Market developments in Water and Horticulture Jordan

Presentation by

MEYS Emerging Markets Research

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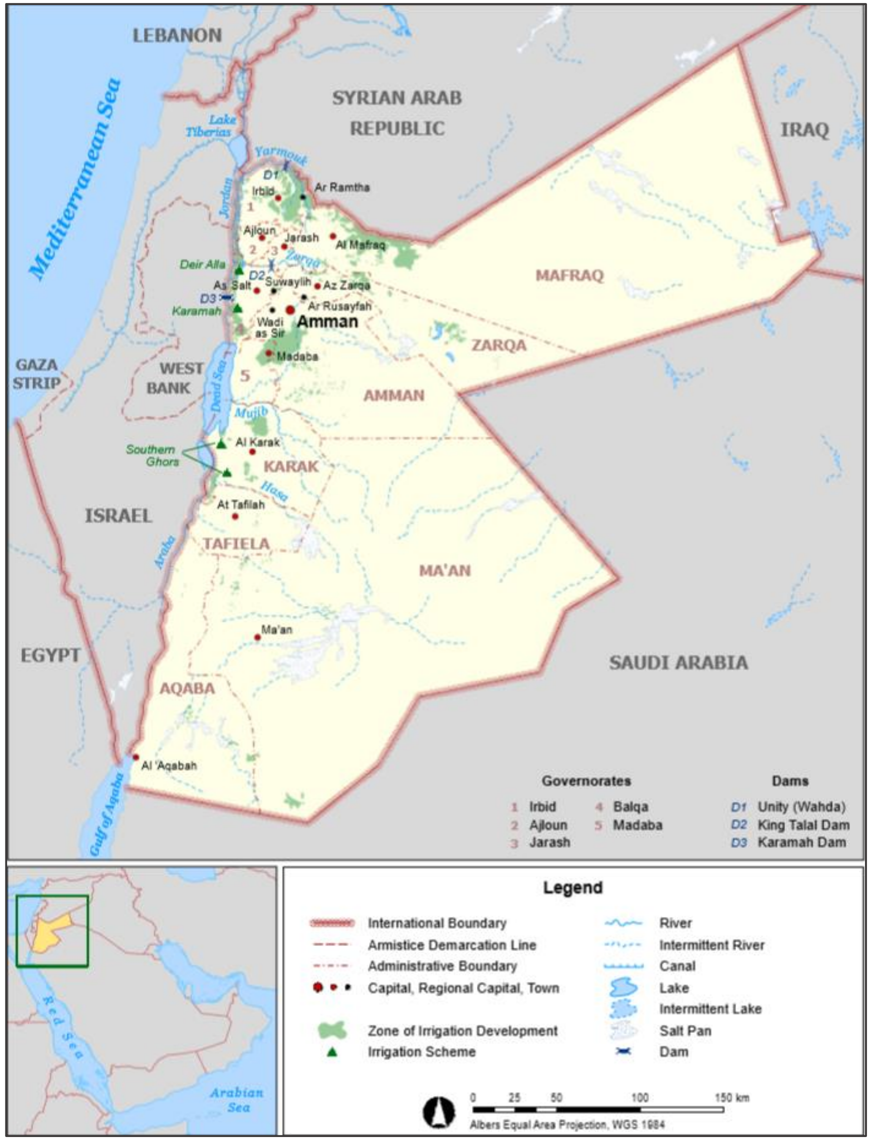
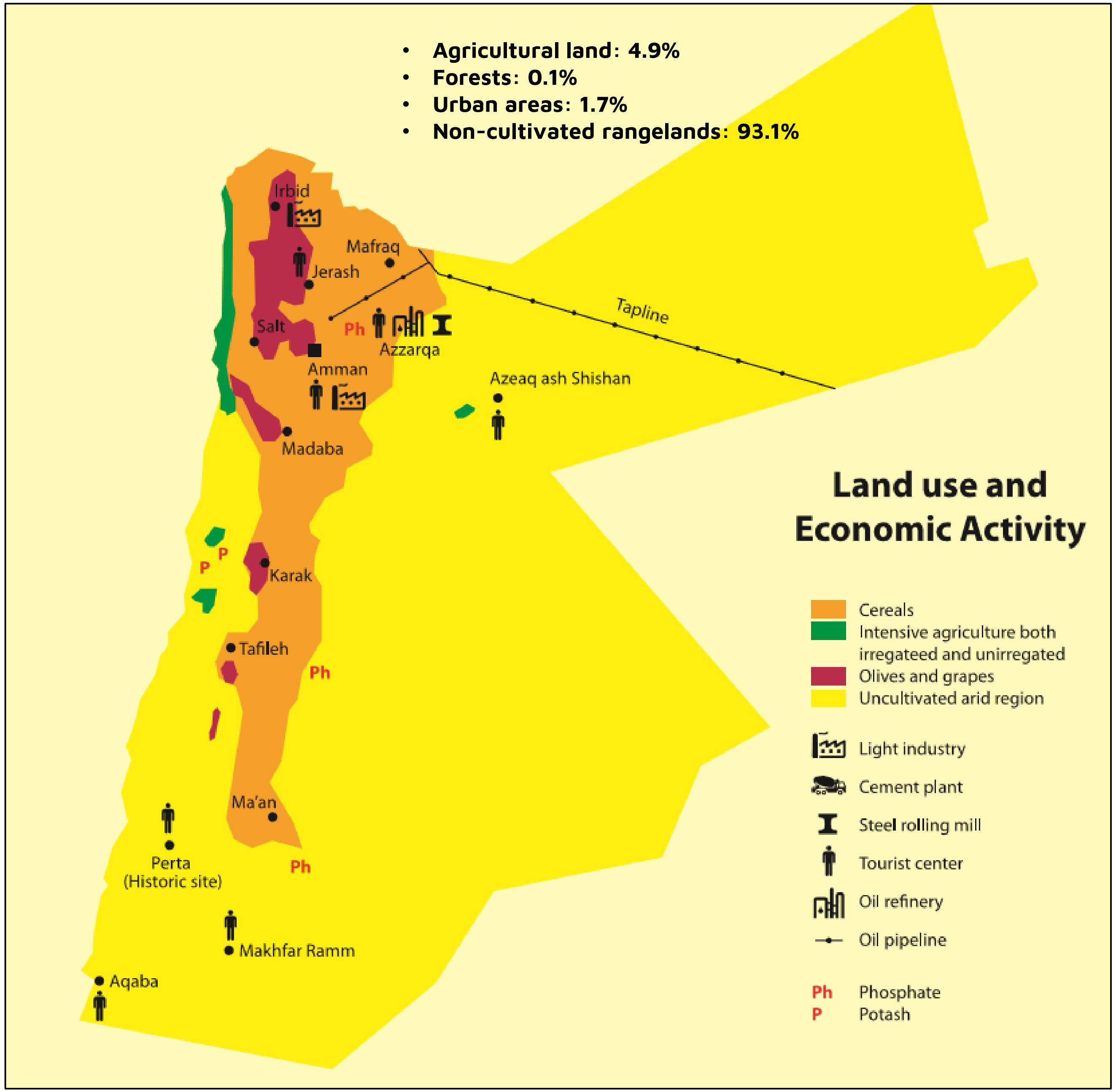


