



Water Resources in Jordan and the Arab World

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Royal Scientific Society

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Water in the ARAB WORLD



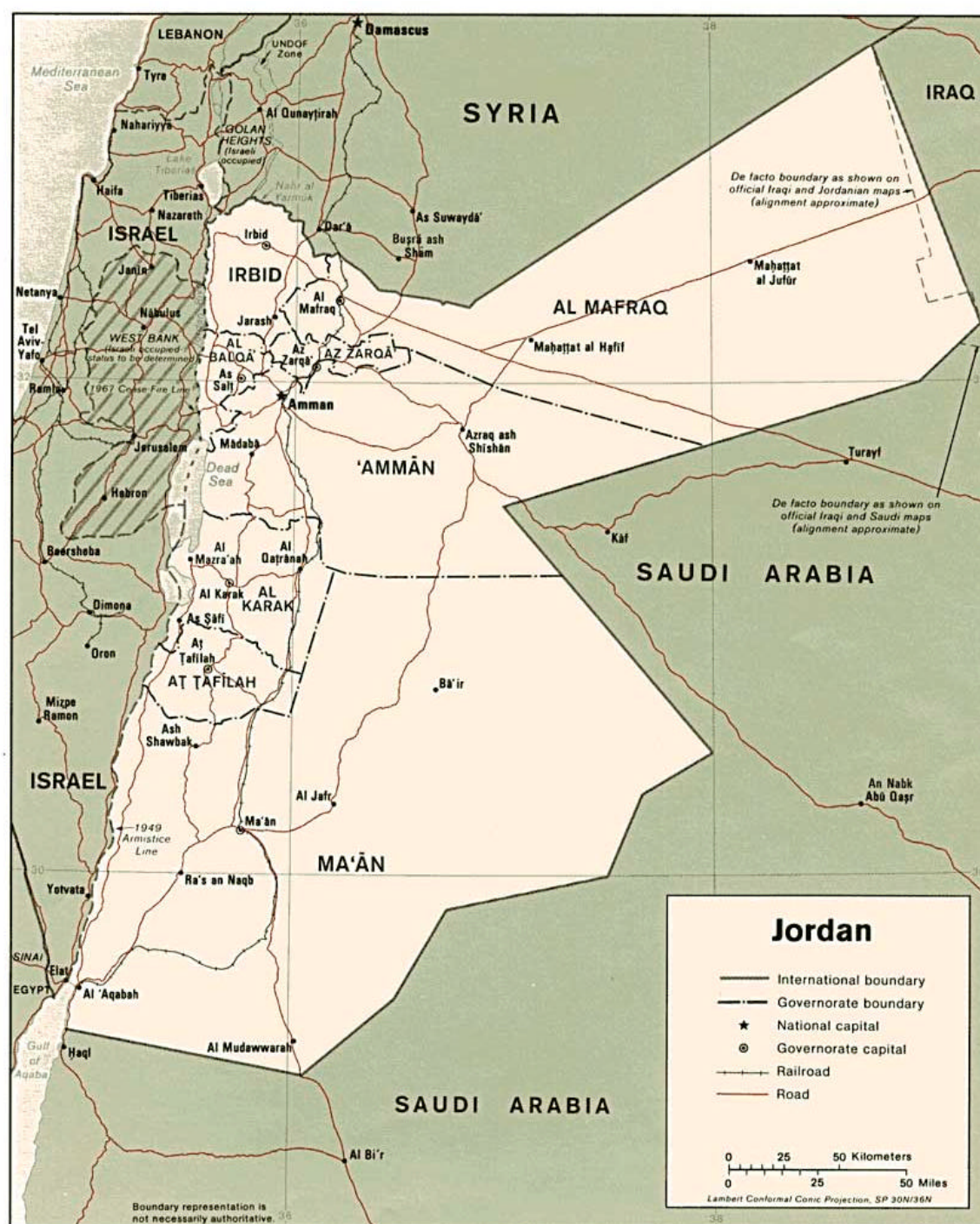
- ? Population of about 350 M
- ? Available water per capita is declining successfully from over 3000 m³/y in 1950s to less than 1000 m³ /y at present.
- ? Agri productivity is found low in many areas, the average of contribution in GDP for ESCWA is 9%
- ? Water use in agriculture is expected to decrease.



JORDAN

Jordan is known to be one of the most water scarce countries in the world, where water shortage has become of permanent nature, meeting water demands a challenge, and managing water resources imperative.

