

Turkey: Weapons production and procurement

2018-27 Turkish Weapons

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Content from today's briefing is compiled from:

Jane's Markets Forecast

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IHS Jane's delivers a comprehensive and reliable forecast to the Aerospace and Defence market

Item/program name and description

Prime contractor, system supplier, subcontractors

Customer country and end-user service

10-year annual R&D, production and service revenue forecasts

Full documentation of sources, comments, assumptions and analytical rationale

over
85,000
detailed records

over
22,000
programs
covered

over
4,800
contractors and
companies
included

over
200
data elements
per record

Jane's Markets Forecast

- A comprehensive market analysis solution that combines detailed market intelligence databases of defence industry forecasts with an easy-to-use online charting interface
- A bottom's up, sales/revenue available to industry for a 10-year forecast period
- Covers 22 defence markets and 60 countries, that make up approximately 96% of the World's defence spending
- Forecasts are developed firstly by covering all the known programs/equipment
- Added to this are:
 - Stated Opportunities (SO) covering stated customer requirements
 - Derived Opportunities (DO) reflecting opportunities identified by our analysts where an explicit requirement has not been stated
- It captures Joint Ventures and Teams as independent contractors
- Markets Forecast provides the ability to customize markets of interest
- Markets can be viewed at the System (top level) or Subsystem (major subsystem categories) levels

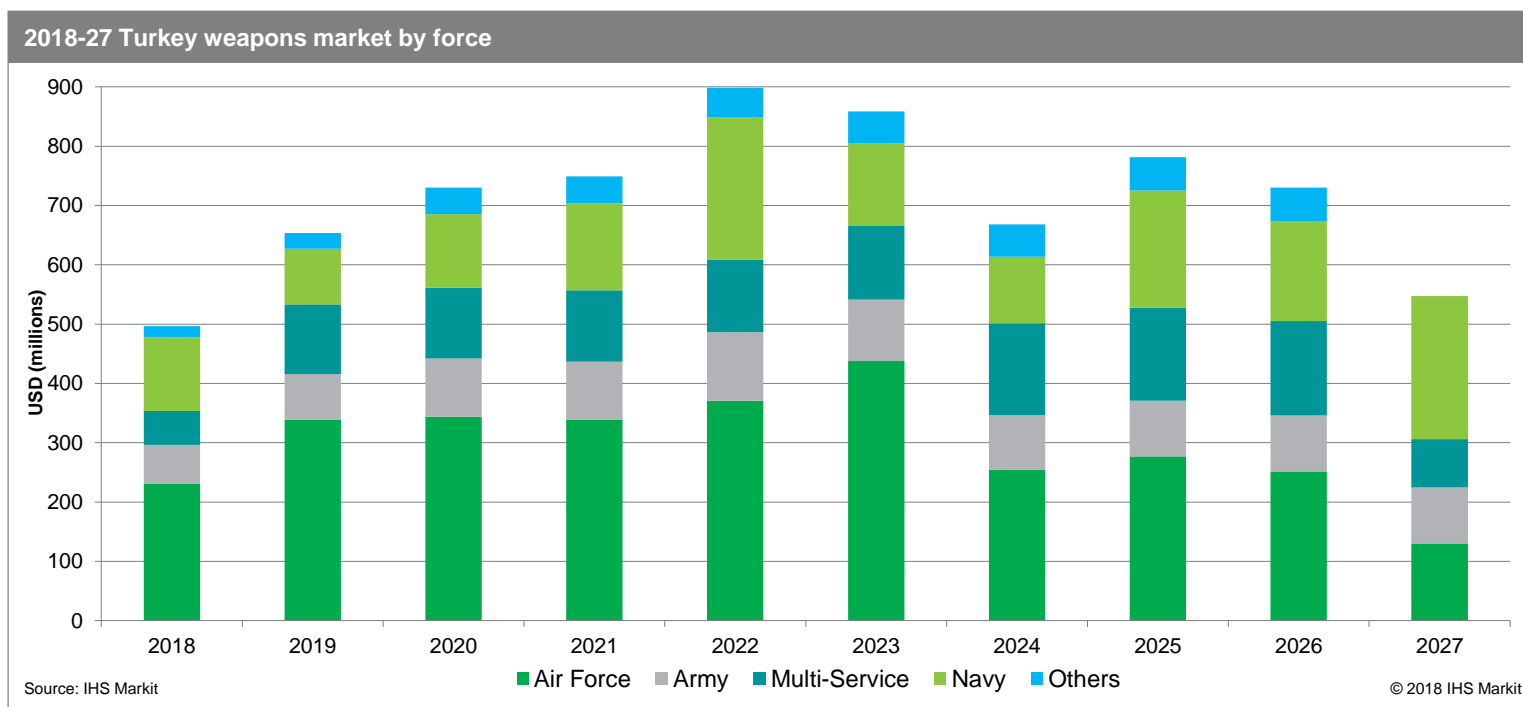
Welcome

1. Turkish weapons market: 2018-27
2. Ground launched: forecast and key weapons
3. Air-launched: forecast and key weapons
4. Naval: forecast and key weapons
5. Summary



