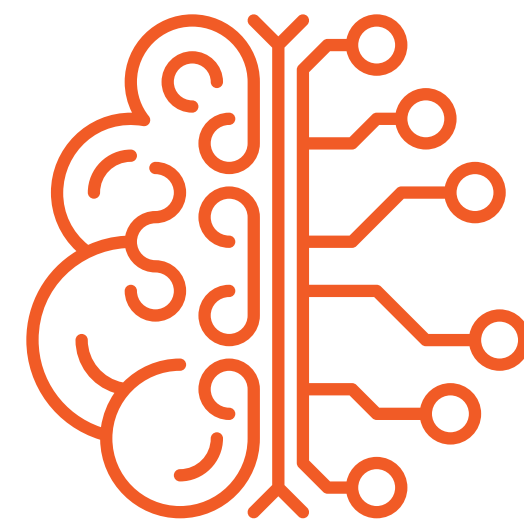
High Technology and
Innovation



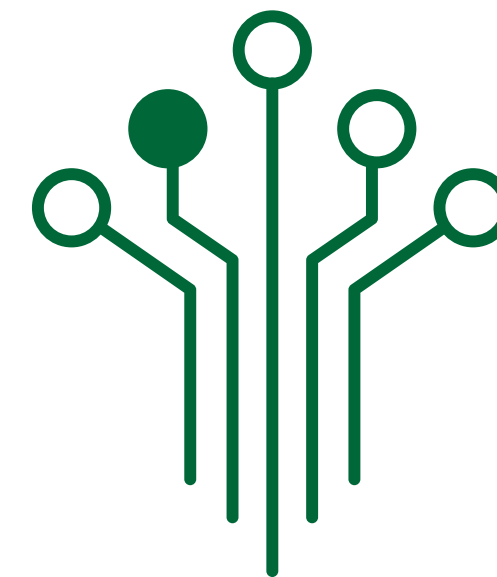
Digital
Transformation and
Industry Action



Entrepreneurship



Human Capital



Infrastructure

THE TWIN GREEN AND DIGITAL TRANSITION IN TURKEY

TURKEY'S 2023 INDUSTRY AND TECHNOLOGY STRATEGY

High Technology and Innovation

- Determination of Technological Competencies and Sectoral Roadmaps
- Development of Strategic Materials for Priority Sectors
- Ecosystem Understanding and Centers of Excellence in R&D
- Active Participation in the Development of Technology Standards, Test Center and Certification
- Global Initiatives in Disruptive Technologies
- Intellectual Property Rights Use and Infrastructure

Digital Transformation and Industry Action

- Digital Transformation of Industry
- Institutionalization of the Industry and Steps to Strengthen Exports
- Industry and Technology Fields with Pre-Competitive Cooperation
- Technology Oriented Industry Action Program
- Improvement of the Investment Environment and the New Investment Incentive System
- Regional Development, Employment and Branding
- New Approaches to Strengthen the Financing of the Industry

Entrepreneurship

- Increasing the Efficiency of the Entrepreneurship Ecosystem
- Policies and Practices Empowering Technology Suppliers and Entrepreneurs

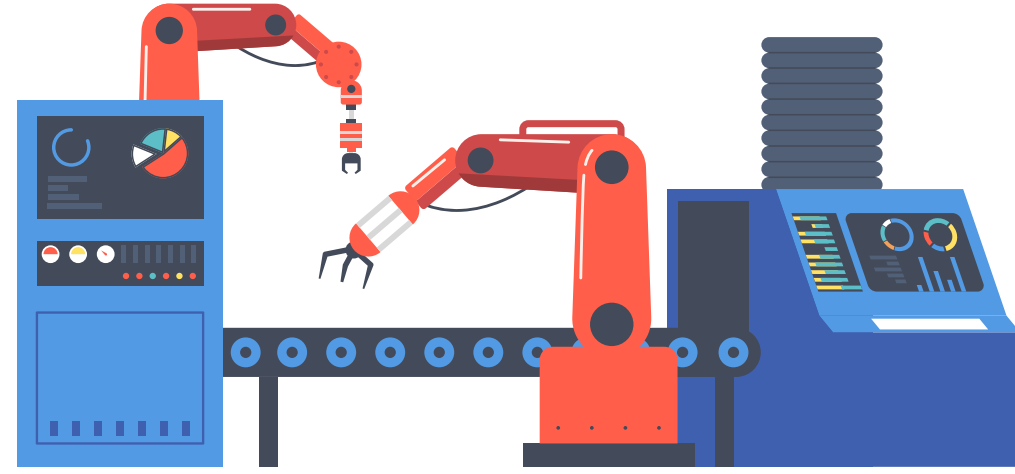
Human Capital

- Development of Human Capital for Sustainable Progress
- Increasing Research and Development Talent Capacity
- Open-Source Platform and Increasing Turkey's Software Capacity

Infrastructure

- Data Communication and Open Data Reform
- Cloud Computing and Data Center
- Cyber Security Standards and Infrastructure
- National Blockchain Infrastructure
- Two Levers of the Industry: Energy and Logistics