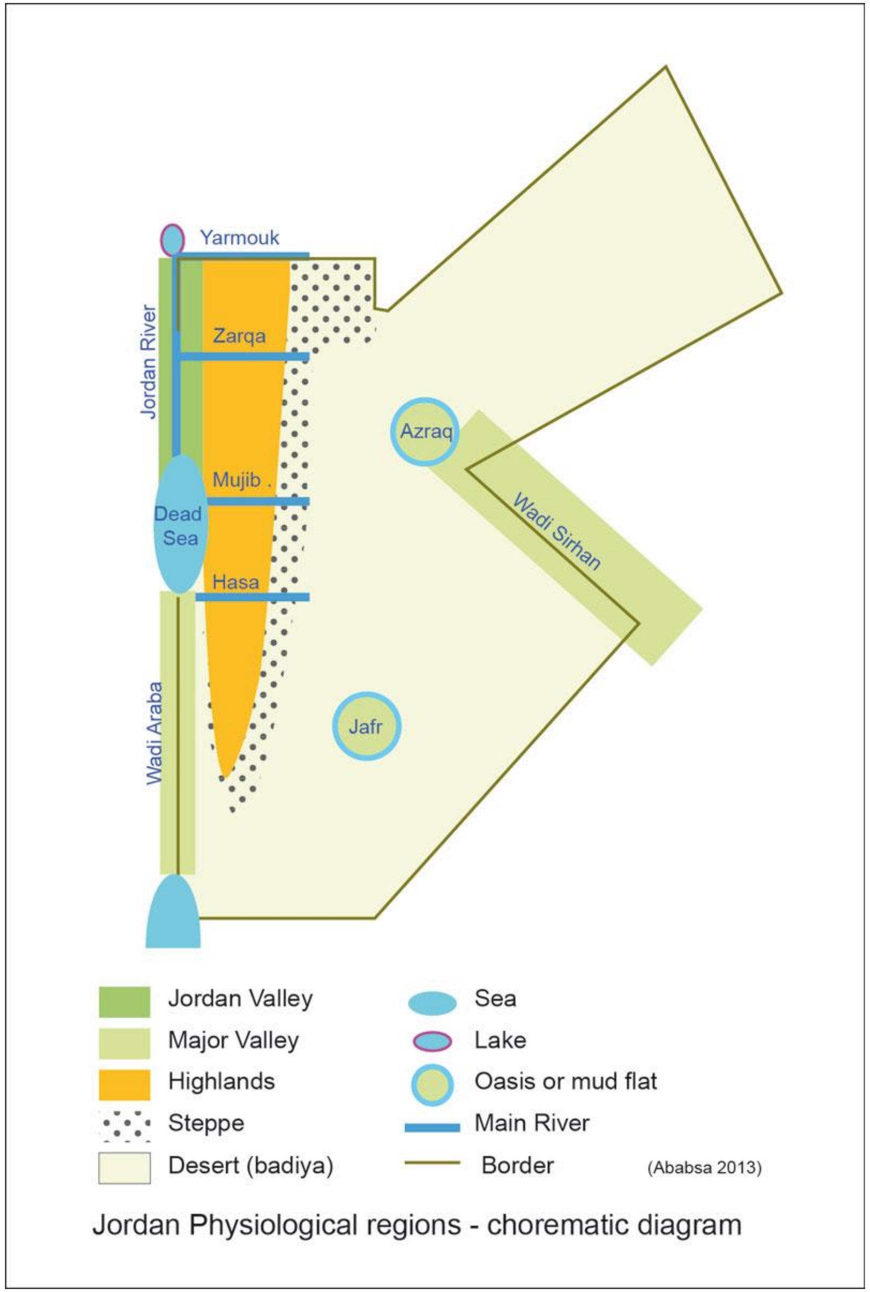
Source: FAO

PART I

Macro-economic developments in Jordan



Jordan land use map
Source: UNDP, 2009

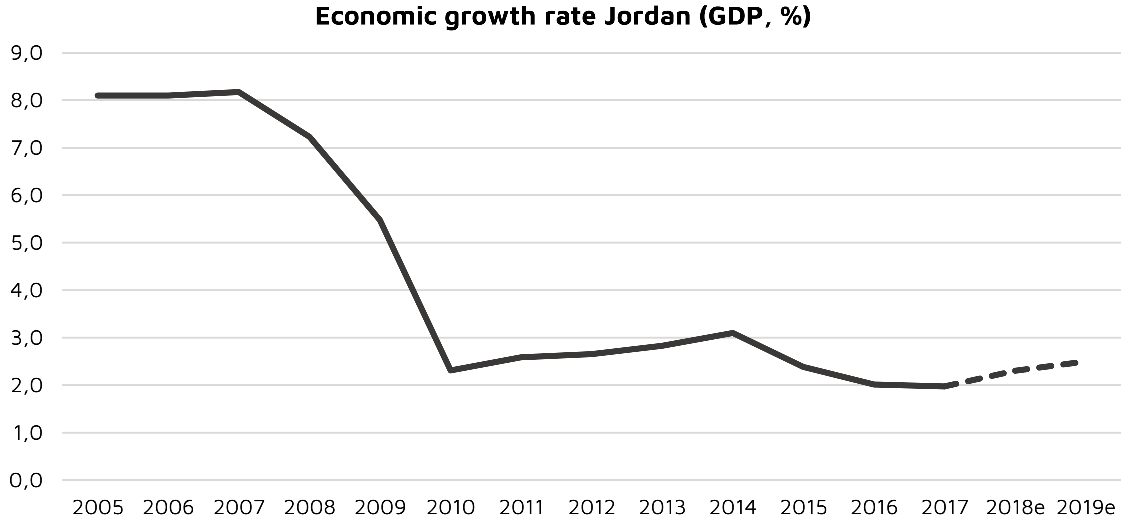


Source: Atlas of Jordan

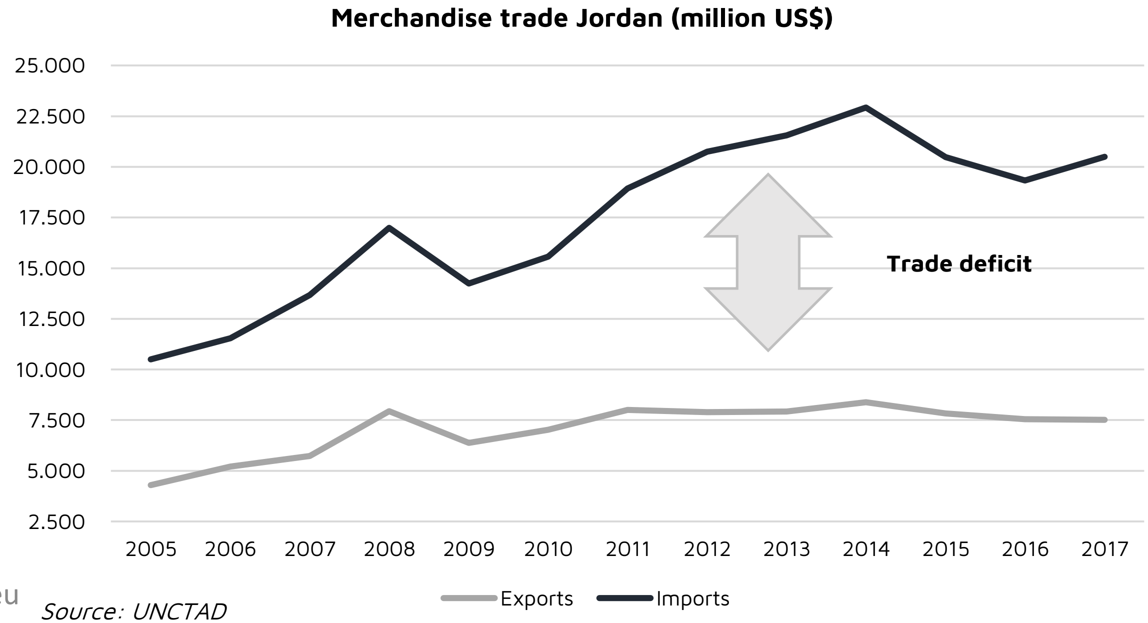
- Political structure: Constitutional kingdom
- Head of State: King Addullah II (since 1999)
- Population 10.2 million people (2018), *including:*
  - 3.3 million migrants (60% from West Bank and Gaza)
  - 740,160 refugees (registered)
- Capital: Amman (2.1 million people, 2018)
- GDP (2017): US$ 40.1 billion
- GDP per capita (2017): US$ 4,136
- Economic growth rate (2017): 2%
- Main economic sectors (% GDP, 2017):
  - Agriculture, Fishery & Forestry: 5.5%
  - Industry: 27.6%
  - Trade, Restaurants, Hotels: 9.7%
  - Transport, Logistics, Communications: 8.5%
  - Financial & Business services, Real estate: 22.3%
  - Other services: 26.4%

  66.9%
- Foreign trade (merchandise trade, 2017):
  - Exports US$ 7.5 billion
  - Imports US$ 20.5 billion

