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Dynamics of the Dutch Migration Chain

Simulating Policies in View of a Robust Future

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Executive Summary

By the end of the year 2018, there were 101.837 refugees in the Netherlands, of which 12.303 were awaiting a decision on their application for asylum. This was caused by the enormous amount of asylum requests in the Netherlands in the period 2013 to 2018 with a peak in 2015. In that year, 58.880 people requested asylum in the Netherlands, of which 27.710 were Syrian refugees, fleeing from the civil war in Syria. This enormous increase in asylum requests has seriously challenged the Dutch migration system, causing problems that still last today. These problems affect both, the asylum seeker and the country in which asylum is requested. In 2018, asylum seekers had to wait up to 16 months before their asylum procedure started, while the procedure itself only takes two weeks. A longer stay in asylum accommodations negatively affects refugees' mental health, which in turn hampers their socio-economic integration. Therefore, one part of the research objectives from this thesis is how to reduce the waiting times in the Dutch migration system. The other part of the objective is how to create a robust migration system, in order to avoid such situations in the future. Combined, these two goals form the following research question: *Which policies could be implemented in the migration system in the Netherlands in order to solve the current problems and create a robust system for the future?*

In order to answer this question, a System Dynamics (SD) model was used. SD models are characterised by their stock-flow structures consisting of relations, feedback effects, accumulation effects and delays. Simulating different runs and analysing its outcomes provides a better understanding of a system. In this research, SD models were combined with exploratory modelling analysis (EMA). EMA uses computation experiments to analyse complex systems while taking uncertainties into account. With EMA, it is possible to run countless simulations using uncertainty ranges for different values. In this way, SD and EMA complement each other. During this research, six base case scenarios were developed in cooperation with the client. Furthermore, SD and EMA were used to simulate 1.000 different scenarios in order to test different policies under deep uncertainty. SD modelling has been used before to model migration. However, these researchers described migration between continents and countries, or inside the borders of one country. Using SD in combination with EMA in order to research the effects of deep uncertainty on a migration chain consisting of several organisations was never done before. In order to model the Dutch migration chain, several meetings and workshops were organised in cooperation with the Programmalijn Gezamenlijke Planning Asiel (GPA). During these workshops the Dutch migration system was sketched together with the migration partners in order to gain face validity for the model. Furthermore, workshops were organised were the migration partners simulated the model themselves in order to gain acceptance for the model.

The Dutch migration chain consists of several organisations. Each of these organisations have their own responsibilities. The Koninklijke Marechaussee (KMar) checks the legality of access to the Netherlands for refugees. The Afdeling Vreemdelingenpolitie, Identificatie en Mensenhandel (AVIM) is responsible for checking the identification. In the model, these organisations are represented as a simple delay. However, a small capacity model for these organisations can be switched on for research purposes. The Immigratie en Naturalisatiedienst (IND) are in charge of the refugee policies. They have to decide whether a refugee becomes receives a residence permit, based on different characteristics for each individual. To do this, different tracks for different kinds of asylum seekers are used:

- Track 1: Asylum seekers that should have requested asylum in another country. Therefore, most of these asylum seekers do not receive a residence permit.
- Track 2: Asylum seekers from countries qualified as safe on the European list of safe countries. Therefore, most of these asylum seekers do not receive a residence permit.
- Track 3: Asylum seekers that clearly qualify for a residence permit can be quickly accepted in this track. This track is not activated.
- Track 4: Asylum seekers that do not directly fit in another track are placed in the general asylum procedure.
- Track 5: Asylum seekers that clearly qualify for a residence permit can be quickly accepted in this track. However, a short research is needed. This track is not activated.

In order to simulate a realistic flow of asylum seekers through IND, a human resources model was developed. The Dienst Terugkeer en Vertrek (DT&V) organises the departure of migrants that are not aloud to stay in the Netherlands. A very simplistic though sufficient delay model was used to represent DT&V in the model. The Centraal Orgaan Asielopvang (COA) is responsible for the residence of refugees in different types of locations, depending on the process of the refugee. For COA, a sub-model for scaling up and down the different types of locations was developed. Although not part of the GPA program, municipalities were also added to the model. This was done because municipalities are needed to prevent crowded COA locations with asylum seekers that already received a residence permit (statusholders). The Dutch government obliges municipalities to house certain amounts statusholders. These obligated amounts of statusholders are called municipality targets.

In order to solve the current problems considering the migration chain and to create a robust future, five different policies were developed. After simulating these policies separately and identifying the specific behaviour of each policy, combinations were made in such a way that they complement each other. These combined policies were simulated under deep uncertainty again. In the end, two suitable policies were identified. Both of these policies use a shift in focus from IND, combined with involving municipalities. The shift in focus for IND means that IND staff members are deployed in places were most asylum seekers are awaiting a decision, instead of prioritising due to political reasons. In order to achieve this, more efficient deployment of IND staff members is required. The adjusted policy for municipalities implies that municipalities have increased municipality targets, adjusted to the needs of IND. The first policy combines shifting focus and involving municipalities with educating 200 extra IND staff members. The second policy combines these two policies with activating track 3 and 5. This makes it possible to perform a fastened procedure for asylum seekers that clearly qualify for a residence permit.

In both policies, the shifting of focus of IND staff members successfully solves the current problems of accumulating asylum seekers awaiting a decision on their asylum procedure. However, the more efficient deployment of IND staff members causes staff members to not being used at certain times. Therefore flexible deployment of IND staff members should be further researched. For example, combining their tasks at IND with tasks at other governmental organisations. For the policy in which 200 extra staff members were educated, the effect of IND staff members not being used is even bigger. Considering the other policy in which tracks 3 and 5 are activated, it should be further researched if activating these tracks has a "pull" effect on asylum seekers due to benefits of the fastened procedure for asylum seekers. Furthermore, solving the problem considering accumulation of asylum seekers awaiting housing requires municipality targets up to 800 statusholders each week. Further research is needed to indicate whether these targets are achievable.

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Acronyms

AA	Algemene Asielprocedure (General Asylum Procedure)
AMV	Alleenstaamde minderjarige vreemdelingen (Unaccompanies minor asylumseekers)
AVIM	Afdeling Vreemdelingenpoltie, Identificactie en Mensenhandel (Department of the Dutch police responsible for identification and tracking of criminal asylum seekers)
AZC	Aszielzoekerscentrum (Asylum reception centre)
BS	Beschikking (Decision from an IND staff member)
COA	Centraal Orgaan Asielopvang (Organisation responsible for reception of asylum seekers)
col	Centrale ontvangstlocatie (central reception centres)
DGM	Directoraat Generaal Migratie (Directorate General Migration)
DT&V	Dienst Terugkeer & Vertrek (Repatriation and Departure Service)
ebtl	Extra begeleiding en toezichtlocatie (centre with additional guidance and supervision)
EG	Eerste gesprek (Initial interview with an IND staff member)
EMA	Exploratory Modelling Analysis
EU	European Union
FLEX	Programma Flexibilisering Asielketen (program for a more flexible asylum chain)
glo	Gezinslocatie (family centre)
GPA	Programmalijn Gezamenlijke Planning Asiel (program for joint planning asylum)
HASA	Herhaalde asielaanvraag (repeated asylum procedure)
IAF	Initial Aid Facilitys (AZC in Germany)
ibo	Intensief begeleidende opvang (reception centre with intensive guidance)
IND	Immigratie- en Naturalisatiedienst (Immigration and Naturalisation Service)
J&V	Ministerie van Justitie en Veiligheid (Ministry of Justice and Security)
KMar	Koninklijke Marechaussee (Royal Netherlands Marechaussee)
KPI	Key Performance Indicator
kwv	Kleine woonvoorziening (small living location from COA)
NG	Nader Gehoor (detailed interview from an IND staff member)
pol	Proces opvanglocatie (process reception centre)
Rva	Regulation for Provisions for Asylum Seekers
RvR	Raad voor Rechtsbijstand (Legal Aid Board)
RVT	Rust en Voorbereidingstijd (Rest and preperation time)
SD	System Dynamics
TAM	Technology Acceptance Model
UNCHR	United Nations High Commissioner for Refugees
VA	Verlengde Asielaanvrag (Extended asylum procedure)
vbl	Vrijheidsbeperkende locatie (freedom restricting centre)
VN	Voornemen (intentional decision from an IND staff member)

Chapter 1

Introduction

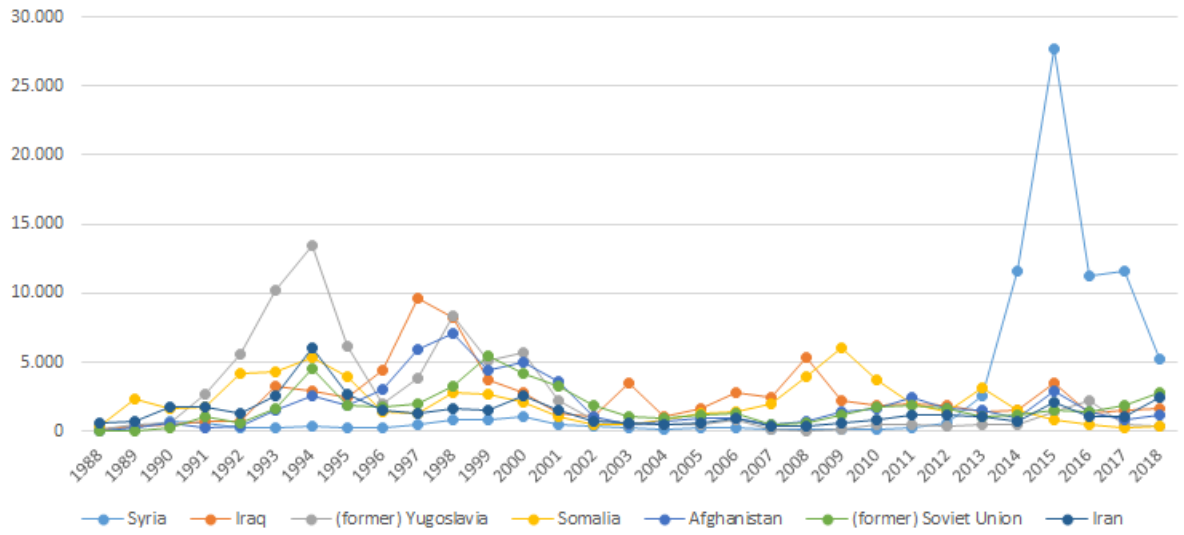
This thesis reports on problems in the Dutch migration system. In this introduction the current situation considering migration will be given on different scales. Thereafter, the societal and political problems caused by refugees will be discussed. At last, the research scope will be explained, and an outline of the report will be given.

1.1 Problem statement

By the end of the year 2018, 70.5 million individuals were forcibly displaced worldwide as a result of persecution, conflict, violence or human rights violations. 41.3 million of these people were internally displaced persons, which means that they were fleeing within their states borders. 25.9 million people were refugees that fled beyond the borders of their home country. Furthermore, 3.5 million people were asylum seekers, which means that they were awaiting a decision on their application for asylum in another country (UNHCR, 2017). In 2015, the instability in the Middle-East and especially the war in Syria caused a lot of refugees to travel to Europe. Most of them tried to cross the Mediterranean Sea in order to reach Greek and Italian Islands. From these destinations, they tried to reach other western and northern European countries (Kloosterman, 2018).

In the Netherlands, there were 101.837 refugees by the end of the year 2018, of which 12.303 were awaiting a decision on their application for asylum. According to Centraal Bureau voor de Statistiek (2019), the majority of asylum requests in the Netherlands from 1988 until 2018 in ascending order came from people from Iran, former Soviet Union, Afghanistan, Somalia, former Yugoslavia, Iraq and Syria. As can be seen in Figure 1.1, their were enormous fluctuations in asylum requests from different countries of origin over time. These fluctuations were caused by several reasons. The first peak that is shown was caused by the Yugoslav Wars starting in 1991 (Baker, 2015). In 1994, the stricter asylum procedure in Germany causes a higher amount of asylum requests in surrounding countries including the Netherlands. From 1997 until 2010, war in consecutively Afghanistan, Iraq and Somalia causes several peaks (Vluchtelingenwerk Nederland, 2019). However, as can be seen, the highest amount of asylum requests was in 2015. In that year, 58.880 people requested asylum in the Netherlands, of which 27.710 were Syrian refugees due to the civil war in Syria (Vluchtelingenwerk Nederland, 2019). This enormous increase in asylum requests has seriously challenged the Dutch migration system, causing problems that still last today.

Figure 1.1: Asylum requests in the Netherlands 1988-2018 (Centraal Bureau voor de Statistiek, 2019)



The problems related to the fluctuations in asylum requests affect both, the requester of asylum and the receiving country, in this case the Netherlands. Considering the people applying for asylum, the increase in applications causes longer procedure times. In the Netherlands, waiting times before starting the general asylum procedure in 2018 were up to 16 months (Dupuy, 2019), while the general asylum procedure itself only takes two weeks (Immigratie- en Naturalisatiedienst, 2019). According to Bakker, Dagevos, and Engbersen (2014), a longer stay in asylum accommodations negatively affects refugees' mental health which in turn hampers their socio-economic integration. Furthermore, one could argue that it is not humane to make asylum seekers wait such a long time before starting the procedure.

In some cases, the receiving country is also affected by the asylum requests. Although, less research is available about this subject. According to Martin, Schoenholtz, and Fisher (2005), complex asylum procedures with multiple levels of appeal will cause the fiscal costs of implementing the asylum systems to be higher. On the other hand, if the government grants work permits, the fiscal impact may be lower (and in fact may become a net benefit through tax revenues). Though, it may be more difficult to remove a working asylum seeker if his or her application is rejected, and the work permit may be an incentive for abuse of the asylum system. If the asylum seeker obtains asylum, however, the work experience during the application stage may enable longer term economic integration that will benefit the receiving society (Martin et al., 2005).

Besides these societal problems, migration could also cause tensions in politics. A growing number of asylum seekers can greatly affect the public opinion on immigration, even if not yet a significant increase in numerical terms (Martin et al., 2005). This causes a division between liberal, cosmopolitan elites and supporters of nativist right-wing populist ideologies (Hansen & Randeria, 2016).

Considering the Netherlands, the increase of asylum seekers during the last years has certainly caused societal problems and political tensions. The problems in the Dutch migration

system are two-fold. On one hand, the current system needs to be repaired. The Syrian asylum seekers from 2015 are still awaiting decisions on their asylum requests. This causes a bottleneck in the system. On the other hand, the Dutch migration system needs to be prepared for future fluctuations in asylum requests. In order to answer these questions, the following research question is used:

> *Which policies could be implemented in the migration system in the Netherlands in order to solve the current problems and create a robust system for the future?*

To answer this question, a system dynamics approach was used. This was done, because of the typical stock-flow structure of the Dutch migration system in which the incoming asylum requests are flows and the asylum seekers awaiting decisions are in stocks. System dynamics models are characterised by stock and flow structures (J. W. Forrester, 1968). According to H. Kwakkel and Pruyt (2013), exploratory system dynamics modelling is a promising approach for addressing deeply uncertain dynamically complex societal challenges. Using this approach, potential influences of different policies on the migration system can be simulated, and thus the policies showing the great promise can be determined (J. W. Forrester, 1994).

1.2 Project scope

As described in Section 1.1, migration is a complex spatial phenomenon on a worldwide scale. Problems and situations in certain locations can cause people to flee and migrate to places far-away from their country of origin. Despite the fact that migration happens on a worldwide scale, in this research the Dutch migration system. In March 2016, the so-called track-policy was introduced (Dijkhoff, 2016). The main focus of this report will be on the functioning of the track-policy, which will be further explained in Section 3.2. According to Directoraat-Generaal Migratie (2018), the Dutch migration system consists of ten organisations. However, in this report only six of these organisations will be highlighted. A seventh actor, the Dutch municipalities, is also taken into account. This will be further explained in Section 3.1. Thus, this research focuses on the following organisations:

- Koninklijke Marechaussee (KMar)
- Afdeling Vreemdelingenpoltie, Identificatie en Mensenhandel (AVIM)
- Immigratie- en Naturalisatiedienst (IND)
- Dienst Terugkeer en Vertrek (DT&V)
- Centraal Orgaan Asielopvang (COA)
- Raad voor de Rechtsbijstand (RvR)
- (Municipalities)

Another important restriction for this research is that it does not deal with spatial distribution of the asylum seekers. Furthermore, not all the different types of locations from COA are discussed equally. The main focus is on the central reception centres (col), process reception centres (pol) and asylum seekers centres (AZC). This report does not distinguish asylum seekers of different nationalities or age because of a lack of data.

The main focus of this research will be on the results gained by the simulations of the model. However, some insights obtained during the process of building the model will also be shared. The simulation time of the model is 5 years and the initial values used are from the year 2019. Despite the fact that the Dutch migration system deals with daily events, the time-unit for the model is set to weeks in consultation with the different migration partners. In order to model the daily events inside organisations, another modelling technique like discrete event simulation or even combined discrete-continuous modelling could be used (Banks, 1998). Of course a further explanation of the modelling method will be given when the methodology is described in Chapter 2.2.

1.3 Outline

In Chapter 2.2, the research approach and methodologies used will be clarified. Thereafter, in Chapter 3, the Dutch migration system will be described. First the roles of the different organisations in the chain will be mentioned, thereafter the newly introduced track-system will be explained and at last the current state of the system will be discussed. After that, in Chapter 4.2, the transformation from the system into the model will be described. First the modelling of the different organisations will be described. Thereafter, other important variables will be mentioned. At last, the verification and validation of the model will be discussed. In Chapter 5 the results of the analysis will be explained. First by running simulations with separate policies. Thereafter, some interesting combinations of policies will be simulated. In Chapter 6, conclusions will be drawn from the simulations. In the Discussion in Chapter 7, a reflection will be given on the the process, the model and the results. At last, in Chapter 8, some recommendations for further development of the model and future research will be given.

Chapter 2

Research approach and methodology

In this chapter the research approach and methods used will be described. First the research approach will be defined by splitting the research question up in different sub-questions using a process diagram from J. W. Forrester (1994). Thereafter, the methods used for answering each sub-question will be explained.

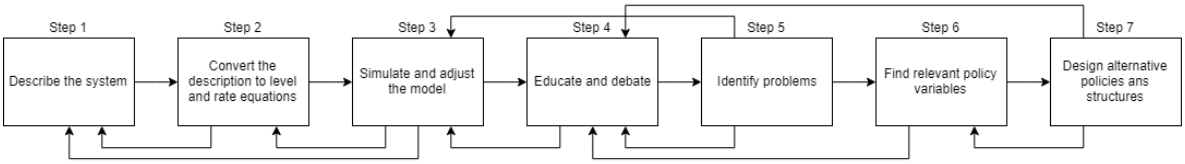
2.1 Research approach

As explained in Chapter 1, the migration system in the Netherlands is a challenge that influences the lives of a lot of asylum seekers. According to H. Kwakkel and Pruyt (2013), exploratory system dynamics modelling is a promising approach for addressing deeply uncertain dynamically complex societal challenges. System Dynamics (SD) is a modelling method that is commonly used to model nonlinear behaviour of complicated systems over time. This continuous-time method uses stocks, flows, time-delays and feedback effects to gain better understanding of complex issues and problems (Pruyt, 2013). In order to structure the research approach, a process diagram from the founder of System Dynamics was modified. The original process diagram from J. W. Forrester (1994) can be found in Appendix A. The adjusted process diagram is shown in Figure 2.1

The first step in the process diagram is "Describe the system". This step is still relevant, and was therefore also carried out during this research. This was done by performing a literature review and conducting field research, which will be further explained in Section 2.2. The second step, "Convert description to level and rate equations", is needed to convert the model description into a system dynamics model. This was done by using software called Vensim. Vensim is simulation software for improving the performance of real systems. It is used for developing, analysing and packaging dynamic feedback models (Vensim, 2019). It is not unusual that the description from the system changes during the conversion to the model. This is indicated with the arrow back to step 1. The next step in the original process diagram is "Simulate the model". This step was changed into "Simulate and adjust the model". J. W. Forrester (1994) already described that this step needs to be done over and over to keep improving the model. One of the biggest adjustments in the new process diagram, is that the "Educate and debate" step is brought forward. This was done because it is very important to constantly update the different organisations concerned with the project. Therefore, step 4

in the new process diagram is "Educate and debate". This step will be repeated several times in combination with step 3. This basically means that the model will constantly be adjusted in consultation with the organisations concerned. This is needed in order to gain support for the model. Step 5, "Identify problems" is added to the original process diagram. This step also needs to be repeated in combination with step 4 several times, in order to identify the problems together with the organisations concerned. The next step in the process diagram is "Find relevant policy variables". This step was added to the diagram, because it is important to find out which variables can be influenced by the different organisations. Therefore, this step is also backwards connected to "Educate and Debate". Step 6 in the process diagram is "Design alternative policies and structures". This step is the same as step 4 from the original process diagram. The original diagram concludes with "Implement changes in policies and structure". This step was not copied into the adjusted diagram, because implementation is beyond the scope of this research.

