WHY INVEST IN TURKISH MACHINERY INDUSTRY?
AGENDA

1. Executive Summary
2. Turkish Machinery Industry Outlook
3. Growth Drivers in Turkey
4. Opportunities in Turkish Machinery Industry
5. Success Stories

TURKISH MACHINERY INDUSTRY?
TURKEY HAS A GROWING MACHINERY INDUSTRY OFFERING OPPORTUNITIES IN MANY AREAS...

FAVORABLE INVESTMENT ENVIRONMENT

- Strong macroeconomic growth with increasing income per capita and a burgeoning middle class
- Favorable demographics with a dynamic, young and skilled labor force supporting the industry
- Cost-competitive labor and energy prices
- Strong government support through manufacturing and R&D incentives

STRONG INTERNATIONAL PRESENCE

- Global machinery companies have been present in Turkey with significant manufacturing activities, using Turkey as a hub to access regional markets
- Successful partnerships with local companies to grow in the region, capitalizing on locals’ experience and networks

LUCRATIVE OPPORTUNITIES IN SUB-SECTORS

- World-scale domestic demand and strong industrial base offer ample opportunities in agricultural machinery, construction & mining machinery, energy equipment such as electric motors & turbines, food processing & packaging machinery, HVAC, lifting & handling equipment, metalworking & machine tooling, pumps & compressors, textile machinery

ROBUST GROWTH IN THE SECTOR

- Turkish machinery industry has been robustly growing over the past decade with approx. 5% CAGR
- Customer industries, such as plastic & rubber, automotive, construction, textile and electrical machinery are robustly growing and therefore further supporting the growth of machinery sector
- Export opportunities due to Turkey’s proximity to regional markets
TURKISH MACHINERY INDUSTRY

TURKISH MACHINERY SECTOR HAS MORE THAN QUADRUPLED ITS REVENUES TO USD 21 BILLION AND DOUBLED ITS WORKFORCE TO 244K OVER THE PAST DECADE

AN UNPRECEDENTED AVERAGE GROWTH OF 25% IN 5 YEARS

TURKEY SHOOK OFF GLOBAL CRISIS WHILE DOUBLING ITS REVENUE & REACHING VALUE-ADD RATIO OF 25%

DECREASE IN REVENUE MAINLY CAUSED BY THE 40% INCREASE IN CURRENCY

Revenue (M$)  Employment

Source: Turkish Statistical Institute Industry & Services Statistics NACE Rev2 Division 28, Central Bank of Republic of Turkey
SUSTAINABILITY OF GROWTH IN CUSTOMER INDUSTRIES DRIVING TURKEY’S MACHINERY INDUSTRY...

END-USE INDUSTRIES

CAGR 2009-2019

- CHEMICALS 4.2%
- TEXTILE 3.6%
- ENERGY 5.3%
- FOOD & BEVERAGES 2.3%
- AUTOMOTIVE 4.2%
- ELECTRICAL EQUIPMENT 2.6%
- AGRICULTURE 7.7%
- CONSTRUCTION 7.5%

2nd largest plastics producer after Germany in Europe
6th largest clothing supplier in the world, 3rd largest clothing supplier to Europe
5th largest electricity market in Europe – with 88.5 GW of installed capacity.
Largest sector in Turkey with a USD 70 billion production
15th largest automotive manufacturer globally, producing over 1 million vehicles
Largest TV and white goods manufacturer in Europe
7th largest agricultural producer in the world
650K+ dwelling units built per year

Source: Ministry of Science, Industry and Technology, Investment Office Team Analysis
TURKEY’S EXPORTS HAVE GROWN FIVE TIMES SINCE 2003, MAKING IT ONE OF THE TOP PERFORMERS IN THE WORLD MACHINERY TRADE.

WHEN WORLD EXPORTS DOUBLED, TURKEY’S EXPORTS INCREASED FIVE TIMES...

...WHILE DIVERSIFYING ITS EXPORT MARKETS:

- Europe – mostly to Germany, UK, France, and Italy (58.5%)
- South and Central Asia (6%)
- MENA - mostly Iran, Iraq, Egypt, Israel (14%)
- Americas (8.3%)

Source: Comtrade HS code 84, 8202, 8207, 8208, 8501, 8502, 8503, 8505, 8514, 8515, 8701, 8709, 8716, 9017, 9024, 9508, 9603, Team Analysis
FOREIGN TRADE

TURKEY HAS ALMOST TRIPLED ITS IMPORTS TO USD 28 BILLION AND NOW IS THE 24TH LARGEST IMPORTER IN THE WORLD

TURKEY HAS INCREASED ITS EXPORT/IMPORT RATIO FROM 30% TO 65% SINCE 2003...