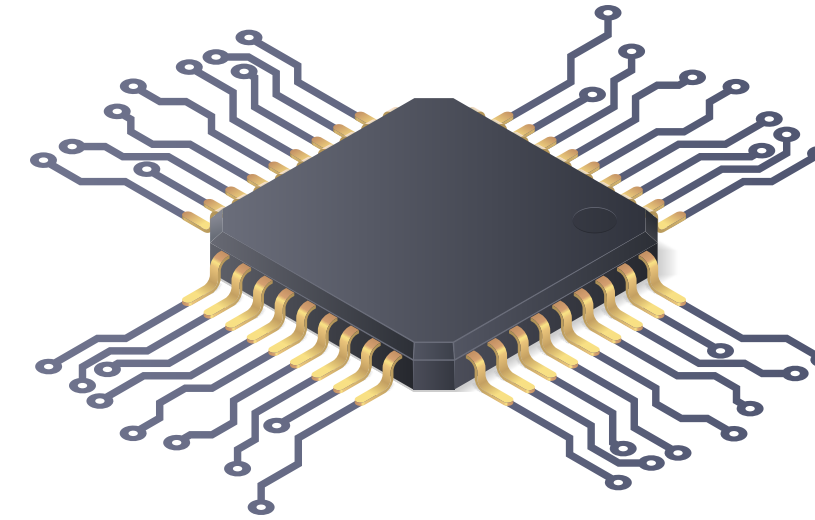
TECHNOLOGY ORIENTED INDUSTRY ACTION PROGRAM



Machinery



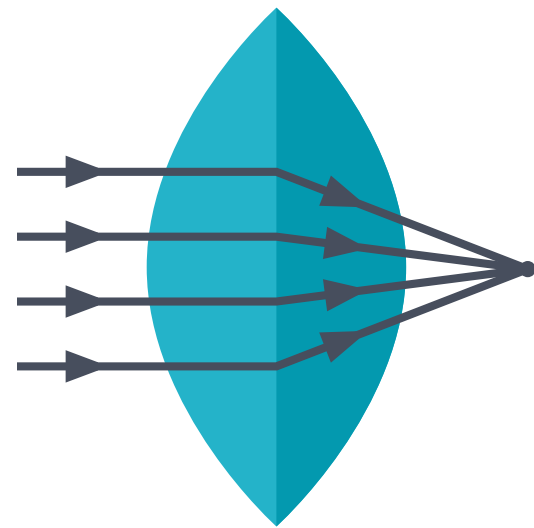
Computer



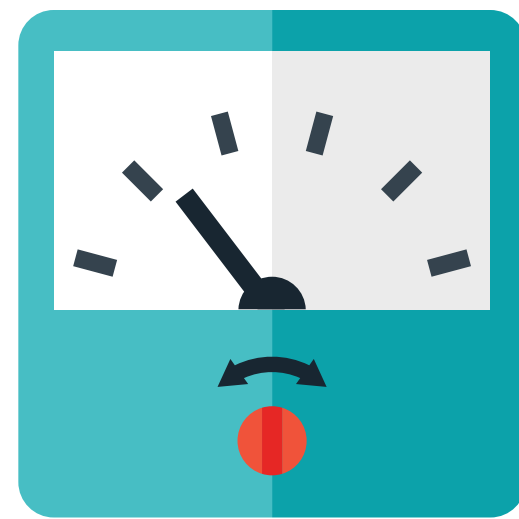
Electronic



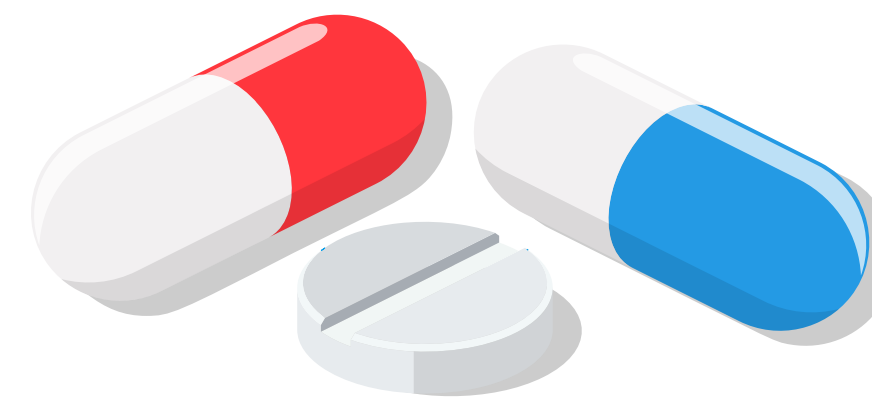
Chemical



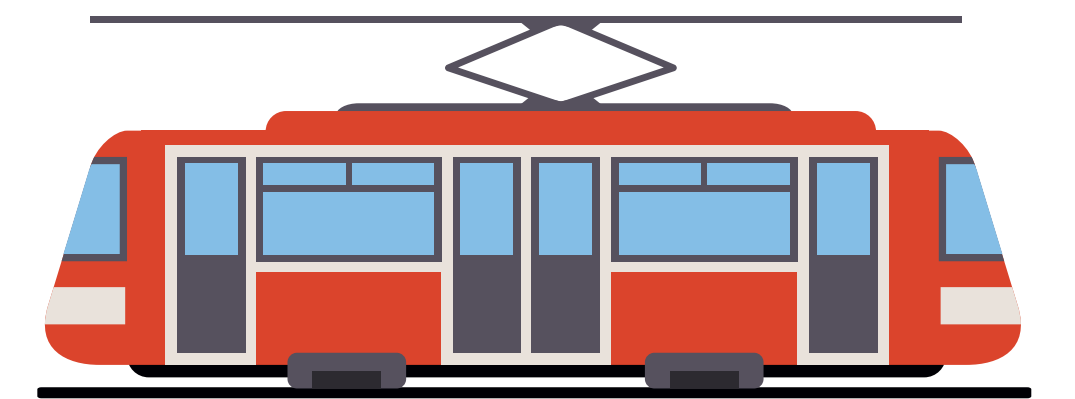
Optical



Electrical
Equipment



Pharmacy



Transportation
vehicles

TECHNOLOGY ORIENTED INDUSTRY ACTION PROGRAM CALLS

Projects

- CNC Machine Tools
- Additive Manufacturing Systems
- Advanced Laser Systems
- Smart and New Generation Elevators
- Internal Combustion Engines
- Advanced Robot and Intelligent Industrial Systems
- Synchronous Motor and Servo Drives
- Synchronous Motor and Wet Rotor Circulation Pumps
- Driver Cards
- Compacted Graphite Wind Power Generator Materials
- Super Critical Fluid Extraction System
- Ball Screw and/or Planetary Screw Shafts
- Special Ball Bearings
- Innovative Oil/Fuel Filters
- Cable Group Production Cells
- Supercritical Water Oxidation Reactor

Machinery Call – Pilot Project

3 October 2019 – 21 July 2020

Total Proposed R&D Budget: 1,7 Billion ₺

Number of R&D Projects Evaluated: 52

Number of Investment Projects: 21

TECHNOLOGY ORIENTED INDUSTRY ACTION PROGRAM CALLS

Mobility Call

30 April – 31 July 2021

Total Proposed R&D Budget: 4 Billion ₺

Number of R&D Projects Evaluated: 77

Number of Investment Projects: 24

Health and Chemical Products Call

10 August – 23 October 2021

Total Proposed R&D Budget: 2,5 Billion ₺

Number of R&D Projects Evaluated: 84

Number of Investment Projects: 63

Structural Transformation in Production Call

23 June – 8 September 2021

Total Proposed R&D Budget: 719 Million ₺

Number of R&D Projects Evaluated: 32

Number of Investment Projects: 23

Digital Transformation Call

30 September – 3 December 2021

Total Proposed R&D Budget: 3,8 Billion ₺

Number of R&D Projects Evaluated: 97

Number of Investment Projects: 23