Turkish weapons market: 2018-2027

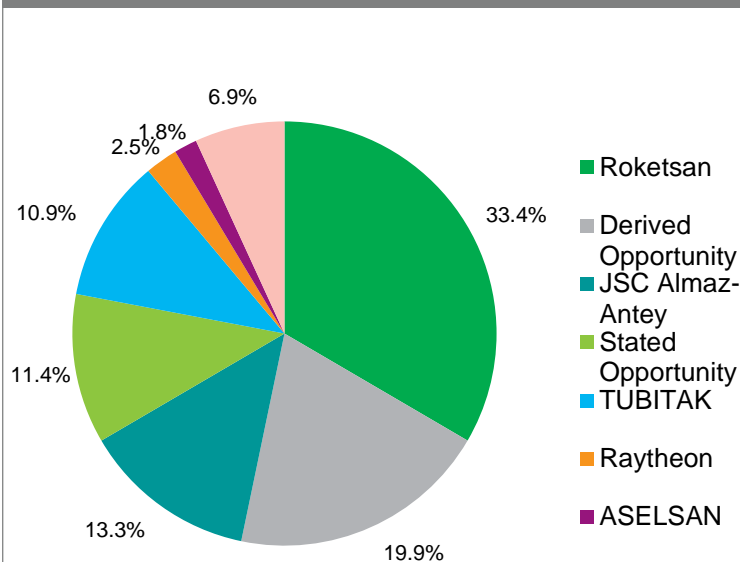
Turkey weapons market by force



- Turkish Air Force has the highest share of weapons expenditure among Turkish military forces.
- Air Force share driven primarily by the S-400 air-defence system.
- The ten year compounded annual growth rate (2018–2027) of the Turkish weapons market is 4.6%.

Turkish weapons market

Turkey weapons supplier share by value

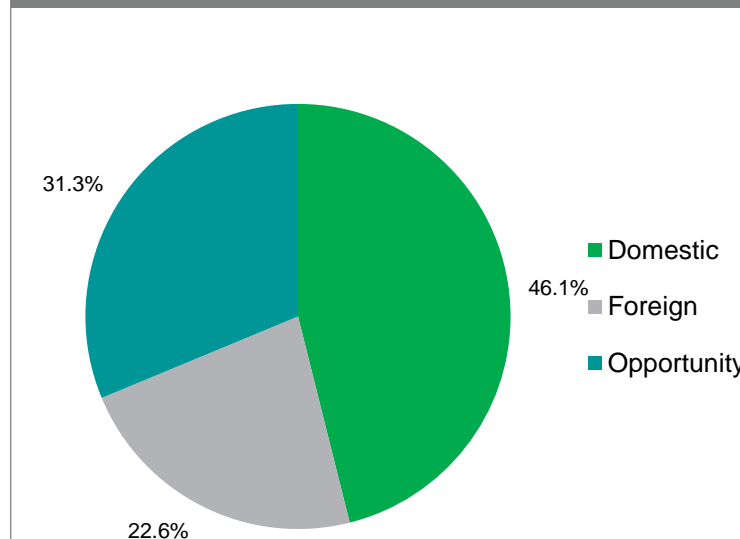


IHS Markit: 1718000

Source: IHS Markit

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Turkey weapons supplier share by origin



Source: IHS Markit

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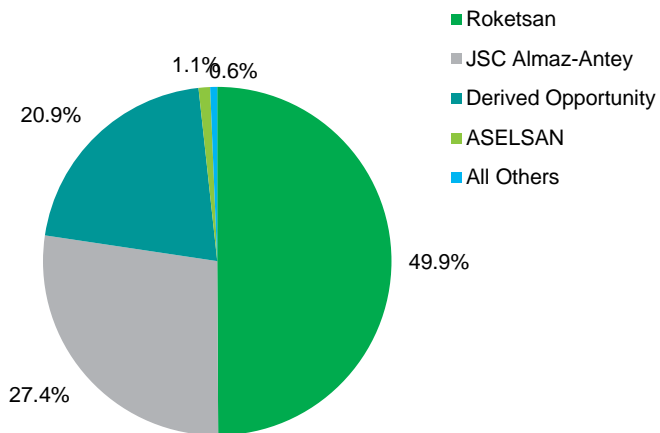
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- Turkish weapons market estimated at USD6.707 billion for the 2018 to 2027 forecast period.
- Roketsan leads the market with revenue driven primarily by the HiSAR and Akya programmes.
- JSC Almaz-Antey, the only foreign player with a notable presence due to the S-400 contract.
- Future opportunities worth USD2.22 billion during 2018-2027.

Turkish market 2018-2027: Ground-launched weapons

Weapons market: Ground-launched

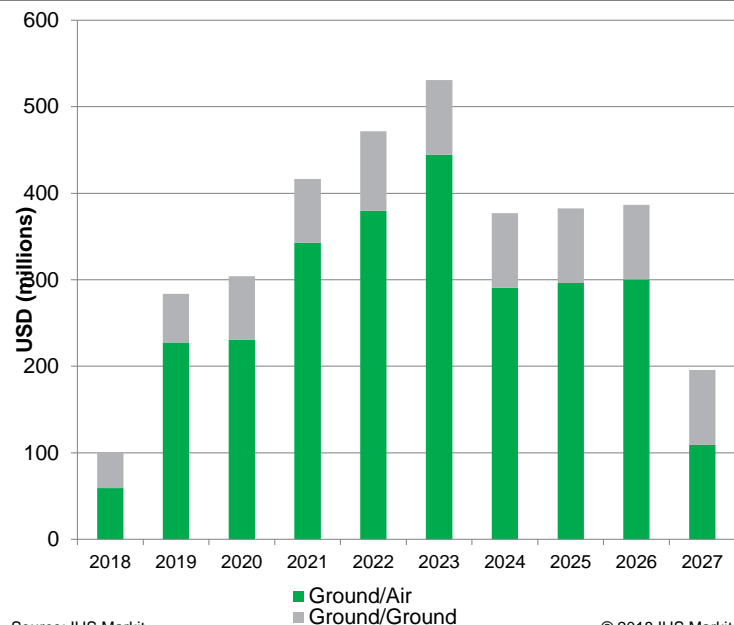
Turkey ground launched weapons supplier share