...WITH THE FOLLOWING BREAKDOWN BY COUNTRIES

Europe - mostly from Germany, Italy and UK: 55%

USA: 6%

China: 24%

Korea & Japan: 7%

Source: Comtrade HS code 84, 8202, 8207, 8208, 8501, 8502, 8503, 8505, 8514, 8515, 8701, 8709, 8716, 9017, 9024, 9508, 9603, Team Analysis

TURKEY IS WELL CONNECTED WITH THE REGION THROUGH CUSTOMS UNION WITH THE EU AND FREE TRADE AGREEMENTS WITH 28 COUNTRIES

TURKEY HAS GEOGRAPHICAL PROXIMITY TO SOME OF THE HIGHEST GROWTH MARKETS IN MACHINERY AND IS CONVENIENTLY POSITIONED AS A MANAGING AND MANUFACTURING HUB

TURKEY FULLY COMPLIES WITH THE EU TECHNICAL LEGISLATIONS SINCE 2002, WITH ALL CONFORMITY ASSESSMENTS IN LINE WITH EU REGULATIONS

Source: UN Comtrade HS Code 84, Turkey has signed Free Trade Agreements (FTA) with Albania, Bosnia-Herzegovina, Chile, Egypt, Faroe Islands*, Georgia, Ghana*, Iceland, Israel, Jordan, Kosovo*, Lebanon*, Macedonia, Malaysia, Mauritius, Montenegro, Moldova*, Morocco, Norway, Palestine, Serbia, Singapore*, South Korea, Switzerland and Liechtenstein, Syria, Tunisia. (*to be ratified).

IMPORT NUMBERS (IN BILLION $)

- 1.8 X
  - 750 (2019)

- 3 X
  - 109 (2019)

- 5 X
  - 11.7 (2003)
  - 58 (2019)
THERE ARE OVER 17K COMPANIES IN TURKISH MACHINERY SECTOR WHERE BOTH LOCAL AND INTERNATIONAL PLAYERS ARE ACTIVE

75% of the companies have <10 employees.

Growth requires access to:
- Market
- Technology
- International finance

OVER 60% OF MACHINERY REVENUE IS MADE BY SMALL AND MEDIUM ENTERPRISES

10 OF THE LARGEST 25 PLAYERS ARE INTERNATIONAL & EXPORT RATE IS 40% ON AVERAGE

40% EXPORT ON AVERAGE

Source: Turkish Statistical Institute Industry & Services Statistics NACE Rev2 Division 28, ISO 500
GROWTH DRIVERS IN TURKEY
ROBUST ECONOMY

11th largest economy in the World

RANKING OF ECONOMIES BY GDP AT PPP

<table>
<thead>
<tr>
<th>2003</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. USA</td>
<td>CHINA</td>
<td>CHINA</td>
</tr>
<tr>
<td>2. CHINA</td>
<td>USA</td>
<td>USA</td>
</tr>
<tr>
<td>3. JAPAN</td>
<td>INDIA</td>
<td>INDIA</td>
</tr>
<tr>
<td>4. GERMANY</td>
<td>JAPAN</td>
<td>JAPAN</td>
</tr>
<tr>
<td>5. INDIA</td>
<td>GERMANY</td>
<td>GERMANY</td>
</tr>
<tr>
<td>6. RUSSIA</td>
<td>RUSSIA</td>
<td>RUSSIA</td>
</tr>
<tr>
<td>7. FRANCE</td>
<td>INDONESIA</td>
<td>INDONESIA</td>
</tr>
<tr>
<td>8. UK</td>
<td>BRAZIL</td>
<td>BRAZIL</td>
</tr>
<tr>
<td>9. BRAZIL</td>
<td>UK</td>
<td>UK</td>
</tr>
<tr>
<td>10. ITALY</td>
<td>FRANCE</td>
<td>FRANCE</td>
</tr>
<tr>
<td>11. MEXICO</td>
<td>ROMANIA</td>
<td>ROMANIA</td>
</tr>
<tr>
<td>12. INDONESIA</td>
<td>ITALY</td>
<td>ITALY</td>
</tr>
<tr>
<td>13. SPAIN</td>
<td>TURKEY</td>
<td>TURKEY</td>
</tr>
<tr>
<td>14. CANADA</td>
<td>S.KOREA</td>
<td>S.KOREA</td>
</tr>
<tr>
<td>15. S.KOREA</td>
<td>SPAIN</td>
<td>SPAIN</td>
</tr>
<tr>
<td>16. S.Arabia</td>
<td>CANADA</td>
<td>CANADA</td>
</tr>
<tr>
<td>17. IRAN</td>
<td>S.Arabia</td>
<td>S.Arabia</td>
</tr>
<tr>
<td>18. TURKEY</td>
<td>IRAN</td>
<td>AUSTRALIA</td>
</tr>
</tbody>
</table>


