

# DURABLE SOLUTIONS AND POTENTIAL PROTRACTION: THE SYRIAN REFUGEE CASE

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## ABSTRACT

This paper presents a model of refugee movement at the nation-state level and how it captures the protraction of forced migration of refugees. The model provides a high-level abstraction based on the United Nations' proposed durable solutions to refugee crises: repatriation to home country, integration to host country, or resettlement to another country. Dynamics were captured from an existing protracted situation of a Congolese refugee camp in Rwanda. We apply the model to the case of Syrian refugees in Turkey to provide a baseline and preliminary validation. The goal of the study is to construct simulation artifacts that facilitate the discussion about refugees and the identification of challenges of implementing durable solutions. Further, the study provides the basis to explore potential new solutions that theoretically may overcome current limitations of existing solutions to prolonged status as a refugee.

**Keywords:** refugee, protraction, durable solutions, system dynamics.

## 1 INTRODUCTION

Protracted refugee situations contribute to the unprecedented levels of forced migration witnessed in the last decade. Existing refugee research highlights degradation of sovereignty and stability of host states, with some protracted camp situations precipitating militarization and radicalization of refugees, secondary expulsions, and regional destabilization (Lischer, 2006; Loescher & Milner, 2005b). In the post-Cold War era, forced migration has been linked to both causes and consequences of regional and global insecurity (Abuya, 2010; Adamson, 2006; Jacobsen, 2000; Lischer, 2006; Muggah, 2006; Salehyan, 2007; Salehyan & Gleditsch, 2006; Stedman & Tanner, 2003). Contributing to the latent crisis of protraction, donor fatigue and the reality that developing states host over 80% of the world's displaced lead to interstate conflict over burden-sharing and cooperation problems (Loescher, 2011).

The commonly accepted premise is that protraction arises due to a failure to provide one or more of three UNHCR-supported "durable solutions" for refugees: voluntary repatriation to the refugees' home state; local integration in the host state; and resettlement abroad to a third state, often in the global North. Some

scholars even propose a labor-mobility adaptation to local integration that provides economic benefit to the host community as well as increased social protection and freedom of employment (Elena, Gil, Katy, Nando, & Katy; Montenegro, 2016). Historically, successful resolution of massive refugee flows, such as those from Vietnam after the Vietnam War, relies on negotiation of all three main durable solutions simultaneously, rather than reliance on a singular solution (Betts, 2009). Protracted refugee situations then depend on the combined probability of repatriation, local integration, and resettlement. The challenge is to implement these solutions given restrictions by one or several of the many actors involved. The conceptual relationship between the three durable solutions and main actors are illustrated in the causal loop in figure 1. The model is based on fieldwork data captured in Frydenlund (2005). The camp in Rwanda hosts Congolese refugees.