Source: IHS Markit

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2018-27 Turkey ground launched weapons by value



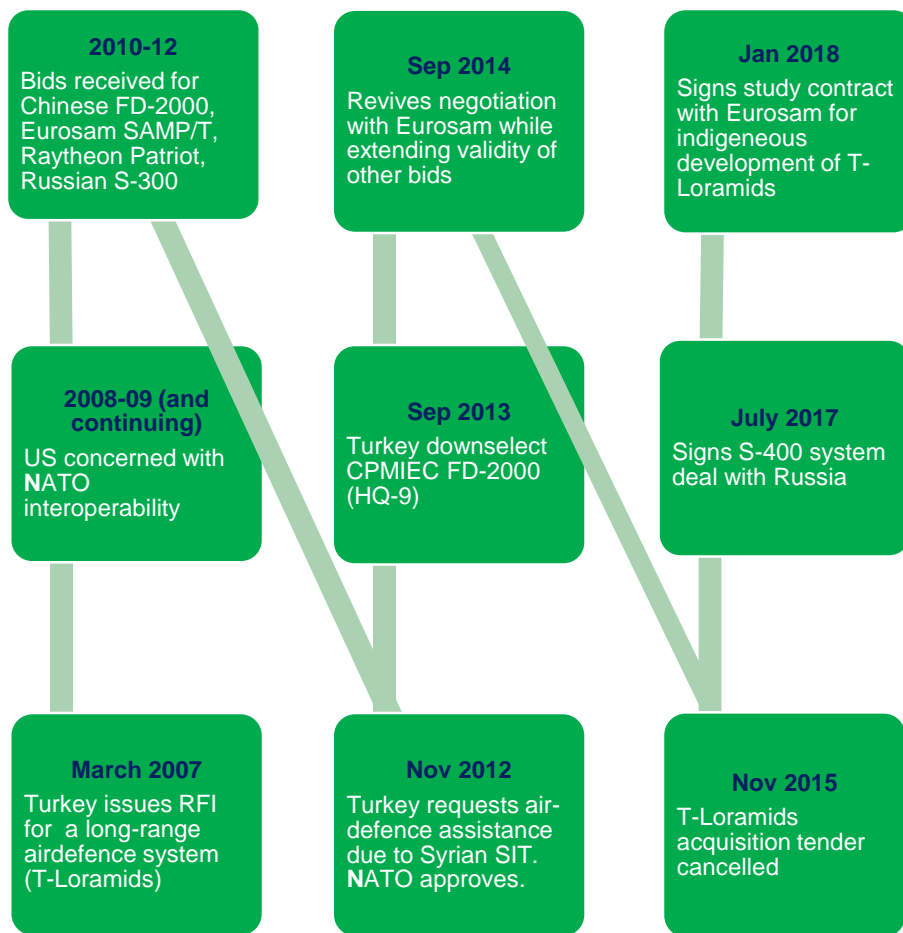
Source: IHS Markit

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- Focus on establishing credible air-defence capability
- Ground launched weapons market to be worth USD3.448 billion by 2027.
- Ground-to-ground missiles and PGW market is relatively smaller.
- Market size estimated at USD99.8 million for 2018 and expected to grow to USD530.8 million in 2023.

Key weapons: Ground-launched

Quest for a long-range air-defence system: The road so far...

