

Dutch Business Opportunities in Horticulture and Water Jordan



Preface

The Horticulture and Water sector in Jordan has been hard hit by the war in Syria and years of misuse of the scarce water resources. The water level in Jordan is dropping around 2 meters per year, but in some areas between 5 - 20 meters per year. By 2025, water demand will exceed the available water resources by more than 26 percent. This will not only have an enormous impact on households and industry, but also on the performance of the Horticulture sector in Jordan which consumes around fifty percent of the national water supply. On top of the water scarcity, Jordan is hosting around three million refugees from Palestine, Syria, Iraq, and other neighbouring countries. Several refugee camps in Jordan consist of around two-hundred thousand people, many already living in these camps for years. Many countries have been delivering aid to Jordan to tackle these challenges. Since 2006 around twenty-two billion US dollars of donor money is provided to Jordan. The Dutch government is also active in Jordan with various donor funded projects. The Dutch embassy in Amman has chosen for a '3x3x3' approach, which means 3 times less water use, 3 times less energy use and 3 times higher earning capacity for the agricultural sector. In short, produce more with less inputs.

The Dutch private sector is less active in Jordan. Approximately 20 – 25 Dutch companies are active in Jordan. Dutch foreign direct investments stock is currently estimated at eighty million euros, while total foreign trade is only around 237 million euros in 2018 of which imports from the Netherlands are five times more than Jordanian exports to the Netherlands. These imports consist primarily of oil products and machinery. Exports to the Netherlands consist for seventy percent out of textile products.

Although Dutch business activities with Jordan are at the moment limited, the country could offer interesting market potential in the medium to long run for the Dutch Horticulture and Water sector. Therefore, the Topsector Tuinbouw & Uitgangsmaterialen (Topsector T&U) and the Netherlands Water Partnership (NWP) asked MEYS Emerging Markets Research to carry out a detailed – at company level – market research to find out more about the possible business opportunities for these two sectors in Jordan. In addition, to take into account the water scarcity, investigate the combination of water and horticulture market possibilities in Jordan.

This market research was carried out by participating in a Dutch scoping mission to Jordan in November 2018, doing desk research using existing data and literature about the Jordanian Horticulture and Water sector, and a field research among a selected number of Dutch private companies from the Horticulture and Water sector. The preliminary results were presented during two meetings with the participants of the scoping mission, the first in December 2018 and the second in March 2019. The final results of the market research is given in the report on the following pages.

We would like to thank all participants from the scoping mission to talk to us so openly about their experiences with Jordan, and the interviewees from the field research to share their ideas about the market potential of Jordan with us. Finally, we would like to thank Topsector T&U, NWP and NLinBusiness for granting us this assignment on Jordan.

*Marco Rensma
Director*

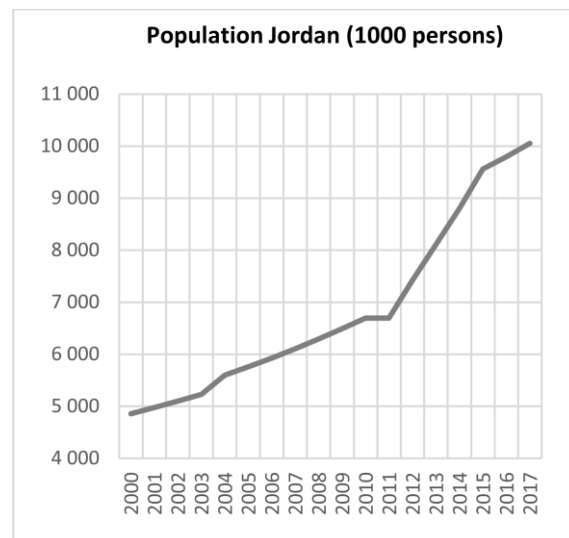
*MEYS Emerging Markets Research
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1. Introduction

The Hashemite Kingdom of Jordan is strategically located in the Middle East. Since the country’s independence in 1946 it has been one of the most political stable countries in the region. Sharing borders with countries more prone to political conflicts, namely Israel, Iraq, Syria, Saudi Arabia and the West Bank (part of the Palestine territories), Jordan has often been praised by the international community for her role as intermediary in many of the regional conflicts. This has resulted, among others, in a large influx of refugees and immigrants over the past decades. Out of a population of around 10.2 million in 2018 3.3 million (32%) are migrants – the majority from the West Bank and Gaza – and since 2011 over 740,000 refugees from Syria are living in Jordan. In addition, the population of Jordan is relatively young. Over one-third is less than 15 years old.



Source: DOS

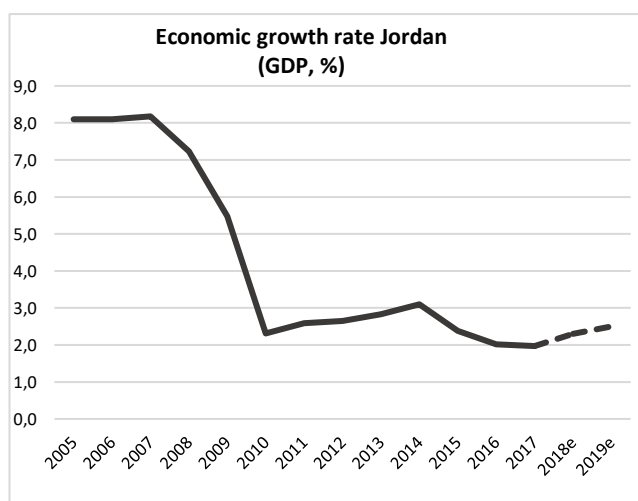
1.1 Economic developments in Jordan

The country’s economy is dominated by the service sector. With a gross domestic product (GDP) of approximately 28.9 billion JD (US\$ 40.1 billion) in 2017, two-thirds is generated by the service sector. Especially the financial (banking, insurances) and real estate sectors are very important to the Jordanian economy. The industry (including manufacturing, construction, energy, mining) has a share of 28 percent leaving agriculture (including fishing & forestry) with only a share of 6 percent in GDP. The relatively low share of agriculture in GDP is – among others - caused by the fact that of the total land area of 8.8 million ha. only three percent is arable. But not only the low level of available arable land causes the limited share of agriculture in GDP, also the fact that the vast majority of farm holdings (80 percent) has a plot of less than 2 ha. making it difficult to have high productivity levels. Food production in Jordan is dominated by five crops, namely watermelons, tomatoes, potatoes, cucumbers and olives. Together they have a share of more than 46 percent in total annual food production. Of the total annual food production of 3.5 million tons, 25 percent is exported primarily to the neighbouring countries in the Gulf-region (Iraq, Saudi Arabia, Kuwait, Qatar, Oman, UAE). Seventy percent of Jordan’s food exports consist of vegetables (specifically tomatoes), cucumbers, peppers, and lettuce. Regarding food sustainability, Jordan is highly dependable on the imports of wheat, barley, rice, and sugar. The country has to import around 97 per cent of its cereal consumption and 100 per cent of its sugar and rice consumption.

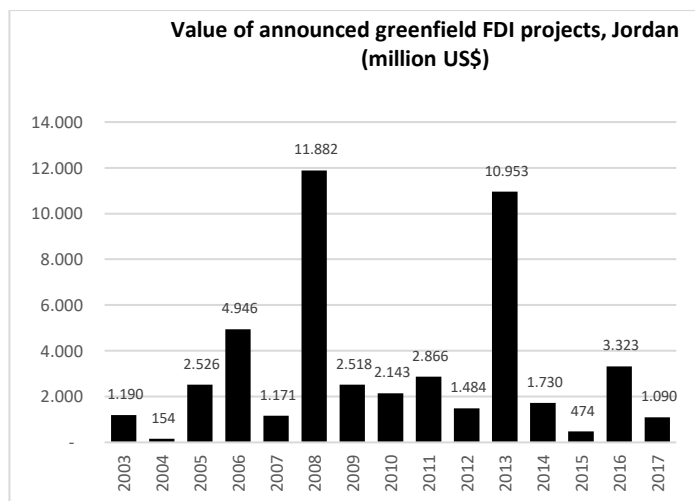
Jordan is one of the world’s water scarcest country, placing the supply and demand of water by agriculture, industry and households always at the centre of economic developments. This situation is further exacerbated by climate change. In the last 20 years the annual rainfall in Jordan was below the long-term average, which was with 114 mm already very low. The strong rise in population and the increased cultivation of water demanded crops

have put tremendous pressure on the available water resources. So much that in the last decade the ground water level has dropped dramatically. In some locations in the North of the country with 20 meters per year. Illegal withdrawal of water and an ineffective pricing mechanism for the use of water are added to the water problems in the country.

The economy of Jordan has been hard hit by the Syrian crisis. Before the start of the crisis in 2011 the economy of Jordan was growing on average with more than six percent per year, while from 2011 onwards the average annual economic growth rate dropped to around two percent. This dramatic slowdown was caused by the closing of the borders with Syria and Iraq, two important trading partners, and the huge influx of refugees from Syria. The changing business environment after 2011 had also an effect on the foreign investments and the type of foreign investment projects. Before the start of the Syrian crisis foreign direct investment inflows into Jordan was between 2 – 3 billion dollars per year. After 2011 this value decreased to around 1.6 billion dollars per year. The largest foreign investors before 2011 came from the Gulf-region, especially from Saudi Arabia and Kuwait. Together the countries from the Gulf-region had a share of 65 percent in total FDI in 2009. From 2011 onwards Jordan received billions of dollars in official development aid from governments in Europe, North America and South East Asia to support the country with the destabilizing effects of the Syrian crisis on the domestic economy. One of the results of these large inflows of aid money is that ODA funded projects are often carried out by companies and organizations from the respective donor countries. Although the Central Bank of Jordan does not keep track of the sources of foreign direct investment inflows, it can be assumed that the number of companies coming from the donor countries has increased considerably compared to the period before 2011. Currently, ODA flows are much larger than foreign direct investment inflows. Nevertheless, in 2017 foreign companies announced to invest for more than one billion dollars in Jordan by setting up new businesses. The majority of these foreign investments are in real estate (hotels, offices) and the energy sector.



Source: IMF



Note: Greenfield investments are a form of foreign direct investments where a parent company starts a new venture in a foreign country by constructing new operational activities from the ground up.
Source: UNCTAD

Due to her strategic location in the Middle East, foreign trade plays a significant role in Jordan’s economy whereby the country’s imports are 2 – 2.5 times larger than exports resulting in a large trade deficit of thirteen billion dollars in 2017. This trade deficit has only increased since the Syrian crisis as the borders between Syria and Iraq were closed. For Jordan these two countries were not only important export markets, but Syria was also an important transit country for Jordan’s exports to Eastern Europe. Important imports are machinery and transport equipment (27.2%), crude oil (16.7%) and foodstuffs (16.6%). Important export products are textiles (24.6%), chemicals (24%), and fruits & vegetables (8.8%).