  Trade deficit of US$ 13 billion



Note: (e) estimate by IMF
Source: IMF



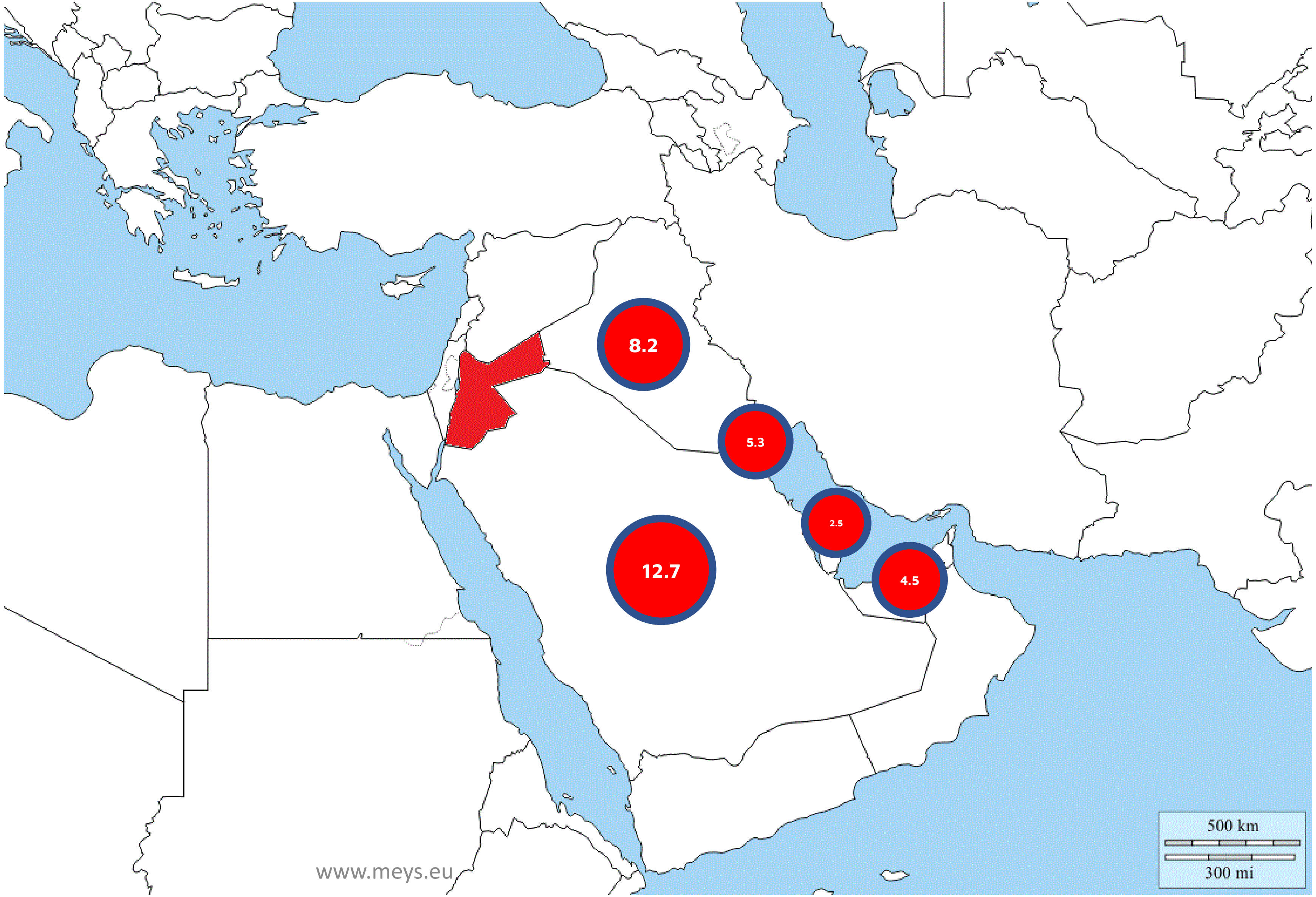
Source: UNCTAD

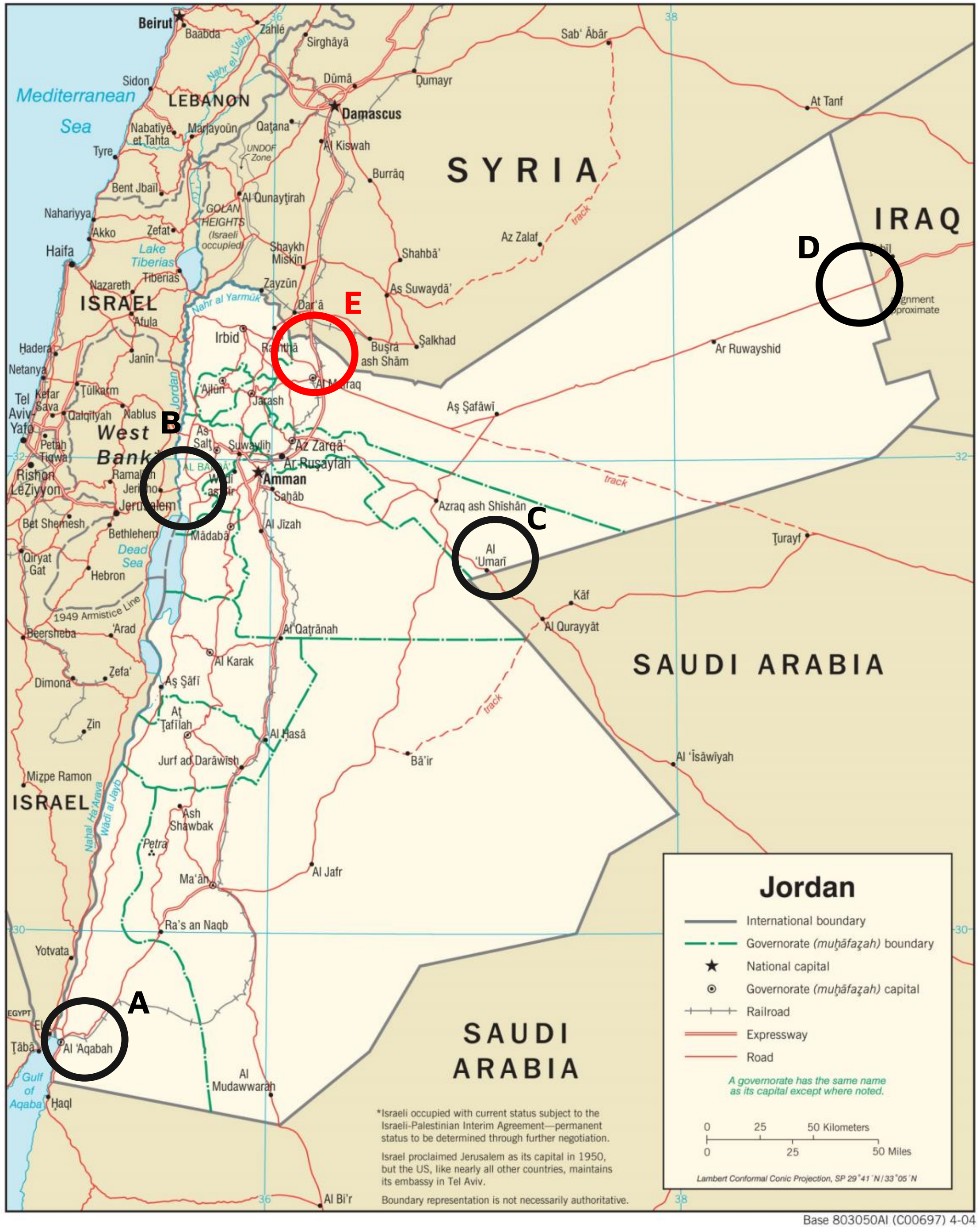
Main export markets of Jordan, 2017 (% in total export value Jordan)

- Arab world*: 51%
- North America: 26%
- Asia: 19%
- EU: 3%
- Other European countries: 0.4%
- Sub-Saharan Africa: 1%
- Central & South America: 0.2%
- Oceania: 0.1%

Note: (*) including Free Zones
Source: DOS

- Jordan important transit country for commodities in the region
- Total volume of transit commodities in 2017 was 4.1 million tons
- In 2017 value of transit commodities was 5.2 billion JD (US$ 7.3 billion)

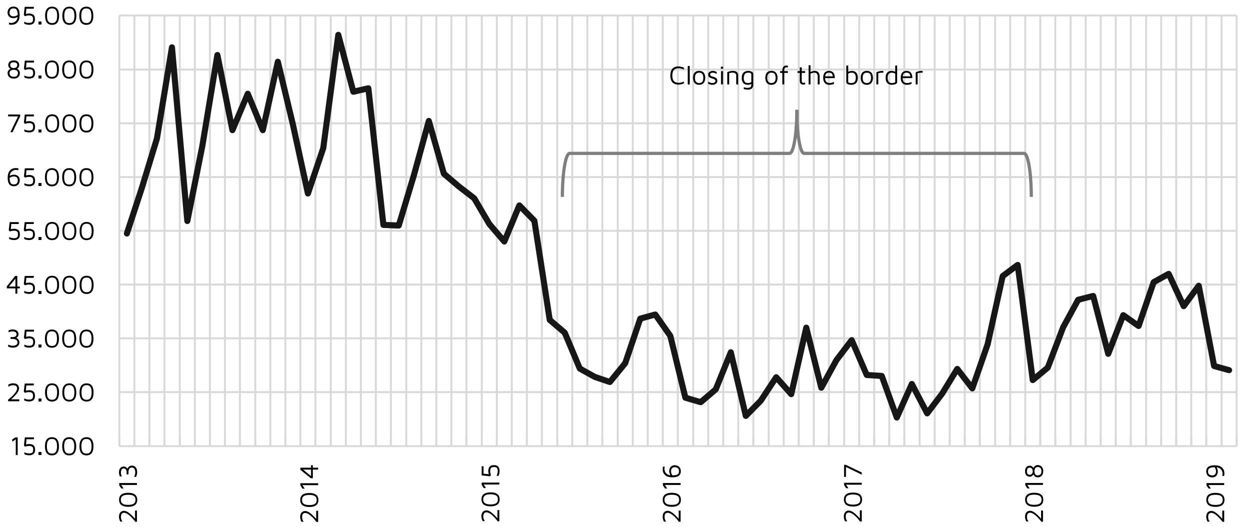




- Means of transport of goods exported (% in total, 2017):
  - Ship: 62%
  - Truck: 37%
  - Airplane: 1%

- Main border posts for exports of goods (% in total export goods, 2017):
  A. Port of Aqaba (only ships): 62%
  B. King Hussein Bridge (only trucks): 13%
  C. Omari (only trucks): 10%
  D. Ruwaished/Al Karamah border crossing between Jordan and Iraq closed in 2015, reopened in August 2017 (2012 8% of Jordanian exported goods; 2017 2%)
  E. Nassib border crossing between Jordan and Syria closed in 2015, reopened in October 2018 but not yet for trucks

Exports with Iraq (1000 JD)



www.meys.eu

Source: DOS

- Foreign Direct Investment inflows (2017): US$ 1.7 billion

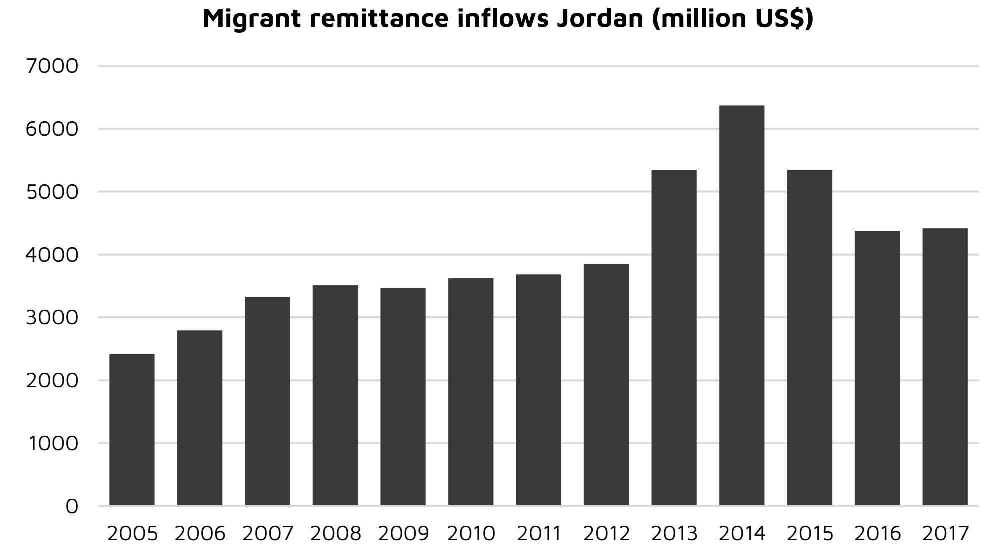
- Main economic sectors receiving FDI:
  - Industry (Energy)
  - Hotels
  - Tourism

- Migrant remittance inflows: around US$ 4 billion annually (official)

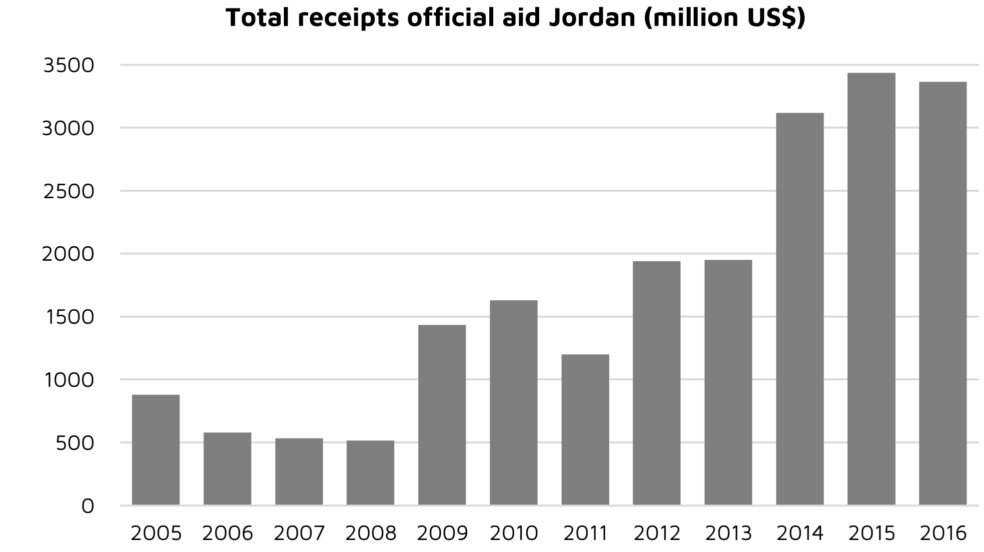
- 770,000 Jordanians living outside Jordan, *of which*:
  - 218,000 in Saudi Arabia
  - 161,000 in UAE
  - 82,000 in US
  - 55,000 in West Bank and Gaza
  - 55,000 in Kuwait
  - 34,000 in Qatar
  - 15,000 Bahrain
  - Other countries worldwide 150,000