MWI site



Introduction

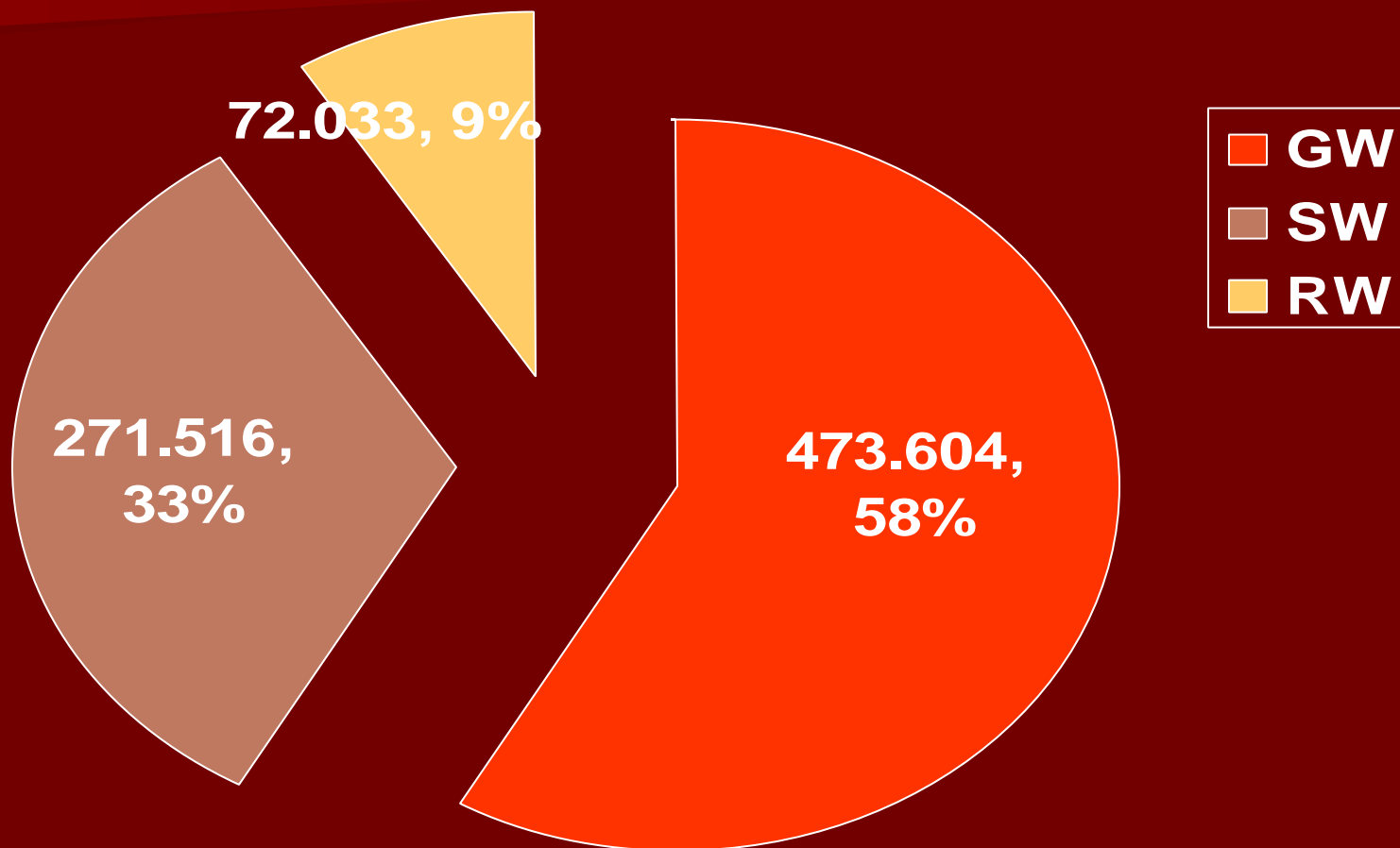
- ? Total area 90 000 km²
- ? Population: 5.2 M, growth rate = 3 %
- ? About 60% of the Jordanian people are less than 24 years of age.
- ? Jordan's climate is mainly semi-arid to arid.
- ? Only 4% of the country's total area receives more than 300mm/year of rain (the highlands).
Precipitation rates decrease drastically to the east and to the west of the highlands.
- ? The long-term average annual precipitation is 8,500 MCM, average per capita is 170 MCM, average 92.5% is lost to evaporation.