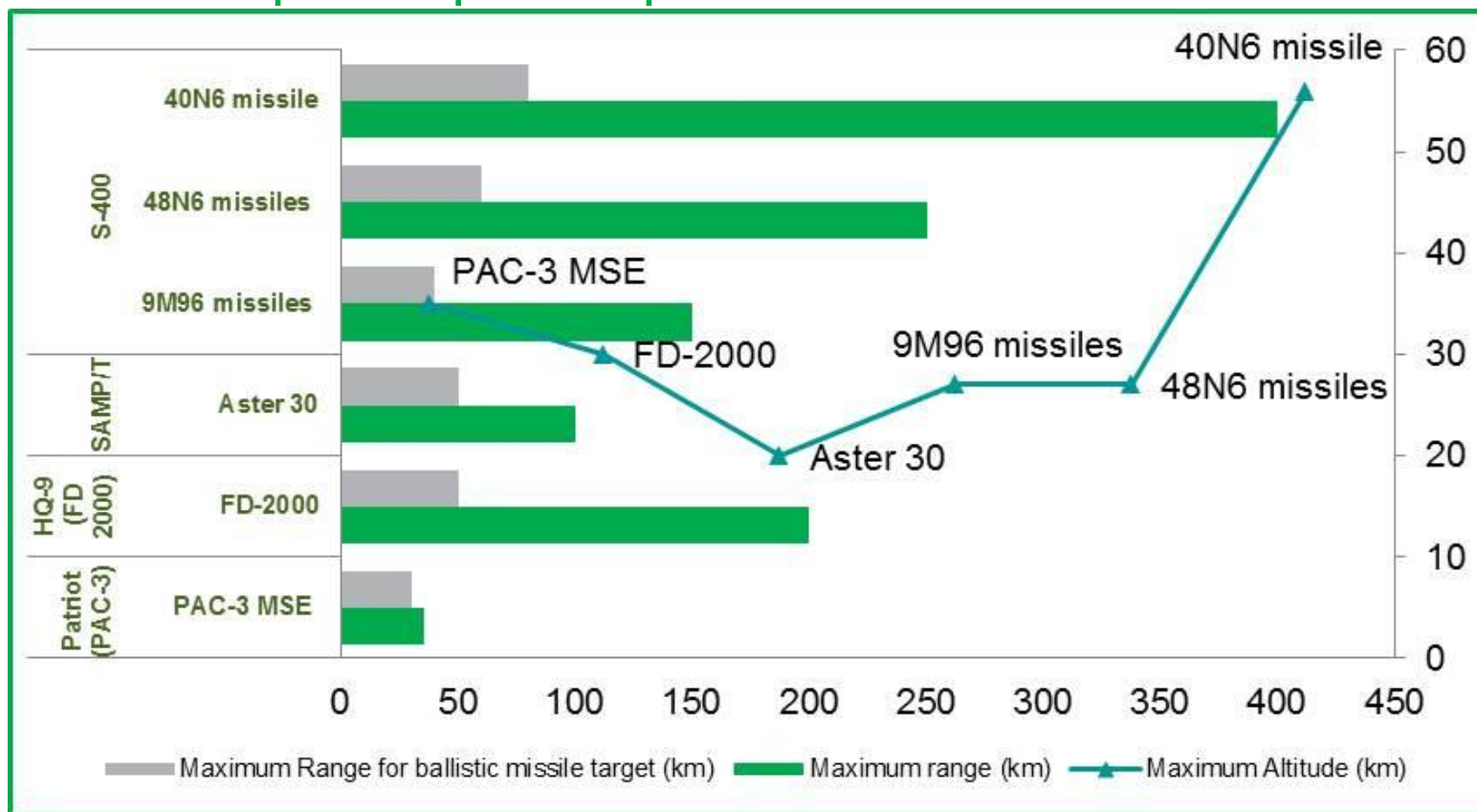


105270 S-400 launcher and associated missiles
Credit: IHS Markit/Peter Felstead



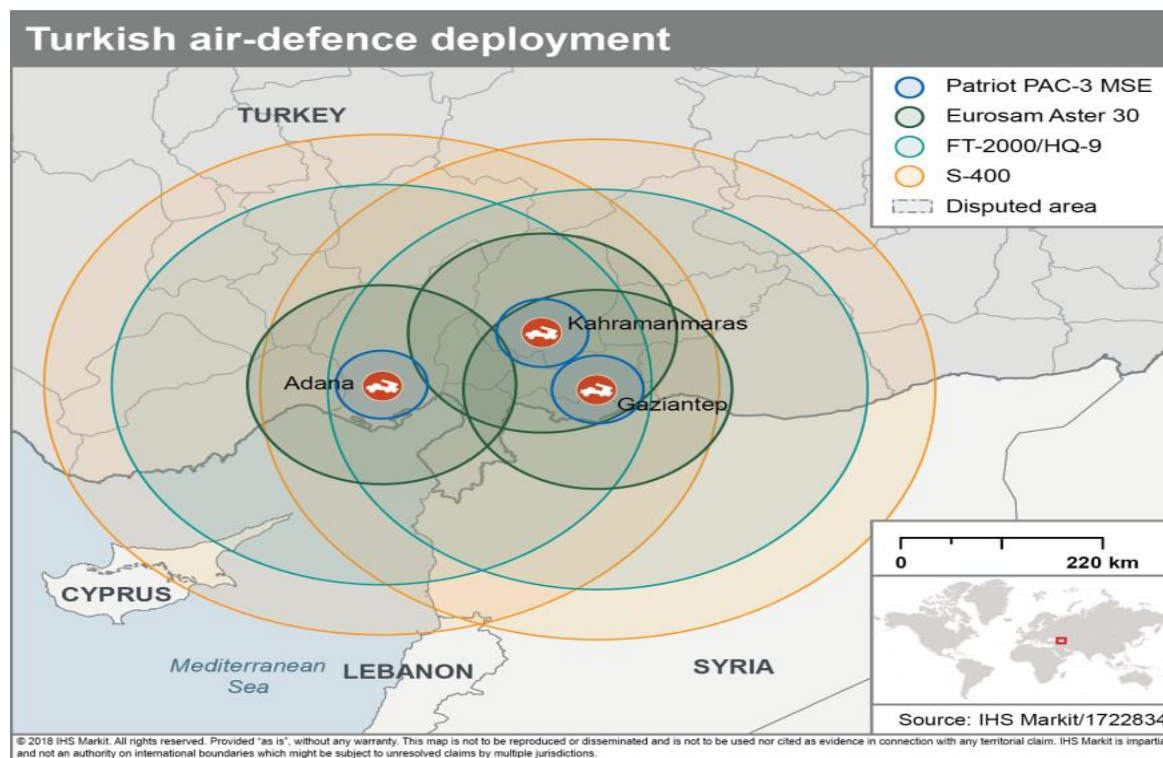
1650195 SAMP/T system launching Aster 30 missile
Credit: MBDA

T-Loramids – options past & present



- The Patriot system operationally inadequate for coverage of 900+ southern border with Syria and Iran.
- Patriot interceptor launch controlled by NATO BMD command at Ramstein base, Germany.
- S-400 long-range tracking and threat detection will enable early-warning and quicker response of lower-tier systems.
- The S-400 can fire the 48N6 and the 9M96 family of missiles. The third family of the missile consists of the very-long-range 40N6 (export 40N6E).