Figure 2.1: Adjusted process diagram from J. W. Forrester (1994)



In Section 1.1, a research question was given. In order to structure this research, the process diagram from Figure 2.1 was used to generate sub-questions. However, not all the steps could be directly translated into a question. Step 1, "Describe the system", was transposed to "What does the Dutch migration system look like?". Step 2 and 3 are used for building the model, and were not included as sub-questions. Step 4, "Educate and debate" was transformed into "How can policy makers be included in the process of modelling and simulating?". Step 5, "Identify problems" was turned into "What are the bottlenecks and problems in the Dutch migration system?". Step 6, "Find relevant policy variables" was transformed to "Which variables could be influenced by policy makers?". The last step, "Design alternative policies and structures" has been adjusted to "Which policies could be used to improve the system?". Notice that no alternative structures are mentioned, because changing the structure of the Dutch migration system was not investigated during this research. Summarising, the research question and sub-questions are as follows:

Which policies could be implemented in the migration system in the Netherlands in order to solve the current problems and create a robust system for the future?

1. *What does the Dutch migration system look like?*

2. *How can policy makers be included in the process of modelling and simulating?*

3. *What are the bottlenecks and problems in the Dutch migration system?*

4. *Which variables could be influenced by policy makers?*

5. *Which policies could be used to improve the system?*

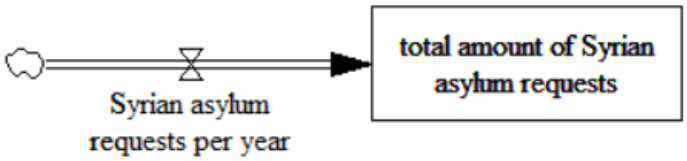
2.2 Methodology

In this chapter, a research method will be proposed for each sub-question. Sub-question 1 and 2 will be answered using a literature review combined with field research. In order to answer sub-questions 3 to 5, a literature research is conducted, combined with the results from the System Dynamics model. In Section 2.2.1, the use of System Dynamics will be explained. Thereafter, in Section 2.2.3, the literature research will be clarified. In Section 2.2.4, an explanation will be given on the field research that was performed. At last, in Section 2.2.5, the workshops and meetings that were organised during this research will be discussed.

2.2.1 System Dynamics

As mentioned before, a System Dynamics model was used to answer the sub-questions 3 to 5. System dynamics was created during the mid-1950s by Professor Jay W. Forrester of the Massachusetts Institute of Technology (System Dynamics Society, 2019). Relations, feedback effects, accumulation effects, and delays of complex non-linear systems are modelled using mainly first order differential equations (J. Forrester, 1961; Pruyt, 2013). By simulating different runs and analysing its outcomes, a better understanding of a system can be achieved. Considering this research, especially the accumulation effects and delays are of huge importance. To explain this, a simple stock and flow structure is shown in Figure 2.2.

Figure 2.2: Simple stock-flow structure for Syrian asylum requests



The flow "Syrian asylum requests per year" is the inflow of asylum requests from Syrian refugees per year during 1988 and 2018 (as shown in the Section 1.1). The stock "total amount of Syrian asylum requests" is the accumulated amount of Syrian asylum requests over this period. In Figure 2.3 the graphs for both of these variables are shown. As can be seen, the inflow of Syrian asylum requests per year results in a total of 74.120 asylum requests during 1988 and 2018.

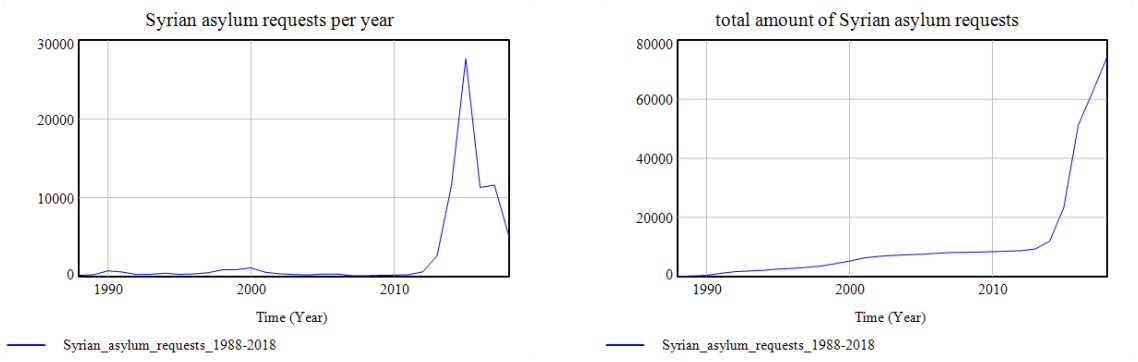


Figure 2.3: Syrian asylum requests 1988-2018

2.2.2 Exploratory Modelling Analysis

Deep uncertainty can be dealt with using exploratory modelling analysis (EMA). EMA uses computational experiments to analyse complex systems while taking uncertainties into account (Bankes, 1993). To this extent, this study used the Python library EMA Workbench (J. H. Kwakkel, 2017). With EMA, it is possible to run a lot of simulations using uncertainty ranges for different values. In this way, System Dynamics (SD) and EMA complement each other. SD is able to deal with complex relations and feedback effects, while EMA has the ability to overcome system uncertainties. While EMA is normally used to apply uncertainty to constants, in this research a structure was build inside Vensim to generate fluctuating values over time. This was necessary to generate fluctuations in the amount of asylum requests in order to generate different future scenarios. This random scenario generator will be further discussed in Section 4.4.

2.2.3 Literature Review

In order to gather information about the Dutch migration system, a literature review was conducted. Much data about the Dutch migration system is available, however, these are not scientific sources. Therefore, articles and papers from governmental organisations were used. A lot of information from the Dutch government is open source. Political decisions, annual reports and parliamentary questions are well documented and can be found on the internet. This information, in combination with the field research, was used to explain how the Dutch migration system works. This explanation can be found in Chapter 3.

Finding different keywords to find interesting articles and papers was an iterating process. Some of the sources gave interesting new keywords to use in the searching process. In this process, searching was done backward and forward. Search backward can be easily done by looking at the citations from an interesting source. Search engines like Google Scholar make it possible to search forward, this is done by looking up which other sources cited a specific article or paper.

System dynamics modelling has been used before to model migration. However, most of these articles are about migration between continents and countries or inside the borders of one country. Bakewell (2013); Bijwaard (2010); De Haas (2010); Wigman (2018) focus on a SD model with demographic factors that influence the migration dynamics. Bijwaard (2010) developed a migration dynamics model for the Netherlands, while Wigman (2018) focused on migration-related problems from a global perspective. De Haas (2010) and Bakewell (2013) focus on migration processes using SD models. Struik and Pruyt (2018) do mention the migration chain in the Netherlands. However, only a very simplified model about the procedures of IND is mentioned. Furthermore the distribution of migrants amongst the Netherlands after receiving a residence permit is modelled. Only one comparable research of modelling a migration chain like the Dutch migration system using SD could be found. This article was written by Mosterd and Hutten (2016) and is used in this research to identify Key Performance Indicators (KPIs). However, Mosterd and Hutten (2016) do not report on deep uncertainty using exploratory modelling techniques. Modelling of the a migration chain and exploring policies under deep uncertainty was never done before. This research focuses on the migration chain of the Netherlands using stocks and flows. Flows are used to represent the flow of asylum seekers through and between organisations, while stocks are used to represent waiting asylum seekers due to delays or insufficient organisational capacity from the migration partners.

2.2.4 Field Research

As mentioned before, field research was a very important part of this research. This importance of field research was two-fold: on one hand, the field research needed to be conducted to gather necessary information about the system. As Kapiszewski, MacLean, and Read (2018) stated:

> "More information about politics around the world becomes available online with each passing day. Governments digitize parliamentary proceedings, ministry documents, and the contents of national archives. Yet despite the wealth of information that the digital revolution has placed at our fingertips, being present in the places where politics plays out remains critical to our ability to understand and gain insight into political processes."

On the other hand, field research contributes to gaining acceptance for the model. This can be easily linked to the "Educate and Debate" step in the process diagram from Section 2.1. In the next paragraph, some insight will be given in the need of field research in order to collect information. Thereafter, the necessity of field research for acceptance for the model will be explained.

Collecting information through field research

Although a lot of information is available through the internet. Some information is not digital, and never will be. Therefore, insight into actor's lived experiences in the field can contribute to the study of politics (Wedeen, 2010). Furthermore, by relying on prepackaged, digital sources, we risk becoming trapped by the biases, limitations and assumptions of those who compile data and put it on Web servers (Jerven, 2013). Therefore, different meetings were arranged with the different organisations of the Dutch migration system. The first meeting was arranged in cooperation with Programmalijn Gezamenlijke Planning Asiel (GPA). This is a department of the Ministerie van Justitie en Veiligheid (J&V), which falls under the departments Directoraat Generaal Migratie (DGM) and Programma Flexibilisering (FLEX). In Appendix D, a complete overview of the different meetings and workshops with the different organisations of the Dutch migration system can be found.

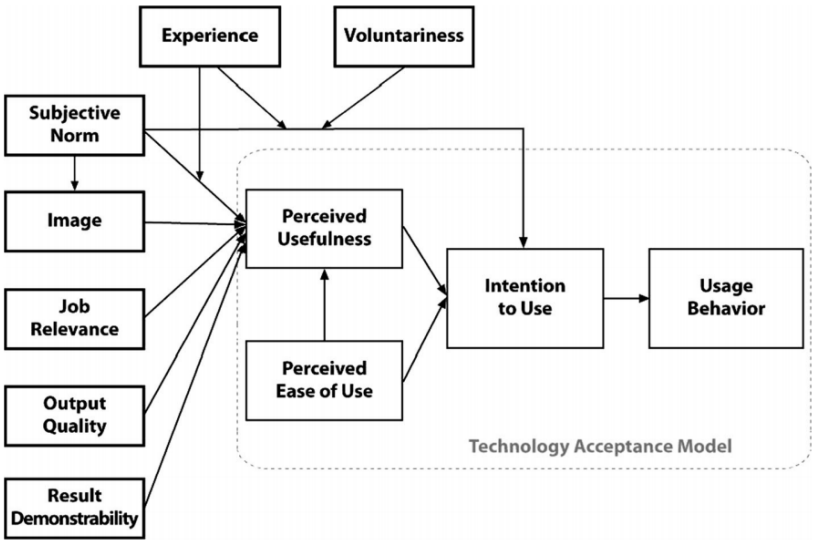
During these meetings and workshops, whiteboards were used to sketch the Dutch migration system together with the different organisations. This helped in understanding how these organisations looked at their own system. Furthermore, it helped the organisations to structure their thoughts about their own and other organisations. Besides sketching the structure of the system, which was later used to develop the model, some of the data used in the model was also gathered during these meetings and workshops. According to Kapiszewski, MacLean, and Read (2015), seeing data in context rather than in isolation can lead to more, and more accurate insights. Moreover, by generating own data in context, researchers are freed from relying on data-collection decisions and practices of other researchers and institutions.

In this way the diversion of asylum seekers across different tracks was discussed with the different organisations. However, this information was later justified by using data from the annual reports from IND. Since no data was available about the human resources of IND, this data was also gathered during the meetings. Furthermore, the different base case scenarios used for the simulations were supplied by GPA.

Providing acceptance for the model through field research

Besides gathering useful information for the model, the meetings and workshops (see Section 2.2.5) during the field research were also important to gain acceptance for the model. This will be explained in this paragraph using the Technology Acceptance Model (TAM). TAM was introduced by Davis, F.D. (1986), and claims that the *Actual System Use* is directly dependent on the *Attitude Toward Using*, which in turn depends on the *Perceived Usefulness* and *Perceived Ease of Use*. *Perceived Usefulness*, defined as the extent to which a person believes that using the system will enhance his or her job performance, and *Perceived Ease of Use* of use, defined as the extent to which a person believes that using the system will be free of effort. In Figure 2.4, an extension of the TAM model from Venkatesh, V. and Davis, F.D. (2000) can be found. This model will be used to explain the usefulness of field research to gain acceptance for new technology.

Figure 2.4: Technology Acceptance Model (TAM) (Venkatesh, V. and Davis, F.D., 2000)



As can be seen in Figure 2.4, the TAM is extended with some external variables. The *Experience* and *Voluntariness* influence the *Subjective Norm*. However, the relationship of these variables is proven to be not significant Venkatesh, V. and Davis, F.D. (2000), and will therefore not be used in this explanation. The other five variables directly influence the *Perceived Usefulness*, knowing:

1. *Subjective Norm*: the influence of others on the user's decision to use or not to use the technology;

2. *Image*: the desire of the user to maintain a favourable standing among others;

3. *Job Relevance*: the degree to which the technology was applicable;

4. *Output Quality*: the extent to which the technology adequately performed the required tasks;

5. *Result Demonstrability*: the production of tangible results.

Considering the *subjective norm*, the meetings are important to show potential users that the staff of other organisations is also willing to invest in the model. This influences the willingness to use the model. The same goes for the *image* of potential users of the model. The *job relevance* of the model was shown during several workshops, but most importantly the workshop with Forio in Amersfoort (see Section 2.2.5), where a first version of the model was demonstrated and used by the staff of different organisations. The *output quality* was also shown during this meeting. However, together with *result demonstrability*, these remain difficult variables due to a lack of data and information for the model. This strongly influences the output, and thus the *output quality* and *result demonstrability*. Nevertheless, making it possible to play with the model in an environment like Forio contributes to the confidence of potential users in the model generating tangible results.

2.2.5 Meetings and Workshops

As mentioned before, several meetings were organised together with the migration partners. Some of the meeting focused on gathering information or data about the migration system, while others focused on updating the organisations about the model. Appendix D shows a complete overview of all the meetings that took place. This section provides information about the workshops that were organised.

In order to give decision makers a better understanding of what a model is capable of, workshops were organised in which participants used a Forio dashboard to play with the model. Forio can be used to simulate Vensim models online. A version of the workshop from 05-14 can be found on `https://forio.com/app/woutervanbekhoven/workshop_05-14/`. During the workshops, attendees were able to simulate three different scenarios in steps of 10 weeks. While simulating, they were able to implement certain policies for the different organisations in the Dutch migration system. They could implement different policies for KMar AVIM, IND, COA and DT&V. These policies influenced the other organisations in such a way that the complexity of the system became clear during the sessions. A screenshot of a part of the dasbhoard can be found in Figure 2.5. A complete screenshot of the Forio dashboard can be found in Appendix D.

As can be seen, the attendees were able to distribute the capacity of IND staff amongst the different tracks. During these workshops, it was not possible to open track 3 and 5, because that part of the model was not built yet. Furthermore, the attendees were able to scale up or down the different capacities of COA locations. The goal was to have enough capacity to house all the asylum seekers in the different procedures. When too much capacity was used, participants scored less points.

Furthermore, sketches were used to achieve a better understanding of the system amongst the different organisations. Figure 2.6 shows a sketch in which the fish tanks represent the typical stock-flow structure of the model. The IND staff member moves the fishes "asylum seekers" from one fish tank to the other. The DTV crane removes some of the asylum seekers, but is not able to handle the inflow. The fish tanks itself are COA locations and fully dependent on the actions of the other organisations. A question to test understanding was "What would a COA employee be doing right now?". Only few of the applicants understood directly that his role was simply building more fish tanks in order to have enough room for all the fishes.

Figure 2.5: Screenshot of a part of the Forio dashboard

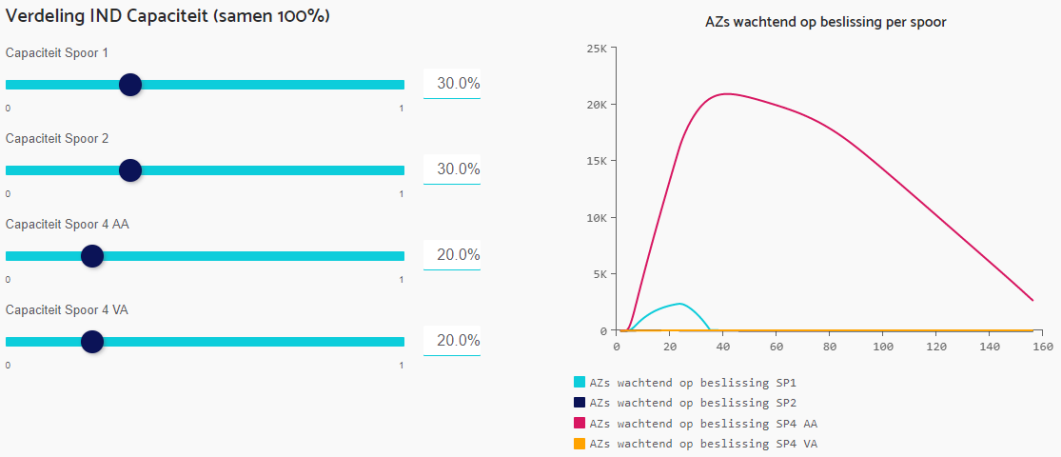
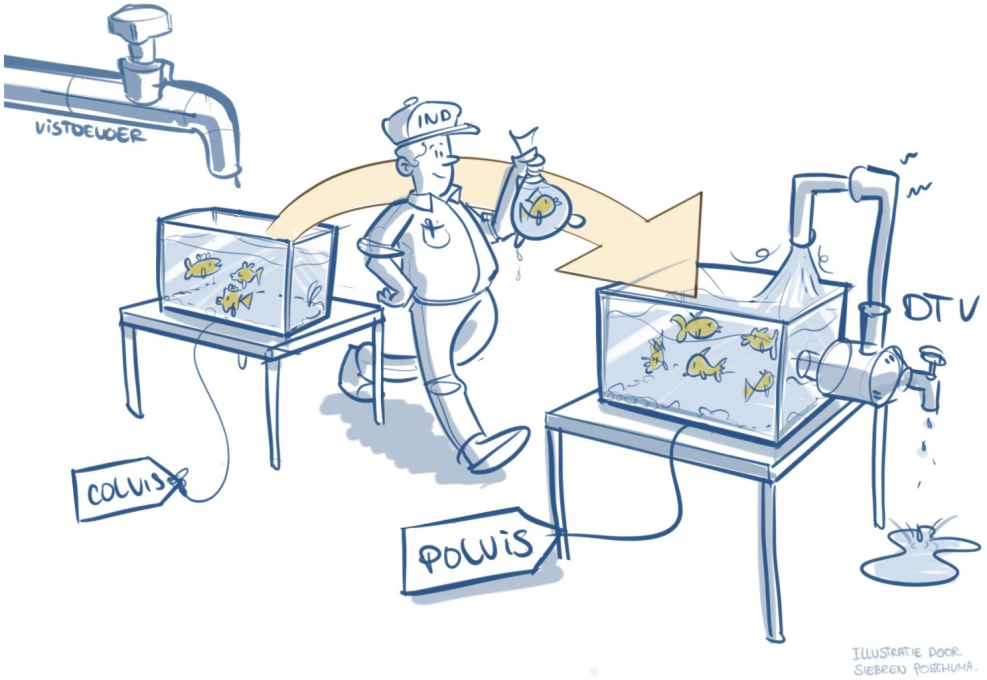


Figure 2.6: Sketch to create better understanding of the system for the organisations



Chapter 3

The Dutch migration system

In this chapter the Dutch migration system will be described. First the different organisations will be mentioned, considering their role in and perspective on the system. Thereafter the track-system introduced in 2016 will be explained.