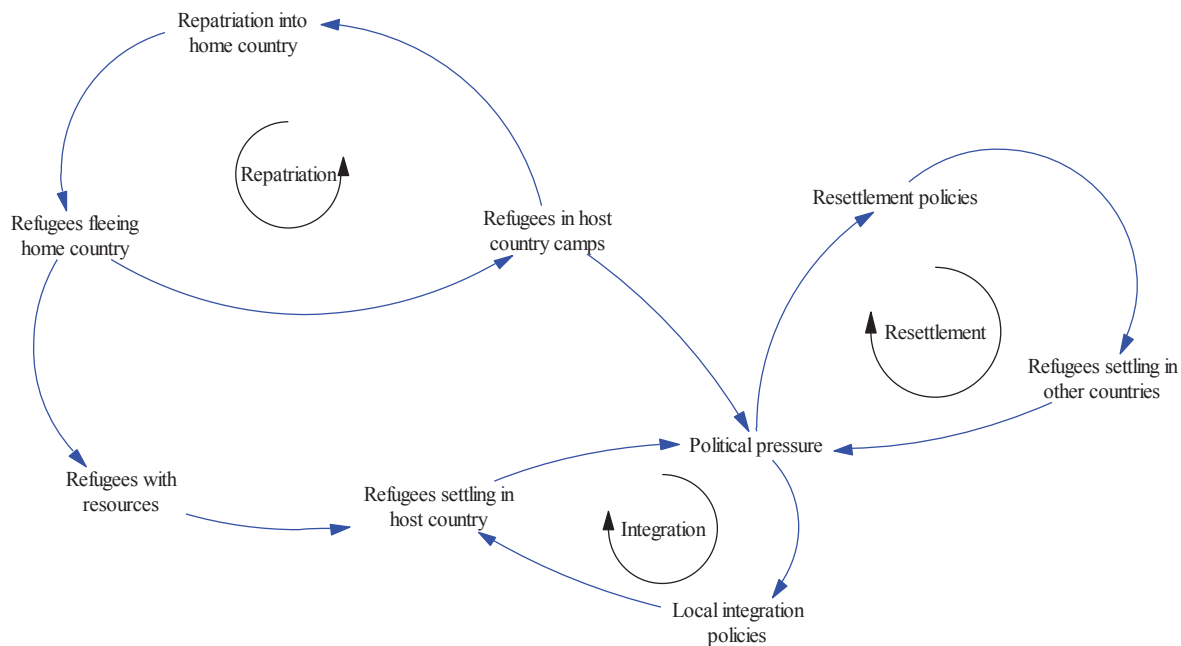


Figure 1: High-level conceptual model of durable solutions dynamics.

Evident in the diagram is that both international relations of host and sending state national policies affect the chances of refugees accessing one or more of the durable solutions. In figure 1, the *Repatriation* cycle shows that, of those refugees who end up in camps with voluntary options to return to their home country, continued violence may cause recurrent refugee flows to the host country. Those refugees with resources, however, may find ways to locally integrate into the host country. Generally, only some camp refugees are offered local integration opportunities based on skills and employment availability, though there are exceptions (Development and Training Services Inc., 2014; Fielden, 2008). In the *Resettlement* cycle, third state resettlement policies and quotas, as negotiated at the national and international levels through the UNHCR, affect the number of refugees who are able to move abroad and start a new life elsewhere. The *Integration* cycle is again a negotiation at national and international levels, this time with the focus on host state refugee policies, that affects the opportunity for refugees to receive proper documentation to live and work outside the camp in a way that leads to permanent residency or even citizenship.

The three durable solutions are interlinked by both the volume of refugee flows and the political negotiations under pressure taking place at national and international levels in attempts to equitably share the burden of displaced persons (Betts, 2009). Additional actors in the system include NGOs providing services and aid to refugees and the refugees themselves. These services occur at the camp. The diagram highlights the system of factors that affect access to durable solutions and contribute to protraction in camps when policy negotiations fail.

In this paper, we attempt to model the flow of refugees during this early stage, i.e. period prior to protraction, to assess the magnitude of the problem. Several researchers have used agent-based models (ABMs) to examine refugee movement. For example, Sokolowski et al. (2014) explore population displacement in the city of Aleppo. Their model and agent framework is used to study the dynamics between rebel and government forces that lead citizens to become refugees. Groen (2016) studies the early refugee movement resulting from the conflict in Mali. He uses an ABM to trace the movement of refugees into different camps and different countries. We choose to utilize System Dynamics to provide a macro perspective of the refugee situation rather than focusing on individual movement. We create a baseline model, extended from the camps in Rwanda to Turkey using UNHCR data. The model provides a view of the expected points of protraction and we will evaluate its generalizability as part of future work.

## 2 SYSTEM DYNAMICS MODEL

System Dynamics (SD) (Forrester, 1958) is considered an appropriate modeling paradigm to capture a high-level system perspective. We developed the following model considering the Syrian refugee crisis in order to explore how a refugee situation may become protracted. This model is a preliminary version to which we will later add mined and fieldwork-gathered data (future work).