1.2 Regional comparison Agricultural sector

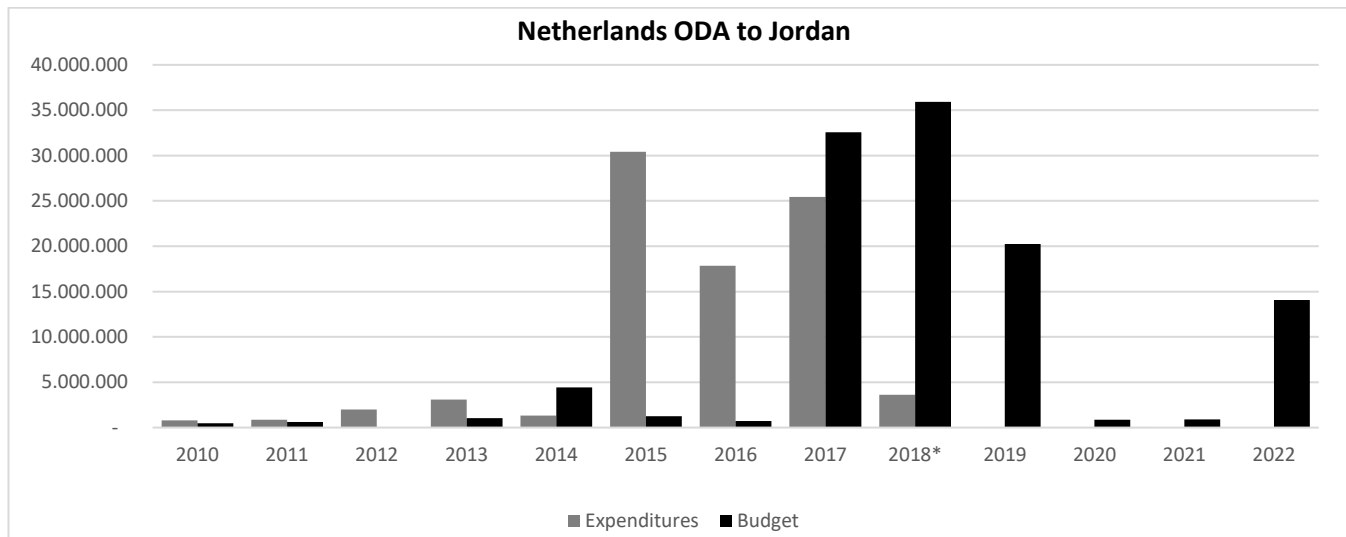
Despite the fact that Jordan has one of the lowest shares of arable land in total land area in the MENA-region, the economic weight of agriculture in country's economy is relatively at the same level as in various other countries in the Middle East. The countries in North Africa have a larger share of agriculture in their GDP. Although more than one-third of the cultivated area in Jordan is destined for cereal production, the country has one of the lowest levels of cereal production per capita in the MENA-region making the country highly dependable on importing cereals. Jordan's agricultural exports are dominated by fruit and vegetables, more specifically by the exports of tomatoes. Together with Morocco and Egypt Jordan belongs to the largest exporters of fruit and vegetables in the MENA-region, but exports from Asian countries like China and India are overtaking market shares in recent years.

Country	Arable land (% in total land area)	% Agriculture in GDP (2016)	Cereal production per capita (kg per person), 2016	% Agriculture in total exports, 2016	% Fruit & Vegetables in total exports, 2016
Jordan	3	4.1	11,0	13.9	7.5
Morocco	21	13.6	101,0	21.3	7.2
Algeria	3	12.7	84,8	1.1	0.1
Egypt	3	11.9	253,1	18.5	9.6
Tunisia	20	9.8	116,1	10.3	2.4
Turkey	31	7.0	443,7	11.2	3.4
Iraq	12	4.1	108,8	0.2	No data
Lebanon	15	2.9	30,7	24.5	4.4
Saudi Arabia	2	2.7	32,5	2.4	0.1
Israel	15	1.3	37,3	2.9	1.5

Source: UNCTAD, FAO, UNCOMTRADE

1.3 Dutch donor relationship with Jordan

The Netherlands has a long standing relationship with Jordan. Since 2011 the focus of the Dutch government in Jordan is aimed at supporting the Jordanian government and NGOs in coping with the situation of the high influx of Syrian refugees. Out of the total Dutch ODA expenditures to Jordan during the period 2008 – 2018 (85,88 million euros) 44 percent went to humanitarian aid projects and 27 percent went to projects related to the support of the Jordanian government and civil society. Only one project is directly related to an economic sector and received funds totalling 1,45 million euros. This is a GIZ-Germany initiated project to strengthen the Jordanian export environment. In addition, Jordanian company Eco Consult received funds totalling 6,97 million euros to develop hydroponic agriculture in the kingdom (total budget 12,77 million euros) and Maple Consult/Greenfieldcities 378,000 euros for a market research on how to promote employment among refugees in Mafraq. For the period 2019 – 2022 a budget of 36 million euros is earmarked for Jordan.



Note: (*) expenditures until November 2018

Source: openaidNL

To further underwrite the importance of the Dutch - Jordanian relationship, the new Dutch government – which took office in 2017 – stated in their development policy for the next four years¹ that Jordan is one of the three focus countries who will receive extra financial support from the Netherlands². Besides humanitarian aid the Dutch governmental support aims at programs improving the water and agricultural sector in Jordan and the linkages these sectors have with transport & logistics, education, R&D, and (renewable) energy. During a donor conference in Brussels in April 2018 the Dutch minister of Foreign Affairs announced that during the next four years an additional 200 million euros is earmarked by the Dutch government for humanitarian aid, educational and employment programs benefitting Syrian refugees as well as local communities in Jordan.

Regarding Dutch support for the Jordanian **Agricultural sector**, the Netherlands via the Dutch embassy in Amman, takes a so-called '3x3x3' approach: 3 times less water use, 3 times less energy use and 3 times higher earning capacity for the agricultural sector. Examples which already started in 2017 are the introduction of hydroponic technology in 14 new greenhouses, supporting Jordanian farmers with their (new) export plans, educating farmers on new technologies, (cold chain) logistics, fertilizer use, finance, R&D, and cooperation. To develop and implement these projects the Dutch embassy is closely working together with JEPA, the Ministry of Agriculture and the agricultural research center NARC.

Regarding the **Water sector** the Netherlands shares its water expertise through a cooperation between the academic water institute IHE Delft, the Jordanian Ministry of Water and Irrigation and several Jordanian academic institutes. This cooperation has three components:

- 1) Desalination of seawater, which is part of the Red Sea Dead Sea project and has a focus on capacity building for the first Jordanian desalination plant;
- 2) Training courses on wastewater re-use for agriculture in Jordan, while ensuring safety for public health and the environment;
- 3) Training courses and knowledge exchange on water diplomacy focusing on negotiation skills and potential conflict.

So far the Dutch donor program by the Ministry of Foreign Affairs and the embassy in Amman is focusing on individual projects within the water and agricultural sector. Although this approach can lead to good results, it will

¹ 'Beleidsnota Investeren in Perspectief', Ministerie van Buitenlandse Zaken, 18 mei 2018

² The other two countries are Lebanon and Iraq

not lead to an improvement in the whole sector let alone lead to substantial and measurable cross-over effects between the Water sector and the Agricultural sector in Jordan.

1.4 Dutch private investments in Jordan

The Netherlands trade and investment relations with Jordan are relatively limited. During the last five years Dutch private investments in Jordan totalled around 80 million euros, while Jordan investments in the Netherlands during the same period has halved to just around fifteen million euros. The share of exports from Jordan to the Netherlands³ in the country's total export is less than one percent and the share of Dutch imports in Jordan's⁴ total imports is around 1.5%⁵, resulting in a trade balance deficit for Jordan with the Netherlands of more than 200 million euros in 2017. The reasons behind these relatively low levels of trade and investments are not clear, but Jordan's relatively small domestic market and the high transport costs are factors contributing to these low figures.⁶ Furthermore, the strong influence of labour unions on the economic affairs in the country creates hesitation among many Dutch companies to invest in the country. When Dutch companies choose for doing business with Jordan the majority, therefore, uses a direct exporting strategy.

Besides the many Dutch NGOs like ICCO, War Child, Spark, Terres des Hommes, Artsen zonder Grenzen who are all focussing on the refugee problem, the following companies and semi-public organizations are active in Jordan, either having a local office//partner in the country or participating (or has done in recent years) in local projects⁷:

- | | | |
|------------------------------|----------------------|---|
| - ORFFA | - DAF Trucks | - Wereld Waternet (gem. Amsterdam, VNG-I) |
| - Unilever | - HollandDoor | - Arcadis |
| - PUM | - NMT Shipping | - Witteveen + Bos |
| - FMO | - APM Terminals | |
| - IHE Delft | - WTS Energy | |
| - WUR | - Shell | |
| - GreenfieldCities | - Rijk Zwaan | |
| - BAM International | - Royal HaskoningDHV | |
| - Koppert Biological Systems | - SaafConsult | |

As can be noticed, this is not an extensive list. Furthermore, the majority of Dutch private companies active in Jordan are large(r) multinationals instead of SMEs. An important reason is the challenging business environment in Jordan which makes it for smaller companies more difficult to do business successfully.