3.1 Organisations in the migration chain

As explained in Chapter 1.2, not all the organisations in the migration chain are represented in the model due to the scope of this project. Only the organisations that are part of the model will be discussed here.

3.1.1 Koninklijke Marechaussee (KMar)

The Koninklijke Marechaussee is responsible for watching the safety of the Dutch State inside and outside of the Netherlands. They are worldwide deployed on places of strategic importance. For example the Royal palaces, but also war and crisis areas around the world. Furthermore, they have shared responsibility, together with the other European countries, for checking the European borders (Koninlijke Marechaussee, 2019).

Considering the migration system, the role of the Koninklijke Marechaussee is two-fold. On one hand, they are responsible for national safety, and thus for misbehaviour of asylum seekers in the Netherlands. On the other hand, they are responsible for checking the Dutch airports and seaports. Persons who wish to enter or leave the Schengen area via the Netherlands have to pass a border crossing point and undergo an identity check. These checks are performed by the KMar (Ministerie van Defensie, 2019). The Schengen area is an agreement between 26 European countries. As a resident of the European Union, you are allowed to travel freely within these countries. The identity checks only take place at the borders of the Schengen area (Rijksoverheid, 2019b). Considering the model, the only role for the KMar is the identity check when asylum seekers ask for asylum inside the Netherlands. However, in reality they are also concerned about national safety.

3.1.2 Afdeling Vreemdelingenpoltie, Identificatie en Mensenhandel (AVIM)

Afdeling Vreemdelingenpoltie, Identificatie en Mensenhandel (AVIM) has different tasks considering the migration system. The most important task for AVIM is the tracking of criminal asylum seekers. Such criminal activities could for example be human trafficking or identity

fraud. AVIM tries to track down the correct information of these asylum seekers like their name, address and country of origin (Politie, 2019). Another task for AVIM is checking clothings and luggage when asylum seekers visit the Netherlands. They take photos and fingerprints and are also allowed to ask questions about the travelling route, other asylum applications and family members. Furthermore, they check if an asylum seeker has original documents to substantiate their story (Immigratie- en Naturalisatiedienst, 2019). AVIM is also responsible for the weekly reporting obligation of asylum seekers during their stay in COA locations (Centraal Orgaan Asielopvang, 2019a). Considering the model, only the identification task is build in due to the scope of this project. More information about this can be found in Sections 1.2 and 4.1.

3.1.3 Immigratie- en Naturalisatiedienst (IND)

As an organisation, the Immigratie- en Naturalisatiedienst (IND) is part of the Ministerie van Justitie en Veiligheid (J&V). They are responsible for the immigration policy in the Netherlands. This means that the IND assesses all applications for residence from people who want to live in the Netherlands or who want to get a Dutch nationality. This may involve refugees who are not safe in their own country, and therefore want to apply for asylum, but also people who want to live in the Netherlands for work, study or to form a family with someone who already lives here. In addition, the IND handles requests from people who have lived in the Netherlands for such a long time that they want to apply for a Dutch passport (Immigratie- & Naturalisatiedienst, 2019).

Considering the migration system, the IND has one of the hardest jobs to do. That is why a significant part of the model consists of the decision making structure of the IND. Another part consists of a sub-model to calculate the human resources available at IND. More information on how this was build can be found in Section 4.2. Furthermore, the political pressure on the IND is very high, because it operates directly under the responsibility of the State Secretary of the Ministry of J&V.

3.1.4 Dienst Terugkeer en Vertrek (DT&V)

The Dienst Terugkeer en Vertrek (DT&V) is responsible for expediting the voluntary and forced departure of asylum seekers who are not allowed to stay in the Netherlands. The DT&V operates on behalf of JV. They work in close partnership with other agencies involved in the asylum and migration process. Furthermore, they act as the point of contact for the authorities in the countries of origin and their diplomatic representatives. In the model the only task modelled for DT&V is the departure of asylum seekers with no legal options left. This process differs based on the track that an asylum seeker was in. How this is exactly represented in the model will be further explained in Section 4.2.

3.1.5 Centraal Orgaan Asielopvang (COA)

The Centraal Orgaan Asielopvang (COA) is responsible for housing the asylum seekers from the moment they apply for asylum until they have a residence permit or have to leave the Netherlands. Besides making sure that these asylum seekers have somewhere to live, the COA also makes sure they have food, pocket money and access to basic services such as health care. This is laid down in the Regulation for Provisions for Asylum Seekers and other categories of foreign nationals (Rva) (Centraal Orgaan Asielopvang, 2019b). Every asylum

seeker has right to reception from COA during the asylum procedure. In case of a repeated asylum application, there is no right to reception, unless someone enters the Extended Asylum Procedure (VA), which will be further explained in Section 3.2. There are also circumstances in which an asylum seeker loses the right to reception, for example if he misbehaves in such a way that he is declared an undesirable foreign national. Where an asylum seeker lives, depends on the phase of the asylum procedure (Centraal Orgaan Asielopvang, 2019b). There are approximately 15 different types of locations spread across approximately 54 locations in the Netherlands. At this moment the model does only deal with 3 types of locations and there is no geographical spreading of the asylum locations. The most important types of locations will be mentioned here. Not all these types of locations could be modelled at this moment, because of a lack of data about nationalities and minors. In Section 4.1 the types of locations in the model will be discussed. The most important types of locations are (Centraal Orgaan Asielopvang, 2019c):

- **Centrale ontvangstlocatie (col):** Asylum seekers that just arrived in the Netherlands are accommodated in central reception centres (col). They receive shelter, have access to medically required care, central meals, and receive guidance in the preparation for the asylum application. There are col's in Ter Apel and Budel-Cranendonck.

- **Proces opvanglocatie (pol):** Asylum seekers who are in the first phase of their asylum procedure, receive accommodation in a process reception centre (pol). The locations are located near an office of the IND. The main activities in these locations are meetings between asylum seekers and their lawyers, provision of information by the Dutch Council for Refugees and medical advice.

- **Asielzoekerscentrum (AZC):** Asylum seekers centres (AZC) are used for the extended procedure, which will be further explained in Section 3.2 and persons entitled to a residence permit who are waiting for a home in the Netherlands. Most of the asylum seekers in the Netherlands stay in an AZC. They have to cook their own meals and do their own shopping. They usually share a kitchen with five to eight other asylum seekers.

- **Kleine woonvoorziening (kwv):** A small housing facility (kwv) is a small-scale shelter (16-20 places) for "Aleenstaande minderjarige vreemdelingen" (amv). Translated this means unaccompanied minor foreign nationals. These are basically the AZCs for minors. There are also pol-amv locations.

- **Vrijheidsbeperkende locatie (vbl):** Asylum seekers who have exhausted all legal remedies and are no longer entitled to reception in an AZC stay in a freedom-restricting centre (vbl). They are allowed to stay there for a maximum of 12 weeks. The house rules are more strict than in an AZC, for example, the residents must report 5 days a week. They are allowed to leave the site, but have to stay within the boundaries of the municipality in which the vbl is located. There is a vbl in Ter Apel.

- **Gezinslocatie (glo):** Families who have exhausted all their legal remedies and are no longer entitled to reception in an AZC, but have children under 18, stay in family centres (glo). This is caused by the fact that children under the age of 18 retain the right to shelter even after the asylum application has been rejected. Children in these type of locations have the same rights as in an AZC. Adults in these type of locations only receive money to buy food, have to report 5 days a week, and are not allowed

to go outside the municipal boundaries in which their glo is located. The guidance in these centres is focused on departure from the Netherlands. From the moment the child becomes of age, the right to shelter ends.

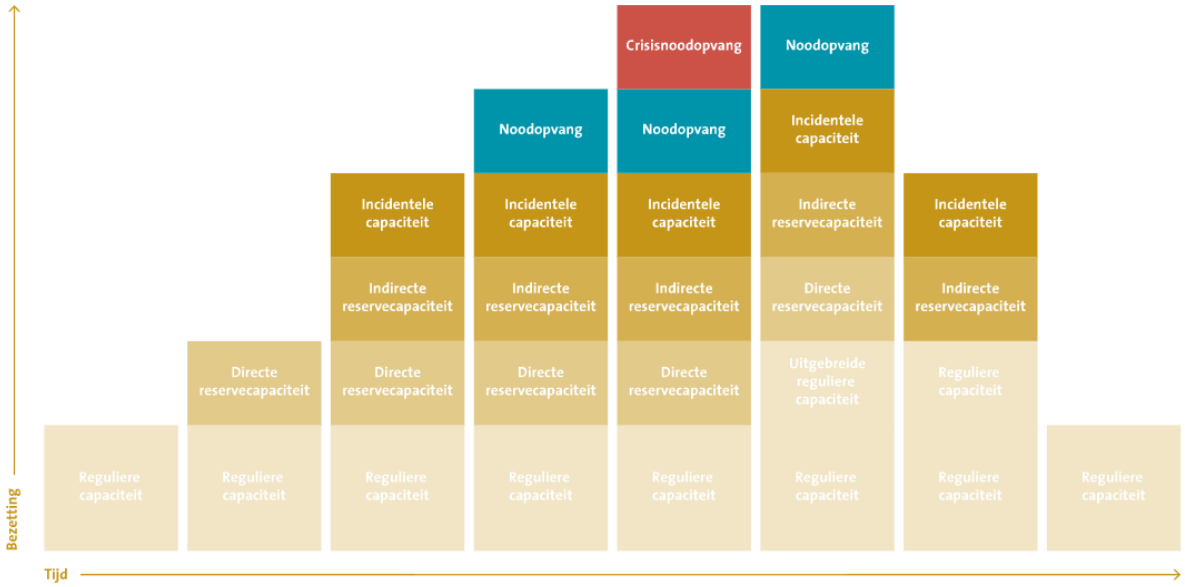
- **Intensief begeleidende opvang (ibo):** Reception centres with intensive guidance (ibo) are for residents who are insufficiently able to function independently in a regular reception centre. Therefore they receive intensive guidance. They learn skills and behaviour with which their self-reliance increases so that they can function better in a regular shelter. The goal is to return these residents to a regular reception centre.
- **Extra begeleiding en toezichtlocatie (ebtl):** In a reception centre with additional guidance and supervision (ebtl), there is place for about 50 asylum seekers who cause nuisance in an asylum seekers centre, but are entitled to reception. In principle, a person who causes nuisance is placed in the ebtl for 3 months. The house rules in an ebtl are stricter than in an AZC. The residents are obliged to follow an intensive day programme and they must report when they leave the site and come back. They do not receive financial benefits such as in a regular reception centre. There are ebtl's in Amsterdam and Hoogeveen.

COA has to respond on different amounts of asylum seekers living in the Netherlands. Therefore, they have a flexible way of scaling up and down their capacity. There are five different types of capacities for COA locations:

1. **Regular capacity:** For regular capacity, a decision is twice a year.
2. **Direct reserve capacity:** Direct available capacity within two weeks. These locations are available through contracts with municipalities.
3. **Indirect reserve capacity:** These locations are available in 3 to 9 months in consultation with municipalities.
4. **Incidental capacity:** Locations that could be used on the short term when needed. For example, recreation parks, empty prisons, etc.
5. **Emergency capacity:** Temporary capacity with lower quality like event halls.
6. **Crisis emergency capacity:** Locations that are used for emergency situations like gyms.

These capacities are scaled up and down as explained in Figure 3.1. Unfortunately, there is not much information available about how much of the different types of capacities COA has and how much time it takes to respond to changes in capacities. Therefore assumptions had to be made in order to model the capacities from COA.

Figure 3.1: COA up- and downscaling in reality (Centraal Orgaan Asielopvang, 2018)



3.2 The Dutch track-system explained

Since the summer of 2015, the number of asylum seekers is firmly increased. In order to keep the waiting time for asylum seekers as short as possible, a new policy was introduced in March 2016, the so-called track policy (Dijkhoff, 2016). This new policy is executed by the IND. All asylum seekers are placed in a certain track with a specific procedure for different types of requests. This makes sure that an asylum seeker from Syria, which has a high chance of getting a residence permit, does not get the same process as an asylum seeker from, for example, Germany, who has a very low chance of getting a residence permit. It is important to mention that even when someone has a small chance of getting a residence permit, they still have to go through the whole process of the IND. These tracks are thus only meant to fasten this process. The different tracks are (Boeding, 2016):

Track 1: Dublin procedure

This track is for asylum seekers that already have, or should have, requested asylum in another European country. For example when they reached the Netherlands by going through another country. In such a case, the other European country is responsible for this asylum seeker.

Track 2: Safe homeland or legal residence in another EU-country

Asylum requests are placed in this track when the asylum seeker comes from a country that is qualified as safe on the European list of safe countries of origin (Rijksoverheid, 2019a). When a country is on this list, the Netherlands (and other European countries) are not obligated to give these people a residence permit. However, some refugees could have different reasons to flee their country. Some safe countries could be unsafe because of sexual orientation or religion of the asylum seeker. In such a case these asylum seekers will be switched to track 4.

Track 3: Evident acceptance

Asylum seekers that clearly qualify for a residence permit can be quickly accepted in this track. This could for example be well documented Syrians, Stateless Palestinians from Syria and Eritreans (Dijkhoff, 2015). This track was closed when the track-system was introduced in March 2016 and has never been used. The same counts for track 5. These tracks can only be put into use by the State Secretary of J&V.

Track 4: General Asylum procedure

This track is used for asylum seekers that do not directly fit in one of the other tracks. This track follows the standard asylum procedure. Since track 3 and 5 are not used at this moment, all these cases are dealt with in track 4. Thus, the most asylum seekers are on track 4. Therefore, this track is overcrowded and split in the "normal procedure (AA)" and "extended procedure (VA)". These procedures will be further explained in Section 3.3.

Track 5: Evident acceptance after short research

When asylum seekers clearly qualify for a residence permit but a short research is needed, for example to check someones nationality, they can be quickly accepted in this track. This could, for example, be not well documented Syrians. Just like track 3, this track has never been used and can only be activated by the State Secretary of J&V.

3.3 The complete asylum procedure

In this section, the complete asylum procedure will be explained as clear as possible. There are small differences between the "border procedure" and the "normal procedure". The biggest difference is the order in visiting the KMar and AVIM. With the border procedure, KMar takes over some of the steps from AVIM, since the asylum seeker did not directly go the the application centre in Ter Apel, but arrived at a seaport or airport. In this explanation, the order of the model will be followed. The asylum procedure consists of six steps in total, consisting of the first appointments with the KMar and AVIM and the general asylum procedure of IND (Immigratie- en Naturalisatiedienst, 2019). In case the asylum request gets denied, the asylum seekers have the option to apply for a repeated asylum procedure (HASA). Furthermore, there are several reasons why asylum seekers have to go to the extended asylum procedure (VA). For example, an IND employee, interpreter, lawyer, or the asylum seeker itself can get ill, or the IND simply does not have enough employees to deal with all the asylum requests at a certain moment. Furthermore, it is possible for asylum seekers to appeal against almost every decision from the IND. After that, second appeal is also a possibility. Normally, the asylum procedure consists of six steps, which are described below. After these steps, the asylum seeker has some legal options left, which are also described. In Appendix B, the asylum procedure is visualised.

Step 1: Reporting and registration

When asylum seekers arrive in the Netherlands, they have to report at the application centre in Ter Apel. AVIM checks their identity and searches their clothing and luggage. They also take photos and fingerprints and check if there are any original documents for the identity, travel route or asylum story. The KMar checks these documents to see if they are authentic.

Step 2: Tuberculosis test

In order to test for tuberculosis, the medical staff takes an X-ray of the lungs of the asylum seeker. If they have tuberculosis, they will receive medical treatment with medication. The asylum procedure will start after the treatment. Asylum seekers from certain countries are not tested for tuberculosis.

Step 3: Reporting interview

An employee of IND will ask questions about, among other things, the identity, origin, family, education, work, life history, living environment, documentation and journey of the asylum seekers. They use this information to indicate in which track of the track-system an asylum seeker needs to be placed and to find out if an asylum seeker needs special treatment based on, for example, their age.

Step 4: Reception

After the reporting interview the asylum seekers go to the col (central reception centres) locations from COA. There are different COA locations for AMV's (minor foreign nationals). In this centre the asylum seekers can rest from their journey and prepare for the asylum procedure. This resting time is called the "Rust en Voorbereidingstijd (RVT)". They get free medical examination, help to prepare for the asylum procedure and a lawyer to help them with the procedure. The duration of the RVT is one week.

Step 5: General asylum procedure

The general asylum procedure (AA) (see Appendix B, Figure B.2) consists of eight days in which the IND will make a decision. These activities during these days are as follows:

- **Day 1:** On the first day there is an initial interview with an IND staff member. The IND uses an independent interpreter for the translation. The IND will write a report on this meeting that will be handed over to the asylum seeker by his/her lawyer.
- **Day 2:** The asylum seeker talks the interview report through with his lawyer. The lawyer passes any errors and/or additions to the IND in a letter. Together they prepare for the second interview with the IND.
- **Day 3:** On the third day, a detailed interview at the IND office will take place. Again an independent interpreter translates the conversation and a report will be send through the lawyer.
- **Day 4:** The asylum seeker talks with his lawyer and checks the interview report. Any errors and/or additions are passed to the IND in a letter.
- **Day 5:** An IND staff members reads the interviews with the IND and the letters from the lawyer about them. After that he makes a decision whether the asylum seeker will receive a residence permit. There are three possible options:
    1. The asylum seeker receives a temporary asylum residence permit.
    2. The IND needs more time to make a good decision. The asylum seeker leaves the general asylum procedure (AA) and enters the extended asylum procedure (VA).

3. The asylum seeker does not get a residence permit.

- **Day 6:** The asylum seeker talks with his lawyer and is able to disagree with the rejection of the IND with a letter sent through the lawyer.
- **Day 7 and 8:** The IND staff member reads the letter from the lawyer and decides if the decision must be changed. Again, there are three options:

    1. The decision changes: The asylum seeker receives a temporary asylum residence permit.
    2. The IND needs more time to make a good decision. The asylum seeker leaves the general asylum procedure (AA) and enters the extended asylum procedure (VA).
    3. The decision does not change: The asylum seeker does not get a residence permit.

