Setting Up Camp

A three-factor suitability analysis of Syrian refugee camp sites in Turkey and Jordan

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Professor Shakespeare
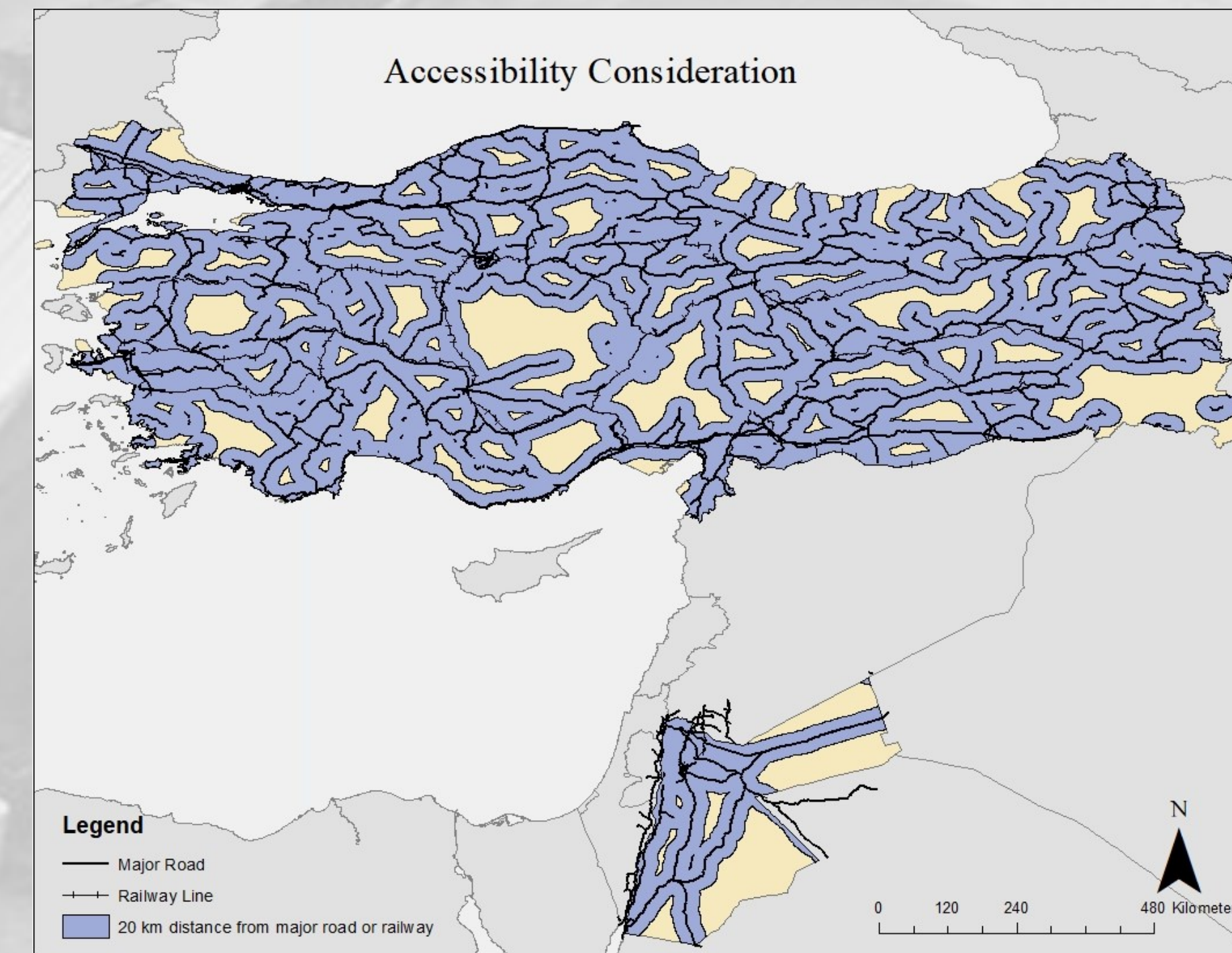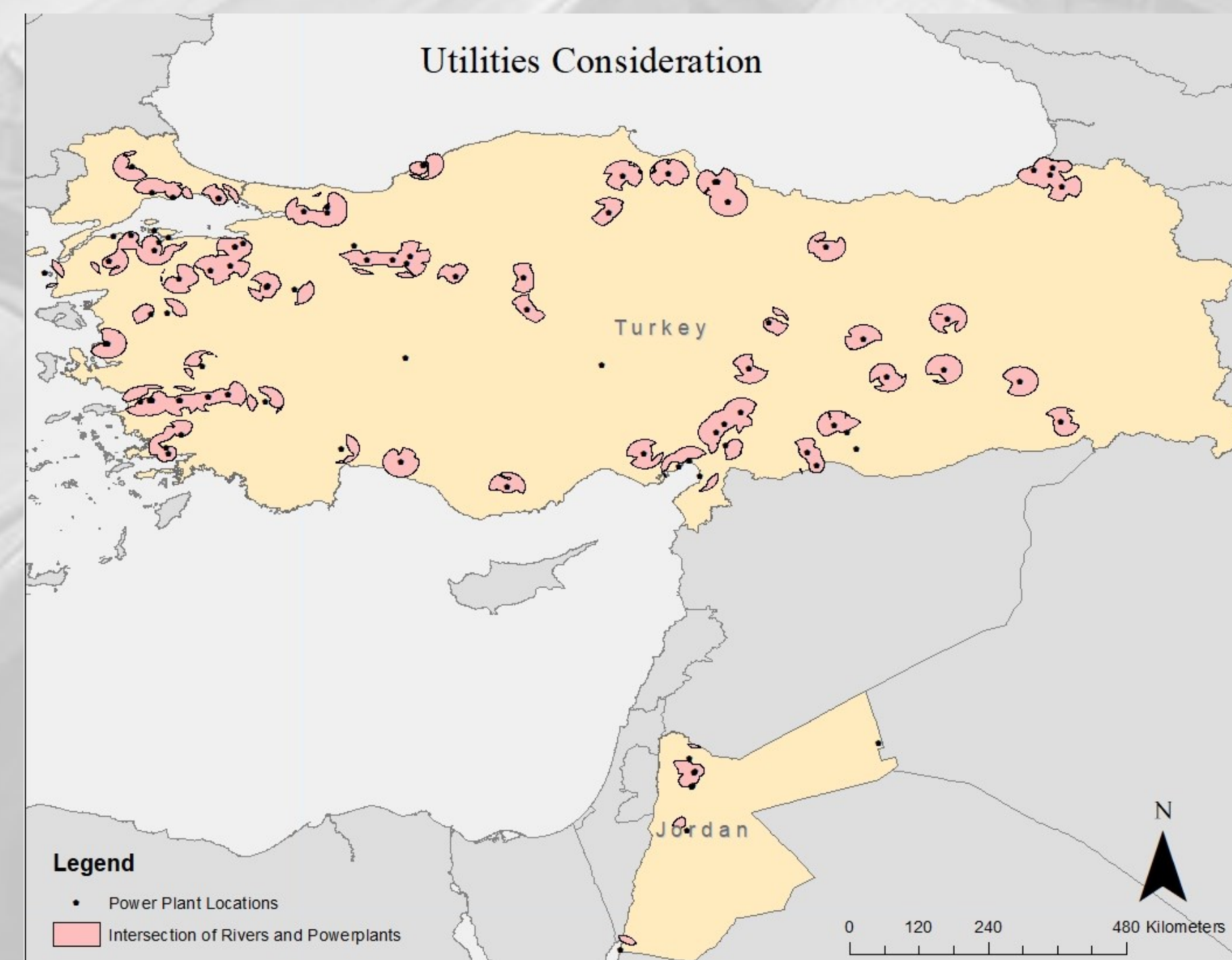