THE TWIN GREEN AND DIGITAL TRANSITION IN TURKEY



Paris Agreement's ratification launches a new climate policy era in Turkey

Turkey is expected to adopt new emissions-cutting goals and action plans after lawmakers ratified the Paris Agreement

PARIS AGREEMENT ON CLIMATE CHANGE

It is aimed to regulate the regime of climate change in the post-2020 era through the agreement

Curbing global warming by 1.5 degrees Celsius

TURKEY AIMS ZERO-EMISSION BY 2053

Turkey will carry out works to prevent pollution in seas and expand forest areas and preserved areas

Consumption of fossil fuels, including oil, coal, and renewable energy will be prioritized

2030

CO₂

21%

TURKEY'S GOAL UNDER THE AGREEMENT

THE TWIN GREEN AND DIGITAL TRANSITION IN TURKEY

GREEN DEAL ACTION PLAN

6 July 2021

MINISTRY OF ENVIRONMENT, URBANIZATION AND CLIMATE CHANGE

29 October 2021

CLIMATE SUMMIT

21-25 February 2022

CLIMATE LAW studies

Purpose: To create the necessary legal and institutional framework for the reduction of greenhouse gas emissions in the fight against climate change and for adaptation to climate change, to regulate the procedures and principles regarding technical and financial mechanisms.

THE TWIN GREEN AND DIGITAL TRANSITION IN TURKEY

TURKEY & WORLD BANK MoU

22 October 2021

Amount of Support

- 3.1 Billion USD concessional loan
- 66 Million USD grant

Scope:

- Renewable energy, increasing energy efficiency and developing energy storage capacity
- Increasing energy and resource efficiency in the manufacturing industry
- Ensuring integration into the global supply chain with digitalization and high-tech production
- Rehabilitation of degraded farmlands, reduction of food waste, enhancement and rehabilitation of forests
- Establishing infrastructure for the transition to rail transport and the transition to electric vehicles

**THANK
YOU**



MAKFED

Turkish Machinery Federation

ZÜHTÜ BAKIR
SECRETARY GENERAL