2. Horticulture sector in Jordan

The total cultivated area of crops in Jordan in 2017 was around 189,000 ha compared to 273,000 ha in 2016. This significant drop in cultivated area is caused by the ongoing conflict in Syria, which has resulted in the loss of important export markets leading Jordanian farmers into lower production of crops. Of the total cultivated area 116,000 ha are for the production of fruit and vegetables. Around 8,000 ha of the 116,000 ha are tunnels and greenhouses. Horticulture farms vary in dimension from very small (0,4 ha) to large (> 30 ha), but the majority of the farm holdings (80%) are not bigger than 2 ha. Currently there are around 75,000 farm holdings out of a total of almost 108,000 holdings producing only crops (fruit, vegetables, cereals). The governate of Irbid is housing the largest number of farm holdings (37%). Of the farm holdings producing crops in Jordan, seventy percent is doing

³ Value of Jordan's exports to the Netherlands in 2017 56 million euros

⁴ Value of imports from the Netherlands to Jordan in 2017 264 million euros

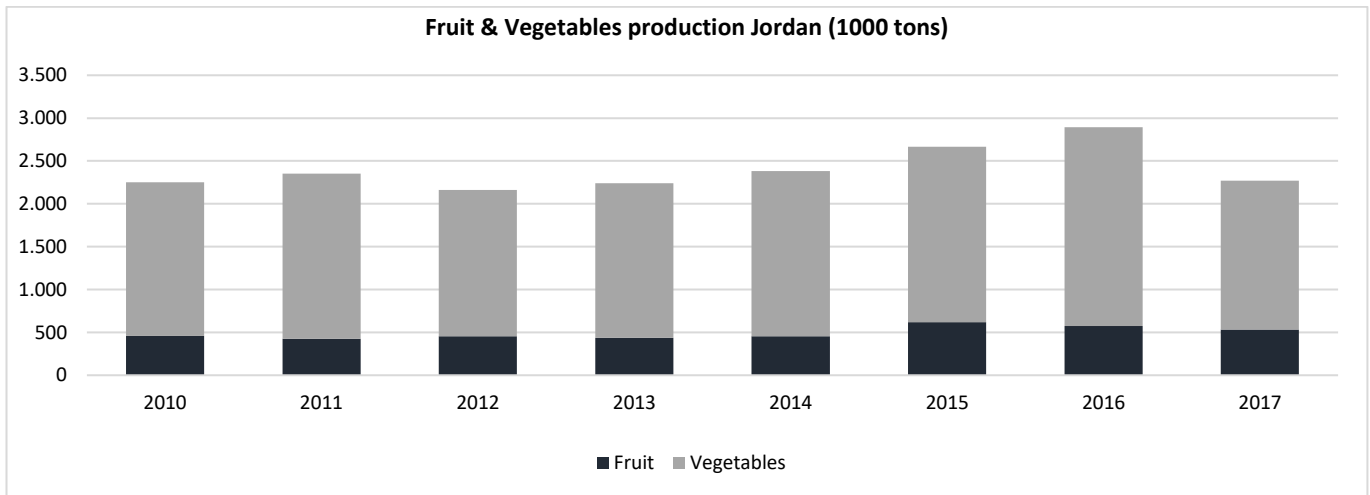
⁵ Although imports and exports are relatively small, the Netherlands is among the largest European trading partners of Jordan.

⁶ In paragraph 5 more information is given about the interests of the Dutch Horticulture & Water sector in Jordan

⁷ This list does not contain Dutch companies who are only exporting directly from the Netherlands to Jordan.

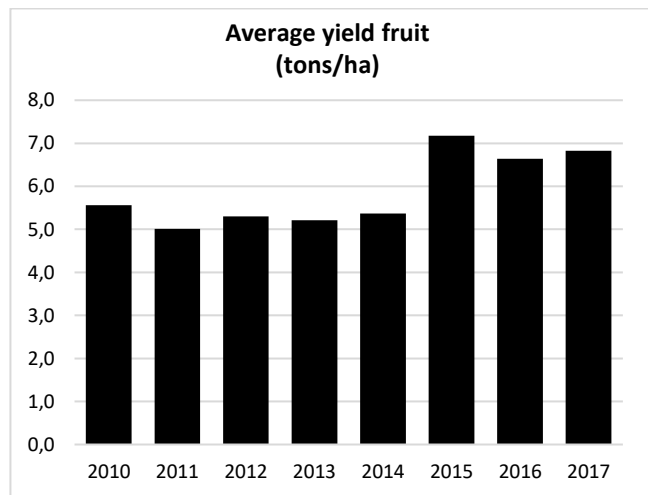
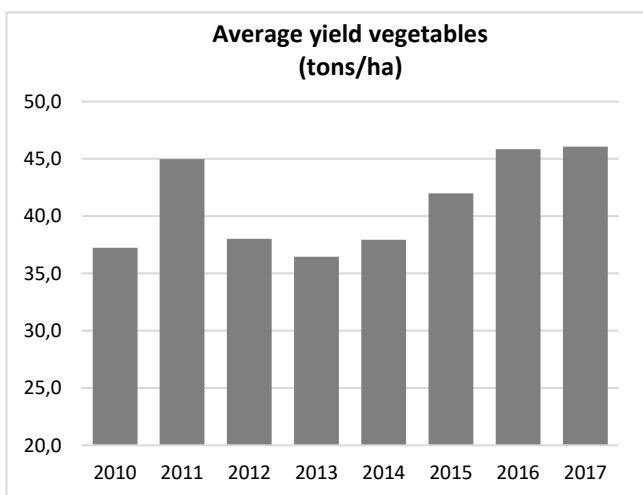
this for their own consumption. No sales on the local or export market. The farm holdings selling their crops are in general larger. Sixty percent of these holdings have more than 2 ha.

Since 2010 the annual production of fruit and vegetables in Jordan has been between 2.2 – 2.9 million tons. Eighty percent of production is from vegetables. Three-quarter of vegetables production comes from four crops, namely tomatoes (40%), cucumbers (14%), potatoes (13%), and watermelons (5%).



Source: DOS

The two main agricultural production areas are the Jordan Valley and the Highlands. The Jordan Valley depends largely on irrigation, while part of the Highlands receives enough water for rain-fed cropping systems. Over the past 20 years, agricultural productivity in Jordan has increased due to increased reliance on new farming and irrigation technologies and the expansion of the production area. However, the forces driving these developments have somehow weakened. During the period 2012 and 2014 crop productivity – measured by average yield – hardly increased compared to the previous years. Only since 2015 productivity levels started to increase again despite the harsh economic climate.

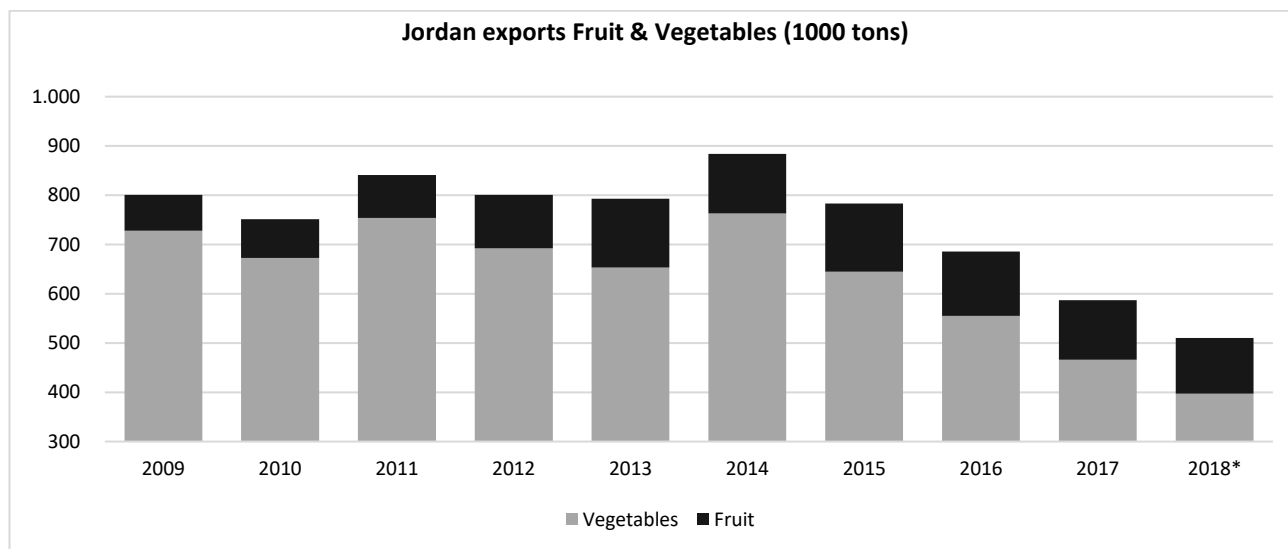


Source: DOS

The country has traditionally been exporting large quantities of fruit and vegetables by road to its neighbouring countries Russia and Eastern Europe. Since 2011, however, border crossings with Syria and Iraq are severely limited and between 2015 and 2018 they were completely closed⁸ having a highly negative impact on the

⁸ The border with Iraq has opened again in August 2017, the border with Syria has opened in October 2018 but not yet for trucks.

country's ability to reach its normal markets. Exports of fresh fruit and vegetables to Western Europe have been there since years, but Jordan does not have a strong competitive strength on these high-end markets due to the closing of the only land route to Europe increasing the costs of transport.



Note: (*) Jan. – Oct.

Source: MoA

Besides having an impact on the export opportunities of the country, the regional turbulence resulted in hesitant behaviour all over the sector and insufficient financial means to invest in technical innovations and new market developments. There is no national vision on agriculture and limited political will to support and revive the sector. Against this background entrepreneurs in the fruit and vegetables sector face problems to maintain and further develop their business activities.

Of the total annual production of fruit and vegetables approximately twenty-five percent is exported. Fruit and vegetables exports consist primarily vegetables of which tomatoes are by far the most important export product. Due to the current political environment and instability in the region, new investments and innovations have hardly been made. The sector is 'standing still' while Jordan's end markets are continuously changing. As a result, Jordan's horticulture cannot comply to the dynamics in market standards and lose their export markets. Compared to 2014 annual fruit and vegetables exports has decreased with one-third primarily caused by a strong loss in tomato exports (minus fifty percent) to neighbouring countries.

Besides losing export markets, farmers in Jordan are confronted with higher prices for inputs, difficulties in finding workers, limited access to finance and the continuing pressure of water scarcity.

3. Water sector in Jordan

Water sector in Jordan is characterized by water scarcity issues exacerbated by the increasing water demand due to high population growth and economic development needs. Challenges related to high population growth have been recently aggravated by an influx of refugees particularly those resulted from the ongoing political unrest in the region with around 650,000 reported Syrian refugees and 750,000 Syrian residents. Furthermore, water scarcity challenges are exacerbated by climate change and the associated augmented drought conditions. In fact, the average per capita annual renewable water share does not exceed 100 m³, which is far below the global threshold of severe water scarcity which is reported at 500 m³/capita/year. Moreover, the competition among domestic, agriculture, and industrial sectors present a serious water sustainability challenge. Only 5% of land

receives enough rainfall to support cultivation⁹. The agricultural sector is the largest user of water resources in the country. While farmers irrigate around 11% of the total agricultural land area – 1.4% of total land area - , agricultural water withdrawal counts for 52% of total national water use. Ground water is the primary source of water for irrigation in Jordan. Use of wastewater in agriculture is a well-established practice in Jordan since decades and has been identified as a priority as will be described later. All collected wastewater is being treated in 31 wastewater treatment plants distributed all over the country. More than 95% of the treated wastewater is used mainly for agricultural production. When considering the direct use of reclaimed water most farmers apply furrow or border irrigation. This is basically due to the fact that irrigation for a large part is still limited to fodder crops (e.g. maize, barley), potatoes, olive trees, or other fruit trees. In the Jordan Valley, farmers mainly follow indirect use via means such as drip irrigation systems with plastic covers (houses or tunnels) in order to avoid excessive evaporation. The indirect use of treated wastewater for irrigation is taking place mostly in the middle and southern Jordan Valley. The types of crops which are indirectly irrigated with treated wastewater include grapes, vegetables (tomatoes, cucumbers, sweet peppers), citrus, bananas, and certain types of stone fruits (peaches, apricots).