Step 6: After the General Asylum Procedure (AA)

When the AA procedure has ended, there are three options left:

1. The asylum seeker receives a temporary asylum residence permit. He is allowed to work and live in the Netherlands. However, he has to wait until housing in municipalities becomes available. Until that time he lives in an AZC.
2. The asylum seeker does not get a residence permit. Three options are given:
    (a) The asylum seeker has 28 days to return to his country of origin. Otherwise the DT&V arranges a forced return. AMV's do have a right to reception as long as they are minor and their return has not been arranged yet.
    (b) The asylum seeker appeals against the decision from the IND
    (c) The asylum seeker applies for a repeated asylum application (HASA), because something has changed in their country of origin or personal situation.
3. The asylum seeker enters the extended asylum procedure (VA).

In the last step of this procedure, it becomes clear that the asylum procedure does not necessarily end here. In case the asylum seeker gets a residence permit, COA and municipalities need to make sure that housing becomes available for the asylum seeker. In case the asylum seeker does not get a residence permit, DT&v needs to arrange return to the country of origin. The asylum seeker also has the option to appeal against the decision of the IND. Later on, he also has a second option to appeal. The asylum seeker also has the option to apply for HASA. At last it could be possible that the asylum seeker enters the VA procedure due to different reasons. The HASA procedure is not included in the model, due to a lack of data. Therefore, the HASA procedure will not be explained here. The VA procedure is explained below.

The extended asylum procedure (VA) has a lot in common with the general asylum procedure. The biggest difference is that it can take a lot longer before a decision is made by the IND. According to the law, this can take up to 6 months. The law also makes it possible to extend this period up to 18 months. Another difference is that during the extended asylum procedure, the asylum seeker will be housed in an AZC instead of a pol location from COA. The asylum seeker only has to visit the IND office when the IND has more questions for them. At the end of the procedure there are two possible outcomes:

1. The asylum seeker receives a temporary asylum residence permit. He is allowed to work and live in the Netherlands. However, he has to wait until housing in municipalities becomes available. Until that time he lives in an AZC.

2. The asylum seeker does not receive a residence permit. In that case he is able to reply with a viewpoint (written reply to the intended decision). In the viewpoint the asylum seeker explains why he does not agree with the decision of the IND). After reading this letter the IND decides to:

   (a) Give the asylum seeker a temporary asylum residence permit after all.

   (b) Do not give the asylum seeker a residence permit. In this case the asylum seeker has two options:

      i. The asylum seeker has 28 days to return to his country of origin. Otherwise the DT&V arranges a forced return. AMV's do have a right to reception as long as they are minor and their return has not been arranged yet.

      ii. The asylum seeker appeals against this decision in court. Later on, he also has a second option to appeal. When he still does not get a residence permit, there are no legal options left.

Chapter 4

The model

In this chapter the model will be described in detail. First the modelling of the different organisations will be explained. Thereafter, other important parts and variables of the model will be described like the policy variables, Key Performance Indicators (KPIs) and the creation of scenarios. After the model explanation, the results of the base case scenarios will be described. At last, the model verification and validation will be discussed.

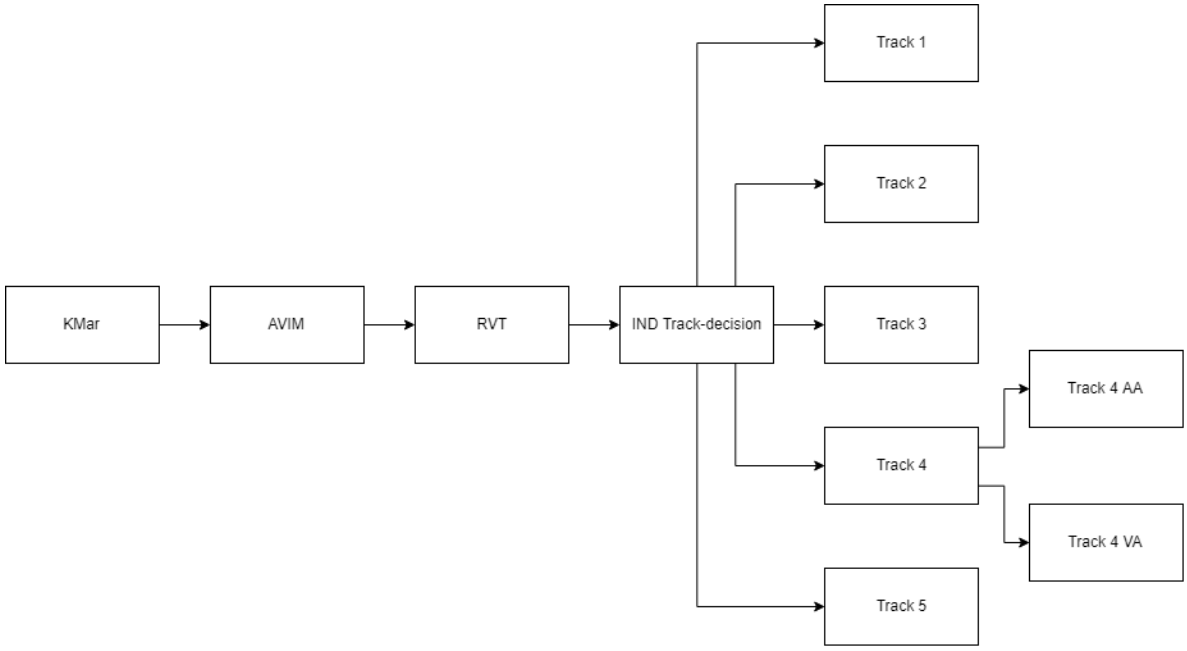
4.1 Modelling of the different organisations

In this chapter the implementation of the different organisations in the model in comparison to the real system will be discussed. It is important to notice that the structures of these different organisations were established in close cooperation with the organisations. Different workshops were organised, as can be seen in Appendix D. It is important to mention that municipalities were added to the model. This was done because part of the problem is that asylum seekers with a residence permit are still waiting for housing by municipalities, which causes them to keep living in an AZC.

4.1.1 KMar and AVIM

At this point the modelling of the KMar and AVIM is as simple as possible, because there is little data available about these organisations. The asylum seekers simply flow through these organisations with a delay of half a day for the KMar and half a day for AVIM. A capacity model was added for the workshops, in which the attendees were able to scale up or down the human resources of both organisations. This was mostly done to involve these organisations into the workshop. However, the effects of capacity changes of KMar and AVIM were also taken into account during this research. The capacity model for KMar and AVIM was build in such a way that each organisations has respectively 4.000 and 5.000 employee hours each week. This could be translated into 100 and 125 FTE. The time for one asylum seeker is modelled as 1 hour for KMar and 2 hours for AVIM procedures. A visualisation of the arrival of asylum seekers can be found in Figure 4.1. As can be seen, after the KMar and AVIM, a decision for a track is made by IND. This will be explained in the next section.

Figure 4.1: KMar, AVIM and track-decision



4.1.2 IND

After the KMar and AVIM procedures, a track decision is made by IND based on the collected information. In the model this is done based on different scenarios. Scenarios consist of a certain inflow per week changing over time, and a distribution of this inflow over the different tracks. This will be further explained in Section 4.2. It has been assumed that the decision for a track by the IND is made during the "Rust en Voorbereidingstijd" (RVT) from the asylum seeker. Therefore, there is no delay modelled for the IND decision. After a decision for a track is made (see Figure 4.1), the IND process starts.

A visualisation of the IND process is given in Figure 4.3. This process is the same for every track, except that delay times differ per track. The explanation of these different delay times is given in Appendix C. At this point, it is important to mention that the IND consists of two departments considering migration, knowing Asylum and Legal. The first decision considering an asylum seeker is made by an employee of the Asylum department. As can be seen in Figure 4.3, the model uses a sub-process for this decision. The steps in this sub-process correspond with the steps from the general asylum procedure, explained in Section 3.3. After a decision is made, the asylum seeker either gets a residence permit or not. When a residence permit is given, the asylum seeker starts waiting for housing in a municipality. When no residence permit is given, the asylum seeker is able to appeal or not. When the asylum seeker appeals, a new decision needs to be made. Thereafter, the process repeats. An asylum seeker is allowed to appeal two times against a decision of the IND.

Besides the basic process of the IND, another important part was added to the model. When first simulating the migration system, no big problems considering waiting times occurred. After talking to the different organisations, it became clear that the agreed standard times between organisation were not always met. Therefore, waiting points for asylum seekers were added to the model. To calculate the time that asylum seekers have to wait before an IND decision is made, a human resources model for IND was built. As explained before, the IND consists of an Asylum and a Legal department. Considering the Legal department, every employee has the same competences. However, considering the Asylum department, employees have different competences for dealing with the general asylum procedure. Not all the IND staff is able or allowed to perform the same steps of the procedures. This is split up in "Initial interviews", "Detailed interviews", "Intentional decisions" and "Decisions" in consultation with an IND expert during the meetings. Some of the staff members are able to perform several tasks, and have thus a combination of these competences. In order to model this, an ageing chain is used, as can be seen in figure 4.2. The initial capacity from IND is distributed amongst the several steps in the ageing chain. During the simulations, when no capacity is needed, the model starts to educated IND staff, which expands their competences. However, new IND staff will only be educated if this policy is used.

Figure 4.2: IND Human resources sub-model

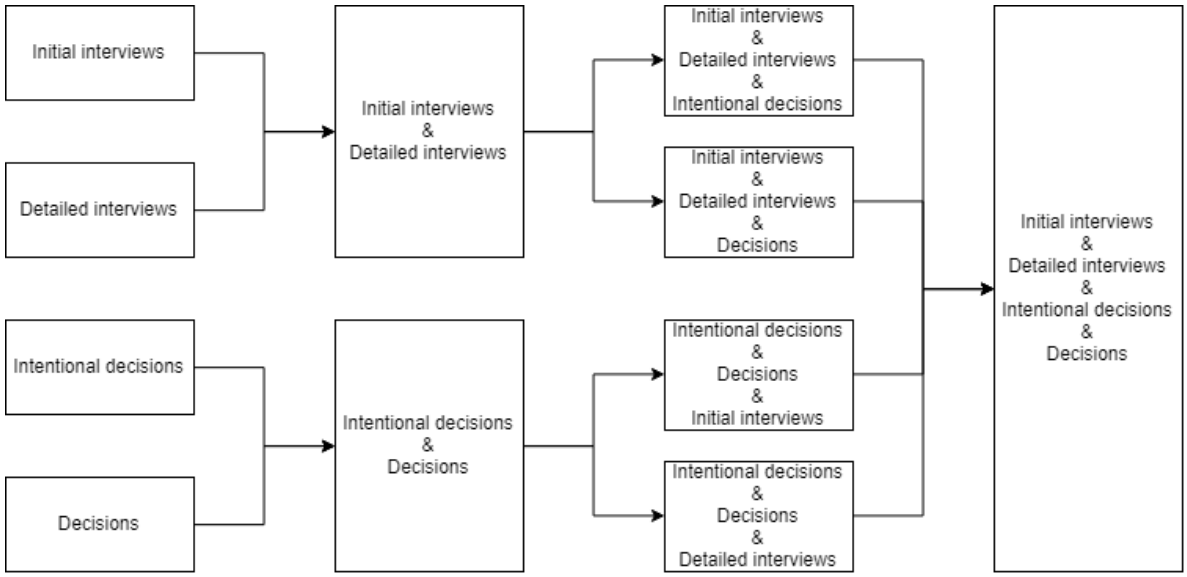
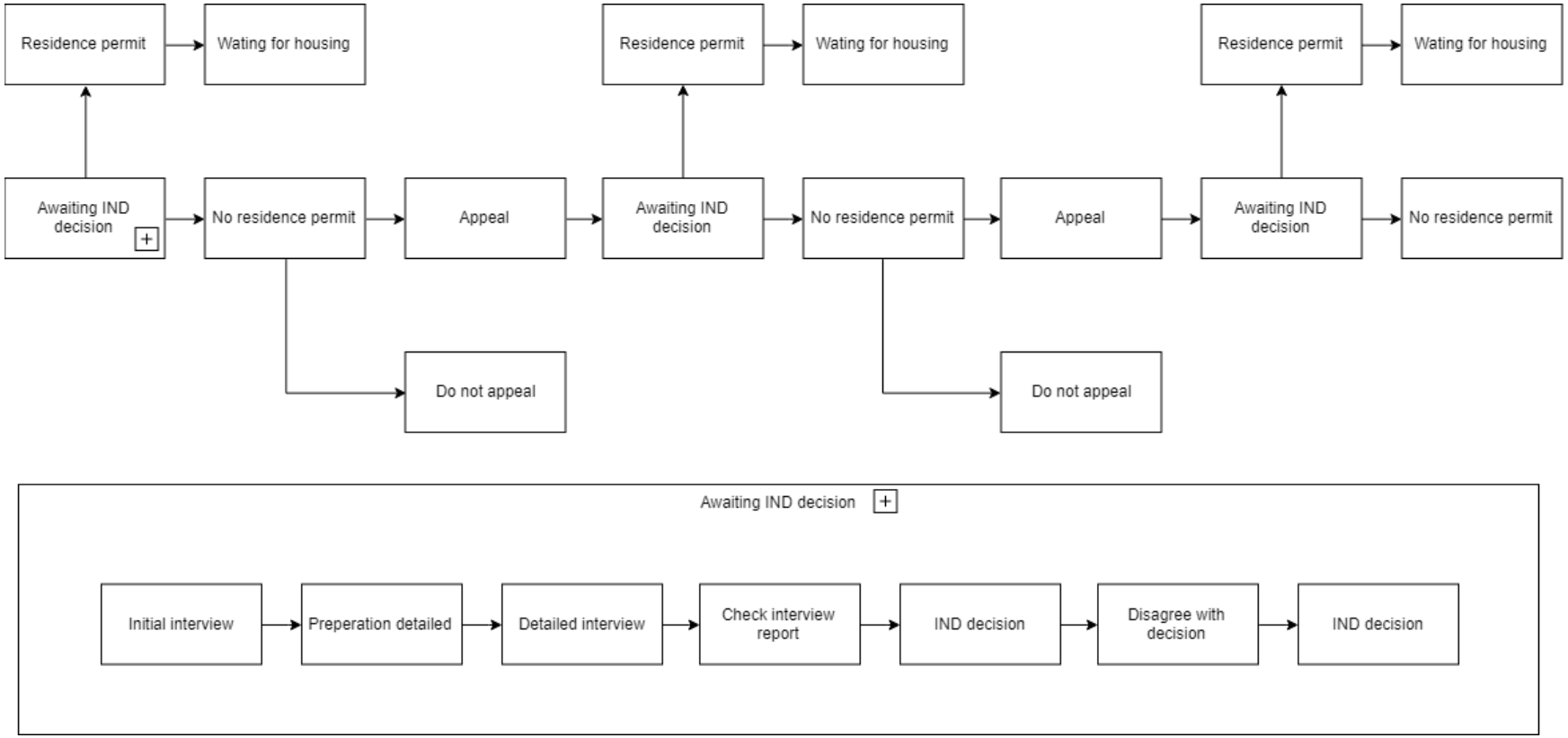


Figure 4.3: Example of track in the model



4.1.3 DT&V

The DT&V part of the model is just like the AVIM and KMar part not very detailed due to a lack of information about this organisation. Furthermore, this organisation is not causing delays in the real system, and is therefore less important for the analysis. However, a basic structure for DT&V with agreed standard times was built. Asylum seekers that do not get a residence permit in the Netherlands are going to DT&V. According to the model, all asylum seekers without a residence permit leave the Netherlands at a certain point. However, in reality, some of the asylum seekers disappear without supervision of DT&V. This limitation of the model will be further discussed in Chapter 7.

In reality, asylum seekers get a different procedure at DT&V based on the track they have followed. In Figures 4.4, 4.5 and 4.6, these different procedures are visualised. As can be seen, in track 1 the asylum seekers only have a first and final departure interview. In track 2, besides the interviews, a restrictive measure is imposed and travelling documents are collected. For track 4, besides the interviews, departure options are checked and travelling documents are collected. Since there is no information available about the procedures for track 3 and 5, because they were never used, these tracks are modelled exactly the same as track 4. This was done because the hypothetical asylum seekers for track 3 and 5 are now in track 4.

Figure 4.4: DT&V Track 1

Figure 4.5: DT&V Track 2

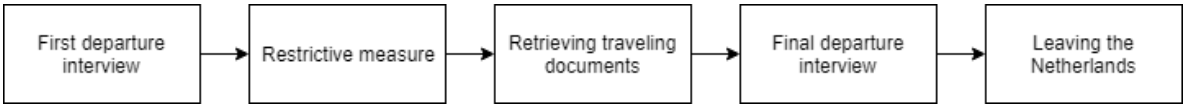
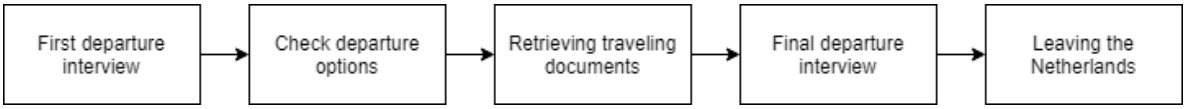


Figure 4.6: DT&V Track 4



4.1.4 COA

As mentioned in Section 3.1, COA has different types of locations for different stages in the asylum procedure. Not all the location types of COA are implemented in the model. For example, the AMV locations were not modelled, because the model does not deal with age at this moment. Furthermore, the smaller locations were not taken into account. At this moment, the model consists of three types of locations:

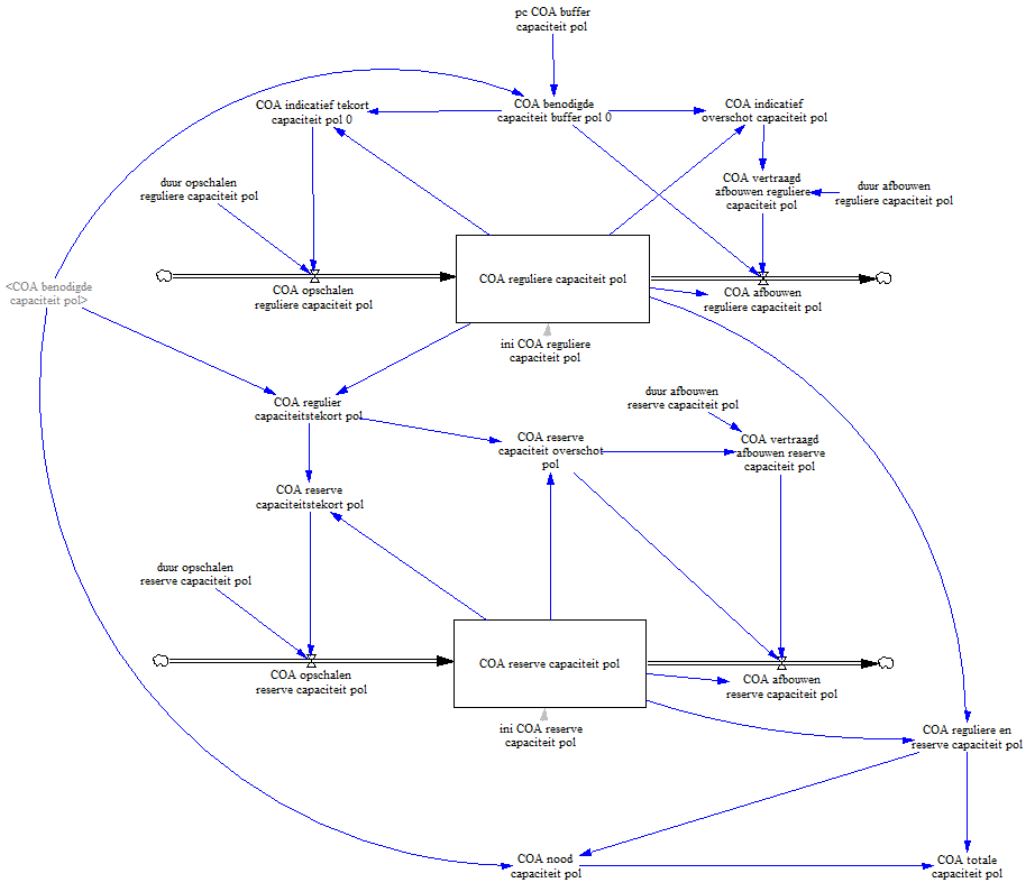
- **Central reception centre (col):** All the asylum seekers in the model that are in the processes of the KMar or AVIM are housed in col locations.