- Official development aid (private + public): more than US$ 3 billion annually

- Main sectors receiving official bilateral aid (% total, 2016):
  - Humanitarian aid (19.9%)
  - Education (10.9%)
  - Water supply and sanitation (6.5%)
  - Energy (3.2%)
  - **Agriculture, forestry and fishing: (0.7%)**



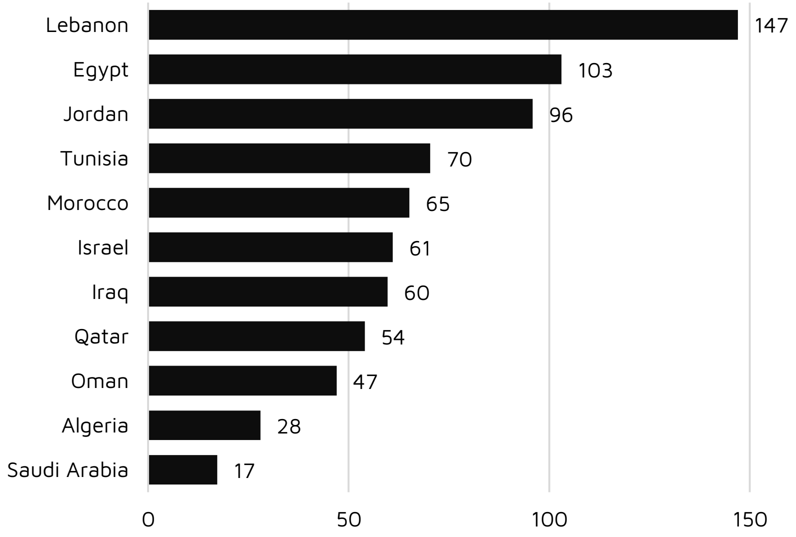
Source: World Bank



Source: OECD

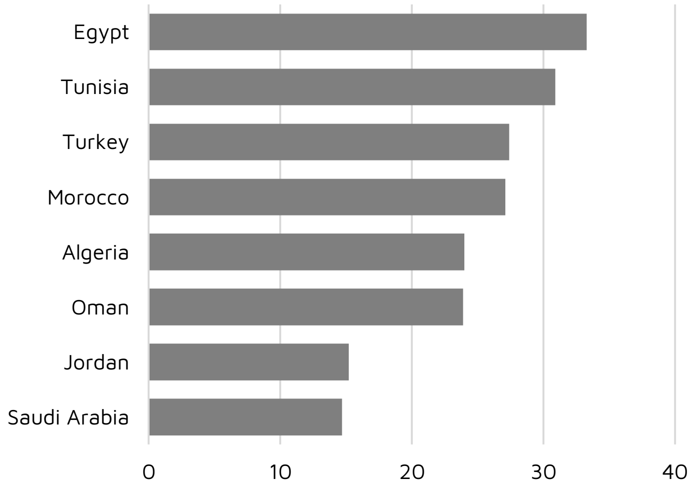
- Gross public debt of Jordan is 96% of GDP (~ US$ 38 billion)
- 95 percent of Jordan's population is not subject to income tax, because of the high-income tax thresholds (above 3 times per capita income)
- Sizeable informal economy (estimated size 15% of GDP ~ US$ 6 billion), paying no taxes and social security, unfair competition towards formal economy
- Tax revenues as % of GDP are among the lowest in the region
- Investments in Jordan - therefore - depends primarily on outside donors (ODA) and remittances from the diaspora
- IMF: increase government revenues by raising fuel prices, cutting subsidies on bread, higher VAT and income taxes -> resulted in large demonstrations (organised and supported by labour unions) in Jordan in 2018 which led to resignation of PM Hani al-Mulki (June 2018)

Public debt, 2017 (% GDP)*



Note: (*) below 60% is seen as healthy
Source: IMF

Size informal economy, 2015 (% GDP)



Source: IMF

PART II

Agricultural sector in Jordan

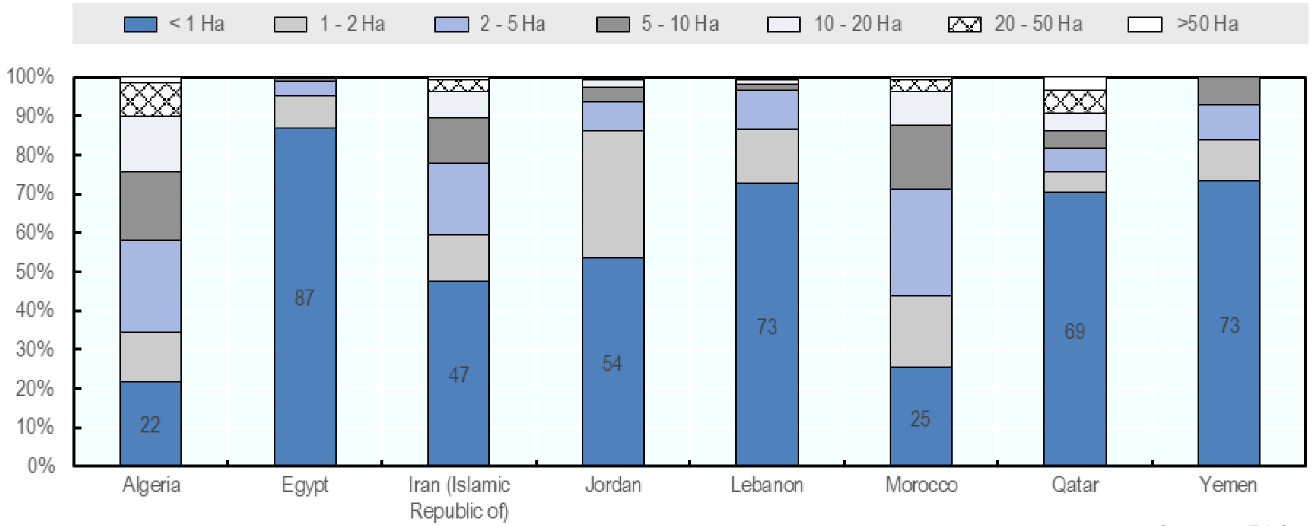
Regional comparisons

- Jordan GDP per capita has hardly grown since 2000
- Compared to neighbouring countries in the MENA-region, Jordan has relatively one of the lowest areas of arable land
- Jordan has a relatively large share of agricultural exports in total commodity exports
- Fruits and vegetables are important export products for Jordan compared to neighbouring countries with the exception of Morocco
- The Middle East and North Africa has one of the most uneven farm size distributions in the world

	GDP per capita		**Agricultural land**	**Arable land**	**Trade (2016)**	
	US$ (2017)	Annual average growth rate 2000 – 2017 (%)	% of total land area (2016)		Agriculture in total exports (%)	Fruit & Vegetables in total exports (%)
Jordan	4 155	1.0	12	3	13.9	7.5
Morocco	3 066	3.5	78	21	21.3	7.2
Tunisia	3 461	2.3	70	20	10.3	2.4
Saudi Arabia	20 597	1.0	81	2	2.4	0.1
Turkey	10 588	3.7	59	31	11.2	3.4
Iraq	4 910	3.5	22	12	0.2	No data
Egypt	2 021	2.4	4	3	18.5	9.6

Source: FAO, UNCOMTRADE, UNCTAD

Farm size distribution in selected MENA countries, 1996-2003



Source: FAO

- Employment in Agriculture, Fishery, Forestry (2017): 1.7% of total employment
- Most workers in agriculture are (illegal) foreigners (primarily from Egypt, Syria)
- Total cultivated area in 2017 189,000 ha. (2016 273,000 ha.), *of which*:
  - Fruit trees: 78,000 ha.
  - Field crops: 73,000 ha.
  - Vegetables: 38,000 ha.
- About 60 percent of Jordan's agricultural production is in the Jordan Valley
- Main agricultural products are (2016):
  - Tomatoes: 837,000 tons
  - Cucumbers: 280,000 tons
  - Potatoes: 274,000 tons
  - Olives: 116,000 tons
  - Watermelons: 105,000 tons
- Total annual food production (2016): 3.5 million tons
- Total food exports (2016): 865,000 tons (25% of total food production)
- Total irrigated area: 119,000 ha. (63% of total cultivated area)
- Total number of farm holdings (livestock + crops, 2017): 107,707
- Number of farm holdings only in crop production (2017): 75,417
- 80% of farm holdings have less than 2 ha.
- 70% produces crops for own consumption
- 16% of all farmers is farming main source of income (full-time farming)

Fruit tree	Cultivated area, 2017 (ha.)	% of total cultivated area
Olives	56,000	72.0%
Citrus	6,400	8.2%
Dates	3,220	4.1%
Grapes	2,900	3.7%
Peach	2,750	3.5%
Others	6,730	8.5%
Total	**78,000**	**100%**

Field crop	Cultivated area, 2017 (ha.)	% of total cultivated area
Barley	56,500	76.6%
Wheat	12,000	16.5%
Clover	2,300	3.1%
Maize	1,260	1.7%
Others	940	2.1%
Total	**73,000**	**100%**

Vegetable	Cultivated area, 2017 (ha.)	% of total cultivated area
Tomatoes	12,000	32.3%
Potatoes	4,000	10.6%
Squash	2,800	7.3%
Mellons	2,700	7.1%
Eggplants	1,960	5.2%
Onions	1,800	4.7%
Cucumbers	1,650	4.4%
Others	11,090	29.2%
Total	**38,000**	**100%**

Market of vegetables in Jordan

- Total cultivated area approx. 38,000 ha. in 2017, *of which*:
  - Irrigated area: 36,980 ha.
  - Non-irrigated area: 720 ha.

