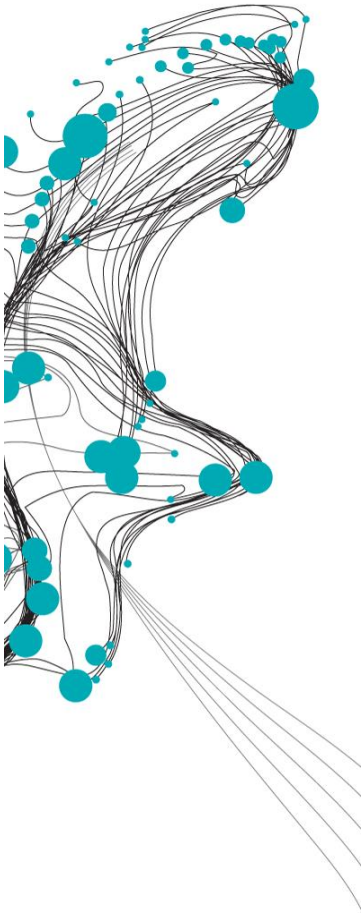
Drivers behind changing food dependency and associated water risk in the MENA-region between 1961 and 2011



Countries in the Middle East and North African (MENA-) region are acknowledged as having the largest water deficits in the world, which makes them dependent on food imports to provide in human food supply. MENA-countries are thereby dependent on natural resources abroad, carrying the risk of unreliable imports caused by limited resources elsewhere. In this study, food import dependency in the MENA-region and its drivers for change are investigated between 1961 and 2011, besides that, food imports are associated to water risks (see Figure 1). At first, food import dependency ratios (IDR) over time for the countries are calculated. Secondly, IDR changes per country are related to predefined drivers. Finally, food imports are associated to the water risk. A rising food import dependency was found in all countries, except for Kuwait where the government decided to start food production to decrease the import dependency in the '80s. Globalization, population growth, human food supply and total renewable water resources were found to be the dominant drivers for change while effects of the GDP were weaker. Wars affect the IDR in case of high casualties per time unit. Trade treaties affected trade partner choice. Water risk is highest in Gulf Cooperation Countries (GCC) a high IDR and trade partners within the severely water scarce region and Australia. The North African countries imported mostly from the moderate to low water scarce European countries and has a lower water risk with an IDR lower than GCC countries. Trade partners of the Levant area (Lebanon, Iran, Iraq, Israel, Jordan and Syria) are found within the region itself and in Europe. IDR and water risk are in between those of the GCC and the North African countries. Water risk of food imports slightly increased over time in the whole region.

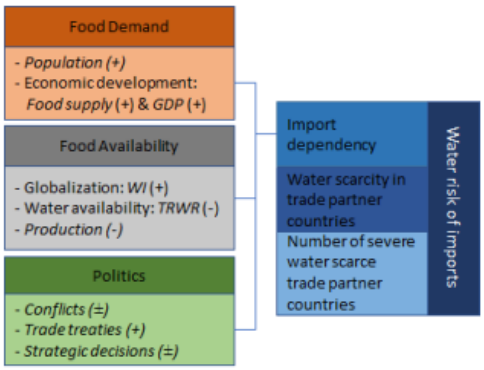


Figure 1: drivers and, in italic, their indicators for a changing IDR.
TRWR= total renewable water resources. WI=Worldwide Imports.
The signs represent a positive (+) or negative (-) expected correlation with the IDR.

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