T-Loramids – options past & present



Turkish air-defence deployment scenario

- An in-country development of the SAMP/T system may be a prudent decision.
- Aster 30 Block I NT (New Technology) programme is expected to be completed by early 2020s.
- France, Italy and United Kingdom involved in development .
- Aster 30 Block 2 missile (interceptor) will engage IRBMs launched 3000 km away with both endo- and exo-atmospheric engagement capability.
- As a future course of action to the initial agreement signed with Eurosam, Turkey would want to participate in Block 2 missile development.

HiSAR-A/O



1634127 HiSAR-A Credit: Aselsan

The HiSAR family air-defence systems is under development by Aselsan, Havelsan and Roketsan and consist of the HiSAR-A and HiSAR-O missiles.

- The HiSAR-A with maximum range of 15 km.
- Uses INS with command updates for mid-course and imaging infrared (IIR) seeker for terminal guidance.
- Aerodynamic surfaces and thrust-vector control.
- HiSAR-O with maximum range 25 km and maximum altitude of 5 km.

COMMENT

- Information on developmental tests in 2013, 2014, 2015; Dec 2016, and Feb 2018 indicate steady progress.
- RF seeker could also be part of further variants.
- Naval variants in future replacing the Sea Sparrow and eventually ESSM with Turkish Navy.

The Korkut self-propelled anti-aircraft gun has been developed by Aselsan, FNSS (amphibious tracked chassis) and MKEK (35 mm guns).

- Twin Rheinmetall Air Defence KBD 35 mm guns - built on ACV-30 chassis.
- HE-I ammunition as well as the ABM - Atom.
- The 3-D Ku-band fire control radar range 30 km and the 3-D I-band search radar range 70 km.
- Thermal imaging system with a day TV camera.

Korkut SPAAG



1513279 Korkut SPAAG
Credit: IHS Markit/Nick de Larrinaga

COMMENT

- A future variant of Korkut SPAAG may form as the basis of short range C-RAM shield dubbed 'Golden Cage'.
- The Atom airburst round very effective against UAVs, but can also engage targets such ground-to-ground rockets, air-to-ground missiles and fixed and rotary wing aircrafts.

Akkor APS



1632469 Akkor APS Credit: Aselsan

Under development contract with Aselsan. Three-year contract includes two complete Akkor systems for delivery and testing.

- Provides 360 degree coverage. Radar antennas mounted on either side of the Altay MBT turret with hard-kill launchers on the roof.
- The hard-kill effector relies on combination of blast and fragmentation.
- Integrates a laser warning receiver that is linked to soft-kill effector counter-measures.

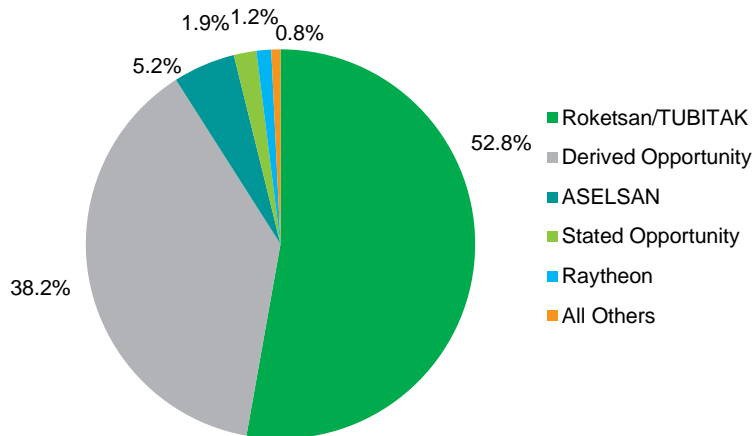
COMMENT

- One of the few countries to develop and use its own APS.
- Similar to Saab LEDS-150 APS and the Korean Active Protection System (KAPS).
- Potential for use with tracked and wheeled APCs and IFVs such as the Otokar Arma 6 x 6.

Turkish market 2018-2027: Air-launched weapons

Weapons market: Air-launched

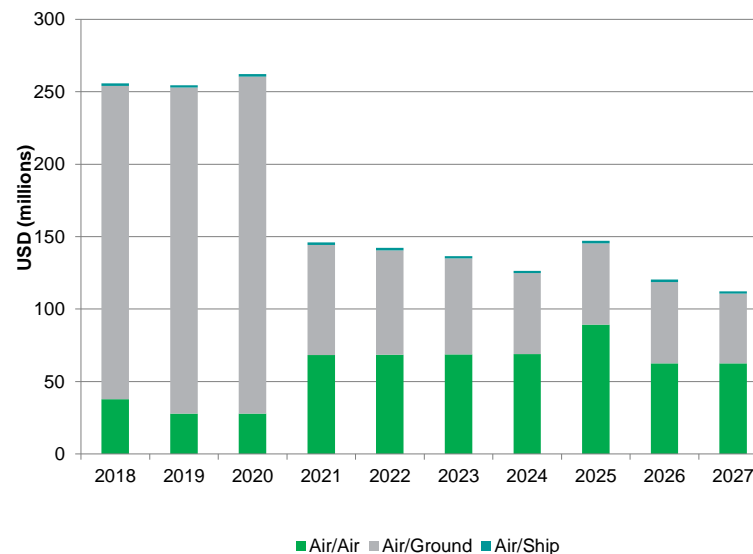
Turkey air launched weapons supplier share



Source: IHS Markit

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2018-27 Turkey air launched weapons market by value