AVERAGE ANNUAL GDP GROWTH (%)

2002-2020

<table>
<thead>
<tr>
<th>GDP GROWTH</th>
</tr>
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<tbody>
<tr>
<td>1. CHINA</td>
</tr>
<tr>
<td>2. USA</td>
</tr>
<tr>
<td>3. INDIA</td>
</tr>
<tr>
<td>4. JAPAN</td>
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<td>5. GERMANY</td>
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<td>6. RUSSIA</td>
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<tr>
<td>7. INDONESIA</td>
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<td>8. BRAZIL</td>
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<td>9. FRANCE</td>
</tr>
<tr>
<td>10. UK</td>
</tr>
<tr>
<td>11. TURKEY</td>
</tr>
<tr>
<td>12. POLAND</td>
</tr>
<tr>
<td>13. ROMANIA</td>
</tr>
<tr>
<td>14. BULGARIA</td>
</tr>
<tr>
<td>15. CZECHIA</td>
</tr>
<tr>
<td>16. HUNGARY</td>
</tr>
</tbody>
</table>

REAL GDP GROWTH (INDEX: 2002=100)

registered the second largest economic growth in OECD
Turkish economy has more than tripled over the past 18 years and is promising more growth in future.

Robust domestic market and entrepreneurial private sector spurred investments and exports.

**Turkish Economy**
(GDP at current prices, $Billion)

- 2002: 236
- 2020: 717

**Contribution to GDP Growth 2002-2020 (%)**

- Domestic Consumption: 72%
- Investment Expenditures: 32%
- Exports: 21%
- Stocks: -1%
- Imports: -24%

Source: TurkStat
Income per capita
(GDP per capita, current prices at purchasing power parity)

$10,997 (2002)
$30,253 (2020)

Stock of Automobiles
(millions of passenger cars)

4.6 (2002)
13.1 (2020)

Source: TurkStat, IMF
FAVORABLE DEMOGRAPHICS

HALF OF POPULATION UNDER AGE OF 32.7 CREATING DYNAMIC LABOR FORCE AND FISCAL DISCIPLINE
SKILLED & COST-COMPETITIVE LABOR FORCE

TURKEY’S EDUCATION SYSTEM UPGRADED TO SUPPORT A SKILLED LABOR POOL.

ANNUAL NUMBER OF UNIVERSITY GRADS IN MECHANICAL FIELDS (2019)

- TOTAL 37,378
- Electronics & Automation: 12,472
- Mechanics & Metal Trades: 19,848
- Manufacturing & Processing: 5,058

NUMBER OF GRADS FROM VOCATIONAL & TECHNICAL HIGH SCHOOLS (in thousands)

- 2002: 177
- 2019: 495

LABOR FORCE BY EDUCATION LEVEL

- University: 27.5%
- High School and below: 72.5%

Source: Ministry of National Education, Council of Higher Education, Turkstat
SKILLED & COST-COMPETITIVE LABOR FORCE

REMUNERATION OF MANAGEMENT/ENGINEER 2020
(10=Available; 0=Unavailable)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total base salary plus bonuses and long-term incentives $K, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>7.35</td>
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<tr>
<td>Poland</td>
<td>6.74</td>
</tr>
<tr>
<td>Romania</td>
<td>5.75</td>
</tr>
<tr>
<td>Czechia</td>
<td>5.65</td>
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<tr>
<td>Bulgaria</td>
<td>5.47</td>
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<tr>
<td>Hungary</td>
<td>4.86</td>
</tr>
<tr>
<td>Slovakia</td>
<td>4.92</td>
</tr>
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</table>

AVAILABILITY OF COMPETENT SENIOR MANAGERS 2020
(10=Available; 0=Unavailable)

<table>
<thead>
<tr>
<th>Country</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>6.15</td>
</tr>
<tr>
<td>Poland</td>
<td>5.72</td>
</tr>
<tr>
<td>Czechia</td>
<td>4.45</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>4.18</td>
</tr>
<tr>
<td>Romania</td>
<td>3.91</td>
</tr>
<tr>
<td>Slovakia</td>
<td>3.39</td>
</tr>
<tr>
<td>Hungary</td>
<td>2.75</td>
</tr>
</tbody>
</table>