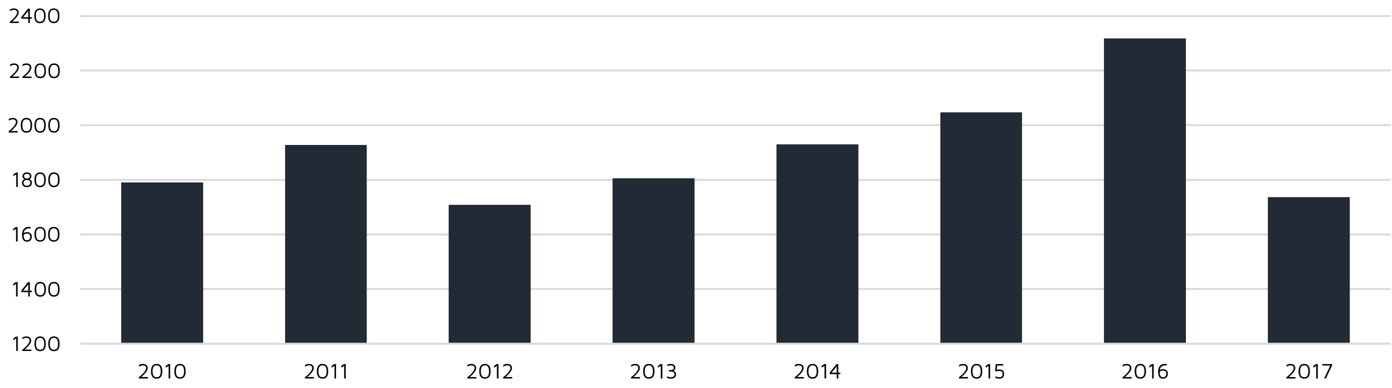
- Type of irrigation system (% total irrigated area, 2017):
  - Drip: 95%
  - Surface: 5%

- Type of plantation (2017):
  - Open field: 29,402 ha. (76%)
  - Plastic Houses & Tunnels: 8,294 ha. (24%)

- Plastic houses & tunnels primarily used for tomatoes, peppers and cucumbers

- Annual production vegetables between 1.7 – 2.3 million tons (tomatoes, potatoes, cucumbers, watermelons)

Production vegetables Jordan (1000 tons)



Source: DOS

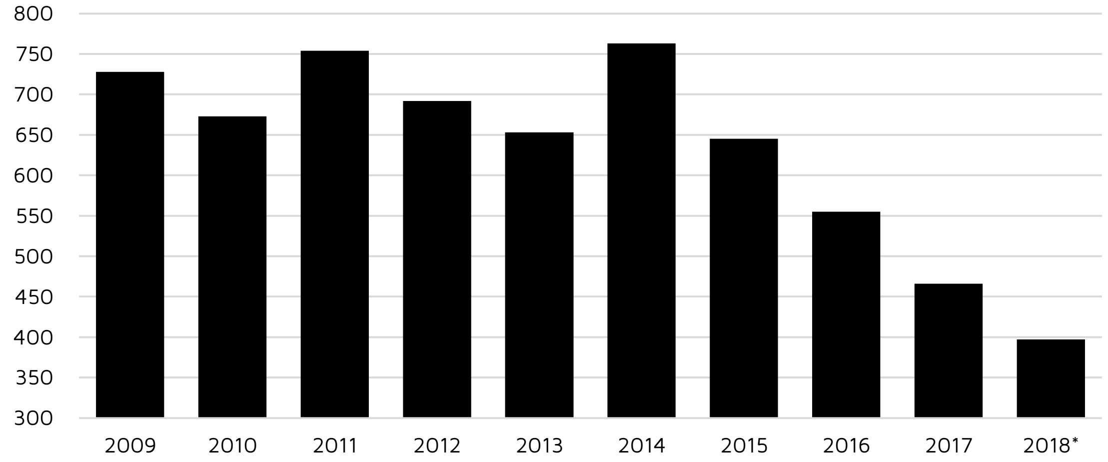
Drip irrigation for cucumbers in Jordan Valley

Plastic tunnels in Jordan Valley

- In 2017 27% of vegetable production exported (2010 38%)
- Jordan exports of vegetables is sharp declining since 2014
- Total export value of vegetables:
  - 2013: US$ 510 million (364.3 million JD)
  - 2017: US$ 395 million (282.3 million JD)
- Main export markets for vegetables are the Gulf countries (Oman, Saudi Arabia, Qatar, UAE, Kuwait, Bahrain) and UK
- Iraq and Syria were important export markets, but due to Syrian crisis (borders were closed) Jordan exports went done considerably
- Main exported vegetables are:
  - Tomatoes
  - Cucumbers
  - Potatoes
  - Squash

  67% of total vegetable exports
- Jordan lost export markets to Turkey, Egypt and Morocco, especially in tomatoes to (Eastern) Europe

Exports vegetables (1000 tons)

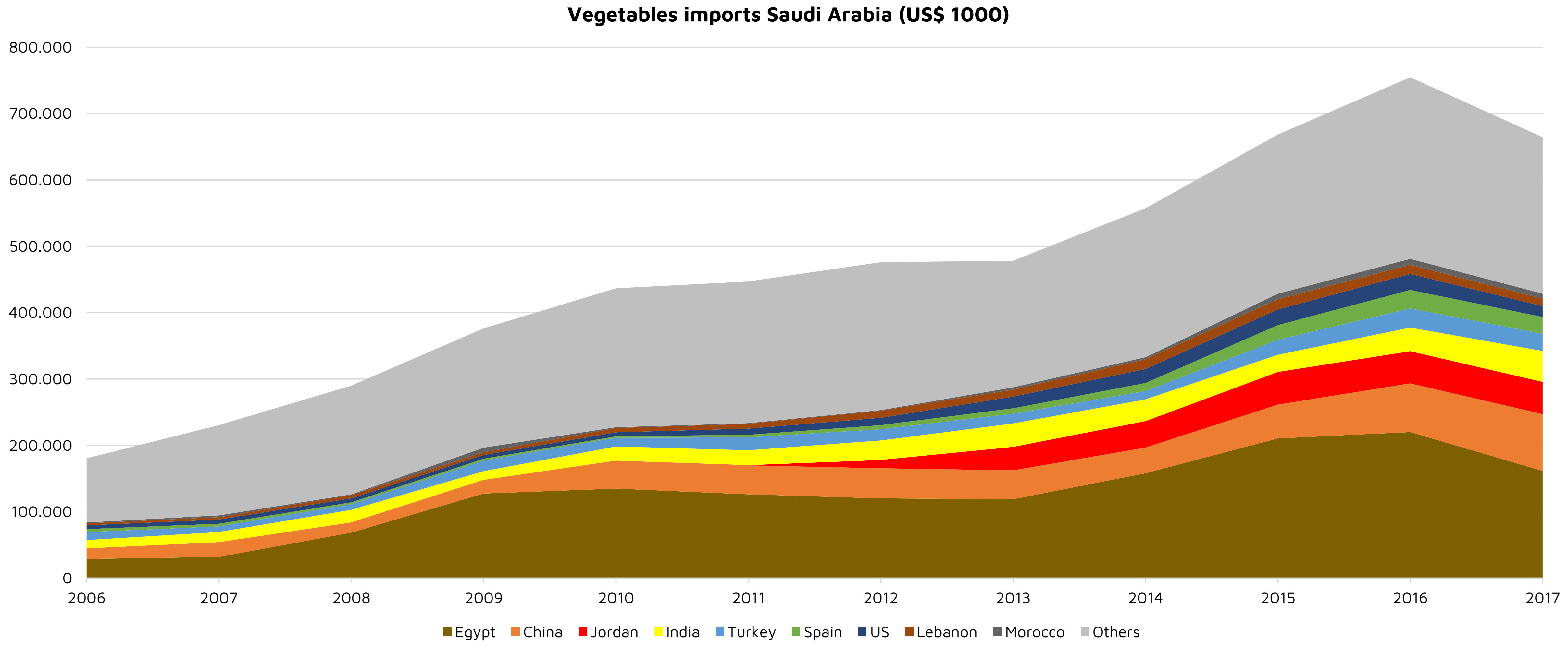


Note: (*) Jan. – Oct.
Source: MoA

Country	Exports of tomatoes (1000 tons)	
	2016*	2010*
Mexico	1,748 (1)	1,510 (1)
Netherlands	992 (2)	943 (2)
Spain	911 (3)	739 (3)
Morocco	525 (4)	372 (6)
Turkey	486 (5)	574 (4)
Jordan	361 (6)	371 (7)

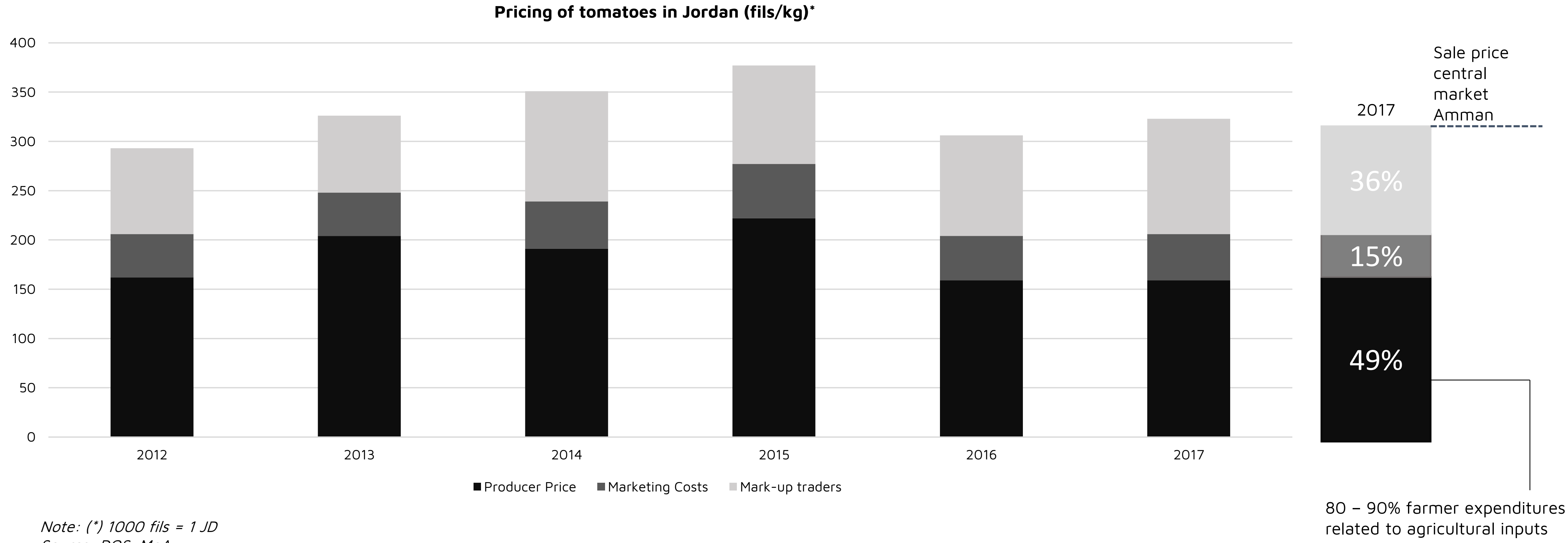
Note: (*) between brackets global ranking in tomato exports
Source: FAO