Water Resources

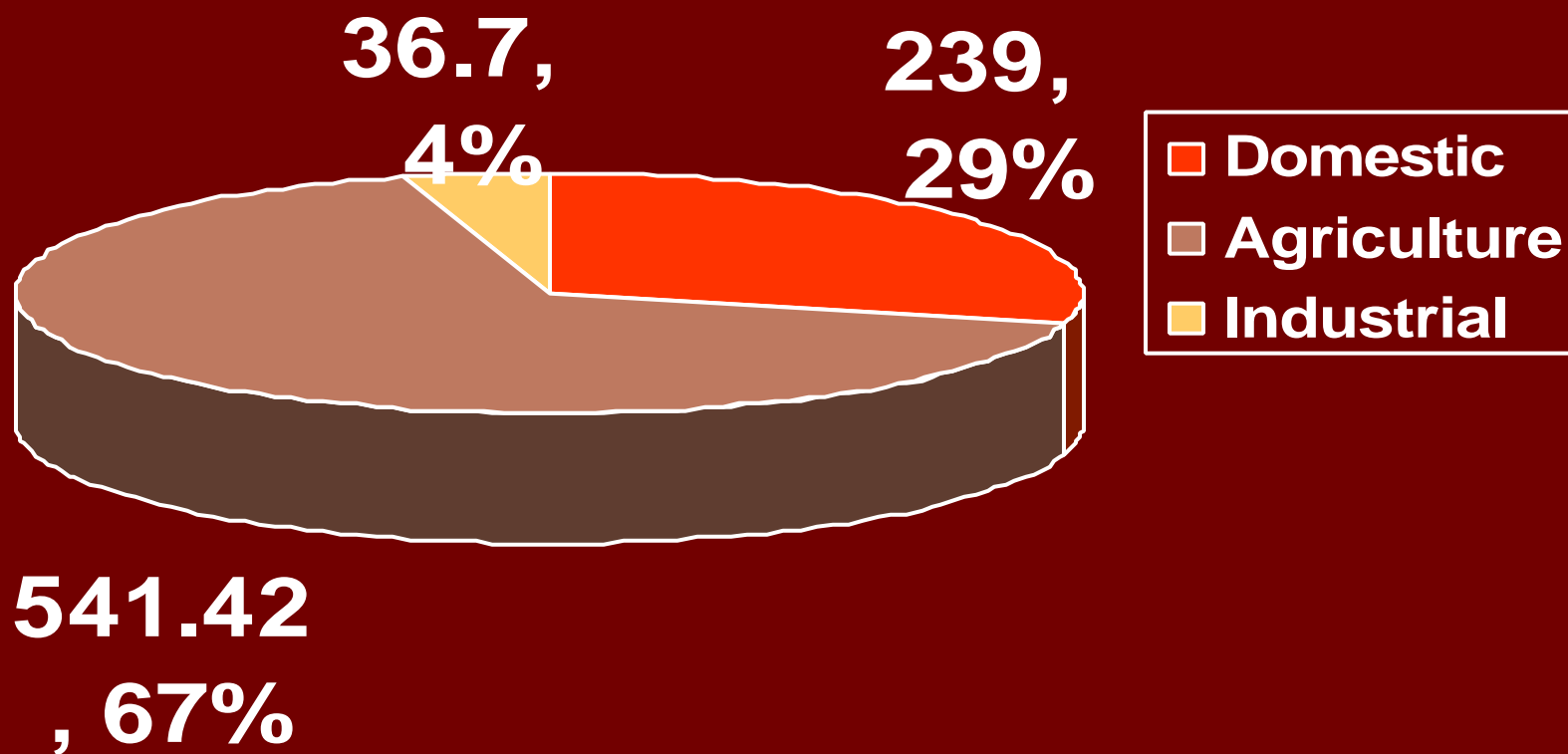
- ? Mainly Ground Water and Surface Water
- ? Renewable : 780 MCM/Y
(GW: 275 MCM/Y + SW: 505 MCM/Y)
- ? 143 MCM/Y from fossil water (underway)
- ? 50 MCM/Y from desalination (underway)
- ? Reclaimed water: 80 MCM/ Y
- ? Thus total available in the near future = 1048 MCM/Y

Sources of Water Used in 2000

Total 817 MCM



Distribution in major sectors



Projected demand (MCM/Y)

Year \ Use	2010	2020
Municipal	434	611
Industrial	99	146
Agriculture	904	890
Total	1436	1647

- ? Over-exploitation ratio of groundwater sources is 185% in 2000, causing drawdown in water levels and deterioration of water quality.
- ? More than 95% of the population are served by domestic water network (with high rates of unaccounted-for water)
- ? 56% of the population are served by public sewerage network.
- ? 19 public domestic wastewater treatment plants treating 82 MCM (2000), all of secondary treatment levels. Reclaimed water is indirectly used for irrigation.

In 2020

- ? Population about 9.2 M
- ? Water demand about 1700 MCM
- ? Total available resources about 1300 MCM
- ? Deficit about 400 MCM
- ? Or water per capita down to about 140 m³/y

Major projects

- ? Water conveyance from Disi aquifer / Aqaba to Amman.
- ? Constructing new dams.
- ? Upgrading domestic wastewater treatment plants.
- ? Water desalination (brackish and sea water)
- ? Improving water supply network.
- ? Water conservation programs (Agriculture and at large users).