Figure 2 captures the causal loop diagram of the current situation in Syria/Turkey. It is a variation of the model in Figure 1, omitting political pressure exerted in order to establish a model only of the exodus. Figure 3 shows the same diagram implemented as a stock and flow model representing the baseline of the Syrian refugee migration into Turkey. The model, in this case, demonstrates how the simulation captures the dynamics leading to the population of Syria decreasing with Syrians fleeing the country in the wake of the escalation of violence.

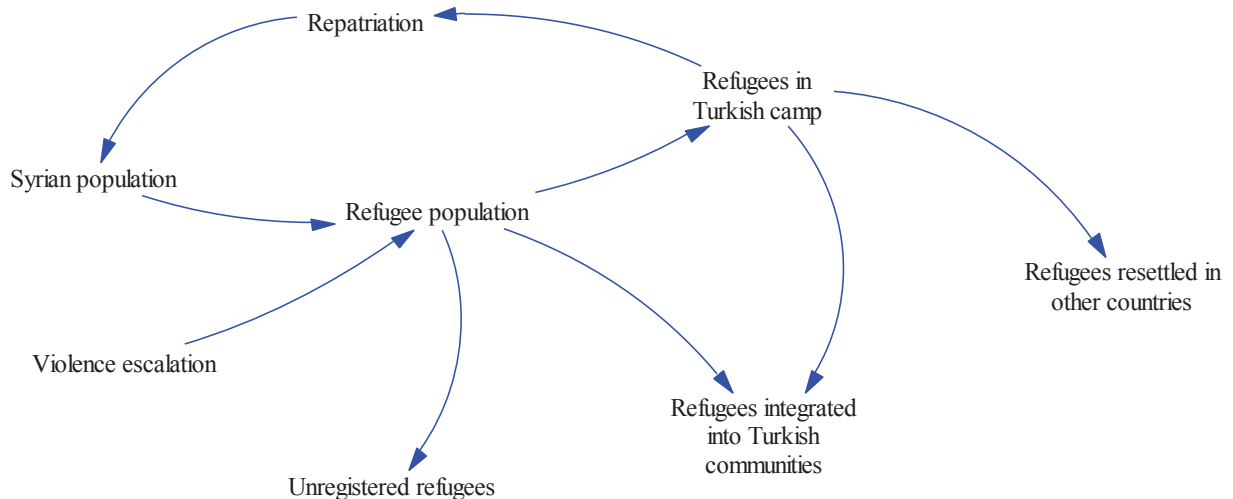


Figure 2: Causal loop diagram of Syrian refugee dynamics in Turkey.

To initialize the model, we rely on publicly available data shown in Table 1 with each row corresponding to a stock in the model. The rates are calculated based on the observed changes over time. As mentioned, the goal of developing this model is to create a base model for discussion and challenge identification of which variable selection and data collection are just two. The model timeline begins in 2011 just prior to the escalation of civil violence. The population in Syria at that time was approximately 22.5M. The Economist reports that current unpublished UN numbers mark the Syrian population at 16.6M in 2016 – a decrease of 5.9M or 26% in about 60 months ("Time to go: Who is leaving for Europe and why," 2015). Hakovirta (1993) notes the correlation between war and refugees is not perfect. However, the connection

is undeniable. Thus, we use the escalation level of violence to proxy for the outflow of refugees from the country as shown in Equation 1. The escalation level is integrated over time at a rate of change at 0.00016. This value is derived from the known value of the initial Syrian population and the population in 2016. The escalation level is designed as a linear variable for simplicity; however, it is possible that the rise is more exponential or stepped. The stock, *Syrian population*, assumes that 5.9M people are fleeing the country. For simplicity, we have not included birth and death rates, which will have an impact on other rates and will be included in future versions.

$$\text{outflow rate} = \text{Escalation level} * \text{Syrian population} \quad (1)$$