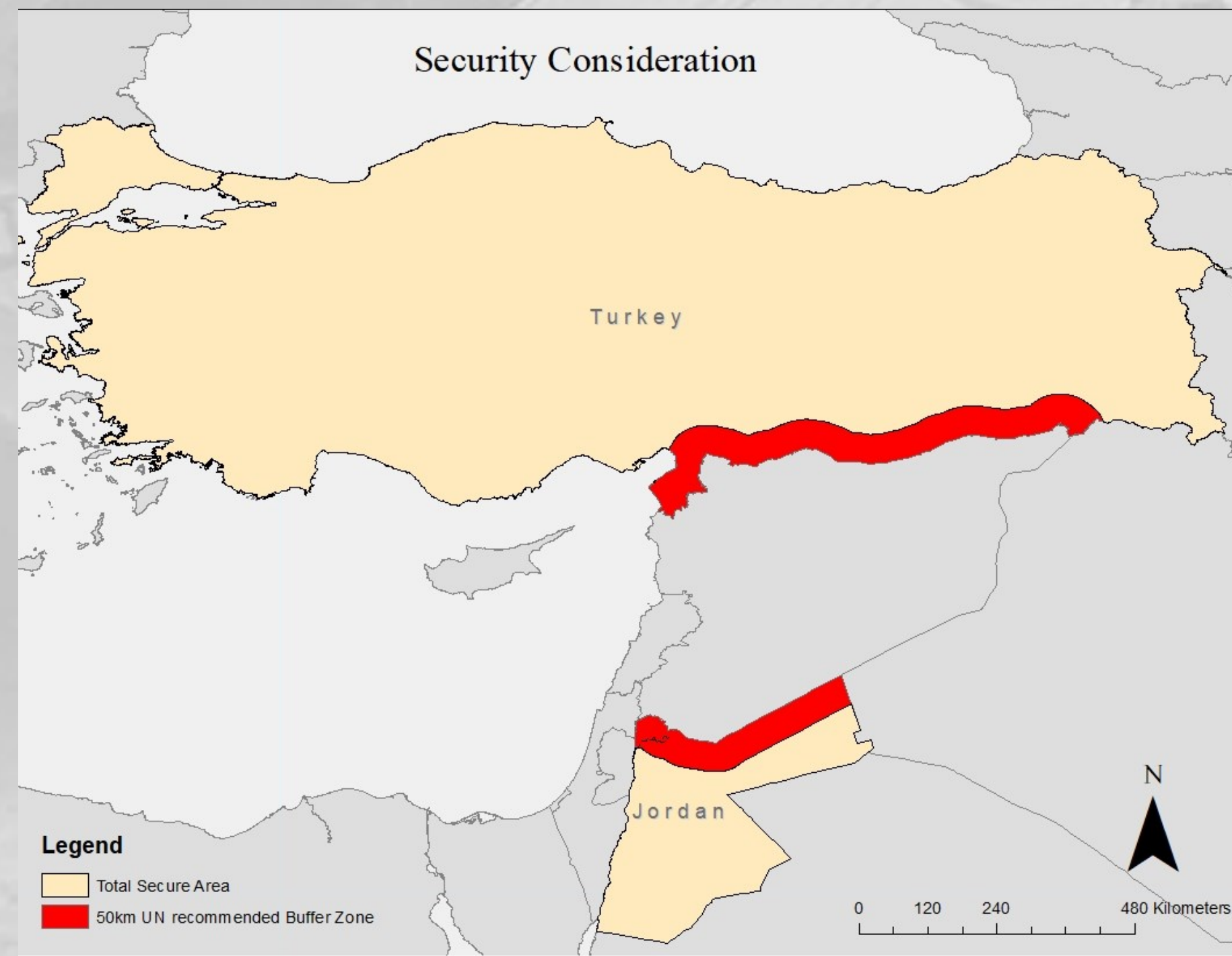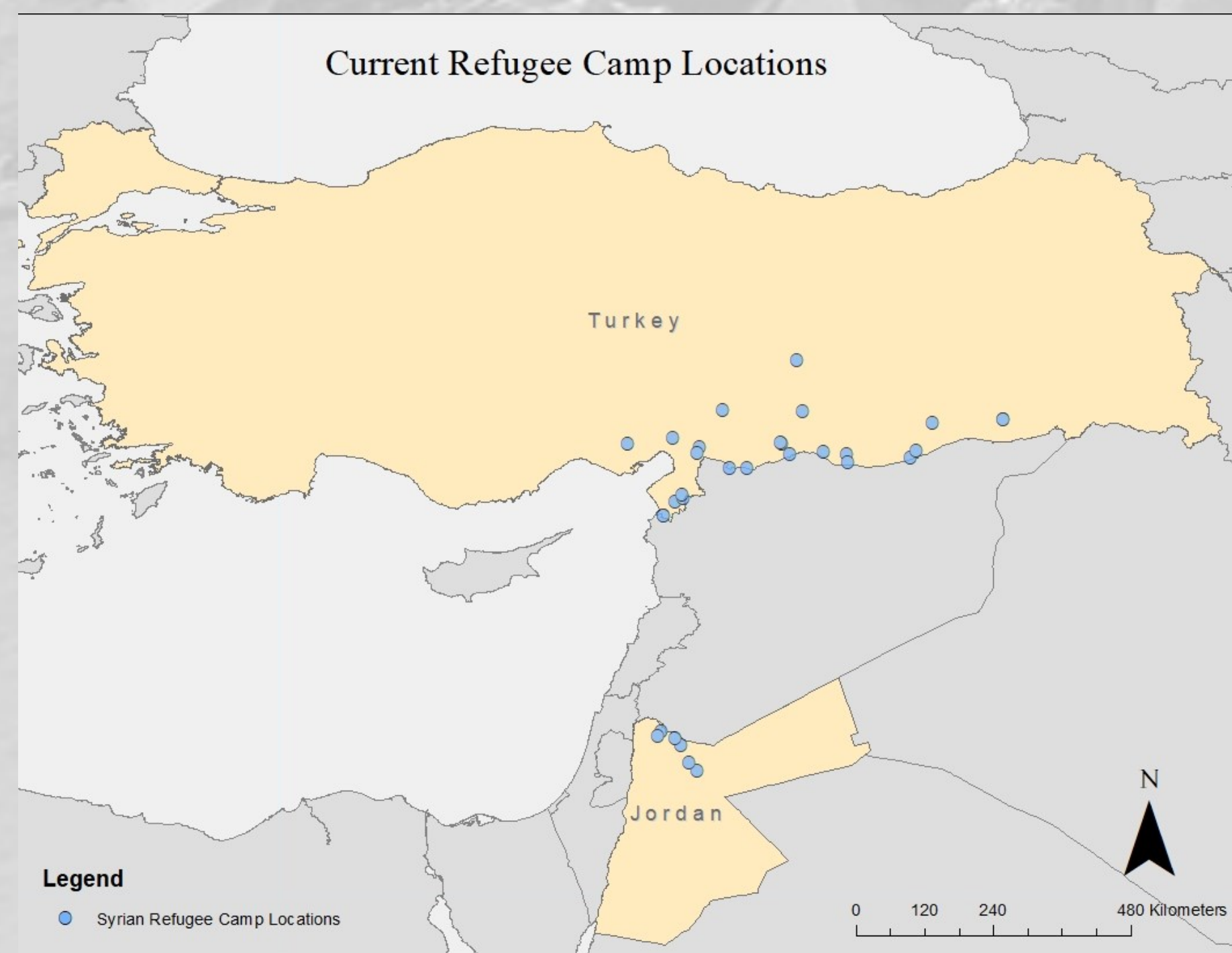
GIS 101: Introduction to GIS