Water for food

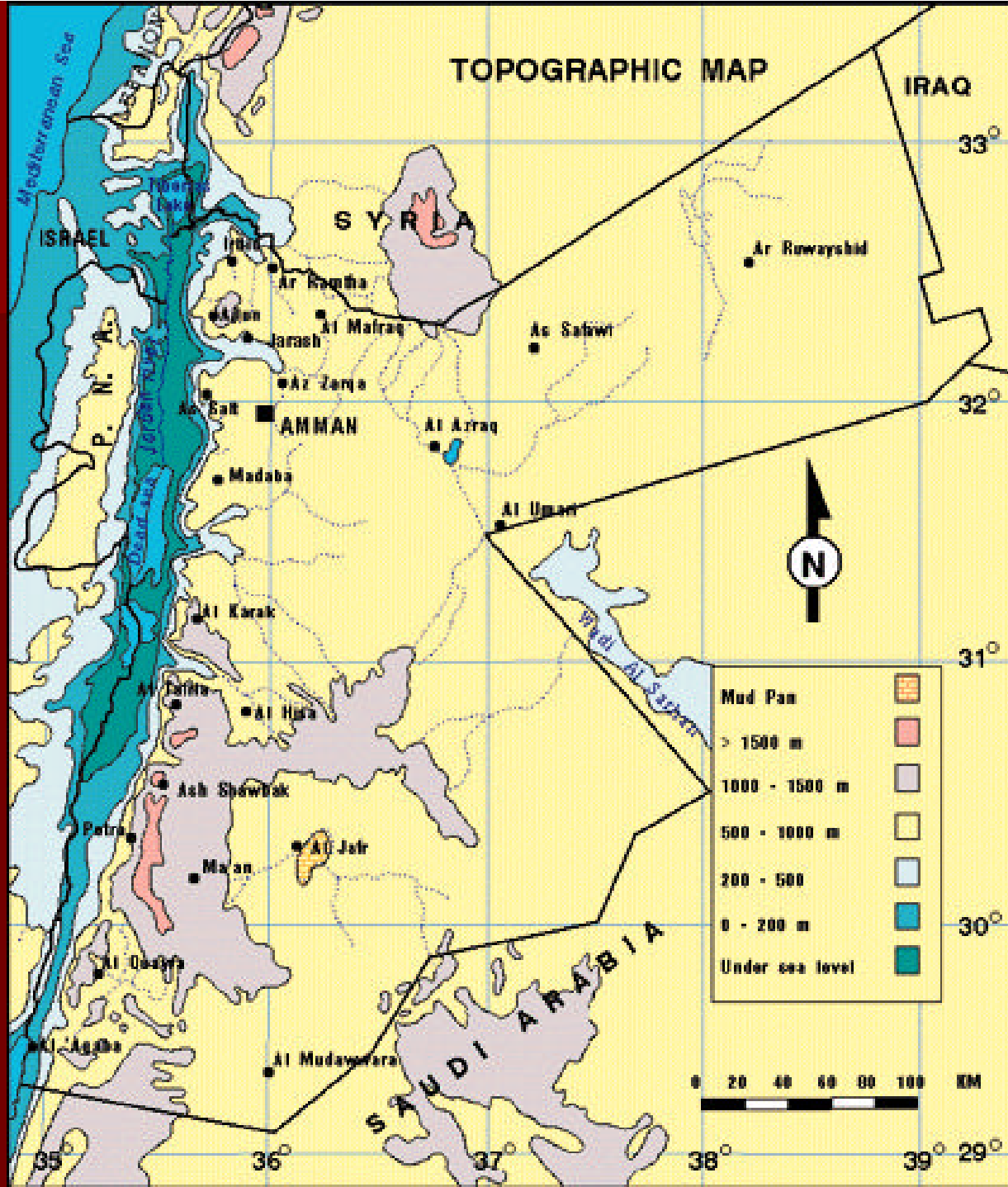
- ? Taking the figure of 1205 m³/p are required for food + domestic use.
- ? Then Jordan needs now about more than 6 BCM and 12 BCM in 2020

Conclusions

- ? The estimated water deficit, together with the drop in water availability per capita and shortage of water for food could result in threat to the socio-economical development of Jordan and the quality of life of Jordanians.
- ? Thus efforts shall be directed to alleviate the problem through joint collaboration and assistance. International assistance directed to the water sector has always been acknowledged and appreciated and is crucial.



TOPOGRAPHIC MAP



References

- ? Investment Program, MWI
- ? Royal Geographic Center
- ? Water Strategy, MWI
- ? Agriculture Plan, Ministry of Agriculture
- ? Water Resources Management Report, JICA study