LABOR COST PER HOUR IN MANUFACTURING
$. 2018

<table>
<thead>
<tr>
<th>Country</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>47.2</td>
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<tr>
<td>France</td>
<td>44.4</td>
</tr>
<tr>
<td>USA</td>
<td>39.6</td>
</tr>
<tr>
<td>UK</td>
<td>31.1</td>
</tr>
<tr>
<td>Czechia</td>
<td>14.9</td>
</tr>
<tr>
<td>Slovakia</td>
<td>14.3</td>
</tr>
<tr>
<td>Hungary</td>
<td>11.5</td>
</tr>
<tr>
<td>Poland</td>
<td>10.7</td>
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<tr>
<td>Romania</td>
<td>7.0</td>
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<tr>
<td>Bulgaria</td>
<td>5.6</td>
</tr>
<tr>
<td>Turkey</td>
<td>5.6</td>
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REMUNERATION OF MANAGEMENT/ENGINEER
Total base salary plus bonuses and long-term incentives $K, 2018

<table>
<thead>
<tr>
<th>Country</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>160</td>
</tr>
<tr>
<td>USA</td>
<td>121</td>
</tr>
<tr>
<td>France</td>
<td>113</td>
</tr>
<tr>
<td>UK</td>
<td>94</td>
</tr>
<tr>
<td>Slovakia</td>
<td>69</td>
</tr>
<tr>
<td>Poland</td>
<td>62</td>
</tr>
<tr>
<td>Hungary</td>
<td>45</td>
</tr>
<tr>
<td>Czechia</td>
<td>42</td>
</tr>
<tr>
<td>Turkey</td>
<td>41</td>
</tr>
<tr>
<td>Romania</td>
<td>36</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: Ministry of National Education, Council of Higher Education, Turkstat, IMD World Competitiveness Yearbook Executive Opinion Survey based on an index from 0 to 10; Eurostat
COMPETITIVE ENERGY PRICES

ELECTRICITY AND NATURAL GAS PRICES IN TURKEY HAVE BEEN COST COMPETITIVE IN COMPARISON WITH THE EU...

Electricity Prices for Household Consumers, H1 2020
(EUR per kWh)

Natural Gas Prices for Non-Household Consumers, H1 2020
(EUR per kWh)

Source: Eurostat, All taxes and levies included
INCENTIVES

MACHINERY SECTOR INVESTMENTS AND R&D ARE CONSIDERED AS PRIORITY INVESTMENTS AND CAN BENEFIT FROM VARIOUS LUCRATIVE INCENTIVES.

MAIN INCENTIVE TOOLS

Tax Deduction:
Reduced tax rates for investor's income (50-90 %) until the total deduction reaches a certain percentage of capex. (15-65 % of capex, in the case of project based incentives up to 200% of capex). For R&D investments, all R&D expenditures are deducted from tax base.

VAT Exemption:
Investment machinery and equipment imported and/or locally provided within the scope of the incentive certificate will be VAT exempt.

Customs Duty Exemption:
Investment machinery and equipment imported within the scope of the incentive certificate will be customs duty exempt.

Interest Rate Support:
For investment loans, a certain portion of the interest share will be covered by government. (3-7 % points for TRY-denominated, 1-2% points for forex-denominated loans) (500K-900K TRY).

Land Allocation:
Government land will be allocated for the investments, if no land is available in OIZs.

Income Tax Withholding Exemption will provide exemption from income tax withholding (only for Region 6).

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*Provided that investments, except R&D, are made in Region 6.
**Provided that investment, except R&D, are made in Regions 3, 4, 5 or 6 within the frame of the Regional Incentive Scheme Source: Ministry of Economy, MSTI
EXCLUSIVE INCENTIVES INCLUDE SUPPORT TO TECH ENTREPRENEURS TO CREATE INNOVATIVE HIGH VALUE-ADDED ACTIVITY, WHICH WILL BE KEY TO CATCH UP WITH THE NEW INDUSTRIAL REVOLUTION

BREAKDOWN OF R&D CENTERS BY SECTOR

<table>
<thead>
<tr>
<th>Sector</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery Industry</td>
<td>197</td>
</tr>
<tr>
<td>Automotive Industry</td>
<td>153</td>
</tr>
<tr>
<td>Software</td>
<td>110</td>
</tr>
<tr>
<td>ICT</td>
<td>56</td>
</tr>
<tr>
<td>Health and Life Sciences</td>
<td>14</td>
</tr>
<tr>
<td>ICT</td>
<td>13</td>
</tr>
</tbody>
</table>

INCENTIVES THROUGH INNOVATION LIFECYCLE

**START**
- Technostartup Incentives: Cash support up to 200K TRY

**PRODUCT / PROJECT DEVELOPMENT**
- Tubitak programs: Cash support up to 60-80% of the project budget

**COMMERCIALIZATION**
- Technoparks and R&D Centers: Income Tax Exemption
  - Tax cuts up to 20-30% of the personnel cost

**MANUFACTURING**
- SME Technoinvestment Incentives: Cash/credit support up to 5Million TRY for SMEs

**GROWTH & COMPETITION**
- Patented sales: Income Tax & VAT Exemption

Source: Comtrade HS code 84, 8202, 8207, 8208, 8501, 8502, 8503, 8505, 8514, 8515, 8701, 8709, 8716, 9017, 9024, 9508, 9603, Team Analysis
The Technology Focused Industry Movement Program has been launched in 2019.