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Introduction

The war in Syria prompted an outflow of 5.6 million refugees into neighboring countries. (UNHCR). While refugee camps make it easier to distribute aid, screen, and account for refugees, (Economist) only 10% of Syrian refugees live in refugee camps, with 90% living in cities or in informal settlements. (UNHCR) Life in poorly planned refugee camps can be stifling and prison-like, which prompts many refugees to instead seek work in cities, even though that work may be illegal and they may be more vulnerable on their own in a foreign city. It's better to have refugees in refugee camps because they're easier to account for and aid, but refugees will only want to go to refugee camps if they are livable. Therefore, it's essential to figure out the best locations for refugee camps in the surrounding countries around Syria. This project will focus on Turkey and Jordan. Turkey bears the highest burden from the Syrian refugee crisis, with 3.5 million refugees. Jordan has 600,000, but a disproportionate 120,000 refugees, or 20%, are in refugee camps. (UNHCR). Thus far, Turkey and Jordan have set up a combined 28 refugee camps. Where are they? And, based on a suitability analysis, where should they be?

Methodology

Before answering this question, the criteria for a suitability analysis. Drawing from Cetinkaya (2016), Maslow (1943), and the UNHCR Emergency Handbook, accessibility, security, and availability of utilities became the principal targets. Security, Accessibility, and Utilities are all vague terms. For the purposes of this project, Security implies physical security and physical security for Syrian refugees means escaping the war. According to the UN, escaping the war means being more than 50 kilometers away from the border of the civil warring country, due to potential spillover effects in civil conflict. (UNHCR) Therefore, a 50 kilometer buffer zone around Syria serves as a proxy for Security. Accessibility implies easy access for an able-bodied person as well as for aid. The proxy for accessibility is a 25 kilometer buffer around major roads and railways because 25 kilometers approximates a two and a half hour walk and is a reasonable length for a new road. Utilities are defined as access to water and power because of their basic yet fundamental importance. Just these two utilities can aid hygiene, heating, and electricity. The approximations for Utilities are distance from rivers and distance from power plants since they are sources of significant amounts of water and power.

The process went as follows: data acquisition, map creation, geoprocessing, and then analysis. Acquiring the data involved accessing Humdata.org and OpenStreetMap.org to find shapefiles for the rivers, Jordanian roads, Turkish roads, Jordanian railways, and Turkish railways. Humdata.org and the World Resource Institute also provided .csv files for refugee camp and power plant locations. Map creation involved geocoding these locations as well as adding basemaps.
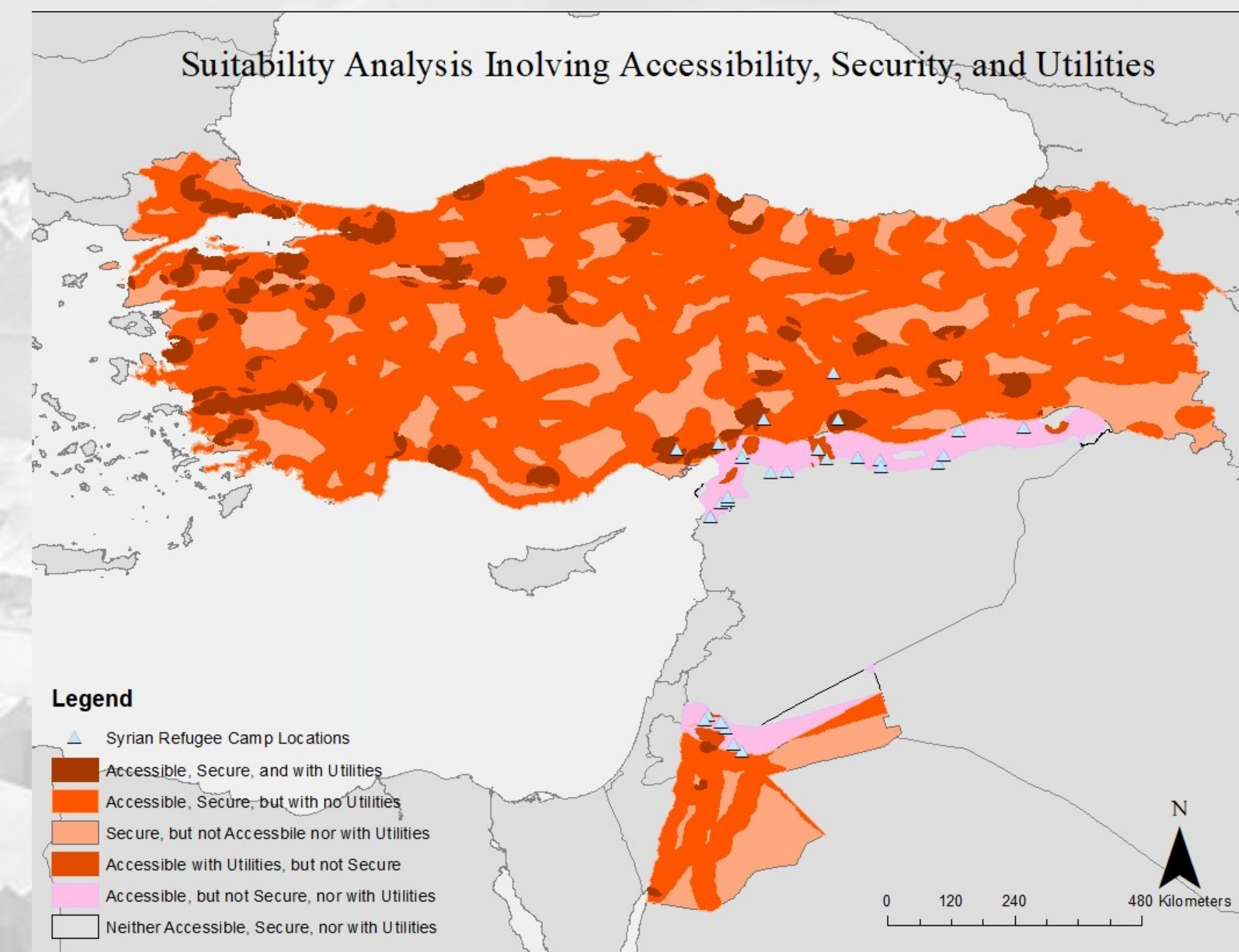
Geoprocessing was the most time intensive. The Buffer tool was used to account for distance from roads, railways, rivers, power plants, and borders. Then the Clip tool was used to trim the shapefiles to the borders of each country. The river and powerplant buffer shapefiles were intersected to create the Utilities Consideration layer. Roads and rivers were intersected to create the Accessibility Consideration layer. The erase tool used inverse of the 50 km border to create the Security Consideration. These were all combined and intersected again in different combinations to create the Suitability Analysis map.