The rates of refugees arriving in Turkish camps, in Turkish communities, outside of Turkey, and to unknown destinations are based on UNHCR figures. The latest reports from UNHCR note that there are 4.84M registered refugees; 2.74M are registered in Turkey with 300K in Turkish refugee camps and 2.45M integrated into the community (UNHCR, 2016). The remaining 1.1M reduction in the population resides in the unregistered refugee stock. This, however, may be inflated as we did not include the death rate in the Syrian population. Syrians fleeing are divided into other stocks based on the current levels provided by UNHCR: camp migration rate, 5.1%; self-move rate, 40.7%; move to other country rate, 35.6%; and unregistered rate 18.6% (UNHCR, 2016). The camp migration rate is the rate of Syrians entering Turkish camps. The self-move rate is the rate of individuals that enter Turkey and live outside of the camps. The move to other country rate is the rate of individuals that flee Syria but do not enter Turkey, and the unregistered rate is the rate of individuals that are removed from the Syrian population but are not registered refugees.

$$\text{camp migration rate} = \frac{\text{registered refugees in Turkish camps}}{\text{total refugees}} \quad (2)$$

$$\text{self move rate} = \frac{\text{registered refugees integrated into Turkish community}}{\text{total refugees}} \quad (3)$$

$$\text{move to other countries} = \frac{\text{registered refugees in other countries}}{\text{total refugees}} \quad (4)$$

$$\text{unregistered rate} = \frac{\text{total refugees} - \text{registered refugees}}{\text{total refugees}} \quad (5)$$

Other assumptions of the model include:

- The resettlement rate of 3.6% (UNHCR, 2016).
- The birth and death rates in the camp are from pre-war rates in Syria. The levels in the camp need to be further investigated.
- Local integration and repatriation are designated as nominal amounts of 0.01% as the data does not show any significant movement in these areas at the current time.
- The equations, at this point, are only checked against current figures provided by the UNHCR. Further validation should be performed from an historical perspective.

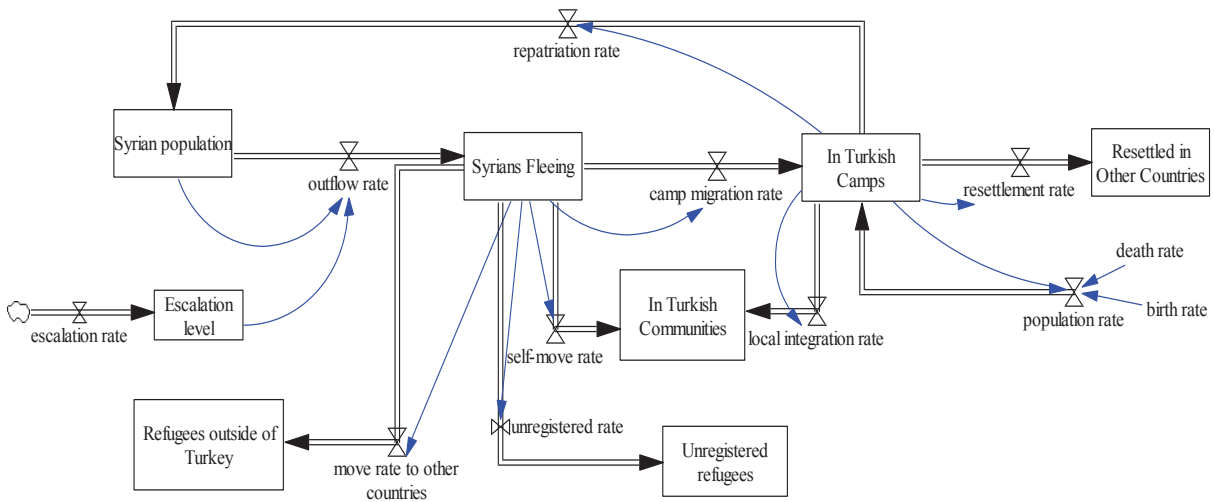


Figure 3: System dynamics model of Syrian refugee movement.