The products will be supported from concept phase to marketing.

The Ministry of Industry and Technology will create schedules within the scope of investor calls for each sector.

Complete support for high-value added, medium-high tech and high-tech products manufactured in certain sectors with local resources and capabilities; Machinery, Computer, Electronics, Chemicals etc.

The investments supported in the program shall receive strategic investment incentives.

Application Process in 3 Stage
Stage 1 PRE APPLICATION
(1 MONTH)
Stage 2 DETAILED APPLICATION
(3 MONTHS)
Stage 3 FINAL DECISION
(1 MONTH)

R&D incentives, KOSGEB incentives and investment incentives will be given through a single platform / www.hamle.gov.tr

Investments over TRY 50 million will be able to benefit from project based investment incentives.

The purchasing guarantee mechanism will also operate in projects where the state is the buyer.
VALUE-ADDED MANUFACTURING

WITH THE SUPPORT OF TURKISH MACHINERY INDUSTRY TURKEY'S PROGRESS IN VALUE-ADDED MANUFACTURING IS ALSO VISIBLE IN THE EXPORTS COMPOSITION

Classification of Turkish Manufacturing

Exports by Technology Intensity

<table>
<thead>
<tr>
<th>Year</th>
<th>High Tech</th>
<th>Medium-High Tech</th>
<th>Medium-Low Tech</th>
<th>Low Tech</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>3.4%</td>
<td>27.6%</td>
<td>35.1%</td>
<td>33.9%</td>
</tr>
<tr>
<td>2015</td>
<td>4.4%</td>
<td>39.3%</td>
<td>34.5%</td>
<td>21.4%</td>
</tr>
</tbody>
</table>

Source: TurkStat; author’s calculation based on OECD definition of technology intensity; Classification of manufacturing industries into categories based on R&D intensities.
DIVERSIFIED MANUFACTURING

TO FURTHER VALUE-ADDED MANUFACTURING, THE METAL INDUSTRY ESTABLISHED A STATE-OF-THE-ART TECHNOLOGY CENTER, AN INITIATIVE, WHICH IS STRONGLY SUPPORTED BY THE GOVERNMENT

An ecosystem of 30+ globally recognized technology providers, solution integrators, universities and institutions

A platform that brings the latest disruptive technologies of Industry 4.0 from Americas, Europe and Far East together to:

Create an ecosystem connecting members from various metal industries with global players

Set the aspiration for future industrial development of members in an innovative environment

Develop capabilities to accelerate transformation and reach full industrial potential

Source: Employers’ Association of Metal Industries https://www.mext.org.tr

230+ MEMBERS
LOCAL & INTERNATIONAL PLAYERS

30K+ ANNUAL PARTICIPANT TRAINING CAPACITY

10,000 M² CENTER

10x traditional model factories

30K+ ANNUAL PARTICIPANT TRAINING CAPACITY

10x the number of students of a mid-sized university

70K+ USE CASES

2 production lines

covering 70+ use cases on discrete manufacturing & continuous process

CORE PARTNERS

McKinsey & Company

Fraunhofer
OPPORTUNITIES IN SUB-SECTORS

TURKEY OFFERS SOLID FUNDAMENTALS TO MAKE PROFITABLE INVESTMENTS IN THE MACHINERY SUB-SECTORS

MILLION USD

- Agricultural Machinery
- Construction & Mining Machinery
- Food Processing & Packaging Machinery
- HVAC Machinery
- Lifting & Handling Equipment
- Metalworking & Machine Tooling
- Motors & Turbines
- Pumps & Compressors
- Textile Machinery


Source: MAKFED analysis 2019 values
AGRICULTURAL MACHINERY

TURKEY’S AGRICULTURAL MACHINERY MARKET HAS REACHED TO USD 1.8 BILLION IN 2019 - 4TH IN EUROPE

KEY FACTS

Strong industrial base - over 10% share in Europe’s production with over 50K units in 2020

Strong local market with 48K units in 2020 - largest tractor sales in Europe, 4th in the world, 75% of the local market supplied by local players

Over 70% of the imports are higher –value tractors and harvesting machinery - investment opportunity for production

Agricultural machinery manufacturing ecosystem with local and international players with a total of 22K employees

TURKEY’S AGRICULTURAL MACHINERY EXPORTS ALMOST TRIPLED IN 10 YEARS

80% OF EXPORTS GOES TO NORTH AMERICA (40%) AND EUROPE(40%)