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

Due to the growing demand of water from all sectors, the illegal abstraction of ground water, high percentages of evaporation, and less annual rainfall resulting from climate change, the water situation in Jordan has been deteriorating. Especially the high percentage of non-revenue of water (NRW)¹⁰, estimated by the Ministry of Water and Irrigation (MWI) at around fifty percent of the domestic water supply annually, results in increased pressure on the country's limited water resources and reducing the economic efficiency of the whole Jordanian water sector. According to MWI in almost all governates of the kingdom there is a substantial water deficit. In 2017 the water deficit amounted to a total of 223.4 MCM. In 2015 it was 156 MCM. By 2025, water demand will exceed the available water resources by more than 26 percent. This deficit is projected by MWI to be lowered to 6 percent when the Red Sea-Dead Sea Project goes online.¹¹

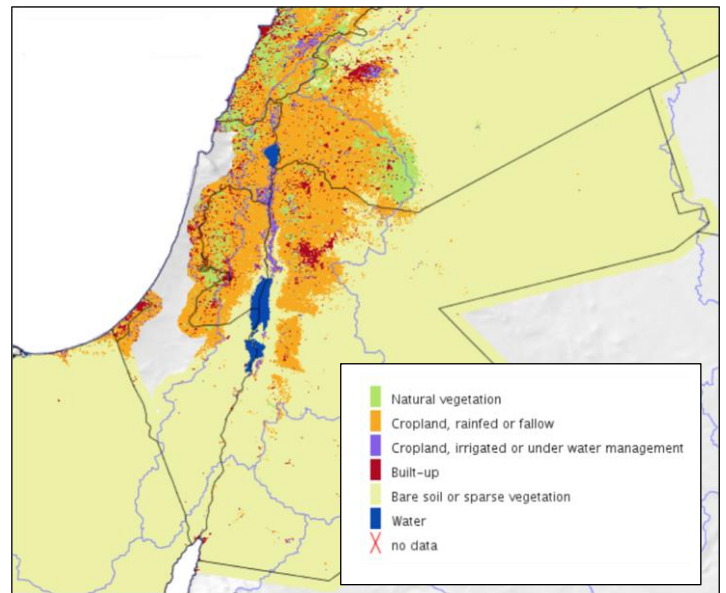
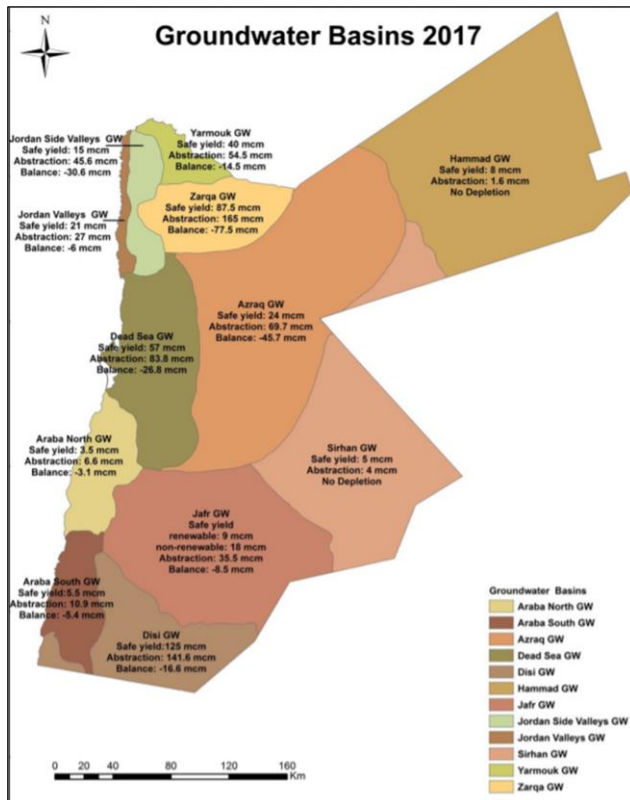
Notwithstanding the severe water shortage, Jordan is one of the few countries in the world to have managed its freshwater resources relatively well. The country has 97% water network coverage; one of the highest coverages in the region. Moreover, Jordan is currently thriving to improve water availability by influencing water demand

⁹ Hiroshan Hettiarachchi and Reza Ardakanian (Eds.), 'Safe Use of Wastewater in Agriculture. From Concept to Implementation', UNU-FLORES, Springer, 2018

¹⁰ Non-revenue of water consist of physical leakages, unauthorized consumption, incorrect billing (administrative losses).

¹¹ Jordan signed a MoU with Israel and the Palestine Authority in December 2013 to implement the first phase of the Red Sea – Dead Sea project. Under the first phase a total of 300 MCM of water would be pumped every year. Eventually, up to 2 billion MCM of seawater will be transferred from the Red Sea to the Dead sea annually. A total of 85 – 100 MCM will be desalinated every year, while the seawater will be pumped out from an intake located in the north of the Gulf of Aqaba. Jordan will receive an additional 50 MCM of water from the Lake of Tiberias Reservoir annually. (Source: Jerusalem Post, 12 February 2018)

behaviour, optimizing water transfer and allocations, reusing reclaimed water in irrigation, and providing additional fresh water source by desalination. The Government of Jordan has recently developed and adopted several policies in face of confronts associated with water shortage. Issued policies include substitution policy, reallocation policy, decentralized wastewater management policy, and climate change policy.¹² These policies are based on the MWI’s ‘National Water Strategy 2016 – 2025’ implemented in 2016.



Source: FAO, WAPOR

The central objective of this strategy is to ‘ensure a sustainable future for the water sector in Jordan’. To reach this objective MWI has appointed 5 key areas: (i) Integrated Water Resources Management (IWRM)¹³; (ii) water, sewage and sanitation services; (iii) water for irrigation, energy and other uses; (iv) institutional reform; and (v) sector information management and monitoring. Furthermore, the strategy also addresses crosscutting issues of climate change adaptation; transboundary/shared water resources; humanitarian WASH (water, sanitation and hygiene) sector coordination; public/private partnerships; and the economic dimensions of water.

¹² Hiroshan Hettiarachchi and Reza Ardakanian (Eds.), ‘Safe Use of Wastewater in Agriculture. From Concept to Implementation’, UNU-FLORES, Springer, 2018

¹³ The overall goal of IWRM is to ensure that national water resource management is based on the principles of sustainable use, economic efficiency and social equity.

Given the context of the water issues at hand in Jordan, the following indicators will be used by MWI to measure the results of the National Water Strategy 2016 - 2025:

Theme	Indicator	2014	2025
Financial sustainability	Percentage of operation & maintenance coverage	70%	127%
	Government support (million JD)	170	180
	Net debt (million JD)	1170	1200
	Energy use per m3 billed (kWh/m3/billed)	4.31	3.66
Enhance the services of water and wastewater	Percentage of water service coverage	94	95
	Percentage of wastewater service coverage	63	80
Supply of water to meet demand for all uses	Water share per capita (l/c/d)	61	105
	Available water resources (m3/year)	832	1341 ^a
	Water share for all uses (m3/year)	90	114
	Dams storage capacity (MCM)	325	400
Water resources sustainability and protection	NRW (%)	52	30
	Percentage of over abstraction	160	140
	Percentage of protected resources	35	60

Note: (a) the relatively large increase in expected water supply is primarily caused by the Red Sea – Dead Sea project
Source: MWI

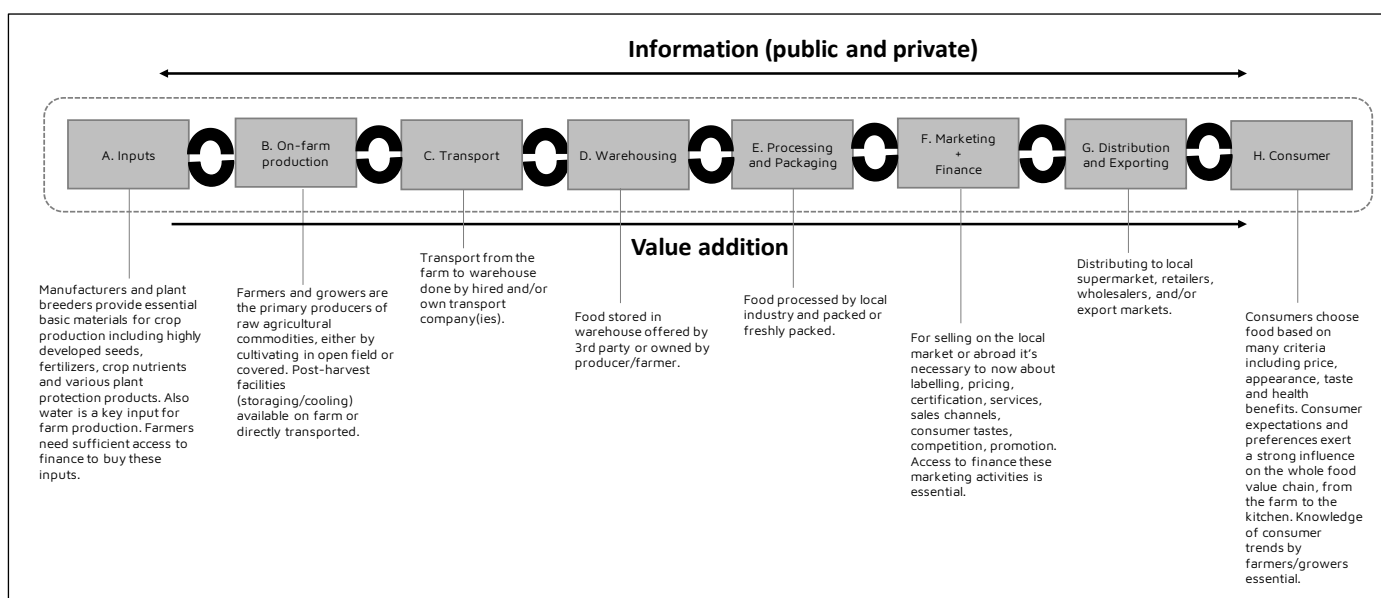
As can be noticed from the table above the primary focus can be described briefly as increasing water supply and improving the efficiency of water demand or ‘more with less’. Especially in the agricultural sector, the largest user of water in Jordan, it is necessary to use less water for irrigation and at the same time improve agricultural productivity (yield) to feed the growing population. The measures MWI wants to undertake will not be taken for granted by the Jordanian agricultural sector. The improvements in the water resources sustainability and protection of the water resources – i.e. reducing illegal water tapping and paying the right (market) price for the use of water - can lead to large protests by farmers and the agribusiness similar to the demonstrations about the tax reforms in June 2018. Nevertheless, without strong governmental interference in the water sector Jordan will face within 10 – 15 years an unsustainable situation between supply and demand of water.