- Jordan vegetable exporters managed to enter Saudi Arabia after 2011 (7% of Saudi Arabia total vegetable imports in 2017)
- Main competitors for Jordan's exports of vegetables to Saudi Arabia are Egypt, China and India



Source: ITC

- Prices received by farmers for tomatoes (most produced and sold vegetable) in 2017 at lowest level in last five years
- Sale prices for tomatoes at the central market in Amman in 2017 higher compared to 2016
- Higher mark-up by traders and marketing costs (transport, market & broker fees, packing) led to higher prices for households
- Farmers expenditures primarily influenced by costs for agricultural inputs (e.g. seeds, fertilizer, water, labour)



Note: (*) 1000 fils = 1 JD
Source: DOS, MoA

Market of fruit in Jordan

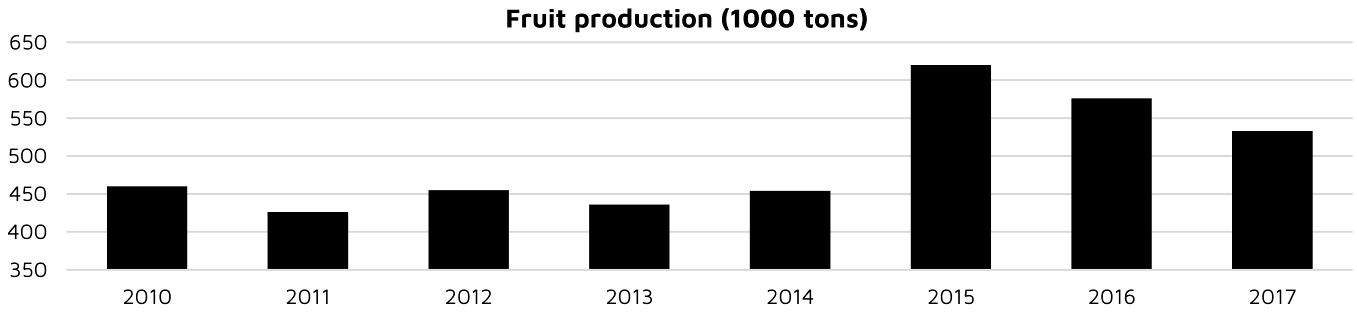
- In Jordan Valley whole year horticulture possible due to stable weather conditions

- Total cultivated area 78,000 ha. *of which*:
  - 42,000 ha. irrigated (54%)
  - 36,000 ha. non-irrigated (46%)

- Total number of fruit trees in Jordan 21,5 million, *of which*:
  - Olives: 49.0%
  - Citrus: 9.8%
  - Peaches:6.7%
  - Others: 34.5%

- Annual fruit production is higher since 2015 compared to previous years

- In 2017 total fruit production around 533,000 tons, of which:
  - Olives: 145,000 tons (27%)
  - Citrus: 107,000 tons (20%)
  - Grapes: 54,000 tons (10%)
  - Apples: 25,000 tons (5%)



Source: DOS

Peach trees in Jordan Valley

Olive trees near Jordan Valley

- Of total fruit production in 2017 23% was exported (2010: 17%)

- The main fruit exported are:
  - Watermelons
  - Sweet melons
  - Olives fresh
  - Olives preserved
  - Peaches

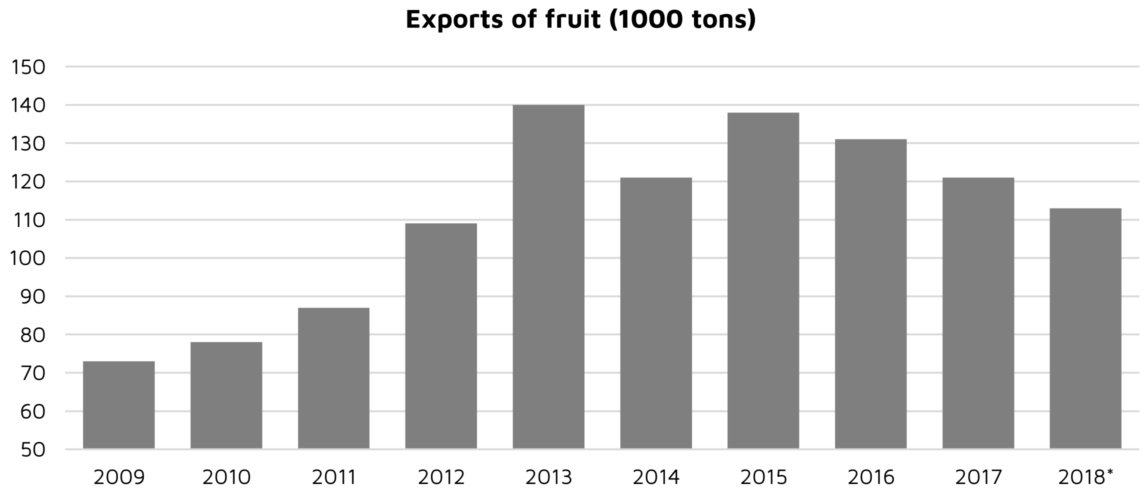
  70% of total fruit exports

- Total export value of fruit and nuts:
  - 2013: US$ 196 million (139.7 million JD)
  - 2017: US$ 158 million (112.8 million JD)

- Main export markets of fruit are the Gulf countries (Saudi Arabia, Kuwait, Bahrain, Oman, Qatar, UAE) and UK

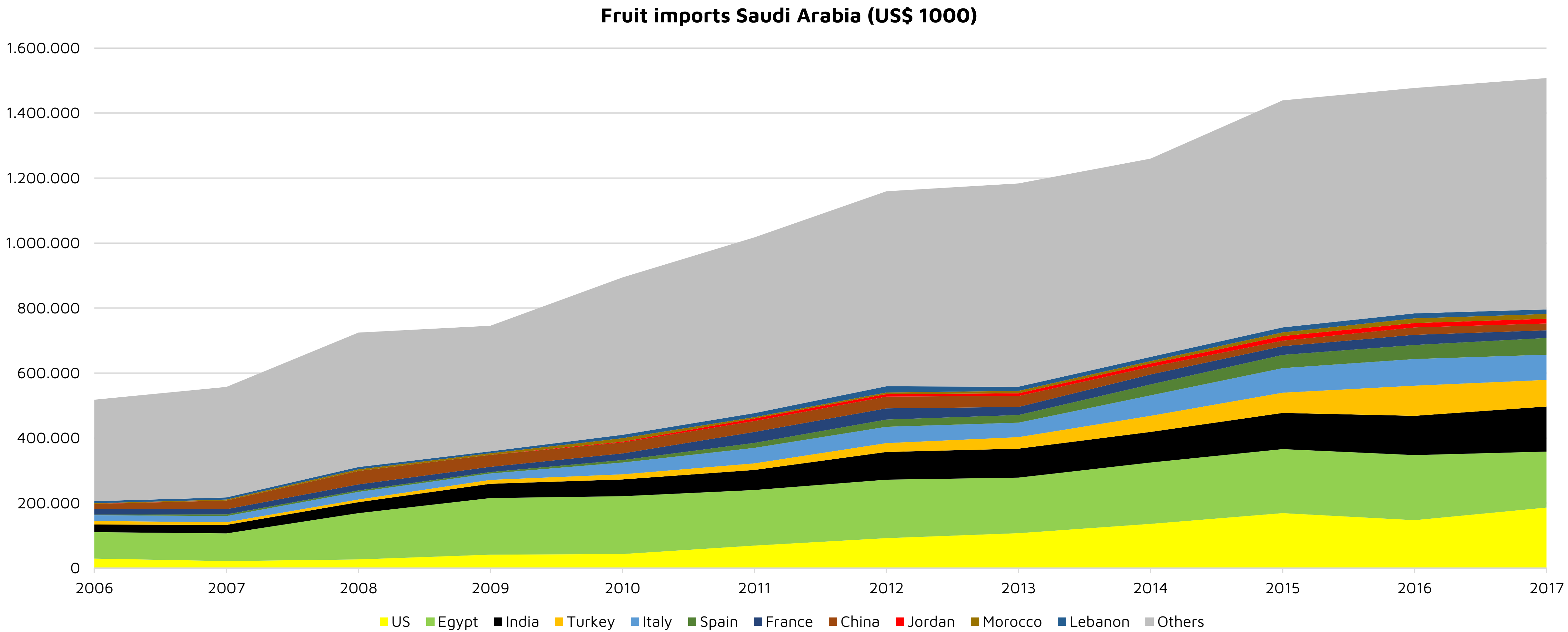
Strawberry production in Jordan Valley

90% of olive production sold domestically



Note: (*) Jan. – Oct.
Source: MoA

- Jordan's exporters of fruit to Saudi Arabia face severe competition from US, Egypt, India, Turkey and EU (Italy, Spain, France)
- Share of Jordan in total fruit imports by Saudi Arabia was 1% in 2017