- **Process reception centre (pol):** Asylum seekers in the tracks 1, 2 and 4 AA are in pol locations. Furthermore, in case track 3 and 5 are activated, these asylum seekers are also housed in pol locations.

- **Asylum seekers centre (AZC):** Asylum seekers in track 4 VA and asylum seekers that have already received a residence permit but are waiting for housing in municipalities, are in AZC locations.

A problem for COA is that the requested capacity at a certain point in the future is not easy to predict. Therefore, they use a specific way of scaling up and down their capacity. As shown in Section 3.1.5, there are five different types of capacities. In the model, only regular capacity, reserve capacity and emergency capacity is implemented. It has been assumed that every type of location (col/pol/AZC) scales up and down in the same way. The model starts with an initial regular capacity. In order to be prepared for fluctuations in the amount of asylum seekers, COA has a buffer of 9 percent on their regular capacity. When more capacity is needed, the regular capacity can be scaled up with a delay of 16 weeks. Therefore, sometimes little regular capacity will be available. When this happens, reserve capacity can be scaled up with a delay of two weeks. The rest of the requested capacity is filled up with emergency capacity. A screenshot of how this is modelled can be found in Figure 4.7.

Figure 4.7: COA up- and downscaling in the model



4.1.5 Municipalities

As described before, municipalities are added as one of the organisations from the migration system. This was done because municipalities play a huge role in the system. During the asylum procedure, municipalities work closely together with COA in order to organise reception for asylum seekers. After the procedure, the asylum seekers who received a residence permit, the so-called statusholders, have to get a place to live in the municipalities. The first part, organising reception with COA, was not implemented in the model since this is pure communication between these organisations. The second part, housing statusholders, needed to be implemented in the model, because otherwise asylum seekers would stay in AZCs until the end of the simulation.

Three ways were modelled to let statusholders flow from AZCs to housing in municipalities. The first is using the "taakstellingen" from 2015 to 2019. Taakstellingen are amounts of statusholders that are assigned to municipalities by the Dutch government (Rijksoverheid, 2019c). From now on, these will be called municipality targets. The statusholders that are waiting for housing flow to these municipalities proportional on the amount of waiting statusholders per track. The second way is a constant flow of statusholders to municipalities per week. The third way is a delay for housing. In this way every statusholder in the model gets a place to live after a specific amount of weeks.

4.2 Important variables

In the previous section, the different organisations in the model were described. In this section, the rest of the model will be explained. First the use of the different policy variables will be explained. Thereafter, the KPIs and the way to interpret these will be mentioned. At last, the remaining important variables will be discusssed.

4.2.1 Policy variables

In the previous section, the different scenarios were discussed. These scenarios are variables that cannot be influenced by policy makers. In this section, the variables in the model that can be changed will be discussed. As discussed before, there are no policy variables for DT&V, and only a capacity model is used for the KMar and AVIM. However, there are KPIs for these organisations. These will be discussed in Section 4.2.2. The policy variables in the model are for the IND. In Table 4.1 all the policy variables are mentioned. In Appendix C all other variables that could be influenced to run different simulations are mentioned. However, these are not all policy variables.

In Table 4.1, the different policy variables of the model are shown. Three of these variables are switches, and are meant to execute a certain policy. When track 3 and 5 are opened, a fixed percentage of the asylum seekers from track 4 is distributed amongst track 3 and 5. The other switches are about the IND capacity. The asylum and legal capacity can be used in different ways. The asylum capacity can be used based on political reasons. At this moment, for example, the main focus of the IND is on track 1 and 2 for political reasons. The IND asylum capacity can also be distributed according to the workload (the number of asylum seekers waiting in a certain track) or the opportunity of asylum seekers getting a residence permit. Since the legal procedure consists of two steps, the legal capacity needs to be

distributed. This can be done using equal distribution of capacity or distribution according to the workload. Furthermore, the legal capacity can be distributed according to political reasons or according to the workload. The other policy variables can be used for educating IND staff for the Asylum or Legal department.

Table 4.1: Policy variables

Variable	Standard value	Explanation
SWITCH geen0 vertraging1 door capaciteitstekort KMar AVIM	0	When this switch is 1, the capacity model for KMar and AVIM will be put into use.
SWITCH SP3-5 dicht1 open2	1	When this switch is 1, track 3 and 5 will not be used. When it is 2, track 3 and 5 will be put into action.
SWITCH CapInzet politiek1 workload2 kansrijkheid3	1	With this switch the usage of the asylum capacity from IND can be determined. Capacity can be used based on political ideas, the workload from IND or the chance of asylum seekers getting residence permit.
SWITCH IND Juridische capaciteit gelijk1 workload2	2	With this switch the usage of the legal capacity from IND can be determined. The capacity can be equally divided, or divided based on the workload.
timing IND opleidingsgolf	1	With this variable the point in time were new asylum capacity from IND will be educated can be determined.
opleidingsgolf IND capaciteit BS	0	The amount of asylum IND capacity educated for final decisions.
opleidingsgolf IND capaciteit VN	0	The amount of asylum IND capacity educated for intended decisions.
opleidingsgolf IND capaciteit NG	0	The amount of asylum IND capacity educated for detailed interviews.
opleidingsgolf IND capaciteit EG	0	The amount of asylum IND capacity educated for initial interviews.
timing IND opleidingsgolf Juridisch	1	With this variable the point in time were new legal capacity from IND will be educated can be determined.
eenmalige extra opleidingsgolf nieuwe IND capaciteit Juridisch	0	The amount of legal IND capacity educated.
SWITCH GEMEENTEN taakstelling1 constante2 wachttijd3	1	This variable determines whether the statusholder are housed in municipalities according to the "taakstelling", a constant amount or a specific waiting time.

4.2.2 Key Performance Indicators (KPIs)

In order to assess the effects of different policies, KPIs are needed. According to Marr (2012), KPIs are the vital navigation instruments used by managers to understand whether their business is on a successful voyage or whether it is veering off the prosperous path". In order to identify important KPIs, a paper from Mosterd and Hutten (2016) was used. In this paper, five KPIs are used, knowing: "stresslevel Bayern", "migrants in IAFs Bayern", "accepted migrants in IAFs Bayern", "rejected migrants in IAFs Bayern" and "not accomodated migrants". IAFs are Initial Aid Facilitys, which are the reception centres in Germany. The variable "stresslevel Bayern" is influenced by media attention due to not accommodated migrants and total costs. Since the costs are not a part of the model at this moment, and not accomodated migrants already is a KPI in the paper from Mosterd and Hutten (2016), the KPI "stresslevel Bayern" will not be used in this analysis. A list of the KPIs can be found in Table 4.2. In this table, only the total amounts are presented. In Appendix C a complete list of all the output variables is given. These are not all KPIs, but could still be used to evaluate policies.

Table 4.2: KPIs

Variable	Explanation
AZs totaal wachtend op behandeling Asiel	The total amount of asylum seekers awaiting a first decision from IND. This variable is comparable to the "not accommodated migrants" variable from the model of Mosterd and Hutten (2016).
totaal IND Asiel capaciteit niet in gebruik	The total amount of asylum capacity from IND that is not in use at a certain moment. This variable is important, because it is interesting to know if you have overcapacity in an organisation.
AZs totaal wachtend op behandeling Juridisch	The total amount of asylum seekers awaiting a legal decision from IND. These asylum seekers need to be housed by COA, but they are not in any procedure.
totaal IND Juridisch capaciteit niet in gebruik	The total amount of legal capacity from IND that is not in use at a certain moment. This variable is important, because it is interesting to know if you have overcapacity in an organisation.
COA capaciteit col totaal	The total col capacity from COA. Together with the pol and AZC capacities, this variable is the same as the "migrants in IAFs Bayern" from the model of Mosterd and Hutten (2016).
COA capaciteit pol totaal	The total pol capacity from COA. Together with the col and AZC capacities, this variable is the same as the "migrants in IAFs Bayern" from the model of Mosterd and Hutten (2016).
COA capaciteit AZC totaal	The total AZC capacity from COA. This variable is the same as the "accepted migrants in IAFs Bayern" from the model of Mosterd and Hutten (2016).
COA capaciteit totaal	This variable is the total capacity from COA. This is the same variable as the "migrants in IAFs Bayern" from the model of Mosterd and Hutten (2016).
AZs uitstroom naar gemeenten totaal cumulatief	The total amount of statusholders allocated to municipalities summed up over time. This variable is comparable to the "accepted migrants in IAFs Bayern" from the model of (Mosterd & Hutten, 2016).
AZs uitgestroomd totaal	The total amount of rejected asylum seekers summed up over time. These asylum seekers have left the Netherlands expedited by DT&V.

4.2.3 Remaining important variables

In the last sections, the policy variables and KPIs were explained. In this section, the remaining important variables will be clarified. These variables are needed to make sure that the process of asylum seekers going through the model is the same as in the real process. For example, the distribution of asylum seekers during the different steps of the asylum procedure needs to be the same as in reality. The values used for these variables can be found in Appendix C. Furthermore, the time needed to perform a certain task for the staff of different organisations needs to be specified. For these values, the standard norms agreed between the organisations are used. However, not all these norms were available and the organisations did not all agree upon these norms. Therefore, some assumptions had to be made. At this point, the norms are the same for different tracks. It is not clear if they differ per track in reality. The used norms can be found in Appendix C. Furthermore, delay times are needed for certain processes. For example, scaling up or down COA capacities or educating employees. The values used for these variables can also be found in Appendix C. Most of the values in this table are collected through field research. Otherwise, a source is mentioned. At last, initial values are needed at the start the simulation, which can be found in Appendix C. Some of these values could be based on yearly reports from COA. However, since some of these values are already outdated, some of the values are assumptions or collected through field research.

4.3 Base case scenarios

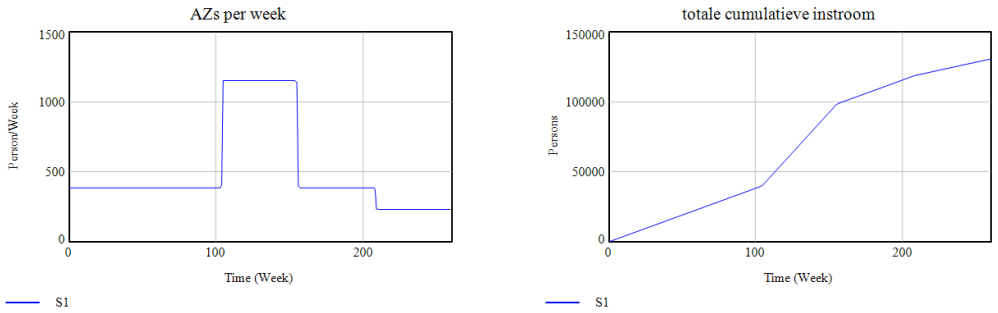
In this section, the base case scenarios of this research will be presented. These scenarios were generated during the meetings with the migration partners and were used while demonstrating the model. In Section 4.3.1, the base case scenarios will be explained. Thereafter, in Section 4.3.2, the results of the base case scenarios will be presented and discussed.

4.3.1 Base case scenarios explained

There are six base case scenarios that are used to represent the results of the model. These scenarios will be explained below using the inflow and cumulative inflow over time. Furthermore, a description of each scenario will be given.

Scenario 1: Civil war in Libya

Civil war in Lybia causes a high amount of asylum seekers to go to Europe. This causes the EU to start Ford Europe. The highest inflow is after two years. Thereafter, the inflow starts to decrease as a result of Ford Europe.

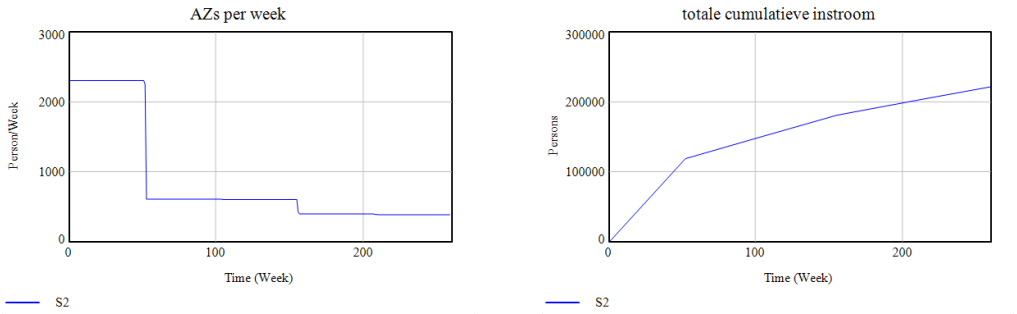


(a) Inflow (b) Cumulative over time

Figure 4.8: Graphs for scenario 1

Scenario 2: Inflow 2015 - 2019

This scenario represents the asylum requests in the period 2015 until 2019. In 2015, war in Syria caused a lot of Syrian refugees to come to the Netherlands. Thereafter, the amount of asylum seekers decreased.

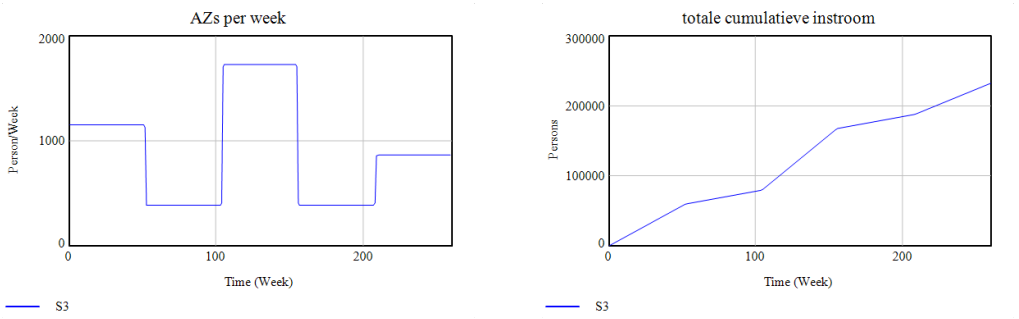


(a) Inflow (b) Cumulative over time

Figure 4.9: Graphs for scenario 2

Scenario 3: Yemenis and Venezuelans

Yemenis that first fled in their own region decide to go to Europe in the first year. A year later, the family of these asylum seekers also comes to the Netherlands. Furthermore, Venezuelans also start to request asylum in the Netherlands. In year five, reassessments of the Yemenis take place, which causes an increase in the amount of asylum requests.

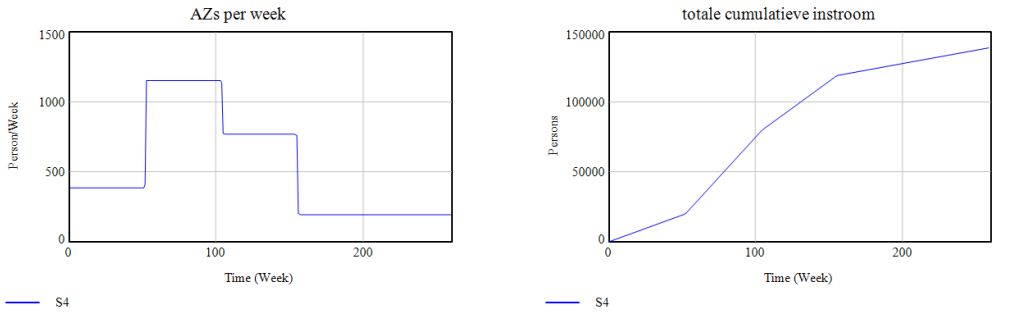


(a) Inflow (b) Cumulative over time

Figure 4.10: Graphs for scenario 3

Scenario 4: Living money in Germany

Living money for asylum seekers in Germany is higher than in the Netherlands. Therefore, a lot of asylum seekers will choose to go to Germany. After 1 year, this situation is reversed, which causes the asylum seekers to request asylum in the Netherlands.

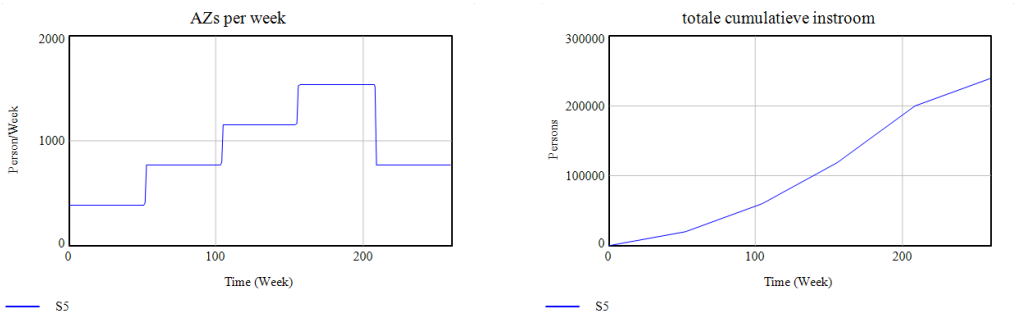


(a) Inflow (b) Cumulative over time

Figure 4.11: Graphs for scenario 4

Scenario 5: Hard Brexit

When the UK leaves the EU, a possible scenario could be that they are not part of the EU refugee program anymore. Therefore, more refugees will request asylum in other European countries, and thus the Netherlands. Furthermore, a hard Brexit could also result in economic refugees from Britain. These two scenarios combined cause an increase in the amount of asylum requests.

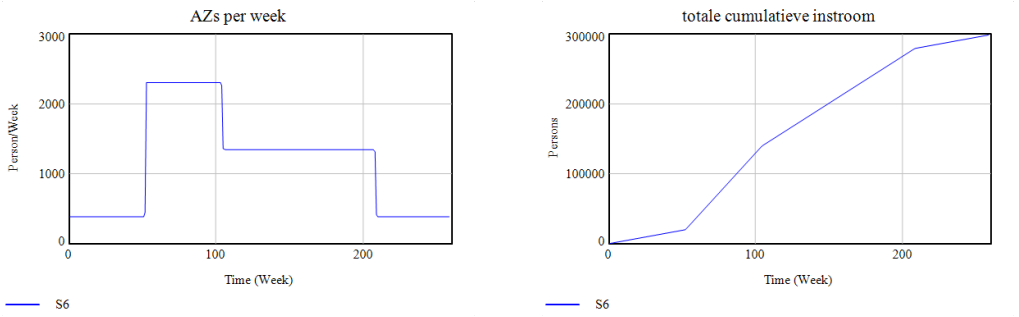


(a) Inflow (b) Cumulative over time

Figure 4.12: Graphs for scenario 5

Scenario 6: War in Turkey (Kurdistan)

This scenario starts relatively quiet. After one year, war in Turkey due to rebellion of Kurds causes a high amount of refugees to request asylum in the Netherlands. This amount decreases over time when the situation in Turkey becomes stable again.



(a) Inflow (b) Cumulative over time

Figure 4.13: Graphs for scenario 6

4.3.2 Results from base case scenarios

In this section the results of the base case scenarios will be discussed. To get used to the model, the results will be explained using the process diagrams presented in Section 4.2. In Figure 4.14, the arrival of asylum seekers is visualised in the process diagram. As can be seen, different inflows cause different behaviour for the asylum seekers housed by COA in the col locations. This is caused by the fact that different amounts of people flow through the processes of the KMar, AVIM and the rest and preparation time. Thereafter, they get distributed amongst the different tracks by IND.