4. Value Chain Approach

For the Dutch government, the embassy in Amman, Dutch private companies and semi-public organizations, the challenges for doing business in Jordan’s Water and Horticulture sector are imminent. Besides specific domestic challenges in Jordan, the Dutch community must also take into account the large number of foreign companies and organizations from other EU countries (Germany, Italy, Spain, France), Saudi Arabia, US, and Japan active in these two sectors in the Kingdom. Between 2006 and 2017 Jordan received more than US\$ 21 billion in aid of which the US, Saudi Arabia and Japan were the main donors. Ten percent of this aid went into water and waste management projects and less than one percent into agriculture. Many foreign companies receive financial support from their respective governments for developing aid related activities in Jordan. Although the Dutch government contributed grants to projects in Jordan as well, they were much smaller compared to the funds provided by the larger donor countries. Nevertheless there are business opportunities for Dutch companies and organizations present in both sectors, and these opportunities will have a higher change of success if the Dutch community takes into account a value chain approach. This food value chain consist of various activities which together makes up the whole food value chain in which value will be added along the chain from the farmer to

the consumer. As all individual activities within the chain are interconnected, the food value chain is as strong as the weakest link within the chain. That means, for example, only focussing on projects which support the individual farmer in buying new seeds for higher yields will not automatically lead to a higher income for this farmer if there are problems in transport, warehousing, marketing and exporting. Even if there is support for each individual activity within the value chain but there is lack of information shared between the various actors, the added value for the whole chain is limited. For example, no or limited knowledge of farmers about what consumers (domestic/abroad) really want will lead to the production of the wrong crop, labelling or pricing.

Food Value Chain Jordan



Source: MEYS

The main obstacles to growth of the Horticulture sector and water efficiency in Jordan can be grouped around the eight activities performed in the food value chain¹⁴:

A] Inputs:

- A1] Water scarcity for agriculture is increasing due to higher demand but lower supply (both surface and ground water)
- A2] Climate change is having a negative impact on the yearly amount of rainfall in Jordan
- A3] Quality of ground water is low (salination)
- A4] Re-use of wastewater in horticulture is limited
- A5] 96% of energy demand must be imported, leads to high energy prices (low production and consumption levels of renewable energy; in 2017 4.5% solar, 2.2% wind, 0.08% water energy in total energy generated)
- A6] Current pricing system (including taxation) of water does not lead to water efficient use by farmers
- A7] High percentage of illegal water withdrawal (not paid for by user)
- A8] Lack of adequate sanitary waste disposal and treatment, both for domestic waste as well as industrial waste causing pollution of ground water and surface water

B] On-farm production:

- B1] The majority of plots are small making it difficult to reach economies of scale

¹⁴ These obstacles were mentioned by participants of the Dutch scoping mission 2018 to Jordan and from previous reports on the Jordanian Horticulture and Water sector.

B2] Dominance of tomato production in horticulture makes the whole sector vulnerable to changes in the domestic and export markets of tomatoes

B3] Glass greenhouses for horticulture production are not suitable in Jordan, due to the high price of gas necessary for heating in the winter and cooling in the summer

B4] Use of plastic covered greenhouses in horticulture still limited

B5] Production of many water intense crops (e.g. watermelons, tomatoes, cucumbers, bananas)

C/D] Transport & Logistics (Warehousing):

C/D1] Cold storage of harvested products at the farm and during transport is under developed. For the local markets hardly any cold storages or cold rooms are used resulting in high food losses

C/D2] Number of refrigerated trucks in Jordan is limited, making the transport of perishables for the domestic and export markets difficult

E] Processing & Packaging:

E1] Improve packaging (including materials used) to reduce the amount of food losses and waste

E2] Share of processed food in total production and exports is limited

F] Marketing & Finance:

F1] Many farmers are not organized in a cooperative to overcome the problem of reaching economies of scale

F2] The role of JEPA (*Jordanian Association of Exporters of Fruit and Vegetables*) to support farmers is not functioning well due to lack of staff capacity

F3] Representativeness of JEPA for the whole horticulture sector is questionable due to the relatively low number of members (around 200 out of 75,000 farm holdings producing crops in Jordan)

F4] Majority of farmers in Jordan are risk-averse, making a change in the type of crop production difficult

F5] Jordanian youth less and less interested in taking over the farm of their parents (generation conflict) due to long working hours, unstable income, high physical effort, lack of social security and health insurance

F6] Large brain-drain of highly skilled Jordanian agricultural engineers who are emigrating to (primarily) the Gulf countries

F7] Majority of farmers don't have enough capital to buy necessary (modern) farm equipment to increase productivity

F8] Farmers depend on financing from either the Agricultural Credit Corporation (Ministry of Agriculture) or private brokers

G] Distribution and Exporting:

G1] Closed border with Syria for trucks leading to lower exports; border with Iraq recently opened, but lost market share has to be regained again

G2] Turkey, Egypt, and Morocco have taken over various European export markets, especially for tomatoes and several other fruit & vegetables

G3] Jordanian farmers find it difficult to see(k) and enter new export markets (direct or indirect, no clear entry strategies at farm level)

G4] Limited control by Jordanian customs on the quality of products exported (classification, quality standards, minimum quality, packing, labelling, etc.)

H] Information:

H1] A wide variety of relevant data about water and horticulture situation in Jordan is available, but not for the individual farmer as the right technical tools are missing (e.g. an App for a smartphone user)

H2] Outdated soil maps of Jordan (last version was developed between 1989 – 1995)

H3] Low trust between farmers and the Ministry of Agriculture, leading to a low rate of necessary policy implementations and developing a mid- to long-term strategy for the sector which is supported by the farmers
 H4] Cooperation between Ministry of Agriculture and the Ministry of Water & Irrigation is limited, although there is a good (personal) relationship between NARC-MoA and the Ministry of Water

5. Interests of Dutch private sector in Horticulture and Water Jordan

As mentioned before, Dutch business activities in Jordan are at the moment rather limited. To find out more about the reasons behind the low levels of Dutch trade and investments in Jordan, a field research was carried out among a non-randomly selected group of Dutch companies in Horticulture and Water. These companies were either active or not active (yet) in Jordan. The type of research methodology chosen was that of an in-depth interview, which provided the researcher the possibility to ask detailed questions about business opportunities and challenges in Jordan. The interviews were recorded. The remarks to be used for this market research were given back to the interviewees for final approval.¹⁵

The **general conclusion** of these interviews are that Dutch companies in Horticulture and Water see **limited to no business opportunities** in Jordan during the next 5 – 10 years. The reasons behind this conclusion can be seen in the table below:

Topic	Horticulture	Water
Market potential?	<ul style="list-style-type: none"> All interviewees see at the moment not enough market potential in Jordan due to lack of local clients Cultivation techniques used are mainly soil-bound, open cultivation which is not interesting for Dutch companies Covered cultivation mainly involves plastic tunnels, little high-tech, which makes it uninteresting for Dutch companies Market potential in the long run (> 10 years) possible 	<ul style="list-style-type: none"> The current water technology used in Jordan is "low-tech", whereas many Dutch products / services are "medium-high tech" (product adjustment difficult) Local private customers hardly or not present at all Lack of greenhouse cultivation with closed systems makes Jordan little of interest to Dutch companies Market is primarily a government-driven (donor) project-based market Market opportunities for individual companies, not for collective (sector wide)
Physical presence in Jordan?	<ul style="list-style-type: none"> There is hardly any interest in opening a physical office in Jordan due to a lack of market potential Jordan's regional function is experienced as limited or not at all, only noting that it is more stable compared to neighbouring countries 	<ul style="list-style-type: none"> There is hardly any interest in opening a physical office in Jordan due to a lack of market potential Jordan's regional function for the Middle East is not recognized, more interest for UAE
Obstacles?	<ul style="list-style-type: none"> Awareness among Jordanian growers to start growing differently (covered / closed) is hardly present, they are not very proactive in responding to market changes Switching to greater use of hydroponics is a long-term process due to a lack of knowledge and money among the majority of growers Low level of organization among growers and the small-scale of farm plots makes (behavioural) change in cultivation techniques something for the longer term (> 10 years) Lack of a clear national public strategy / policy framework for necessary changes in cultivation techniques Many growers are too small and have little capital Jordan is expensive; high costs for labour, capital, logistics in relation to the state of the economy -> 	<ul style="list-style-type: none"> The use of low-tech and the general lack of knowledge and experience to go to the next development phase Jordan is expensive; high costs for labour, capital, logistics in relation to the state of the economy Lack of wealthy local investors

¹⁵ All remarks (in Dutch) given by the interviewees are presented in the Appendix.