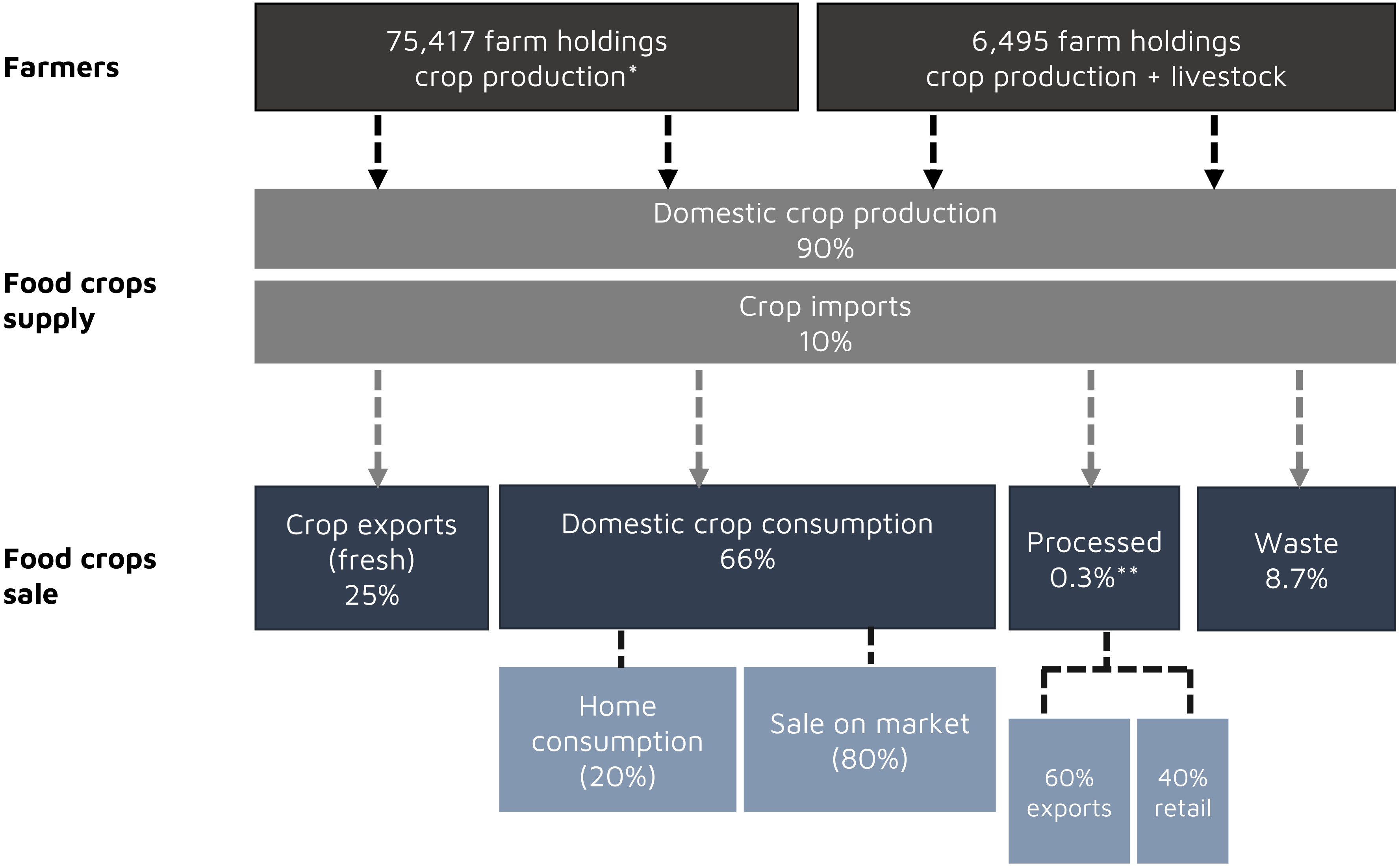


Source: ITC

Fruit and Vegetables processing industry

- Processing of fruit and vegetables in Jordan still limited
- 4300 companies active in food processing (half are local bakeries), of which only 69 in fruit and vegetables (all private Jordanian companies)
- 96% of fruit and vegetables processing companies are SMEs (capital < 500,000 JD and < 20 employees)
- Total annual sales of fruit and vegetables processing industry around 79 million JD, of which around 40% from exports
- Vegetables processed in Jordan are chickpeas, olives, tomatoes, potatoes
- Low volumes of processing of fruit in Jordan into packed fruit juices (e.g. oranges, apples)
- Exports of fruit and vegetables juices in 2017 12,653 tons; imports 9,541 tons
- Fruit and Vegetables juices export markets are mainly Palestine, Iraq, Qatar, and Yemen
- Fruit and Vegetables juices imports are primarily from Saudi Arabia, Egypt, and the Netherlands

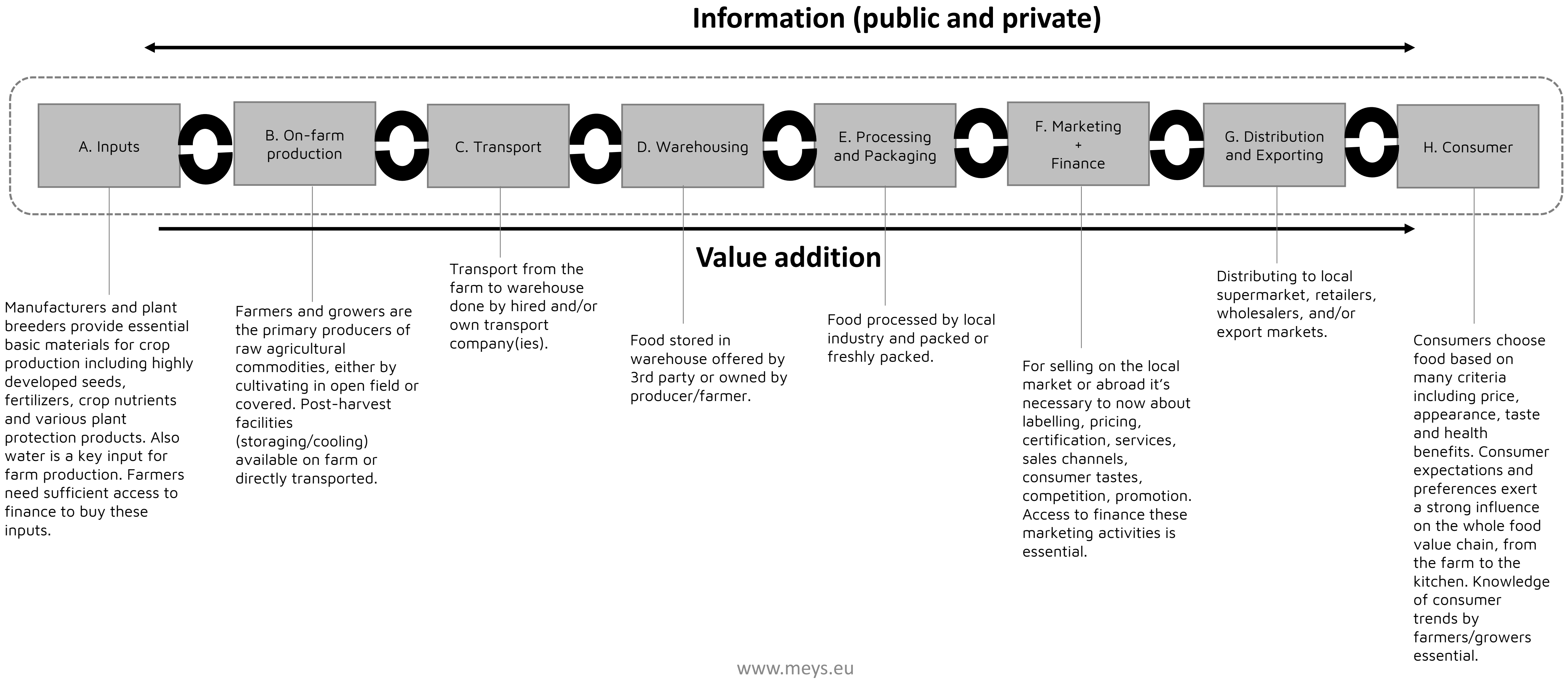
Food crops supply chain Jordan



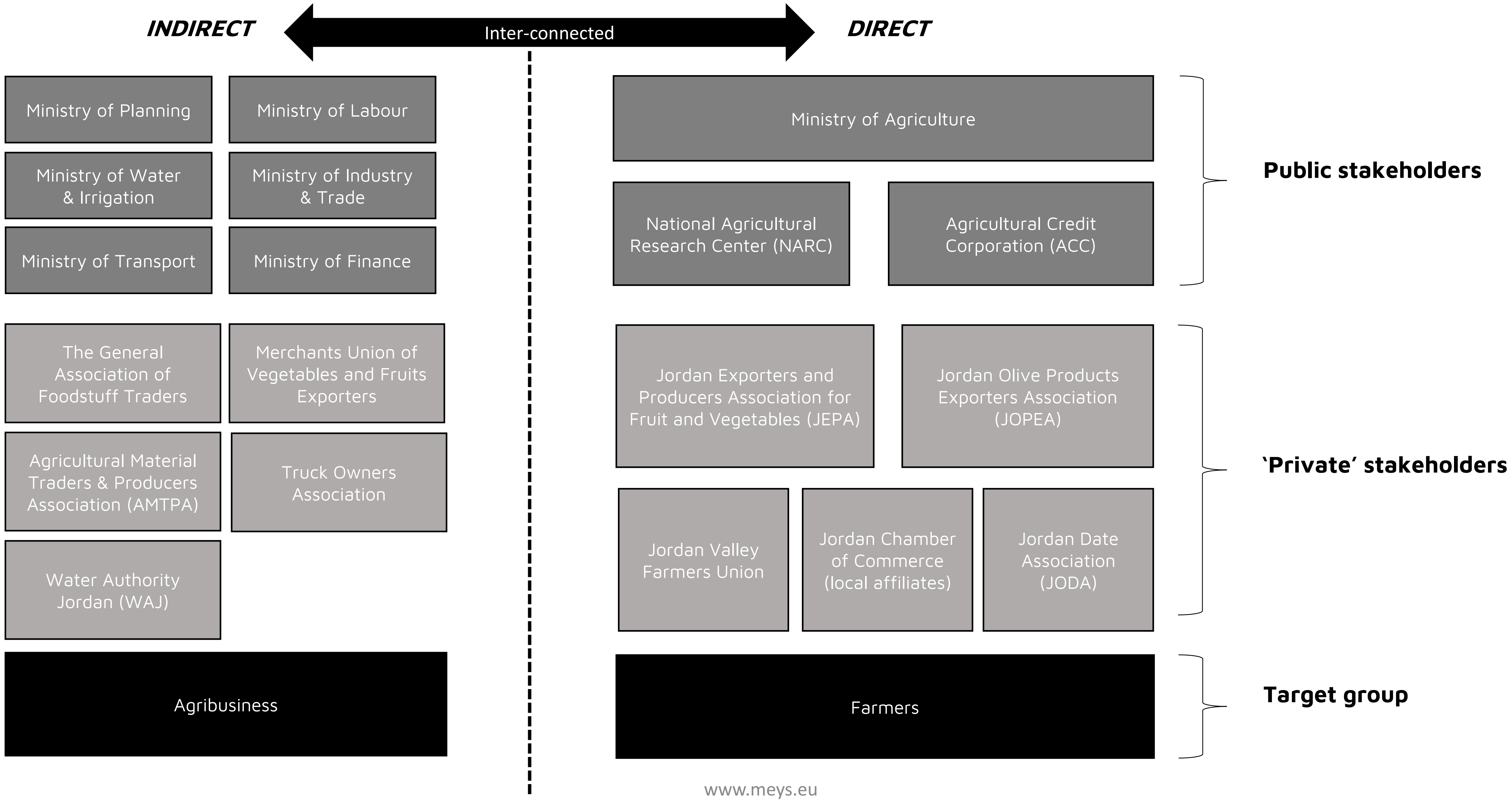
Note: (*) Crop production = fruit and vegetables
(**) excluding fruit and vegetable juices
Source: DOS, ITC