To do the analysis, I performed a spatial join where I joined the point layer Refugee Camp Locations to the Accessible, Secure, and with Utilities polygon layer, with the match option of COMPLETELY_CONTAINS. I proceeded to do this with the points and each polygon layer. I then looked at each Attribute Table and counted how many there were.

Results and Conclusion

Of the total 28 refugee camps, 23 were Accessible, but not Secure nor with Utilities. Only 2 were in the best possible location, Accessible, Secure, and with Utilities. The remaining 3 were located in areas that were Accessible and Secure, but with no Utilities. Of the 22 total refugee sites in Turkey, 17 were Accessible, but not Secure nor with Utilities. Turkey contained all 2 that were in the best possible location and all 3 that were in Accessible and Secure, but with no Utilities locations. Of the 6 total refugee sites in Jordan, all 6 were located in areas that were Accessible, but not Secure nor with Utilities. The Utilities consideration appears to be the strictest determining factor for whether or not a refugee camp is in the best location.

The Syrian refugee camps are not in the best possible place in Turkey or in Jordan. This could be a contributing factor for why such a low percentage of refugees live in refugee camps in these countries. Surprisingly, the refugee camps in Jordan are in worse locations than the refugee camps in Turkey, given that 100% of camps in Jordan are in locations that are Accessible, but not Secure nor with Utilities whereas 77.2% are in these locations in Turkey. This is surprising because Jordan has a higher percentage of refugees in camps than Turkey does. Maybe the vast majority of refugee camps are close to the Syrian border because refugees settle at the closest possible place outside of their home country.

Limitations

The three major limitations of this paper are that the considerations are not gradual; are based on vague terms; lack weighting; and are limited. Further research will make the considerations a matter of degree rather than a binary. More discussion on the terms Accessibility, Security, and Utilities is needed as well. What do these words reasonably mean in the context of refugees? Likewise, some considerations are more important than others and ought to be weighted. Future papers will also look at what other considerations are important for refugees, perhaps looking at interview data that is outside the scope of this project.

Suitability Analysis Inolving Accessibility, Security, and Utilities

Legend
- Syrian Refugee Camp Locations
- Accessible, Secure, and with Utilities
- Accessible, Secure, but with no Utilities
- Secure, but not Accessible nor with Utilities
- Accessible with Utilities, but not Secure
- Accessible, but not Secure, nor with Utilities
- Neither Accessible, Secure, nor with Utilities

Current Refugee Camp Locations

Legend
- Syrian Refugee Camp Locations

Security Consideration

Legend
- Total Secure Area
- 50km UN recommended Buffer Zone

Utilities Consideration

Legend
- Power Plant Locations
- Intersection of Rivers and Powerplants

Accessibility Consideration

Legend
- Major Road
- Railway Line
- 20 km distance from major road or railway

References:

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