	limited international competitiveness, certainly in the EU	
Finance?	<ul style="list-style-type: none"> The presence of large amounts of donor funds is not a reason for the majority of Dutch companies to go to Jordan (ultimately it concerns customers) Jordanian growers are not used to work in a financial system with co-financing in which they have to pay the other half 	<ul style="list-style-type: none"> The presence of large amounts of donor funds is not a reason for the majority of Dutch companies to go to Jordan (ultimately it concerns customers) Grants can be interesting for pilot projects, but scaling-up will remain difficult
Trade missions / Trade fairs?	<ul style="list-style-type: none"> For the majority of Dutch companies not so interesting or necessary to participate in trade missions/trade fairs Only when there is a local question (tender) from Jordan, companies will respond (re-active) No structural attention by Dutch companies for Jordan 	<ul style="list-style-type: none"> For the majority of Dutch companies not so interesting or necessary to participate in trade missions/trade fairs Only when there is a local question (tender) from Jordan, companies will respond (re-active) No structural attention by Dutch companies for Jordan
RVO-pilot project?¹⁶	<ul style="list-style-type: none"> Most participants will not become customers for Dutch companies (too small-scale, low in capital) Question marks towards spin-off effects of the project (possibility of scaling up) (still) unclear role of parties involved (expectations are different) Training growers a good initiative 	<ul style="list-style-type: none"> Most participants will not become customers for Dutch companies (too small-scale, low in capital)
Business opportunities/possibilities?	<ul style="list-style-type: none"> Jordan can become a regional knowledge center in the field of horticulture Give practical training to local growers about new cultivation techniques (soil-bound -> substrate) Placing an example of a (locally adjusted) greenhouse ("seeing is believing") Set up a "horticenter" Develop specific product-market combinations instead of building on current (generic) production of tomatoes, cucumbers, potatoes Value chain approach with linking Dutch - Jordanian companies 	<ul style="list-style-type: none"> Continue to roll out Hydroponics (HAED project), provided that it's taken into account the limited financial capacity of Jordanian growers The Abu Sido project is seen as unique and difficult to copy, possibly used as a training example Provide training to local companies to learn how to deal with new techniques and products Solving water problems for refugee camps interesting case for various Dutch water companies

At the moment the Horticulture and Water sector in Jordan are, according to the interviewees, in such a low-tech development phase that it makes very difficult to sell high-tech Dutch products and services to Jordanian clients (private and public). There is always room for individual buyers and sellers (see e.g. Abu-Sido project), but in general the Jordanian market potential is seen by Dutch companies as very limited to non-existent.

6. Potential match Dutch business solutions to Jordan's challenges in Horticulture and Water

Taking into account the aforementioned obstacles to growth of the Water and Horticulture sector in Jordan, the rather low interest from the Dutch private sector and taking into account the 'food value chain'-approach, the possible solutions that Dutch companies and organizations could offer to Jordanian clients are as follows:

¹⁶ Pilot project 'Inclusive Horticulture Value Chain Jordan': to train and coach growers in Jordan to increase the level of knowledge about efficient and high-quality production with efficient water use. To be able to compete with other exporting countries and to meet higher standards in, for example, the EU and the domestic market.

Chain activity	Water sector	Horticulture sector
Inputs	<ul style="list-style-type: none"> Set up waste collection and disposal to prevent ground and surface water pollution Exchange knowledge/knowhow between Vereniging Afvalbedrijven, NVRD and MWI on waste collection (private and public) Increase re-use of wastewater for agriculture Re-using waste from wastewater as fertilizer in agriculture 	<ul style="list-style-type: none"> Support individual farmers to change crop varieties into less water demanding crops Reduce harmful pesticides Increase efficient use of fertilizers
On-farm production		<ul style="list-style-type: none"> Providing/implementing (new) technologies to increase productivity with less water (e.g. hydroponics, salt farming) Reduce post-harvest losses by improving handling/storing/packing Introduce new seeds to improve productivity Increase the cultivated area of plastic greenhouses and tunnels
Transport & Logistics	<ul style="list-style-type: none"> Support of decreasing the size of NRW (i.e. illegal tapping, leakages) 	<ul style="list-style-type: none"> Strengthening of the cold chain (refrigerated warehousing & trucks)
Packaging & Processing		<ul style="list-style-type: none"> Support the improvement of (on-farm) packaging Support expansion of fruit and vegetables processing industry
Marketing	<ul style="list-style-type: none"> Training of MWI staff in strengthening the capacity of enforcing regulations in water use 	<ul style="list-style-type: none"> Training of civil servants of Ministry of Agriculture (developing strategies, cooperation, etc.) Capacity building among individual Jordanian farmers Support JEPa and JOPEA in strengthening their position as key players on domestic and export related topics (data, knowhow, network) Together with stakeholders in the Jordanian agricultural sector develop a clear long-term strategy
Finance	<ul style="list-style-type: none"> Supporting MWI staff in improving pricing system for water use 	<ul style="list-style-type: none"> Together with ACC develop financial instruments which are tailored to small individual farmers and agribusiness Stimulate and support the use of (more) solar energy by farmers to reduce the electricity bill
Distribution & Exporting		<ul style="list-style-type: none"> Training (international) marketing, sales, logistics skills of farmers/traders (e.g. evofenedex training program) Providing logistical support to farmers to reduce post-harvest losses Support Jordanian customs to improve quality control of exports Set up partnership between JEPa and LTO NL Support the growth of higher value added export crops and find seasonal market window
Information	<ul style="list-style-type: none"> Build a water accounting system with supply/demand data on (re-)use of ground water, surface water and treated wastewater by agricultural sector for irrigation 	<ul style="list-style-type: none"> Together with MoA and NARC develop a new soil map of Jordan Develop a smartphone app with relevant data for individual farmers Provide up-to-date export market information (e.g. via CBI, consultants)

7. Conclusions

The Jordanian Water and Horticulture sector are facing enormous challenges now and in the near future. Before the start of the Syrian crisis in 2011, Jordan's economy was growing on average with more than six percent per year. Since 2012 the growth rate has dropped to around 2.5 percent per year and will -according to the latest prognosis by the IMF - stay at this level during the next two years. Together with the high influx of refugees from

Syria and immigrants from Palestine GDP per capita has also hardly improved. For the Horticulture sector exports were always an important source of income. With the closing of the borders with Syria (2015 – 2018) and Iraq (2015 – 2017) Jordanian exporters lost important export markets for their fruit and vegetables which were not compensated by other foreign markets or at home. This situation is further exacerbated by rising prices for agricultural inputs, increased competition from importers of other countries, mounting pressures of water scarcity, low productivity levels due to small farm holdings, tax reforms by the central government, and a weak logistic chain resulting in high losses of food. Farmers in Jordan are hesitant to work together to reap the benefits of economies of scale or find collectively new markets for their fruit and vegetables. At the same time labour unions in Jordan are highly active and can generate strong pressure on the government to change policies for the farmers although labour unions are among each other less cooperative to find solutions for all actors directly and indirectly operating in the Horticulture sector.

Due to the fact that Jordan is one of the world's water scarcest country, the problems of supply and demand of water resources are always at the centre of the country's economic policies. During the last decades many activities are undertaken by the Jordanian government and foreign investors (public and private) to increase the available amount of water and at the same time increase the efficiency of the use of water ('more with less'). Investments have been done in wastewater treatment, re-use of wastewater in agriculture, desalination of water, increasing the number of wells for extracting ground water, and measures to lower the illegal abstraction of water. The largest consumer of water resources is the agricultural sector. Although activities have been undertaken by both the water and agricultural sector to be more water efficient, more has to be done to prevent the country of running out of water in the next two decades. Not only in physical investments (e.g. hydroponic farming) but also in the attitude towards the pricing of water withdrawal by farmers.

Dutch relationships with Jordan exist already for many decades. The primary focus of these relationships was government-to-government financial assistance in coping with the situation of the high influx of refugees and migrants from neighbouring countries. The interests from the Dutch private sector for Jordan is very limited. The main reason is lack of market potential, caused by the fact that the cultivation techniques primarily used at the moment in Jordan are not suitable for the majority of Dutch products and services. Besides assistance to refugees, Dutch governmental support is also given to strengthen the civil society in Jordan, provide vocational training facilities to improve employment opportunities for local people and refugees, and knowhow and expertise on water management. Due to the Syrian crisis and the subsequent problems for the Horticulture sector in Jordan, more attention and support is given in Dutch ODA to this sector. This support has so far be aimed at finding new export markets for farmers in horticulture, increasing agricultural productivity with different techniques using less water, and vocational training on new agricultural inputs (seeds, fertilizers, machinery equipment). Although all important individual activities they are only part of a wider food value chain, which should be the main focus of the Dutch approach in Jordan. The 'food value chain'-approach takes into account all activities from farm to fork. These activities are closely interconnected and must therefore be all looked at when strengthening the Horticulture sector. Water is in this approach one of the key inputs for farmers and must therefore be an integral part of the Dutch assistance to the Horticulture sector in Jordan.

8. Recommendations

The Dutch support to the Horticulture and Water sector in Jordan must have an integral focus on the whole food value chain. Without such an integral approach the Horticulture sector as a whole in Jordan will not improve and could even lose in the long run to foreign competitors entering the Jordanian market of fruit and vegetables.

Therefore, actions to be made by the Dutch government, Topsector T&U and NWP in support of the Horticulture and Water sector in Jordan should be as follows:

- Appoint a 'chain manager' who is made responsible for coordinating all activities in the food value chain

- Cooperate on investments in treatment of wastewater with other ODA-partners; locate the Dutch added value within this cooperation
- Broaden and strengthen the cooperation among direct and indirect stakeholders in Jordanian Horticulture and Water sector
- Develop a support office in Jordan for Dutch companies and organizations (connected/located at the Dutch embassy in Amman)
- Organise, with other foreign and local partners, a (regional) horticulture and water trade fair in Jordan
- Strengthen the cold chain in Jordan's Horticulture sector by investigating the potential for more cold storage facilities and refrigerated trucks
- Provide vocational training on (export) marketing and sales to Jordanian growers
- Investigate the potential to increase exports of fruit and vegetables to GCC and Asia and to a lesser extent to the EU
- Adapt Dutch productivity technologies for Jordanian farmers to the local situation (i.e. having low purchasing power, are in general low(er) skilled, have low investment capacity, confronted with water scarcity)
- Support Jordanian customs on quality control
- Set-up a 'horticenter' in which Dutch horticulture products and services can be shown to local clients
- Organise annual Dutch trade missions to the Horticulture and Water sector in Jordan
- Held more regular annual meetings/events/conferences on Jordan in the Netherlands to increase awareness among the Dutch private sector about business opportunities in this country
- Rolling out the HAED-project in a more to the local market adjusted style
- Provide a Shiraka-training to government employees, business associations and private companies active in the Jordanian Horticulture sector to improve cooperation among these organizations