DRIVEN BY TURKEY’S AGRICULTURAL ECODEMANDNOMY AND FRAGMENTED STRUCTURE:

- Agricultural GDP: USD 80 Billion
- Agricultural land: 23 Million ha
- Arable land: 6.1 Million ha
- Average enterprise size: 7.6 ha

Source: MAKFED analysis 2019 values, TARMAKBIR, press excerpts, Comtrade HS 8432, 8433, 8436, 8478, 842481, 870110, 870190, 871620

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TURKEY’S CONSTRUCTION MACHINERY EXPORT HAS REACHED USD 1.4 BILLION IN 2019

**KEY FACTS**

- **Strong local market** - 3rd largest growth in the world after China and India for the last eight years
- **Local and international companies** exist - local market supplied by 35% local production and 65% import
- **Strong & international supplier base** - Construction machinery industry can benefit from the supplier base of automotive manufacturing industry in Turkey, which is a European manufacturing hub and has reached 1.3 million units
- **Local demand driven by public infrastructure and urbanization projects** - opportunity for smaller sized construction machinery
- **Europe’s 10th largest manufacturing base** with strong players, USD 626 million local market and USD 1.4 billion of exports in 2019
- **Access to international markets enabled through Turkish construction companies** - 44 contractors in ENR250 list

Source: MAKFED analysis 2019 values, IMDER, ISDER, press excerpts, Comtrade HS 8429, 8430, 8431, 8474
Turkey invested USD 100 billion to infrastructure projects in the last 5 years. Another USD 325 billion is expected by 2023.
ENERGY EQUIPMENT

TURKEY’S ENERGY EQUIPMENT
(ELECTRIC MOTORS & TURBINES)
MARKET HAS REACHED USD 3.2 BILLION IN 2019

5th largest electricity market in Europe; highest growth in Europe with 5.3%

Over USD 75 billion of energy investments made in the last 10 years

Electricity demand and supply to grow by 50% by 2030 - renewable and local energy resources are priorities

Opportunities in production of wind/hydro/steam turbines and generators

Source: MAKFED analysis 2019 values, Ministry of Energy, Investment Office analysis, press excerpts, Comtrade HS 850231, 8410, 840690, 840290, 854140, 8501
FOOD PROCESSING & PACKAGING MACHINERY

Turkey's food processing & packaging machinery market has reached USD 2 billion in 2019.

- **Strong industrial base** with a production value of USD 2 billion clustered in Istanbul, Konya, Ankara, Gaziantep and Izmir.
- Demand driven by the strong packaged food and beverages market in Turkey - USD 16 billion export in 2019.
- USD 1.8 billion of import in 2019 - major imports are machinery for industrial preparation of food or drink, for treating material by heat change and machinery for filtering or purifying water.
- Turkey is a manufacturing base for international food giants like Unilever, Kraft, Nestle, Danone, Ferrero with over 15K employees.

**Key Facts**

- TURKEY'S FOOD PROCESSING & PACKAGING MACHINERY EXPORTS QUADRUPLED IN 10 YEARS

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports (M$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0.2</td>
</tr>
<tr>
<td>2008</td>
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<tr>
<td>2018</td>
<td>1.1</td>
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<tr>
<td>2019</td>
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</tbody>
</table>

- **WHERE 80% OF EXPORTS ARE MACHINERY FOR**
  - Processing & milling of grains and cereals
  - Industrial preparation of food or drink
  - Milking machines and dairy machinery

- **AND TOP5 EXPORT MARKETS ARE**
  - UZBEKISTAN
  - IRAQ
  - KAZAKHSTAN
  - IRAN
  - ROMANIA

Source: MAKFED analysis 2019 values, TARMAKBIR, press excerpts, Comtrade HS 8432, 8433, 8436, 8478, 842481, 870110, 870190, 871620
HVAC

TURKEY’S HVAC MARKET HAS REACHED USD 2.4 BILLION IN 2019

KEY FACTS

Strong industrial base - USD 3.2 billion in value - Europe’s manufacturing base for panel radiator, boiler and AHU’s

Demand driven by construction in residential market; efficiency regulations and development in technology in non-residential market

Strong local market - Europe’s largest split AC market with 1.5M units and VRF market with 250K units

VRF market has grown 6 times with imports - opportunity for high-tech production

Strong local market - Europe’s 4th largest with 1.3M boiler units

Access to international markets through Turkish construction companies - 44 contractors in ENR250 list

Source: MAKFED analysis 2019 values, press excerpts, Comtrade HS 8415, 841810, 841850, 841861, 841869, 841891, 841899

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DemirDöküm  arçelik  LG  VESTEL