Figure 4.15 gives a visualisation of the track procedure. In this explanation, track 2 is used to describe the results. Notice that the results shown are the total amounts summed up over the different tracks. The amount of asylum seekers in the COA pol locations are the asylum seekers that are in the general asylum procedure. Since IND does not have enough capacity to process the amount to asylum requests, the pol amount of asylum seekers in the pol locations keeps increasing. As a result, the amount of asylum seekers in AZCs keeps relatively stable. This are the asylum seekers that are awaiting housing in municipalities. The only fluctuations in the AZCs are caused by the fluctuations in targets for municipalities. In the end, asylum seekers flow either to the municipalities, or they leave the system via the DT&V.

Besides the KPIs that were discussed right now, there are other KPIs. These KPIs however are not affected by the base case scenarios without using any policies. Therefore, these KPIs were not taken into account during the analysis in this section. However, a complete overview of the results is given in Appendix F.

Figure 4.14: Arrival procedure in stock-flow overview

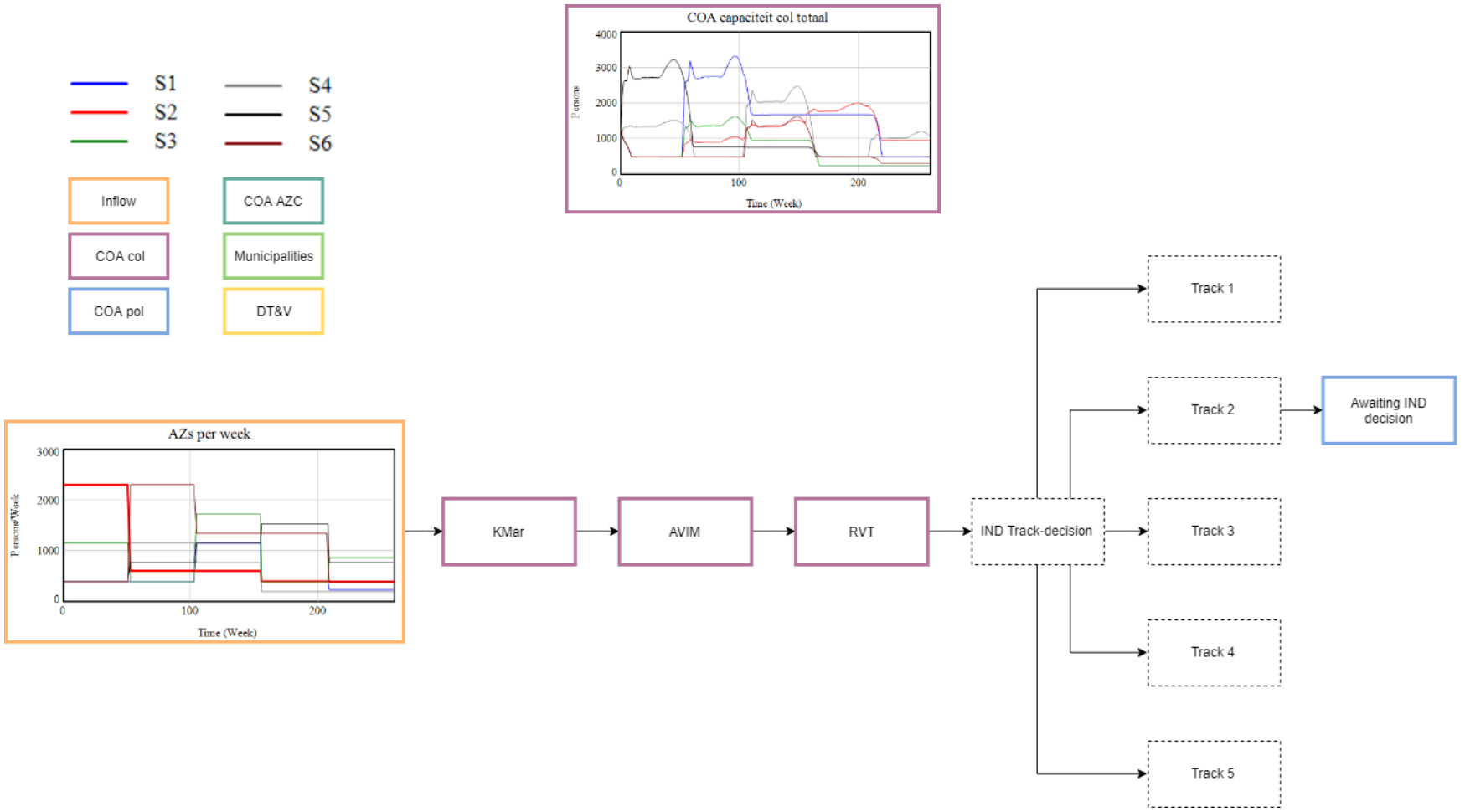
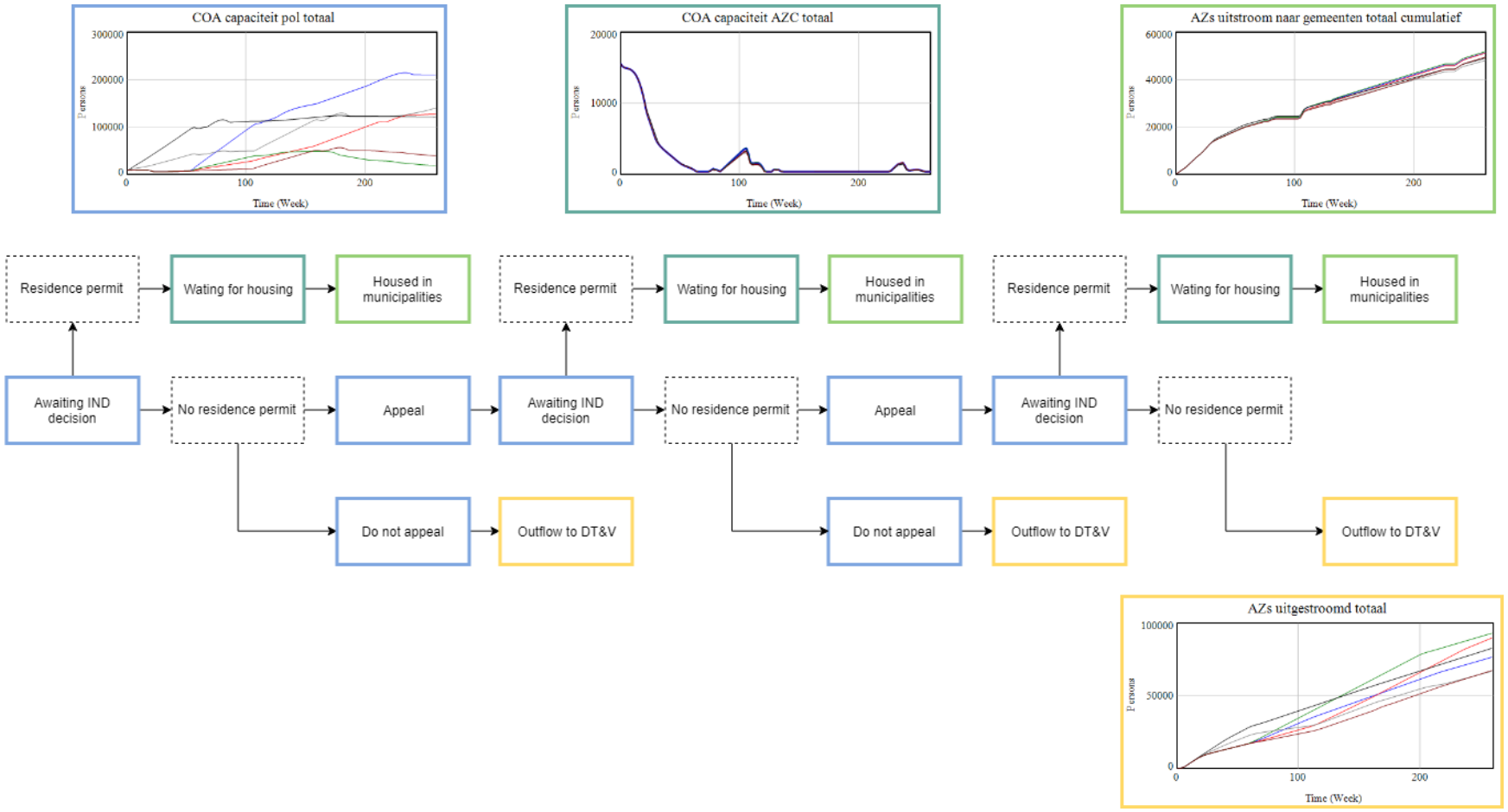
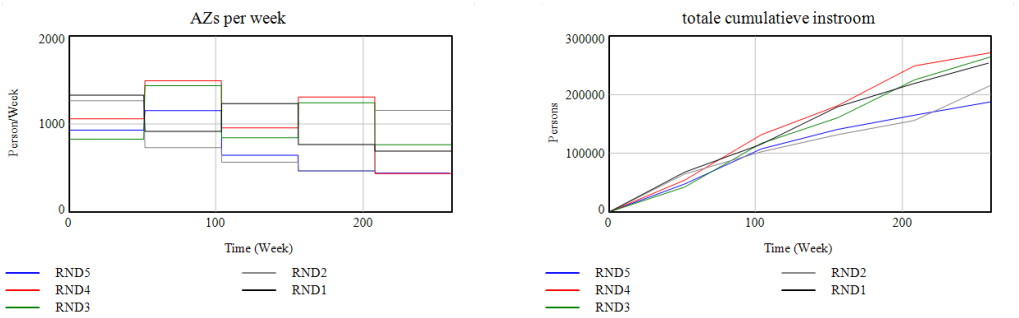


Figure 4.15: Track 2 procedure in stock-flow overview



4.4 Random scenarios

In the previous section, the base case scenarios were discussed. In order to explore the model under deep uncertainty using different policies, a random scenario generator was developed. This generator generates similar scenarios as the base case scenarios. However, the generator is not limited to six scenarios, but is able to generate an infinite amount of possible future inflow scenarios. Furthermore, it distributes the asylum seekers over the different IND tracks using random percentages, to imitate the inflow of different kinds of asylum seekers. At this point, quite simple scenarios are used. This was done in consultation with the project partners. At this point the scenarios created are comparable to the base case scenarios, which makes them easier to interpret. In a further stage, scenarios need to be developed with more unpredictable behaviour and other external influences like seasonality. This will be further discussed in the model reflection in Section 7.2.



(a) Inflow

(b) Cumulative over time

Figure 4.16: Graphs for five random scenarios

In Figure 4.16, five different random scenarios are shown. The left graph shows the inflow per week, the right graph shows the cumulative inflow over time. These scenarios were created using a lower bound of 250 asylum requests per week and an upper bound of 1.500. As can be seen, the behaviour is similar as the behaviour of the base case scenarios. In Chapter 5 (Results), the random scenario generator will be used to generate 1.000 scenarios to test the different policies for different future scenarios.

4.5 Model verification and validation

In the previous chapter, the first results were presented. However, it is important to check whether the results of the simulations are "correct". This concern is addressed through model verification and validation (Sargent, 2010). In this chapter, a framework from Carson and John (2002) is used to verify and validate the migration model. This framework consists of three steps:

1. Test the model for face validity.

2. Test the model over a range of input parameters.

3. Where applicable, compare model predictions to past performance of the actual system or to a baseline model representing an existing system. When designing a new system, compare implemented model behavior to assumptions and specifications.

These steps will be discussed in the next sections. Section 4.5.4 presents the results of the mass balance test.

4.5.1 Face validity

Face validity means that the model is a reasonable imitation of the real-world system according to experts. This means that he model is tested by these experts and that they interpret the results as reasonable (Banks, Carson, Nelson, & Nicol, 2010). An added advantage of having the users involved in validation is that the model's credibility to the users and the user's confidence in the model increases (Banks et al., 2010; Carson & John, 2002). In this research, this was done by the meetings and workshops organised in cooperation with GPA. During these meetings and workshops, the model and the results were shown to the attendees. This ensures the face validity of the model.

4.5.2 Testing over a range of input parameters

In order to test the behaviour of the model, the model needs to be simulated over a wide range of input parameters. This could be considered as a "stress test" for the model (Carson & John, 2002). During this research, a wide range of input parameters was simulated using the random scenario generator. This was done, because the real fluctuations in the amount of asylum requests is hard to forecast. Therefore, the "testing over a range of input parameters" was basically done when interpreting the results presented in Chapter 5.

4.5.3 Compare results to actual system

According to Carson and John (2002), validation by comparing the results to the actual system is at least theoretically possible. This becomes possible in practice if the right data can be collected. Unfortunately not all data needed in order to check the results is available at this point. However, in the future it could be possible to measure the KPIs needed to validate the results of the model.

4.5.4 Mass balance test

In order to test whether the equations used in the model are right, a mass balance test for all base case scenarios was conducted. This test accumulates all the asylum requests over time and subtracts the asylum seekers that live in COA locations, went to municipalities or went to DT&V. Logically, the result of this calculation should be close to zero. The results of this test are shown in Figure 4.17. As can be seen, the mass balance test shows that in some scenarios asylum seekers are created or disappear during the simulations. This is caused by the way the human resources of IND are modelled. This is more an agent based system, which makes it hard to model this using System Dynamics. Therefore, the sub-model used to imitate the human resources of IND a causes asylum seekers to be created or disappear. In scenario 2 and 6 this is even up to 50 asylum seekers. However, considering the total amount of asylum seekers in these scenarios, respectively 300.000 and 200.000, this number is relatively low. Nevertheless, when the model is put into use, this needs to be fixed.

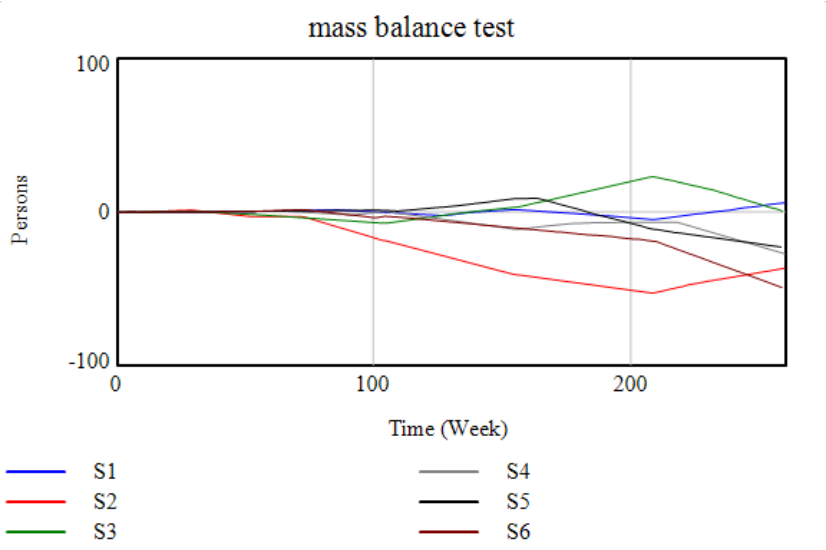


Figure 4.17: Mass balance test

Chapter 5

Results

In this chapter, the results of the analysis will be discussed. First, the experimental setup will be described. Thereafter, in Section 5.2, different possible policies will be explored. In Section 5.3, different policies will be combined to find the most promising solutions. At last, these promising solutions will be compared to each other in Section 5.4.

5.1 Experimental setup

This research was performed using the six base case scenarios described and the random scenario generator to create 1.000 randomised scenarios in order to test the behaviour of the KPIs under deep uncertainty. Since no other uncertainty variables were used during the simulations, 1.000 scenarios was enough to show all different possible behaviours for all the policies. This was figured out by first simulating small amounts of scenarios and increasing the amount of simulations until no new behaviour could be found.

In order to use the EMA Workbench from J. H. Kwakkel (2017), a 32-bit version from Vensim needs to be used. During this research, Vensim DSS 7.3.5 was installed. Furthermore, the EMA Workbench (version 2.0.5) was used with Python 3.7.3 installed. As stated in the introduction the simulation time was set to 260 Weeks (5 years) with "Week" as unit for time in consultation with the migration partners. The integration type used is Euler with a TIMESTEP of 0.015625. This was done because some of the equations in the model have a discrete character. In order to use the results in the EMA Workbench, a SAVEPER 1 TIME STEP was used.

5.2 Policy exploration

In this section, the different policies will be explained and simulated. Simulations are done for the six base case scenarios, and thereafter for 1.000 random scenarios. In this section, only the random scenarios will be interpret and only the important KPIs will be discussed. In Appendix F all results are shown. Since the density of the lines becomes too high to interpret when 1.000 scenarios are simulated, an envelope is used which shows the lowest and highest simulation. Besides that, some of the simulations were drawn to show the separate scenarios. However, in this stage of the research, the behaviour of the envelopes is more important than separate scenarios.

5.2.1 KMar and AVIM capacities

In this section, the effects of a change in the capacities from the KMar and AVIM will be discussed. As mentioned before, only a simplified sub-model for these organisations was used. In the standard version of the model, and thus the "Current" scenarios in the graphs below, the sub-model of these organisations is only a delay of the time needed by the KMar and AVIM. The KMar_AVIM simulations are based on a capacity model for these organisations.

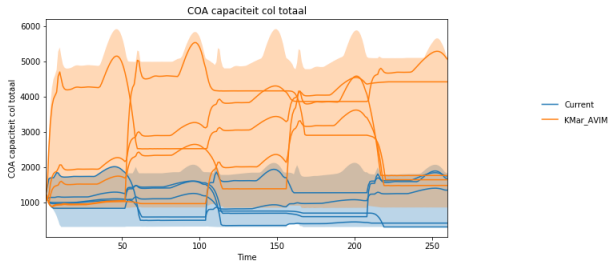


Figure 5.1: KMar and AVIM policy - COA col locations

As expected the implementation of capacities from KMar and AVIM in the model does not have a significant effect on the asylum seekers awaiting an IND Asylum or Legal decision. The only noticeable changes are in the amount of asylum seekers in COA col locations. This is easily explained by the fact that asylum seekers in KMar and AVIM procedures are always in col locations. The effects of switching on the capacity model for KMar and AVIM on the col locations can be seen in Figure 5.1. In the "Current" scenario, a simple delay is used to model the flow through KMar and AVIM. In the "KMar_AVIM" scenario, each procedures takes respectively 1 and 2 hours for KMar and AVIM. Therefore, accumulations start to grow in the col locations from COA. However, as mentioned before, more information about the human resources from KMar and AVIM is needed to draw meaningfull conclusions.

5.2.2 Educate IND staff

In this section the simulations for the policy "Educate IND staff" will be discussed. There are two variants of this policy. The first one is 400 staff members being educated. This policy did have an effect on several of the KPIs. However, it seemed interesting to see what happens if the educated amount was doubled to 800 new employees. Therefore, this was the second policy simulated. In order to simulate the education, the sub-model described in Section 4.1.2 was used. Notice that these policies only consist of educating staff of the IND Asylum department.