Table 1: Stocks represented in Figure 3.

STOCK	DESCRIPTION
Syrian population	Total population of Syria (22.5M) initialized using World Population report as of 2011.
Escalation level	Linear variable set to emulate the rising violence in Syria that causes individuals to flee the country. The initial value of this variable is 0.001% representing minimal violence prior to civil war.
Syrians Fleeing	The total number of Syrians exiting the country due to violence.
In Turkish camps	Government run facilities provided to Syrian refugees fleeing the violence. UNHCR reports approximate 300K Syrian refugees residing in these camps. The rate of influx to these camps is 5.1%.
In Turkish community	Registered refugees with adequate support and contacts emigrate into the Turkish community or Syrian communities within Turkey. UNHCR reports 2.45M Syrian refugees currently residing in Turkey outside of the refugee camps. Refugees settle in the community at a rate of 40.7%.
Refugees outside of Turkey	Turkey receives about 46% of the registered refugees from Syria. This variable accounts that settle in a country other than Turkey. 35.6% of the refugees move to other countries.
Unregistered refugees	The difference between the population decrease and the number of registered refugees. The model does not account for the deaths due to violence; therefore, they are captured with this variable. The rate of unregistered refugees is 18.6%.
Resettled in other countries	Amnesty International reports that globally there has been a pledge to resettle 162K Syrian refugees. This represents 3.6% of the refugee population. Using this as a guide, this variable estimates 3.6% of the camp population will be resettled.

### 3 RESULTS

Figure 4 shows the simulated results of the population fleeing as the conflict escalates. The model mimics the decline of the population placing the Syrian population at 17M at the end of 2016 and 11M at the end of 2018 without intervention. Current figures estimate the population to be 17.8M as of January 1, 2017 (<http://countrymeters.info/en/Syria>).

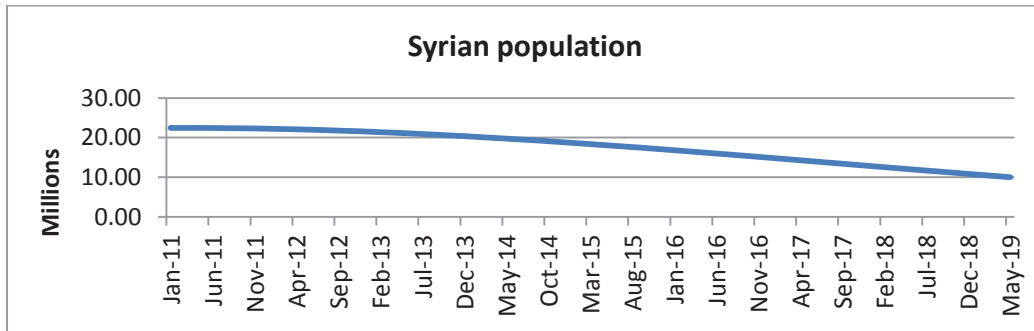


Figure 4: Decrease in the Syrian population due to civil war violence.

Figure 5 shows the past and projected levels of each of these groups from simulated data in the base system dynamics model. The model employs the historical data to illustrate the protracted effect that is expected to result from the continued conflict in Syria. The SD model provides a platform to examine the level of migration into neighboring Turkey should the conflict continue on this path. The model estimated that by the end of 2016 there would be 3.0M registered refugees in Turkey; UNCHR (2016) places this count at 2.8M at year end 2016. Left to continue on this path, the number of refugees in Turkey is projected to rise to 4.7M by the end of 2018. The 2.8M refugees is equal to approximately 3.5% of the Turkish population of 79.7M (<http://worldpopulationreview.com/countries/turkey-population/>). The Turkish population is expected to be 81M in 2018 (<http://populationpyramid.net/turkey/2018/>); an increase of 1.3M vs. an increase in the Syrian refugee population of 1.9M. The size of the fleeing population into Turkey and the comparatively low resettlement rates into other countries captured in the model provides the platform for understanding the protraction. In this case, protraction may result from refugees entering Turkey much faster than they find opportunities to leave, resulting in a massive buildup of forced migrants.