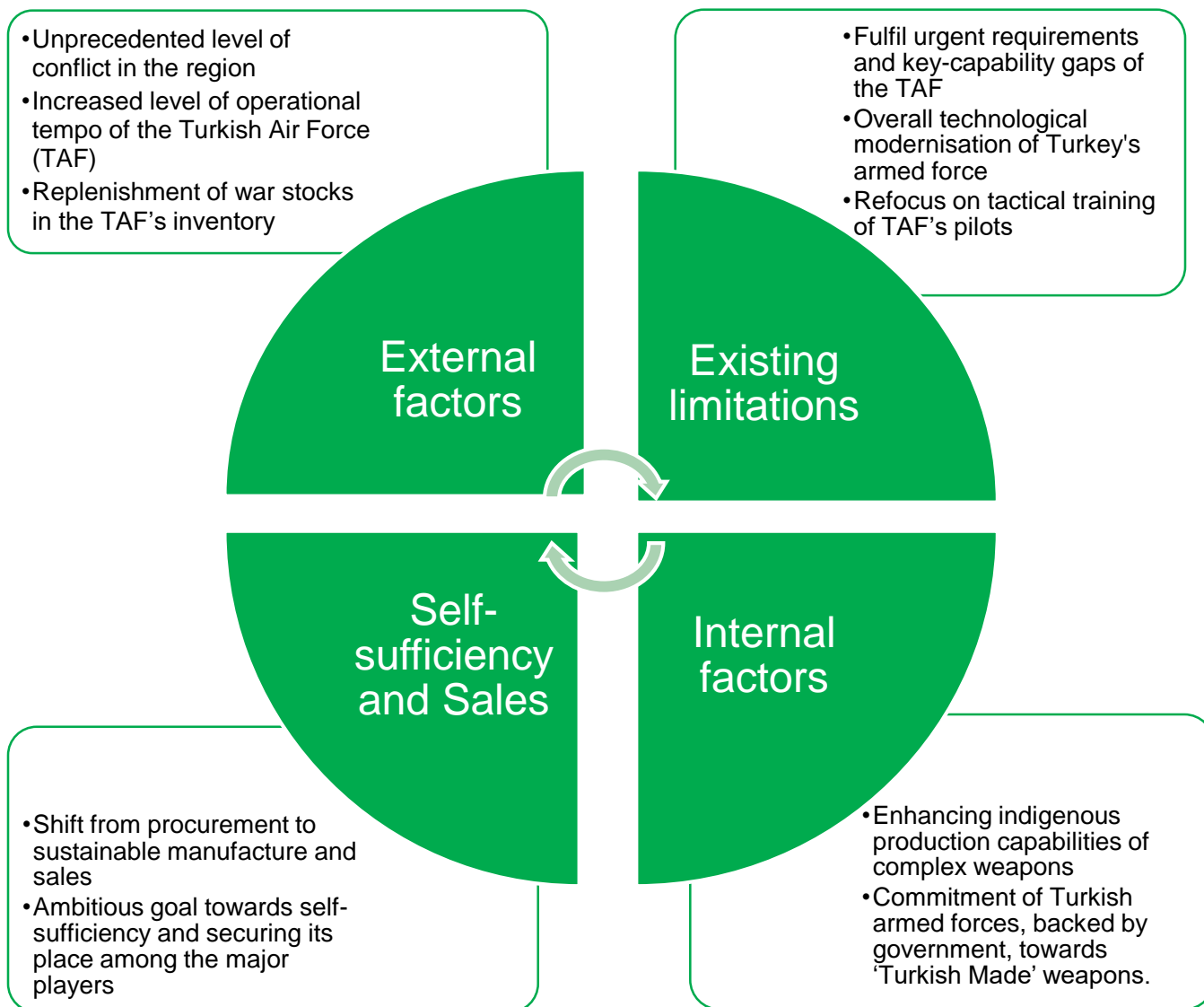


Source: IHS Markit

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- Turkey's air launched weapons market forecast to worth USD1.703 billion during 2018-2027.
- Turkey's ground-attack requirements largely met by weapons sourced from global suppliers. Maturity and availability of indigenous weapons is expected to change this trend.
- Air-to-ground missiles would contribute the major share followed by air-to-air missiles.
- Roketsan dominates the market with a share of 52.8%.

Key driving factors: air-borne weapons procurement



Key contracts

Dec 2017 Turkey contracted Kale Havacılık (Kale Aero) to design, develop and produce a miniature turbojet engine for Roketsan's new cruise missiles, including the SOM.

Dec 2016 The TAF awarded Roketsan a five-year production contract for the MIZRAK-U version, to be run from 2017 to 2022. Initial deliveries are expected to take place in 2018.

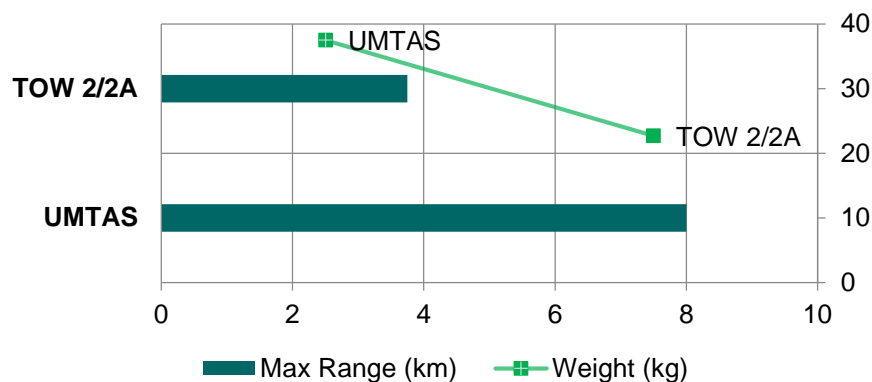
Dec 2015 A request for a total of 900 Joint Direct Attack Munition (JDAM) kits and 100 Laser JDAM kits