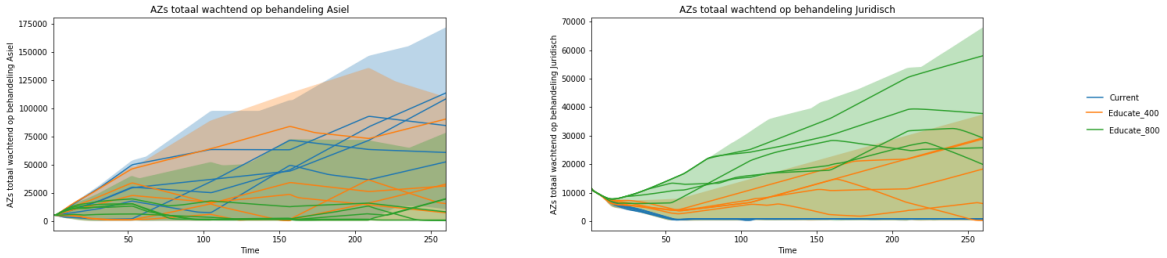


Figure 5.2: Educate IND staff policy - Asylum seekers awaiting IND decisions

As can be seen in Figure 5.2, educating IND staff has a significant impact on the amount of asylum seekers awaiting an IND Asylum decision. However, it is interesting to see that due to a shortage of Legal staff, the accumulation of asylum seekers awaiting a Legal decision starts to grow. When 400 IND staff members are educated, the amount of asylum seekers awaiting an Asylum decision from IND does not change much. However, there are some accumulations in asylum seekers awaiting a Legal decision. When 800 IND staff members are educated, there is a significant effect on the amount of asylum seekers awaiting an Asylum decision, but the accumulation at the Legal department is even bigger.

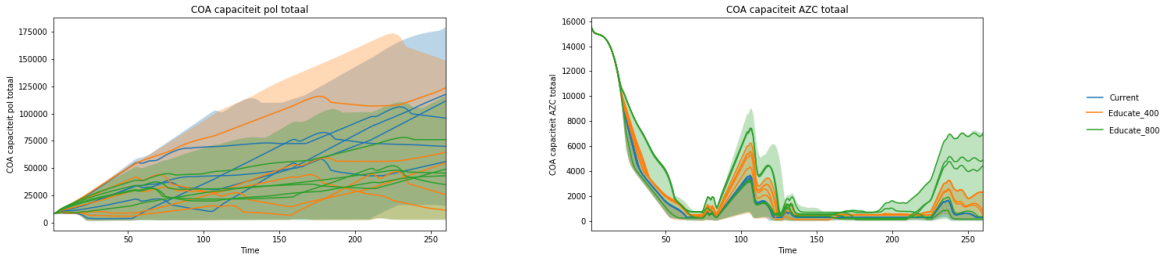


Figure 5.3: Educate IND staff policy - COA capacities

As can be seen in Figure 5.3 , considering COA locations, the "Educate_400" policy does not have a significant effect on the amount of people staying in COA locations. The "Educate_800" scenario does have a significant impact. It is important to mention that educating more IND staff members also results in staff members being not used at certain times. This can be seen in Figure 5.4. Therefore, researching a more flexible deployment of IND staff could be interesting. This policy however does not solve the problems of asylum seekers awaiting decisions on it own.

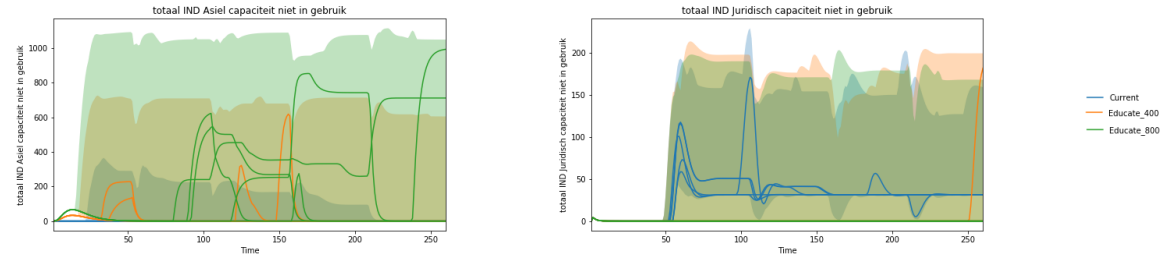


Figure 5.4: Educate IND staff policy - IND staff members not being used

5.2.3 Activate track 3 and 5

As explained in Section 3.2, this policy is already partly implemented in the Dutch migration system. However, track 3 and 5 have never been put into use. In order to activate this policy in the model, some changes had to be made. During normal simulations, no IND capacity is used on tracks 3 and 5. Therefore, during the simulation of this policy, the distribution of the IND capacity was changed as displayed in Table 5.1.

Table 5.1: IND capacity for track 3 and 5 policy

Variable	Current value	Open track 3 and 5 value
pc SP1	0.3	0.25
pc SP2	0.3	0.25
pc SP3	0	0.1
pc SP4 AA	0.2	0.15
pc SP4 VA	0.2	0.15
pc SP5	0	0.1

As can be seen in Table 5.1, the "Current" scenarios uses 30% of the IND capacity on track 1, 30% on track 2 and 40% on track 4. During the "Activate track 3 and 5" policy, this was switched to 25% on track 1, 25% on track 2, 10% on track 3, 30% on track 4 and 10% on track 5. As can be seen in Figure 5.5, activating track 3 and 5 results in a relatively small effect on the amount of asylum seekers awaiting a decision from the IND Asylum department. However, there is a small increase in the amount of asylum seekers awaiting a legal decision, which results in a higher workload for the Legal department of IND.

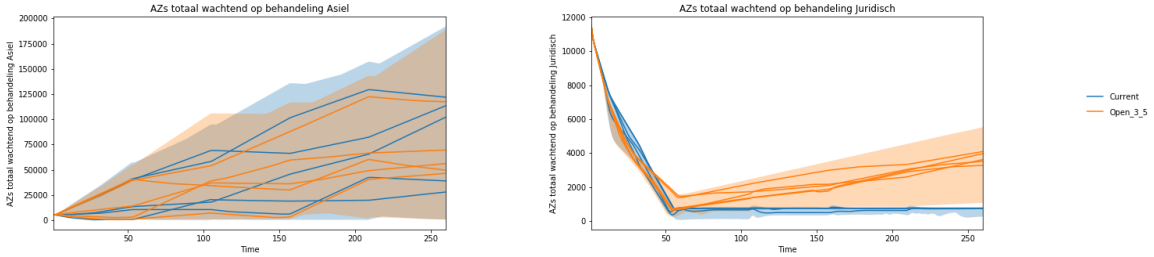


Figure 5.5: Activate track 3 and 5 policy - Asylum seekers awaiting IND decisions

Furthermore, it is logical that activating track 3 and 5 results in a significant increase of the amount of asylum seekers being housed in municipalities, as can be seen in Figure 5.6. Further research into employing statusholders could be interesting in combination with this policy. As can be seen, this policy does not solve the problems on its own, but could be interesting in combination with other policies.

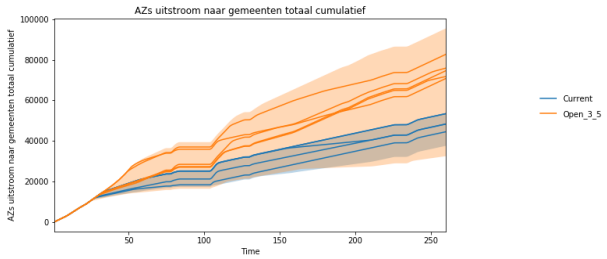


Figure 5.6: Activate track 3 and 5 policy - Statusholders to municipalities

5.2.4 Shifting focus

The shifting focus policy is targeting the distribution of the IND capacity across the different tracks. As mentioned before, the current policy is to focus on track 1 and 2 due to political reasons. This is represented in the model with a higher percentage of the IND capacity used on these tracks, as can be seen in Figure 5.1. With the shifting focus policy, the capacity of IND is distributed according to two different principles. The "Chances" policy focuses on the chances of asylum seekers of getting a residence permit, and uses more capacity for promising asylum seekers. This could be interesting if policy makers want to prioritise on promising cases. The "Workload" policy focuses on the amount of asylum seekers awaiting a decision, and uses more capacity on certain tracks if more asylum seekers are waiting there.

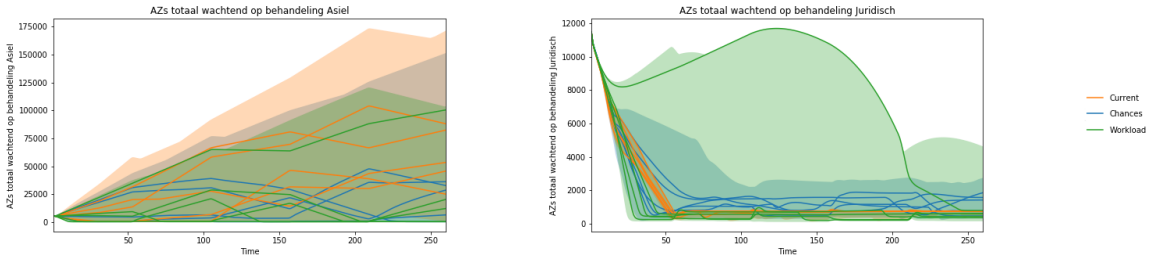


Figure 5.7: Shifting focus policy - Asylum seekers awaiting IND decisions

As can be seen in Figure 5.7, shifting the focus of IND results in a decrease of the amount of asylum seekers awaiting a decision from the Legal department of IND. Again, this results in an increase of asylum seekers awaiting an Legal decision. Furthermore, the "Workload" policy results in a lot of the staff members from the IND Asylum department not being used, as can be seen in Figure 5.8.

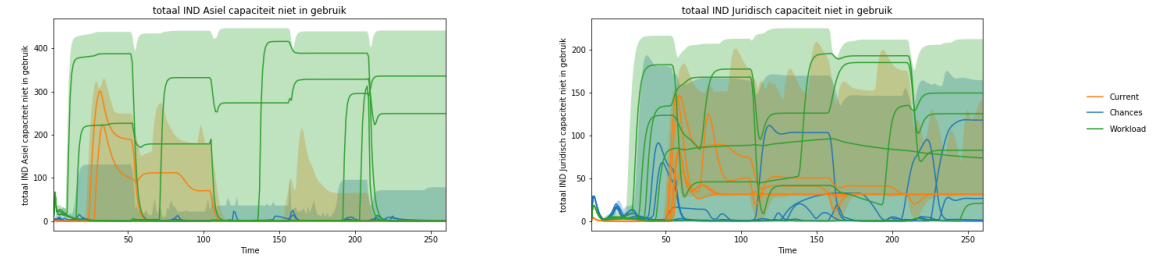


Figure 5.8: Shifting Focus policy - IND staff members not being used

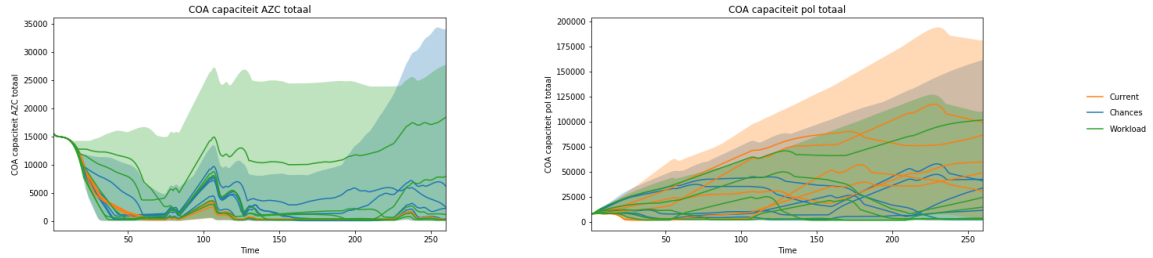


Figure 5.9: Shifting Focus policy - COA capacities

Figure 5.9 shows another side effect of this policy. The increase in the amount of asylum procedures results in more residence permits. Therefore, more statusholders are awaiting housing in municipalities, which results in accumulation of statusholders in AZCs. However, the total capacity used by COA is still decreased. Figure 5.10 shows that both policies result in a significant increase of outflow to municipalities and DT&V.

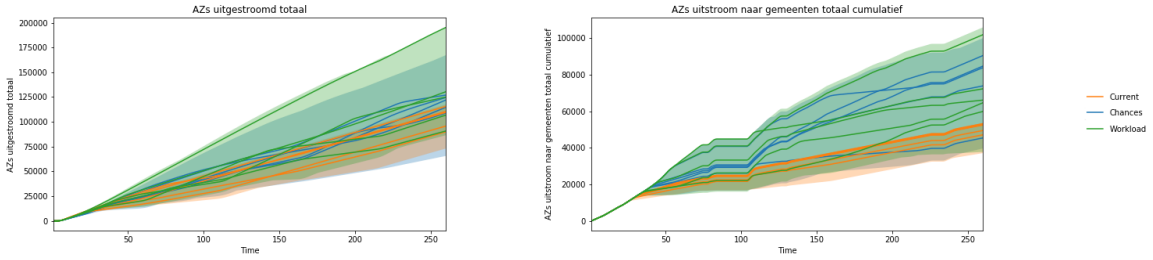


Figure 5.10: Shifting Focus policy - Outflow to municipalities and DT&V

5.2.5 Involve municipalities

As mentioned before, municipalities could play a big role in the Dutch migration system. Especially when the amount of statusholders grows and there is no place in municipalities, this is directly visible in the AZC capacity needed by COA. Therefore, simulating different policies for municipalities could be interesting. There are two different policies simulated. One policy uses a constant outflow to municipalities of 400 statusholders per week, instead of the fluctuating municipality targets used before. The other policy uses a waiting time, which means that statusholders will always be housed in municipalities after 10 weeks. As a result, asylum seekers will not be summed up in AZCs when they are awaiting housing in municipalities. From another point of view, the "Waiting" policy is basically the required municipality targets if every statusholders needs to be housed in 10 weeks.

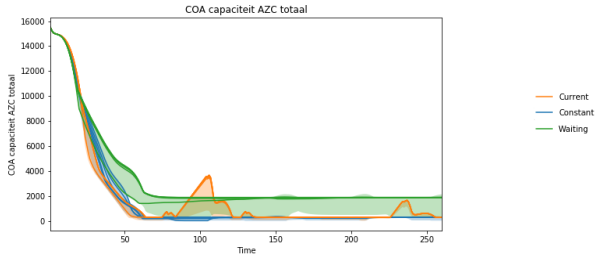


Figure 5.11: Involve Municipalities policy - Statusholders in AZCs

As can be seen in Figure 5.11, both policies strongly influences the COA AZC capacity. This is caused by the fact that aslym seekers with a residence permit (statusholders) are normally waiting in AZCs until municipalities offer them a place to live. With the "Constant" policy, a constant outflow of 400 alylum seekers to municipalities each week is obligated for the municipalities. This strongly reduces the amount of AZC capacity used by COA. The "Waiting" policy makes sure that all statusholders get a place to live in municipalities after 10 weeks. This removes the fluctuations in AZC capacity. Therefore, both policies could be an interesting combination with policies that decrease the pol capacity used, but increase the AZC capacity.

5.3 Combined policies

In the last Chapter, the isolated effects of all policies were discussed. However, combined policies are also a possibility. In this Chapter, three combined policies are introduced and explained. As mentioned before, municipalities are really important to house statusholders. Otherwise, the AZCs will get crowded. Therefore, in each of the three policies, municipalities were introduced. The first combined policy is a combination between education, track activation and municipalities. The second combined policy consists of shifting focus, track activation and municipalities. At last a combination was simulated with shifting focus, education and municipalities. Only the KPIs from IND and COA are used to interpret the results, since these are most important for solving the current problems. In Section 5.4, where the policies will be compared to each other, the other KPIs will be taken into consideration.

5.3.1 Education, track activation and municipalities

This policy consists of educating 200 IND staff members, in combination with activating track 3 and 5. Furthermore, a difference is made between using targets for municipalities or waiting times. This combination of policies is interesting, because both activating track 3 and 5 and educating IND staff do not seem to solve the current problems on their own.

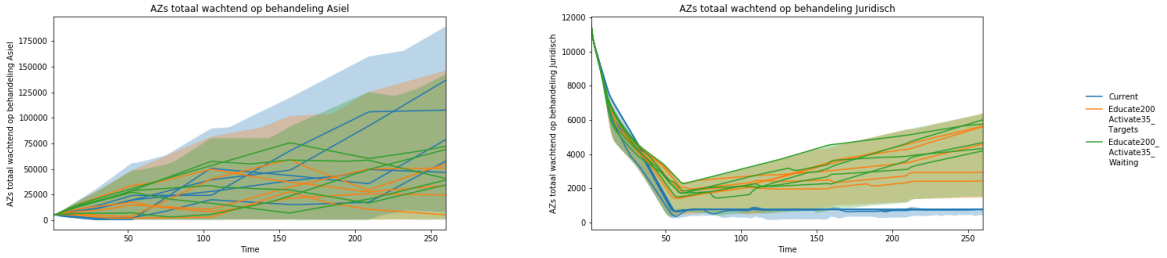


Figure 5.12: Education, track activation and municipalities policy - Asylum seekers awaiting IND decisions

As can be seen in Figure 5.12, the amount of asylum seekers awaiting a decision from the Asylum IND department is only partially reduced with both policies. Furthermore, part of the reduction is directly transferred to asylum seekers awaiting a decision from the IND Legal department. As can be seen in Figure 5.13, the amount of asylum seekers in AZCs is stabilized when using the municipalities "Waiting" policy. Nevertheless, the total amount of COA capacity used did not change much. Therefore, this does not seem to be a promising combination of policies.

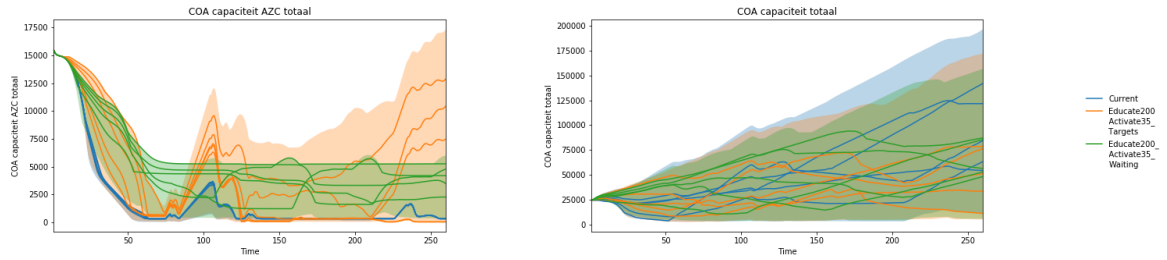


Figure 5.13: Education, track activation and municipalities policy - COA AZC and Total capacity

5.3.2 Shifting focus, track activation and municipalities

This policy combines the shifting focus ("Workload") policy with activating track 3 and 5 and involving municipalities. This is interesting, because activating track 3 and 5 is not able to solve the problems of accumulating asylum seekers awaiting a legal decision, because not enough IND staff members are available at track 3 and 5. Therefore, shifting focus could be interesting. However, shifting focus results in accumulations in AZCs. Therefore a combination with the municipalities "Waiting" policy could be interesting.