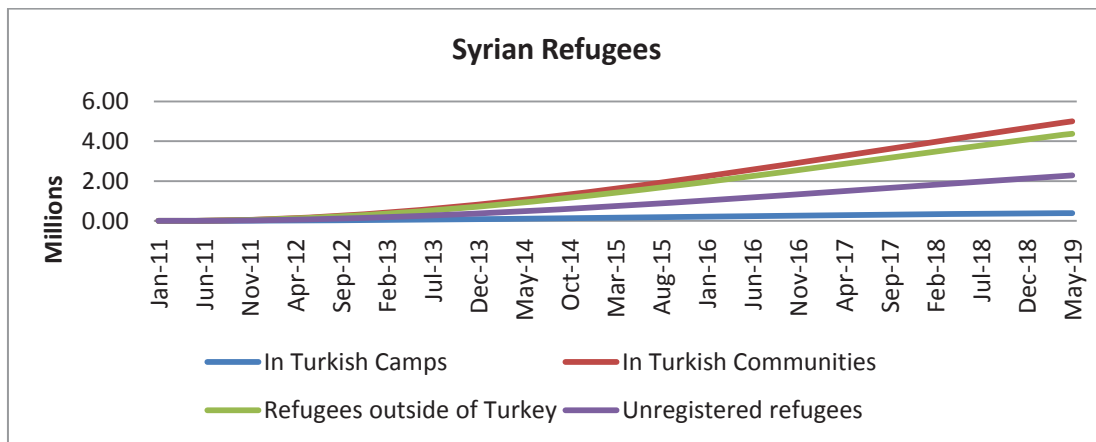


Figure 5: Numbers of Syrian refugees in and out of Turkey.



## 4 DISCUSSION

Opportunity for protraction occurs when the opportunity for repatriation, integration and/or resettlement occurs at a rate significantly lower than the refugee migration rate. The SD model utilizes current and historical data to examine the migration of the Syrian population from the civil war in Turkey. This refugee population has several options based on their individual circumstances: they can resettle in Turkey using their own resources, they can flee to another country in the region, or they can settle in a Turkish refugee camp. At the time of the development of the model, repatriation was not an option. A large portion has resettled in Turkey on their own; however, this puts a strain on the Turkish communities and will eventually cause a reaction. The current model provides now a platform for expansion to examine the effects of this population strain and the potential likelihood that more refugees are forced into camps or out of the region. So far the model shows that the inflow is greater than the outflow of refugees resulting in a large number of Syrian refugees in Turkey. Planned expansion of the model will capture the Turkish government policy of supporting Syrian refugees providing opportunities for integration and potential non-mediated resettlement as refugees move through Greece to countries like Germany and Sweden. In these cases, resettlement is no longer driven by intern-nations discussion but by refugee mobility across porous borders. We posit that there is a point of no return where the movement of refugees grinds to a halt generating protraction. A point where camps and policies (to limit integration and resettlement) are established. This point has not arrived to Syrians refugees in Turkey, but the conditions are present, among others, unrest in Turkey, violence in Syria and reluctance of taking refugees by other countries.

## 5 CONCLUSIONS

The paper presents a baseline refugee model. The model captures UNHCR durable solutions in the context of Syrian refugees in Turkey. Data is collected from public sources in order to initialize the simulation and provide basis for comparison of results. The model shows that if current migration flows remain, the population of Syria will be greatly impacted before 2019. The model captures actors, like host country, and factors, like violence escalation, as elements that affect refugee movement. We discussed the model in the context of protraction. While the situation in Turkey is not protracted, the conditions for protraction are present: unrest in Turkey, violence in Syria and reluctance of taking refugees by other countries. The model will be expanded in order to capture these conditions.

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