Food Value Chain in Jordan

- Various activities in the food value chain can be done by one company, e.g. transport & warehousing or processing & packaging
- In lower to middle-income countries like Jordan often each activity in the value chain is done by different companies due to lack of financial means and information about other actors operating in the chain
- Actions must be aimed at strenghtening the whole food value chain, not a single activity (the weakest link determines the strength of the whole chain)



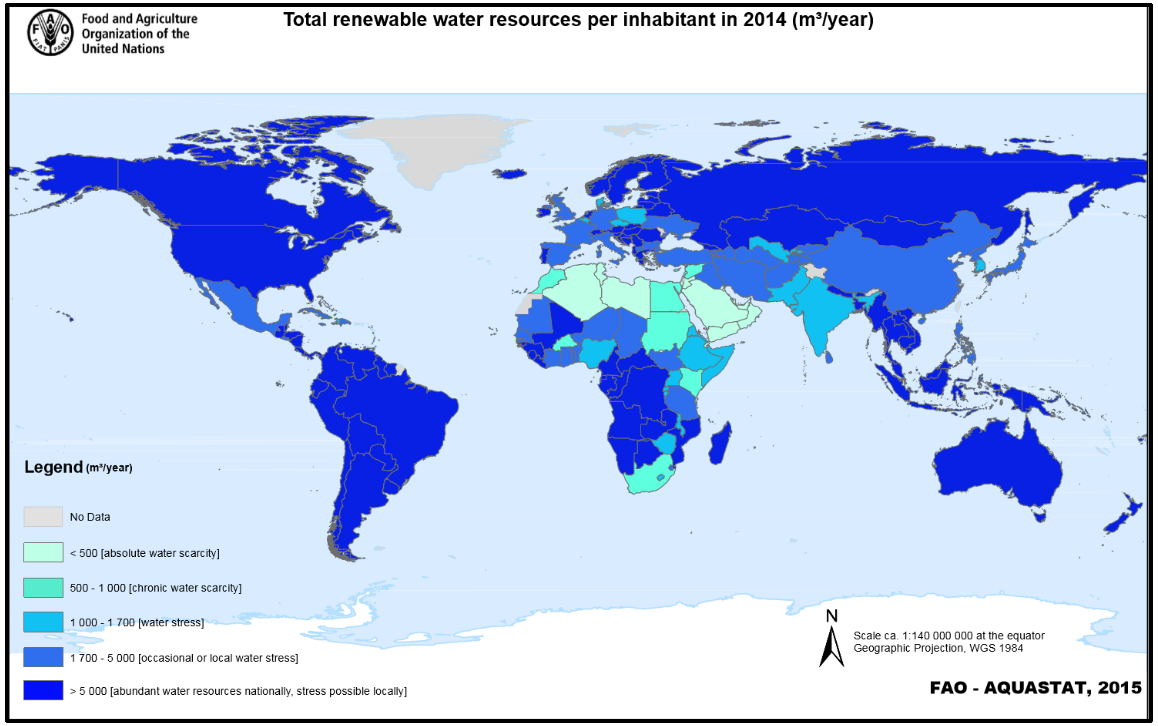
Stakeholders in Food Value Chain Jordan



PART III

Water sector in Jordan

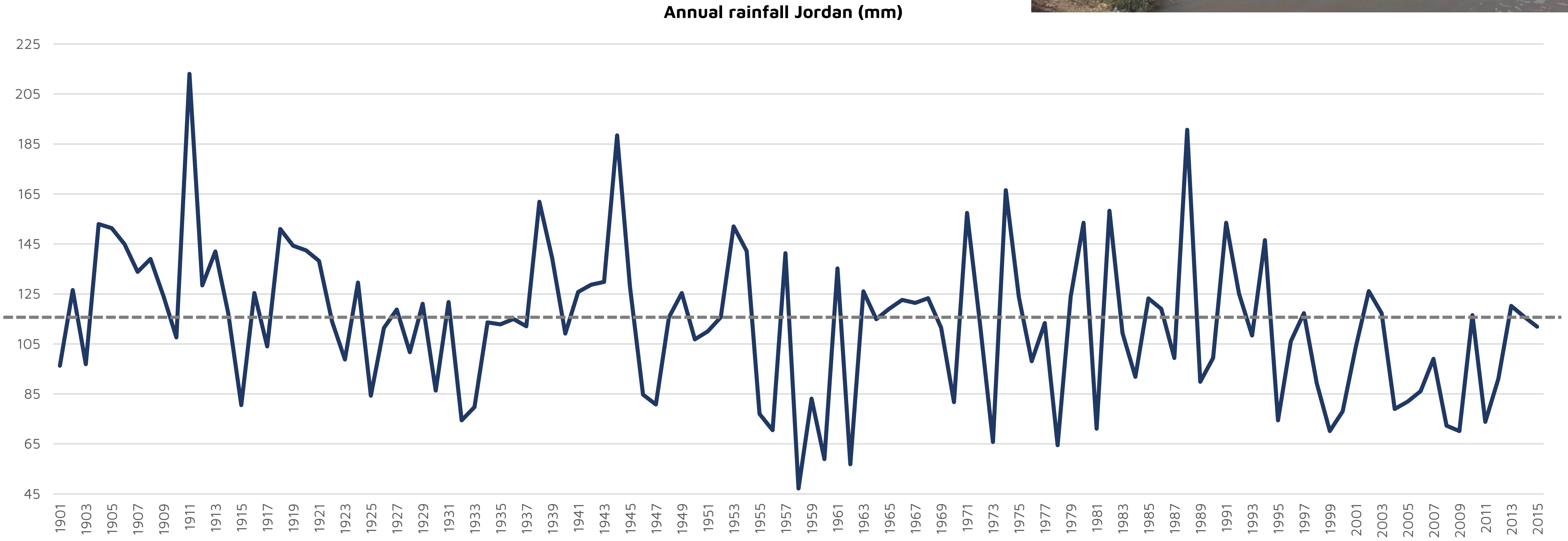
Regional water comparisons



Country	Total renewable water resources* (2014)	Total water withdrawal (2003 – 2015)	Agricultural water withdrawal as % of total water withdrawal (2002 – 2015)
	m3/inhab./yr		(%)
UAE	16	665	83
Qatar	26	377	59
Saudi Arabia	76	908	88
Bahrain	84	348	45
Libya	112	928	83
Jordan	**123**	**145**	**52**
Israel	221	282	58
Algeria	294	225	59
Oman	312	509	88
Tunisia	410	304	80
Egypt	637	911	86
Lebanon	770	321	60
Morocco	844	316	88
Syria	908	863	88
Iraq	2467	2646	79
Kuwait	5139	447	54

Note: (*) include ground water, surface water, inflows of ground and surface water
Source: FAO

- Average annual rainfall between 1901 – 2015 114 mm
- During last 20 years annual rainfall below long-term average
- 92% of surface water evaporates
- 44% of total dam capacity is used for water storage in 2015



Source: World Bank

- Water resources in Jordan is primarily ground water (59% of total water resources)
- Since 2006 total water withdrawal in Jordan has increased with 20%, primarily caused by strong increase of household consumption (+60%)
- Increase in demand for domestic water (households) in the northern governorates of 40% in the last few years is a result of the influx of hundred thousands of Syrian refugees
- Agriculture has a share of more than 50% in total water consumption in Jordan
- For irrigation of farm land ground water (46%) is the main water source
- 50.3% of the Jordanian population has only 24 h/week of piped water supply

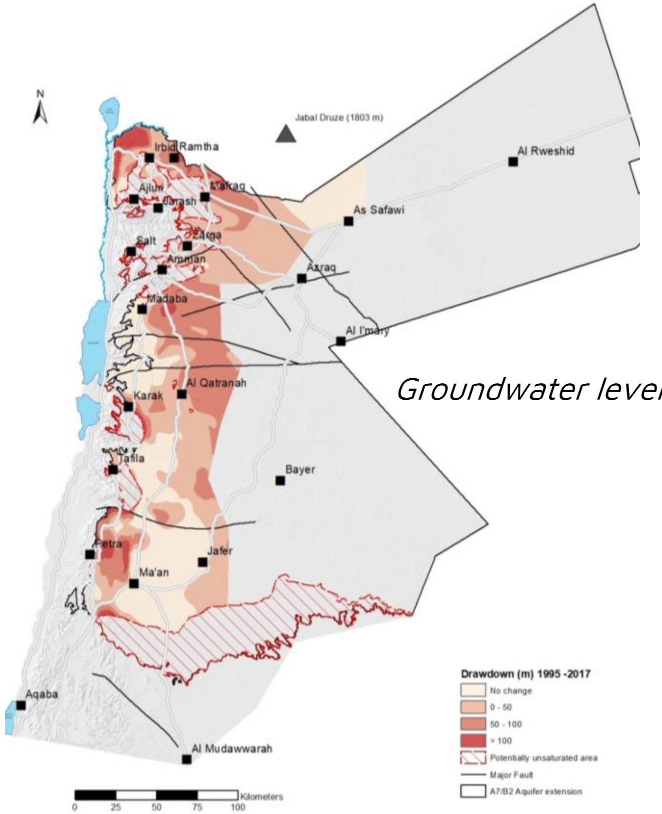
11% of agricultural land area is irrigated; 52% of water consumption by Agricultural sector

Water use in Jordan (registered), 2017 (million m3)

Uses	Surface Water	Ground Water	Treated wastewater	Total water resources	% in total water resources
Domestic	131,1	338,4	0	469,7	45%
Agriculture	154,4	253,2	144,2	551,8	52%
Industry	2,4	27,2	2,5	32,1	3%
Total	**288,1 (27%)**	**618,8 (59%)**	**146,7 (14%)**	**1053,6**	**100%**

Source: MWI

- Estimated non-revenue water (NRW) by Ministry of Water & Irrigation is 48% in 2017 compared to 43% in 2010
- NRW can be traced back to physical leakages, unauthorized consumption, incorrect billing (administrative losses) resulting in increased pressure on water resources and reducing the economic efficiency of the Jordanian water sector
- 47% of the price of domestic water is subsidized by the Government, costing the Government of Jordan 348 million JD in 2017
- Ground water level in the main aquifers drops at a rate of 2 meters per year but the decline in some depleted areas reaches 5 to 20 meters



Groundwater level drawdown 1995 - 2017

Water reservoir of large farm in Jordan Valley, every three days to be refilled for production of peppers and cucumbers

Dam in the river Jabbok (Zarqa river), near Jordan Valley

Thank you for your attention

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