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TURKEY’S HVAC EXPORTS MORE THAN DOUBLED IN 10 YEARS

WHERE EUROPE HAS OVER 60% SHARE

Source: MAKFED analysis 2019 values, press excerpts, Comtrade HS 8415, 841810, 841861, 841869, 841891, 841899
TURKEY’S MARKET FOR LIFTING & HANDLING EQUIPMENT HAS REACHED USD 1.7 BILLION IN 2019

**Strong industrial base - USD 1.4 billion** of production in 2019

**3rd largest** elevator market in the world with 30K new units - ThyssenKrupp, Otis, Kone, Schindler, Hyundai present with some level of assembly operations

**Local and international players** mostly based in Istanbul, Kocaeli, Bursa, Ankara, Konya, Kayseri and Izmir

**Strong supplier base** - expertise in automotive, machinery and electronics & control systems

**Strong local market** - demand driven by the growth in the industry and infrastructure & construction projects

**2nd largest** escalator and moving walk market in the world with 2K new units per year

**Opportunity for assembly and manufacturing** of parts

Source: MAKFED analysis 2019 values, IMDER, ISDER, press excerpts, Comtrade HS 8429, 8430, 8431, 8474
TURKEY’S PRODUCTION OF LIFTING & HANDLING EQUIPMENT HAS INCREASED BY 40% SINCE 2010..

AND EXPORTS HAVE REACHED USD 460 MILLION IN 2019 - AN IMPRESSIVE 60% GROWTH IN TWO YEARS

USD 808 MILLION IMPORT IN 2019 - ALMOST 70% FROM CHINA, GERMANY & ITALY

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (M$)</th>
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Source: MAKFED analysis 2019 values, press excerpts, Comtrade HS 8415, 841810, 841850, 841861, 841869, 841891, 841899
LIFTING & HANDLING EQUIPMENT

Source: MAKFED analysis 2019 values, press excerpts, Comtrade HS 8415, 841810, 841850, 841861, 841869, 841891, 841899

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Local Market</th>
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<tr>
<td>2018</td>
<td>808</td>
<td>1130</td>
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<tr>
<td>2019</td>
<td>808</td>
<td>1130</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Export Million $</th>
<th>Import Million $</th>
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<tbody>
<tr>
<td>2018</td>
<td>370</td>
<td>1130</td>
</tr>
<tr>
<td>2019</td>
<td>460</td>
<td>808</td>
</tr>
</tbody>
</table>
TURKEY’S METALWORKING & MACHINE TOOLING MARKET HAS REACHED TO USD 2.1 BILLION - 11TH LARGEST IN THE WORLD

**Strong industrial base** - largest in Central and Eastern Europe with USD 1.36 billion of production in 2019

**Strong in laser machine tools, forging & punching machine tools (including presses)** - 80% of the exports

Exports have reached USD 841 million in 2019 - 30% growth in the last three years - industry diversifying its export markets to Russia, Germany, USA, Poland, France, Canada.

Almost 30% of the USD 1.6 billion import in 2019 is for machining centers, transfer machines and lathes - mostly from Germany, Japan and Italy

Investment opportunity for CNC tools - supplier base for CNC tools exist

**KEY FACTS**

TURKEY’S METALWORKING & MACHINETOOLING MANUFACTURING DOUBLED SINCE 2009

**DEMAND IS DRIVEN BY INDUSTRIES WHERE TURKEY HAS A STRONG PRESENCE**

- **AUTOMOTIVE**
- **WHITE GOODS**
- **AVIATION**
- **HEALTH CARE**

**Source**: TIAD, MAKFED analysis 2019 values, press excerpts, Comtrade HS 8456, 8457, 8458, 8460, 8461, 8462, 8463, 8464, 8465, 8466, 8467, 8468, 8515
**PUMPS & COMPRESSORS**

**TURKEY’S MARKET FOR PUMPS & COMPRESSORS HAS EXCEEDED USD 2.3 BILLION IN 2019**

**KEY FACTS**
- Industrial base - USD 1.1 billion of production in 2019; mostly based in Istanbul, Konya and Izmir
- Majority of the companies are small-sized - over 9K employees in 500 companies
- Strong local market - demand driven by the growth in the industries, municipal infrastructure investments, construction and agriculture

**INDUSTRIAL**
- Mostly driven by special projects - low demand in Turkey

**REFRIGERATION**
- Refrigerators, Residential A/C, Vehicle A/C

**GAS COMPRESSORS**
- Gas Compressors

**Source:** MAKFED analysis 2019 values, press excerpts, Comtrade HS 8413, 8414
TURKEY HAS USD 2 BILLION OF IMPORTS WHERE EUROPE HAS AROUND 60% SHARE

TURKEY’S PRODUCTION OF PUMPS & COMPRESSORS HAS INCREASED BY 50% SINCE 2010

...AND EXPORTS HAVE REACHED ALMOST $1 BILLION WHERE EUROPE & USA HAVE A 50% SHARE

Source: MAKFED analysis 2019 values, press excerpts, Comtrade HS 8413, 8414
Turkey's Textile Machinery Market has reached USD 1.6 billion in 2019.