2014 An USD320 million contract for 145 AIM-120C-7 Advanced Medium-Range Air-to-Air Missile (AMRAAM's)

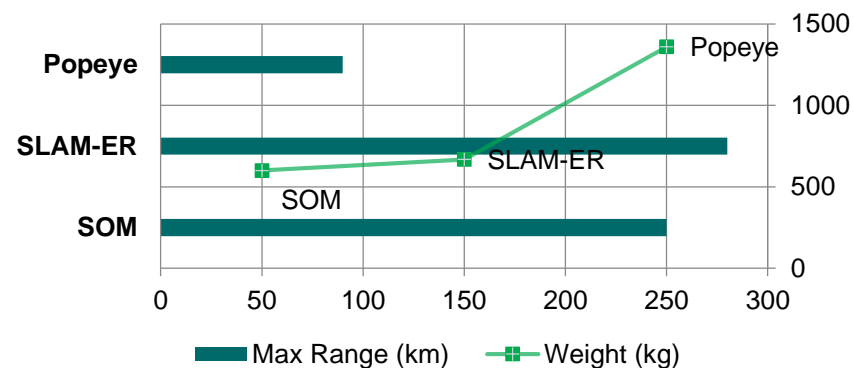
2012 An USD140 million order for 117 AIM-9X Sidewinder Block II

Key weapons: Air-launched

Air-to-surface missiles for rotary-wing aircrafts and UAV's



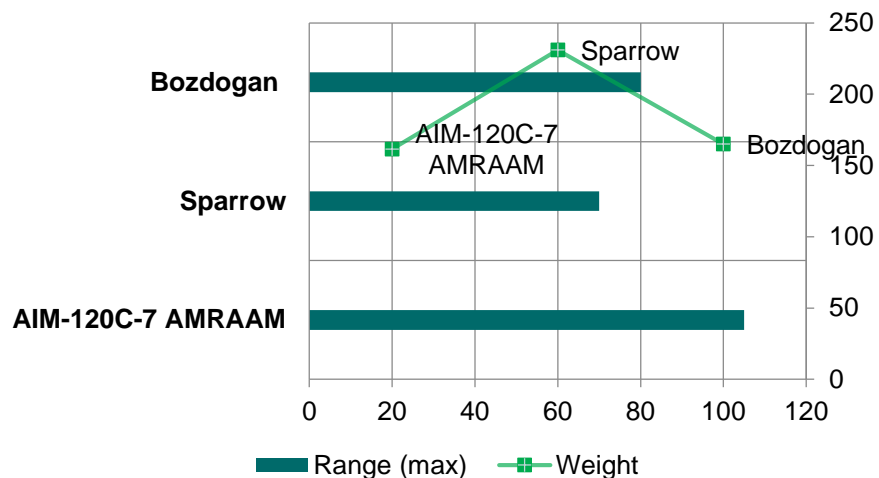
Air-to-surface missiles for fixed-wing aircraft



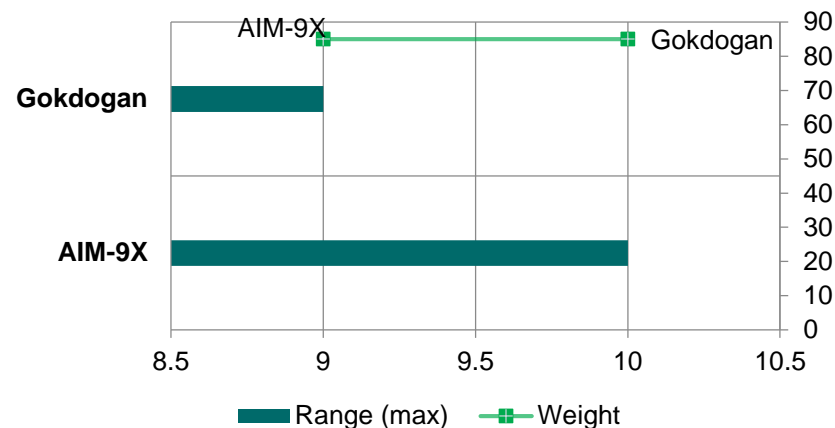
INSIGHT

- TAF operated US SLAM-ER missile and Israeli Popeye missile, will be replaced by SOM.
- The US TOW missile in service will be replaced by UMTAS.
- Requirement for the medium-range segment. To pursue development partner or direct purchase.

Beyond Visual Range Air-to-Air Missiles (BVRAAM)



Within Visual Range Air-to-Air Missiles (WVRAAM)



INSIGHT

- Turkey depends on foreign-built weapons for its air-to-air capability. Sparrow missile, AMRAAM and AIM-9X Block II currently in use in Turkey.
- Offset funding to acquire key technologies, production collaboration and export facilitation.
- Turkish domestic-built developmental projects, Peregrine (Gokdogan) and Merlin (Bozdogan) missiles will initially supplement the present capabilities before fully replacing them. Expected to complete development by 2019.

Stand Off Missile (SOM)



1632570 SOM Credit: The Undersecretariat for Defence Industries (SSM)

Turbojet powered SOM is a modular, stealthy, cruise missile with multiple warhead options.

UMTAS/MIZRAK-U



1635905

UMTAS

Credit: Roketsan

- The UMTAS engages armored targets.
- Infrared seeker head and laser seeker head options.
- Surface-to-surface variant.