APPENDIX

1) Private company in horticulture

- Wereldwijd actief in hoger segment van geautomatiseerde glazen en plastic kassen
- Opening vestiging in buitenlandse regio afhankelijk van omvang regionale markt (VS, Canada, China, Mexico)
- Werkt met eigen regionale vestigingen, maar niet in Midden-Oosten waar met een lokale partner (in Abu Dhabi) wordt gewerkt
- Jordanië//Midden-Oosten nog een te kleine markt voor ons om een eigen regionale vestiging op te zetten
- Gaan vooralsnog niet de Jordaanse markt proactief bewerken met haar producten/diensten; daar waar een gelegenheid c.q. lokale vraag ontstaat wordt er naar gekeken
- Maakt o.a. gebruik van handelsmissies en beurzen om in contact te komen met klanten
- Subsidies helpen om een beslissing te nemen om een bepaalde markt c.q. project te doen; kan in een (Europees) consortium of alleen
- Vooral de Jordaanse tuinbouw versterken via een ketenaanpak, waarbij o.a. Jordaanse partijen aan Nederlandse partners worden gekoppeld
- Uitdaging ligt er om de verschillende lokale partijen in de water & tuinbouwsector met elkaar te laten samenwerken zoals dat ook in Nederland het geval is (van elkaar leren i.p.v. elkaar alleen zien als concurrent)
- Culturele veranderingen in Jordanië noodzakelijk om daadwerkelijk de tuinbouwsector vooruit te brengen, maar zal echter niet snel plaatsvinden
- Telen op substraat moet in Jordanië veel meer gestimuleerd c.q. gestuurd worden door de overheid, wat ook het geval was in Nederland met de overgang van grondgebonden naar substraatteelt
- Beleidskader in Jordanië ontbreekt voor deze (gedwongen) overgang naar substraatteelt
- Jordaanse export van groente en fruit naar West-Europa is moeilijk vanwege reeds bestaand lokaal aanbod van hoge kwaliteit; mogelijkheid voor specifieke seizoensgebonden Jordaanse tuinbouwproducten gebruikmakend van het milde klimaat jaar rond, maar Spanje heeft dat in feite ook (lagere transportkosten, scherpere prijs)
- Veel Jordaanse tuinders te klein om te kunnen investeren in betere technieken voor productiviteitsverhoging (overstappen op andere teelthetode); tevens hebben zij een vrije korte investeringshorizon terwijl de duurdere technieken juist vragen om een lange(re) termijn strategie
- Jordanië moet eerst nog een paar ontwikkelstadia in de tuinbouwsector doorlopen alvorens er een interessante markt ontstaat voor onze producten (uit grond -> substraatteelt -> plastic tunnel -> hoogwaardige kas)
- Hebben ook in-house trainingsfaciliteiten (incl. online) dan wel dat er training op locatie kan worden gegeven

2) Private company in horticulture

- Jordaan Vallei heeft veel potentie voor tuinbouw, maar waterproblematiek beperkt verdere ontwikkelingsmogelijkheden → beperkt om door te gaan op de huidige manier, men zal over moeten gaan op opvangen van drainwater en hergebruik van drainwater
- Telen op substraat i.p.v. grondgebonden wordt nog weinig gedaan in Jordanië terwijl het voordelen geeft (lees noodzaak) t.a.v. watergebruik en voedingsstoffen ('gecontroleerde omgeving')
- Bedrijf was, voorafgaande aan betrokkenheid bij project Abu Sido, als leverancier van tuinbouwbenodigdheden aan diverse klanten actief in Jordanië
- Hebben Project Abu Sido via een tender gewonnen, is uitgevoerd met enkele andere Nederlandse bedrijven
- Project Abu Sido farms is simpel te kopiëren naar aantal andere tuinders met geld in Jordanië middels de subsidie van 50%
- Ruime meerderheid van de Jordaanse tuinders niet in staat om een dergelijk project van de grond te trekken (onvoldoende financiële middelen, gebrek aan kennis over hydroponics)

- Jordaanse tuinders ook afwachtend; willen eerst zien of het project bij Abu Sido farms aanslaat of niet ('eerst zien, dan geloven')
- Nieuwe buitenlandse afzetmarkten voor Jordaanse tuinders niet zomaar gevonden; investeren in productieverhoging dan ook niet interessant als er niet voldoende (nieuwe) afzetmarkten worden gevonden, leidt tot afwachtende houding t.a.v. lokaal investeren
- Opvang en hergebruik van water in de tuinbouw in Jordanië wordt nog nauwelijks gedaan, maar is wel een noodzakelijke volgende stap (creëren 'gesloten systeem')
- Jordaanse kennis tuinbouw op goed internationale niveau
- Veel afgestudeerden actief in het Midden-Oosten, willen op termijn weer terug naar Jordanië
- Jordanië zou een regionaal kenniscentrum kunnen zijn op het gebied van tuinbouw
- In 2018 hadden wij samen met vier andere Nederlandse bedrijven en een lokale partner het plan van een horticulture center (investering 1 miljoen euro) gepresenteerd aan de NL-ambassade en RVO; nog geen concreet vervolg op gekregen

3) Private company in horticulture

- Belangrijkste klanten voor ons zijn boeren die hun teelt (verder) willen optimaliseren
- Wij leveren kennis en expertise via 230 medewerkers aan ca. 6.000 boeren wereldwijd
- R&D is een belangrijk onderdeel van het bedrijf in het verbeteren van teelttechnieken
- Bedrijfsactiviteiten gericht op open en gedekte teelt
- Enkele markten geïdentificeerd voor verdere groei: Rusland, ZO Azië/Japan, Afrika
- In Midden-Oosten (Saoedi-Arabië, UAE) activiteiten in het verleden uitgevoerd, maar is voorlopig geen speerpunt regio (ging destijds om adviesdiensten aan de lokale overheid in het opzetten van een waardeketen in groente & fruit) -> waren vooral logistieke vragen (koudeopslag)
- Zien in Jordanië mogelijk een markt voor het geven van trainingen op het gebied van nieuwe teelttechnieken en de waardeketen (cfm. eerdere ervaringen in het Midden-Oosten)
- Opdrachtgevers kunnen zijn de lokale private en publieke sector, maar vooral ook internationale NGO's en kennisinstellingen als Nuffic (gesponsorde opdrachten)
- Ervaringen opgedaan met trainingen in Afrika kunnen ook gebruikt worden in Jordanië; deze trainingen vooral gericht op productieverhoging en niet op export zoals het CBI (wordt wel mee samengewerkt)
- Vragen die wij voorgelegd krijgen liggen meestal op het gebied van teelt, daarnaast ook sector studies (zoals in Saoedi-Arabië) of inrichting studies
- In Kenia hebben wij mede-geïnvesteed in een trainingscentrum en een voorbeeldkas neergezet, wat mogelijk ook een interessant concept kan zijn voor Jordanië
- In Ghana wordt een trainingscentrum gebouwd door ons en een voorbeeldkas neergezet die aanpasbaar is voor de lokale situatie; mogelijk ook een interessante opzet voor Jordanië
- Heldere selectiecriteria opstellen voor boeren die mee (willen) gaan doen aan een training via een trainingscentrum, waarbij kwaliteit boven kwantiteit moet staan, biedt ook meer succes op langere termijn (opschaling)
- Vraag voor Jordanië is of het mogelijk is om een trainingscentrum met voorbeeldkas neer te zetten die voldoet aan de lokale behoeftes en beperkingen (water, kennis, financiën, kleinschaligheid, beperkte samenwerking, e.d.) met uitzicht op opschaling
- Lokale markt in Jordanië moet dan wel in staat zijn om de producten te leveren die de opschaling door Jordaanse boeren mogelijk maakt
- Voor ons is het van belang of er overheidssubsidies beschikbaar zijn voor Jordanië om in deze markt te stappen; Jordanië is namelijk voor het bedrijf momenteel geen focusland
- Of een markt interessant is voor ons hangt af van het aantal boeren dat <> 5.000 euro kan investeren (> 5.000 euro zijn interessante klanten voor het bedrijf; < 5.000 euro zijn in principe te klein)
- Werken veel samen met Salt Line Farming in de MENA-regio

- Handelsmissies en vakbeurzen zijn minder interessant voor ons om een nieuwe markt te betreden, eerder op basis van een concrete lokale klantvraag

4) Private company in horticulture

- Richten zich op negen verschillende veldgewassen (open veld), wat ook richting geeft aan hun aanwezigheid op markten wereldwijd
- Al 8 jaar lang een eigen kantoor in Jordanië
- Kantoor in Jordanië richt zich niet op de lokale markt, maar op de markten in omliggende landen
- Het kantoor in Jordanië is ook een regionaal veredelingsstation, waarbij klanten uit andere landen in de regio (inclusief Afrika) op bezoek komen om zaden mee terug te nemen
- Ook gekozen voor Jordanië vanwege de politieke stabiliteit in vergelijking met veel andere landen in de regio
- In Jordanië wordt hooguit 5% van de verkopen in het Midden-Oosten gegenereerd
- Syrië en Irak veel interessantere markten voor het bedrijf dan Jordanië, zijn er ook gebleven ondanks de oorlog en gesloten grenzen (betaald zich nu uit)
- Distributeurs in Syrië blijven leveren, wordt zeer gewaardeerd
- De Golf-regio is voor ons minder van belang, is meer gedekte teelt i.p.v. open veld
- Syrië was en wordt naar verwachting weer de grootste afzetmarkt voor ons, veel meer open veld dan in Jordanië
- Negatief over de Jordaanse markt; duur land (hoge lonen, hoge rentes), hoge transport en logistieke kosten
- Jordaan Vallei voor winterproductie naar Europa concurreert rechtstreeks met Egypte, Marokko, zuidelijk Turkije en Zuid-Spanje; door relatief hoge kosten (arbeid, transport, kapitaal) zal Jordanië het echter niet winnen van deze landen op de Europese markt
- Jordanië moet op zoek gaan naar specifieke product-markt combinaties (pmc's) om internationaal te kunnen concurreren, betekent een grote omslag t.o.v. de huidige situatie
- Ziet nog niet duidelijk of de boeren uit het RVO-project op termijn klanten kunnen worden
- Enkele grotere Jordaanse tuinders zouden een omslag kunnen maken naar specifieke pmc's, dus weg uit de mainstream productie van tomaten, komkommers, aardappelen, maar de overgrote meerderheid van Jordaanse tuinders niet
- Lage organisatiegraad en gebrek aan financiën onder de Jordaanse tuinders maakt het nog moeilijker om de transitie naar andere type gewassen en teelttechnieken te maken
- Voorbeeld van een specifieke pmc zou kunnen zijn de productie van stoksperziebonen voor supermarktketens in Engeland en Nederland
- Goed opgeleide mensen ter plekke aanwezig, maar de meest ondernemende afgestudeerden vertrekken naar de Golf-regio en dan met name naar Saudi-Arabië
- Vanwege lage toetredingsdrempels is de concurrentie met andere internationale zaadbedrijven groot terwijl de Jordaanse markt klein is
- Handelsmissies en vakbeurzen zijn voor ons interessant, maar voor Jordanië niet omdat wij er al langer zitten
- Ons project in Tanzania - waar een trainingscentrum staat - worden lokale boeren uitgenodigd om te komen kijken naar specifiek geteelde rassen die zij vervolgens naar huis meenemen om het daar uit te proberen; sterk praktisch georiënteerd met 'zien is geloven' en (positief) kopieergedrag