Key Facts:
- 3% of world exports
- Strong industrial base especially in knitting and dyeing & finishing machines
- Demand driven by textile industry - Turkey is the 7th largest textile exporter with USD 10 billion in 2019 where Europe has around 50% share.
- Due to high cost pressure from Asian countries, Turkey's textile industry needs to specialize and increase its added-value while upgrading or renewing its USD 25 billion machinery park - technical textile is an example.

Turkey's Textile Machinery Exports Tripled in 10 Years Still Low Compared to $1.9 Billion of Imports

Exports (M$)

- 2007: 0.2
- 2008: 0.3
- 2009: 0.3
- 2010: 0.3
- 2011: 0.3
- 2012: 0.3
- 2013: 0.4
- 2014: 0.4
- 2015: 0.5
- 2016: 0.6
- 2017: 0.7
- 2018: 0.8
- 2019: 1.0

Source: International Textile Manufacturers Federation, MAKFED analysis 2019 values, press excerpts, Comtrade HS 8444, 8445, 8446, 8447, 8448, 8449, 8451, 8452
SUCCESS STORIES

MACHINERY GIANTS HAVE BEEN INVESTING IN TURKEY FOR DECADES

**B/S/H/**
- The company’s brand portfolio includes eleven well-known appliance brands like Bosch, Siemens, Gaggenau and Neff as well as the ecosystem brand Home Connect and service brands like Kitchen Stories.
- 38 production sites in Europe, the USA, Latin America and Asia
- At the end of 2020, BSH employed about 60,000 people worldwide.
- BSH achieved record sales of €13.9 billion in 2020.
- At 5.1 percent of total turnover, R&D spending in 2020 remained high – with a focus on digital technologies.
- BSH Turkey produced 5.8 million products from Çerkezköy Factories in 2020. 70% of the production is exported. BSH Turkey is the first company that exports by rail to China from Turkey.

**IHI**
- IHI Corporation - Japanese corporation that produces ships, aircraft engines, turbochargers, industrial machines, power station boilers and suspension bridges
- Had a revenue of USD 13 billion in 2020 with 30K employees
- Completed projects in Turkey include Golden Horn Bridge, Fatih Sultan Mehmet Bridge, Osman Gazi Bridge and several reinforcement projects
- Formed a JV with Dalgakıran Makine with an investment of USD 14.4 million to produce turbo compressors in Turkey in 2018 (60 employees)
- Uses Turkey as a base for exports to Europe, the Middle East, and other growing markets.

**Putzmeister**
- Established in Germany in 1958, its products include plant and equipment for concrete production, truck mixers, plastering machines, concrete injectors and concrete pumps
- Acquired by Chinese competitor Sany Heavy Industries for USD 402 million in 2012
- Manufacturing concrete pumps and mechanical and hydraulic distributors at its Çerkezköy plant since 2008

**Haier**
- Established in Italy, its products include washing appliances, built-in and small domestic appliances. Had a revenue of 1.1 Billion in 2019
- Manufacturing in Turkey since 2007 at its Eskisehir plant
- Invested EUR 15 Million for the launch of a new plant in Turkey with an employment of 300 people
- Uses Turkey plant as a base for oven and stove manufacturing, built-in appliances and dryers and exports over 90% of its production
- Qingdao Haier completed the acquisition of the Candy Hoover Group in 2019.

**IHI**
- Japanese multinational electronics and electrical equipment manufacturing company with a total revenue of USD 40.7 billion in 2019
- Operational in Turkey since 2012 especially in air conditioning, elevators and escalators, factory automation systems, visual information systems and transportation systems as well as electrification
- In 2018, opened its first air-conditioner manufacturing plant of Europe in Turkey with an investment of USD 80 million

**Putzmeister**
- Established in the USA in 1899, its products include pistons, rings,liners, valve seats, guides, engine bearings and sealing
- Tenneco completed the acquisition of Federal-Mogul in 2018. Tenneco is one of the world’s leading designers, manufacturers and marketers of automotive products for original equipment. Tenneco had $15.4 billion revenue in 2020 and approximately 73,000 employees.
- Operational in Turkey since 1998, currently has two facilities with a total employment of 1600 people
- Has invested a total of EUR 400 million in Turkey by 2017
- 80% of the piston production is exported to Europe and USA as original equipment