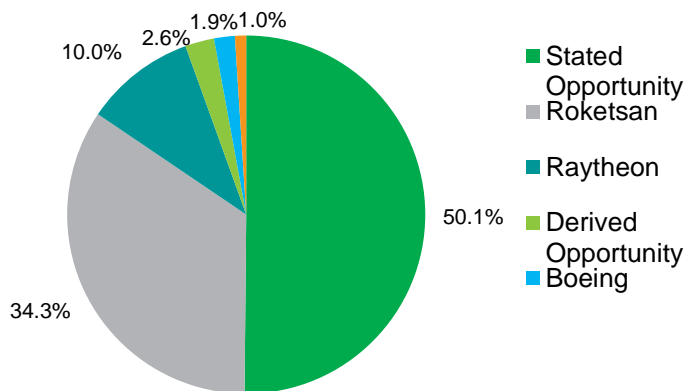
COMMENT

- Increase in platform's stand-off deep strike capability.
- Domestic industry may develop and produce long-range systems and missiles, to meet the emerging requirements for stand-off weapons

Turkish market 2018-2027: Naval weapons

Weapons market: Naval

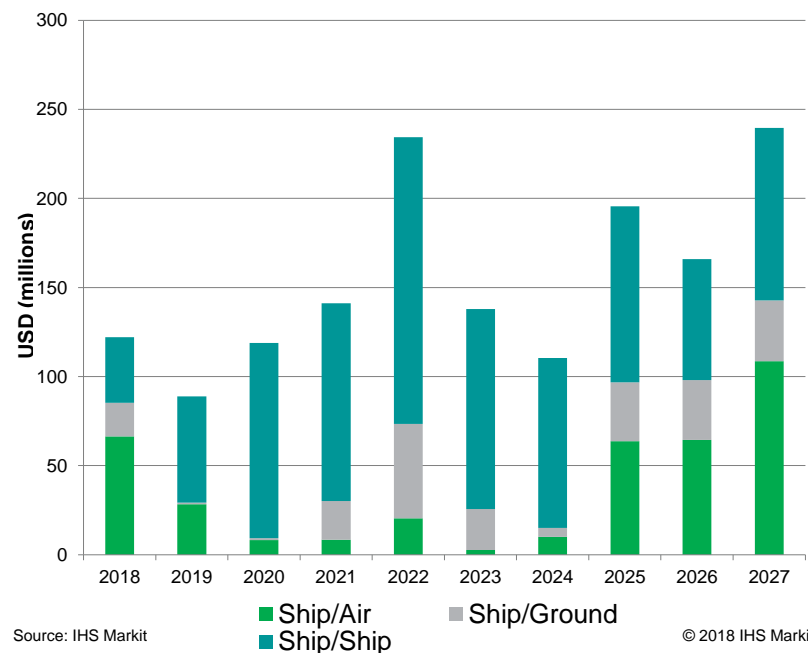
Turkey naval weapons supplier share



Source: IHS Markit

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2018–27 Turkey naval weapons market by value



Source: IHS Markit

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- Turkish naval weapons market estimated at USD122 million in 2018 and expected to grow to USD234 million by 2022.
- Contractual delays, financial difficulties and limitations in indigenous ship building have hurt naval procurement.
- Key naval weapons development include AKYA torpedo and Atmaca anti-ship missile.
- Foreign weapon systems purchased in the short term include MK 48 Mod 6 torpedoes, MK 54 lightweight torpedoes and MK 15 Phalanx CIWS.

Key weapons: Naval

AKYA heavyweight torpedo



1632572 Silhouette of AKYA.
Credit IHS Markit/Rahul Udoshi

AKYA torpedoes are to be installed on Turkish Ay-class submarines, as well as on Type 214TN and Preveze/Gür-class submarines

- 533 mm heavy torpedo to meet a naval requirement under the National Heavy Torpedoes Development Project (AKYA).
- Technical support from South Korea, leveraging White Shark heavy torpedo.
- Sonar system by TUBITAK, while guidance systems and warheads by Roketsan.

COMMENT

- Currently, US-made MK 48 heavy torpedoes fulfill ASW/ASuW requirements.
- AKYA torpedoes will initially supplement the MK 48, gradually replace them.
- Potential for export to cater to global market demand.

Harpoon RGM/UGM-84C



1137061 RGM-84 Harpoon
Credit: Defence Logistics Organisation

Employed on Turkish Frigates such as the Yavuz and Ada class, and the Yildiz- and Kiliç-class fast attack crafts. Also deployed on the Preveze-class SSK.

- Anti-ship missile using an inertial navigation system and active radar seeker during terminal phase.
- The 343 mm diameter missile is equipped with a 221.6 kg semi-armour-piercing warhead.
- Liquid-fuelled turbojet motor gives maximum range of 92.6 km (50 nautical miles).

COMMENT

- Turkish Navy relies on the Harpoon missile for anti-ship capability upgrades to extend its service life.
- Turkey will replace the Harpoon with the indigenously developed Atmaca anti-ship missile.
- Atmaca has significantly longer range at 200+ km.

Summary

- Defence budget increases hampered by high inflation and a weak lira
- Self-sufficiency and growth in A&D exports still key priorities for the SSM
- Turkey plans to further strengthen the domestic weapons industry with new investments and technological cooperation.
- Turkish long-range air-defence programme is now showing visible signs of progress after a protracted procurement process.
- Export potential of indigenous developments may have a challenging outlook.
- Opportunities over the forecast period worth USD2.22 billion. Spending on air and missile defence and multi-target weapons amount to USD1.56 billion.
- Other opportunities are for torpedoes, guided projectiles and launchers.
- Recent Turkish weapons programmes have achieved reasonable success, and aims to replace foreign subsystems.
- Political will is there to continue buying outside NATO but will interoperability present too great a challenge on procurement?

Q&A Session

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