5) Private company in horticulture

- Heeft een sterke mondiale positie in schermdoeken voor gedekte teelt, focus op "Plantprestatie" en "Climate Control"
- Adviseren tuinders ter plaatse over 'climate control' in kassen ('zien is toch geloven')
- Sterk actief buiten Europa in Azië (China, Japan, Zuid-Korea), Noord- en Zuid-Amerika en enkele landen in Afrika waaronder Marokko, Kenia, Zuid-Afrika

- Daarnaast actief in de Russisch talige landen, maar ook bijvoorbeeld Iran en landen zoals Oezbekistan, Turkmenistan en het Midden-Oosten
- Is veelal betrokken in het proces van ongedekt -> gedekte -> gesloten teelt
- Belangrijk in een verdere professionalisering van de tuinbouwsector in Jordanië is bewustwording bij alle betrokken spelers (tuinders, overheid, brancheorganisaties) dat het anders moet (minder watergebruik, andere teeltvormen voor hogere productie, ander type gewassen) -> deze bewustwording is in de breedte nog onvoldoende aanwezig, ('End-to-End' werken kunnen uitvoeren moeilijk)
- Handelsmissies en vakbeurzen zijn belangrijke instrumenten voor ons om in contact te komen met klanten
- Jordanië is voor het bedrijf een moeilijke markt, relatief weinig gedekte teelt en wat er is vooral kleine plastic tunnels
- Jordanië is voor ons momenteel dan ook "minder" een focus land; wel Spanje en Marokko
- Volgende stap in de Jordaanse tuinbouw naar een professionelere teelt (gedekte/gesloten) zien wij niet in de komende 5 jaar gebeuren, tenzij 'End-to-End' gerealiseerd kan worden
- Jordaniërs worden ervaren als open en prettige mensen om mee samen te werken, echter de kennis bij tuinders over niet-gebonden teelt is zeer beperkt tot geheel afwezig (versterkt het probleem van een gebrek aan bewustwording)
- Vanwege de zeer beperkte omvang van gedekte teelt (niet zijnde plastic tunneltjes) momenteel in Jordanië is het moeilijk om naar een volgende fase te gaan in teeltvormen -> er ontbreekt praktijkervaring over hoe het anders kan -> project Abu Sido is vrij uniek wat lastig is om dit uit te rollen naar een veel grotere groep tuinders in Jordanië
- Grote kapitaalcrachtige spelers die kunnen en willen investeren in de Jordaanse tuinbouwsector ontbreken, wat het lastig maakt om nieuwe technologieën te introduceren bij de veelal kleine tuinders, kennis ontbreekt over welk technologie ze eerst moeten gebruiken en hoe dat dan werkt, en wat is dan stap 2, is lange weg.
- Onderwijs/praktijktrainingen zijn belangrijke elementen voor de verdere ontwikkeling van de Jordaanse tuinbouwsector -> wij kunnen hier een rol in spelen

6) Private company in horticulture

- Is een coöperatie waar acht zelfstandige ondernemers bij zijn aangesloten
- Eerder betrokken geweest bij een USAID hydroponics project in Jordanië
- Momenteel betrokken bij het HAED-project van de WUR – trekker EcoConsult - voor het introduceren van hydroponics in Jordanië, hier zit ook een link in naar het creëren van werkgelegenheid voor vluchtelingen in Jordanië
- Abu Sido farm is één van de pilots van het HAED-project
- Kennis en ervaring van Nederland met hydroponics belangrijke reden om het HAED-project op te zetten in Jordanië
- Technisch kennisniveau van de gemiddelde Jordaanse tuinder in de Jordaan Vallei geringer dan in eerste instantie verwacht, kijkend naar de historie van de Jordaan Vallei als groenteverancier van het Midden-Oosten
- Het afsluiten van de belangrijkste Jordaanse afzetmarkten voor groente en fruit in de afgelopen jaren (Syrië, Irak) heeft de situatie in de Jordaan Vallei verder verslechterd, het zal moeilijk zijn om deze opgelopen achterstand weer in te halen nu grenzen met deze twee landen recentelijk zijn geopend
- De slechte marktsituatie in Jordanië heeft er ook toe geleid dat steeds meer Jordaanse tuinders de energie verliezen om te investeren in nieuwe technieken om de productie te verhogen; er is dan ook veel scepsis onder Jordaanse tuinders over de naaste toekomst
- Abu Sido is een uitzondering op de algehele situatie in de Jordaanse tuinbouwsector
- De Nederlandse methodiek van co-financiering bij investeringsprojecten zijn Jordaanse tuinders niet gewend; eerder alles of niets

- Huidige techniek van bedekte teelt (plastic tunneltjes) in Jordanië moet door lokale tuinders worden losgelaten om over te kunnen stappen naar hogere productie met minder water- en energieverbruik; is ook een mentale verandering wat een langere aanpassingstermijn vergt
- Andere type tuinder nodig in Jordanië die zich pro-actief aanpast aan marktveranderingen en bereidt tot samenwerking
- Veel Jordaanse tuinders willen pas overstappen op andere teelttechnieken en of producten als zij daadwerkelijk zien dat dit tot succes leidt ('zien is geloven'); alleen theorie is onvoldoende overtuigingskracht
- Gebrek aan onderlinge samenwerking door Jordaanse tuinders is mogelijk de belangrijkste obstakel in de verdere ontwikkeling van de sector
- Nederlandse 'high-tech' producten en diensten werken niet in Jordanië; eerder kijken of 'medium-tech' producten de Jordaanse tuinder aan een hogere productie kunnen helpen (stapsgewijze introductie)
- Marktpotentie in Jordanië voor Nederlandse tuinbouwsector op langere termijn
- Huidige waterkwaliteit (relatief hoog zoutgehalte) remt de ontwikkeling van de Jordaanse tuinbouwsector, wordt door de tuinder weliswaar herkend maar nog te weinig aanleiding voor aanpassing teeltgedrag
- Door de hete zomers in de Jordaan Vallei is het gebruik van kassen waar je het hele jaar rond kan produceren noodzakelijk, maar momenteel zijn deze er niet wat leidt tot een productiestop gedurende de zomer, verlies aan inkomen voor de tuinder en daarmee onvoldoende middelen om te investeren
- Betrokken bij RVO-project om trainingen te gaan geven aan lokale tuinders en eventueel een business match making
- Aarzelingen bij Nederlandse tuinbouwsector in Jordanië creëert het risico dat andere landen (o.a. Spanje) met de grotere projecten vandoor gaan; zuidelijke Europese landen bieden ook producten aan die meer aansluiten op de financiële situatie van Jordaanse tuinders
- Risico aanwezig bij samenwerking in een project met grotere Jordaanse partijen dat zij de regie overnemen i.p.v. dat er op gelijkwaardige manier met respect voor elkaars kennis en kunde wordt samengewerkt (Nederlands 'Poldermodel' van elkaar wat gunnen ontbreekt in Jordanië)

7) Private company in water

- In Jordanië is bedrijf niet actief en ziet voorlopig ook geen verandering in deze situatie voor het bedrijf
- Zijn vooral initiatieven vanuit de Nederlandse overheid om hulp te bieden aan Jordanië, (nog) niet een markt voor ons
- Nu nog veel 'low-end' technologieën (grondgebonden teelt) gebruikt in Jordanië, daar waar producten van ons meer 'high-end' (substraat/kassen teelt) gericht zijn
- De transitie in Jordanië van grondgebonden naar substraat teelt zal echter nog jaren duren
- Potentiële klanten zouden zijn lokale tuinders die commercieel (zakelijk) zijn ingesteld
- Volgt de tuinbouwinstallateurs met projecten in binnen- en buitenland, gaat niet snel zelfstandig ergens zitten
- Ook actief in Maritiem en Offshore, waarbij de nadruk ligt op 'stand-alone' projecten
- Klanten in tuinbouwsector zijn vooral afkomstig uit de private sector in Nederland
- Samenwerking met lokale universiteiten op het gebied van onderzoek zoals in Marokko en UAE, wij leveren pilotinstallaties en verzorgt daarbij trainingen en levert eigen experts
- Zit niet met eigen (regionale) kantoren of lokale agenten in het buitenland, werkt vooral projectmatig (Maritiem wel eigen vestiging in Singapore en Agentennetwerk in maritieme/offshore hubs wereldwijd)
- De vele beschikbare financiële middelen uit RVO/NL-ambassade en FMO de komende jaren voor Jordanië is geen reden om naar Jordanië te gaan; bleek ook voor andere Nederlandse bedrijven aangesloten bij de Topsector Water
- RVO-project ('800-boeren') kan interessant zijn, maar is afhankelijk wat en hoe de betrokken boeren gaan telen

- Voor één project gaan wij niet naar Jordanië; er moet spin-of zijn met andere projecten in Jordanië of in de regio (ontwikkelen van lange termijn relaties essentieel)
- Niet actief met handelsmissies en beurzen, zijn vaak te breed georiënteerd en minder effectief voor ons
- Beter om Handel en Ontwikkelingshulp te scheiden dan te combineren, is effectiever anders alles 'half-half'
- Vanuit Topsector Water gezien kan Jordanië voor enkele individuele bedrijven interessant zijn, als collectief is Jordanië (nog) een te kleine markt
- Sterke logistieke keten in Jordanië afwezig in vergelijking met andere landen in de Golf-regio, wat het voor veel Nederlandse bedrijven minder aantrekkelijk maakt
- In de Golf-regio zitten vaak ook grote investeerders achter grotere water en tuinbouwprojecten, in Jordanië ontbreken dergelijke investeerders (publiek en privaat)
- Het oplossen van de waterproblematiek in de opvangkampen in Jordanië kan een interessant project zijn voor ons; hebben reeds ervaring opgedaan met het snel kunnen leveren van een drinkwatervoorziening voor het in 2017 door een orkaan getroffen eiland van Sint Maarten
- Centraal moet staan waar Nederlandse bedrijven impact kunnen creëren in Jordanië, maar dit uitgangspunt botst regelmatig met de (SDG) projectcriteria vanuit Ministerie van Buitenlandse Zaken