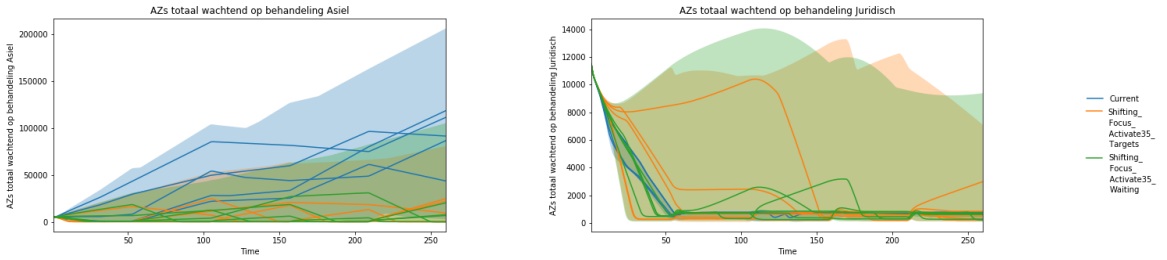


Figure 5.14: Shifting focus, track activation and municipalities policy - Asylum seekers awaiting IND decisions

As can be seen in Figure 5.14, the amount of asylum seekers awaiting an Asylum decision is strongly reduced. Compared to the "Current" policy, more asylum seekers are awaiting a Legal decision, although it is still stable. Furthermore, this increase is low compared to the current amount of asylum seekers in AZCs (200.000 compared to 10.000). As can be seen in Figure 5.15, the municipalities "Waiting" policy solves the problem of accumulating statusholders in AZCs. The total COA capacity is almost halved compared to the "Current" policy. This combination of policies seems to be very promising to solve the amount of asylum seekers awaiting IND decisions and to reduce the amount of asylum seekers and statusholders at COA locations. However, a more efficient way of deploying IND staff members always seems to come for the price of staff members not being used at certain moments. This problem will be further discussed in Section 5.4.

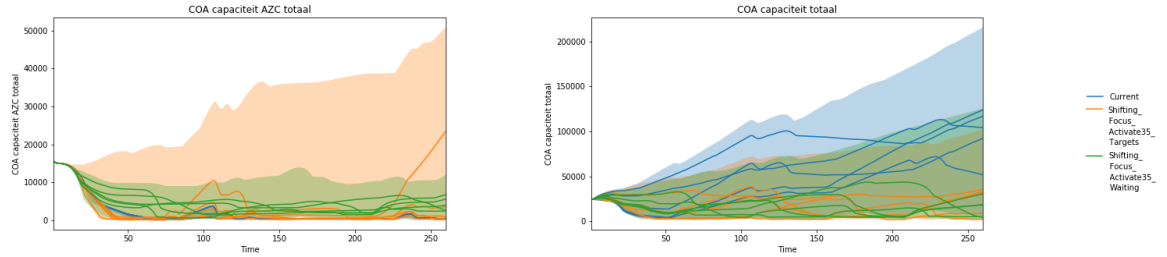


Figure 5.15: Shifting focus, track activation and municipalities policy - COA AZC and Total capacity

5.3.3 Shifting focus, education and municipalities

This policy combines shifting the focus ("Workload") of IND, education IND staff and involving municipalities. Shifting focus has proven to be an efficient way of reducing the amount of asylum seekers awaiting an Asylum decision. However, in combining this policy with educating IND staff members could even further decrease the amount of asylum seekers waiting. Logically, this will increase the amount of statusholders in AZCs. Therefore, municipalities are also involved in this policy.

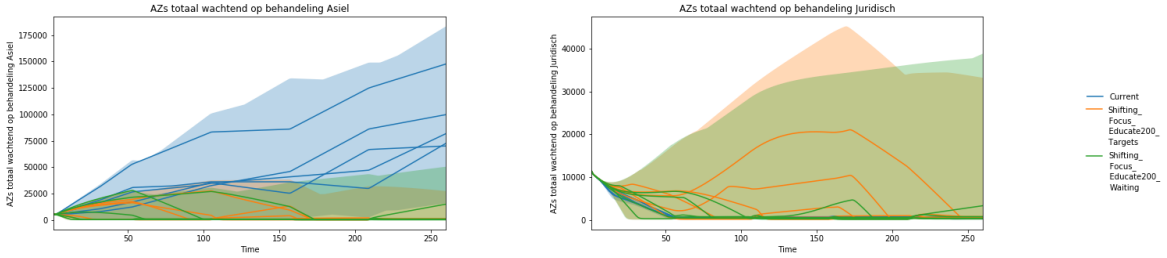


Figure 5.16: Shifting focus, education and municipalities policy - Asylum seekers awaiting IND decisions

As shown in Figure 5.16, this policy is very successful in decreasing the amount of asylum seekers awaiting an Asylum decision. Once again, this results in more asylum seekers awaiting a decision from the IND Legal department. Figure 5.17 shows that with the "Targets" policy for municipalities, the AZC capacity is still increasing. However, due to a decrease in the amount of pol capacity used, the total COA capacity is still stabilised. When using the "Waiting" policy for municipalities, the COA capacities are also stabilised.

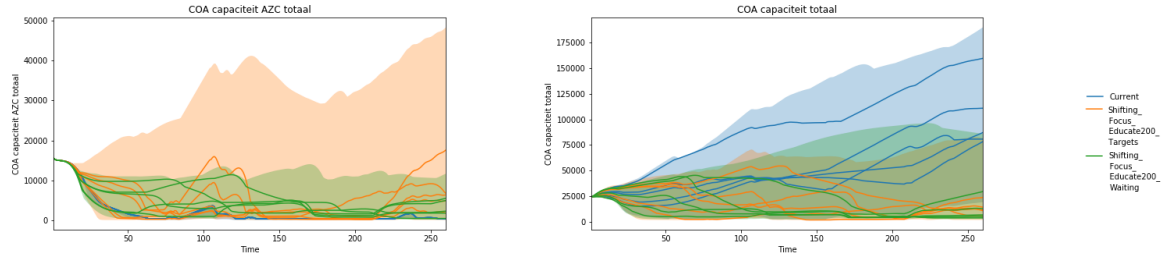


Figure 5.17: Shifting focus, education and municipalities policy - COA AZC and Total capacity

5.4 Policies Compared

In the last Section, three different policies were described. However, in order to compare the results of the different policies to each other, it is useful to plot them together. In the last Section, only the most important KPIs were presented in the graphs. In Figure 5.19, all the KPIs are shown. This make sure that all the three policies can be compared based on all the KPIs. In this section, the advantages and disadvantages of the policies will be discussed. All of the policies use the 10 week waiting time as policy for the municipalities, since this policy is certainly needed in order to avoid crowded AZCs. The policies shown are:

1. **Shifting focus, track activation and municipalities:** This policy uses a more efficient way of using IND capacity. Furthermore, it activates track 3 and 5 and it uses the 10 week waiting times for municipalities.

2. **Shifting focus, education and municipalities:** This policy uses a more efficient way of using IND capacity. Furthermore, it educates 200 staff members for IND and it uses the 10 week waiting times for municipalities.

3. **Education, track activation and municipalities:** This policy educates 200 staff members for IND. Furthermore, it activates track 3 and 5 and it uses the 10 week waiting times for municipalities.

Policy 2 strongly reduces the amount of asylum seekers awaiting a decision from the IND Asylum department. Policy 1 and 3 also manage to half the amount of asylum seekers awaiting an Asylum decision. However, shifting focus and educating IND staff always seems to result in IND staff not being used at certain moments. Therefore, flexible deployment of IND staff should be further researched. Policy 1 has the side effect of an increasing amount of asylum seekers awaiting a Legal decision. This is not seen with Policy 2 and 3. As can be seen, neither of the policies affects the capacity of the col locations of COA. The pol capacity however is strongly decreased with policy 1 and 2. This results in an increase in AZC capacity, but the total capacity used by COA is still only half compared to the "Current" scenario with policy 1 and 2. With policy 3, a relatively small decrease is shown. Therefore, policy 3 can not be seen as a suitable solution for the current problems. Considering the rest of the other KPIs, the asylum seekers that went to the procedures either went to municipalities or DT&V. Therefore, a strong increase is shown in both of these outflows. This results in higher targets for municipalities. As shown in Figure 5.18, targets for municipalities go up to 800 for Policies 1 and 3, and up to 500 for policy 2. Concluding, it can be said that the "Shifting Focus" policy in combination with the "Activating track 3 and 5" or "Educating IND staff members" policies is needed in order to remove the asylum seekers awaiting a decision from the IND Asylum department. Furthermore, the "Waiting" policy for municipalities is needed to decrease the amount of people in AZCs. However, this firmly increases the targets for municipalities.

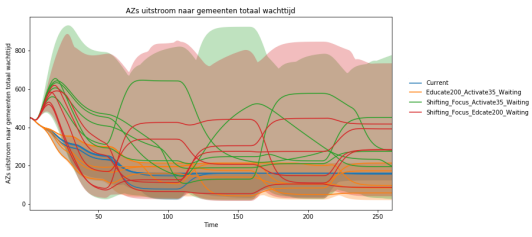


Figure 5.18: Required municipality targets

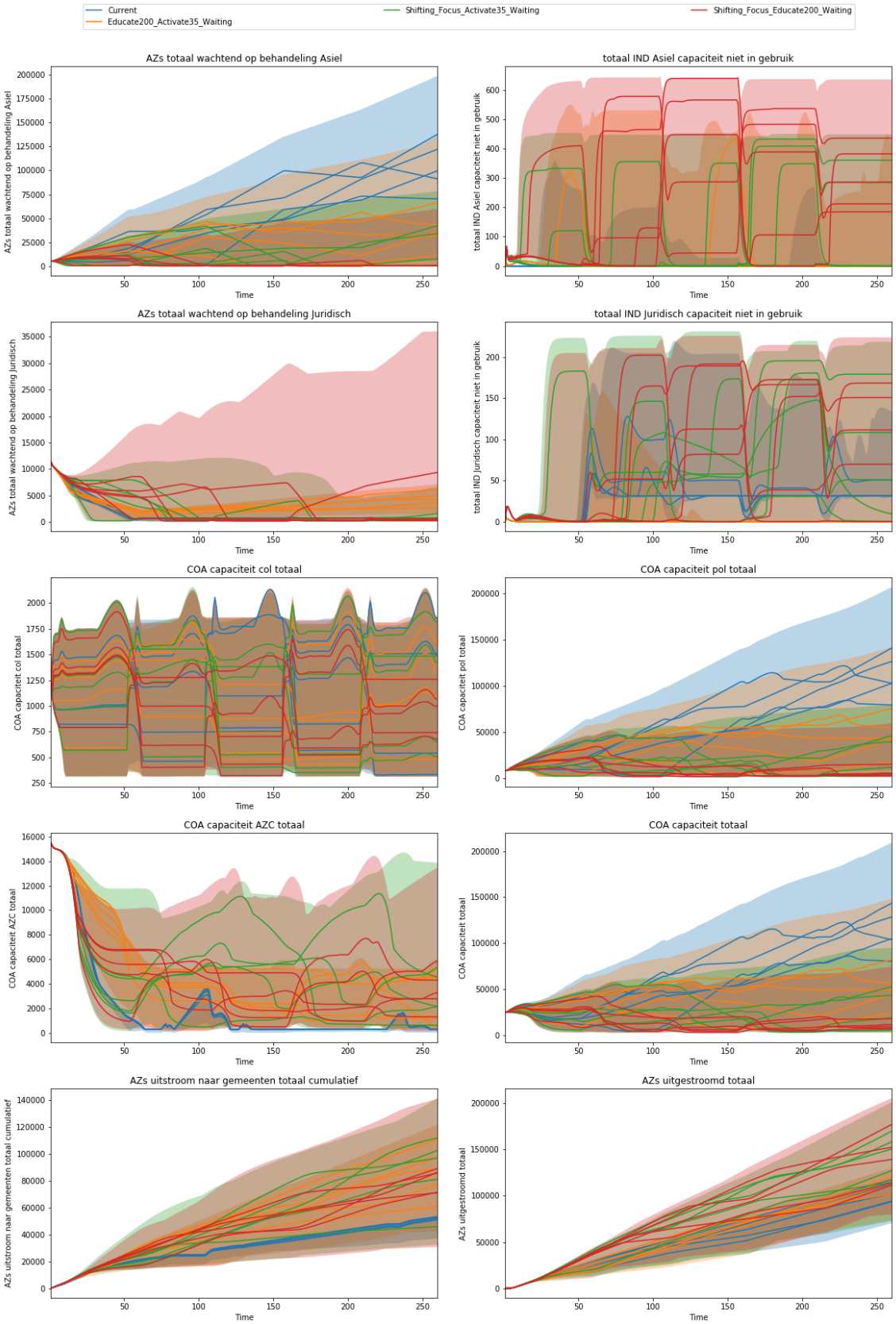


Figure 5.19: Comparing combined policies

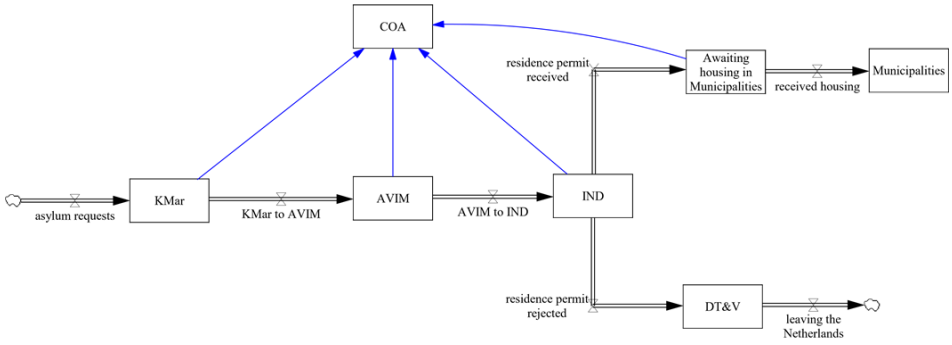
Chapter 6

Conclusions

This study focused on the Dutch migration system. This system consists of several organisations working together in a chain. These different organisations each have their own responsibilities. The Koninklijke Marechaussee (KMar) checks the legality of access to the Netherlands for refugees. The Afdeling Vreemdelingenpoltie, Identificatie en Mensenhandel (AVIM) is responsible for checking the identification. The Immigratieen Naturalisatiedienst (IND) are in charge of the refugee policies. They have to decide whether a refugee becomes a statusholder, based on different characteristics for each individual. The Dienst Terugkeer en Vertrek (DT&V) organises the departure of migrants that are not aloud to stay in the Netherlands. The Centraal Orgaan Asielopvang (COA) is responsible for the residence of refugees in different types of locations, depending on the process of the refugee.

The problems that needed to be tackled were two-fold. On one hand, the current problems considering waiting times for asylum applications needed to be solved. Asylum seekers are waiting up to 16 months for a decision on their asylum application, while the general procedure itself only takes two weeks. Solving this problem causes accumulations of asylum seekers in other parts of the migration chain like the legal department of IND or statusholders awaiting housing in municipalities. On the other hand, the migration chain needed to be prepared for future scenarios, in order to have a robust system for the future.

Figure 6.1: Flow of asylum seekers through the migration chain



In order to solve these problems, delegates of the different organisations were actively involved in the development of a System Dynamics (SD) model by several meetings and workshops. This was done to collect necessary information about the system, and to provide acceptance for the model amongst the different organisations. System Dynamics was used, because the

migration chain has a stock-flow structure, which is typical for SD models. As can be seen in Figure 6.1, an inflow of asylum seekers flows through the migration chain. During this process they are housed by COA. Accumulation at the different organisations results in extra capacity needed by COA. In the end, all asylum seekers are either getting a residence permit or they are send back by DT&V.

Several policies were simulated in order to explore which ones were more effective. While some of these policies focused on solving the current crisis, others were more promising for a robust future. In the end, different policies were combined in order to solve the two-fold problems for the migration chain. Two policies seemed to be the most promising:

1. **Shifting focus, track activation and municipalities**
2. **Shifting focus, education and municipalities**

Shifting focus indicates that the focus of the IND is shifted from a political strategy to a strategy based on workload. This means that the deployment of IND staff members will be based on the amount of asylum seekers waiting at a certain track. Activating track 3 and 5 means that the tracks for fastened procedures for asylum seekers with a high chance of getting a residence permit are activated. Therefore, less IND capacity is needed for these procedures. Educating IND staff means that 200 extra IND staff members are educated to increase the capacity of IND. The increased targets for municipalities implies that municipalities have to house more statusholders each week than they did before.

As can be seen, both of these solutions use a shift of the focus of IND. This partly solves the current crisis. However, when the accumulations in the asylum procedure are solved, a next bottleneck arises at the housing market. Municipalities need to increase their targets in order to provide enough places to live for statusholders. In order to solve the current crisis, these targets are up to 800 asylum seekers per week. Both policies also use a third measure in order to decrease the amount of people that need to be housed by COA during the procedures. Policy 1 uses the activation of track 3 and 5. Therefore, less IND capacity is needed to perform the Asylum decision making procedures. However, a possible "pull" effect on asylum seekers when activating this policy needs to be further researched. Policy 2 educates 200 extra IND employees to fasten the procedures. Unfortunately, this also causes a lack of work for these employees with certain scenarios. Therefore, flexible deployment of IND employees could be interesting for further research.

Chapter 7

Discussion

In this chapter, this report will be critically reviewed. In Section 7.1, the cooperation with the different organisations will be discussed. Furthermore, a reflection will be done on the opportunity of working in a political playing field. In Section 7.2, the shortcomings of the model, and therefore important notes considering the results will be mentioned. At last, in Section 7.3 the possible political and societal effects of the policies advised will be discussed.

7.1 Reflection on the process

This research started with a first meeting organised by the Programmalijn Gezamenlijke Planning Asiel (GPA) in cooperation with Erik Pruyt. GPA is a department the Programma Flexibilisering Asielketen (FLEX). FLEX is a program of the Directoraat Generaal Migratie which falls under the Ministerie of Justitie en Veiligheid (J&V). GPA consists of delegates from the different organisations in the migration chain. The target of the first meeting was finding out which procedures were performed by which organisations, and combining them in a first model. It was interesting to see that every organisation had its own idea of how the procedures were performed, and which level of detail was important for this model. During the first meeting, a sketch of the model was made and discussed with the attendees. Some of the attendees were restrained in sharing information, while others send a lot of information even after the meeting. On one hand, it was surprising that some of the attendees were restrained, since the all of the attendees agreed on an open attitude towards sharing information. On the other hand, it was admirable that some of the attendees shared sensitive information considering their organisations.

During the process, different meetings and workshops took place in order to gather the necessary date for the model. However, not all the data required was assembled during these meetings. It is hard to say if this is caused by the restraining attitude from some of the organisations, or by the fact that the organisations simply do not have the required information. In the beginning of the process it seemed like some of the organisations were indeed reserved in sharing their data. However, over time it became clear that some of the attendees simply did not have access to certain sources. Therefore, in a later stage, meetings with KMI+ were planned. This organisation is responsible for assembling data about the migration chain. Although, even there the necessary data was not directly available. At this point, the process is still not finished, and meetings are still taking place. In the next section the required data, and how it should be collected, will be discussed.

7.2 Reflection on the model

Despite the effort of the different organisations and the author, the model is not yet a reliable reflection of reality. Some adjustments need to be made considering the structure of the model and the data behind. In order to make this adjustments, more information is needed from the different organisations. At this moment, this information is assembled in cooperation with KMI+.

The first and most important shortcoming of the model is that the model does not distinguish different nationalities at this point. This data could not be used at this point, due to the sensitivity in combination with the difficulty of finding the right values for the different variables in the model. The distribution amongst the different tracks of IND should be made based on the nationalities requesting asylum in the Netherlands. Furthermore, the model does not use a separation for different ages. Minors have a different procedure, and this should be added to the model. Furthermore, family composition can influence the procedures and residence that an asylum seeker gets. Further distinction could be made based on religion or sexual orientation. All this information (age, family composition, religion and sexual orientation) needs to be available per nationality in order to have more reliable outcomes for the model. However, it is easily understandable that this information is very sensitive, and thus not easy to collect.

Besides the different data that is still needed, some adjustments need to be made in the structure of the model. At this moment, asylum seekers have 2 options to appeal against a decision of IND. However, in reality they also have the option to request a HASA procedure. Furthermore, it is possible that the procedure needs to be redone based on changing circumstances. For example, an asylum seekers could have a child during their stay in the Netherlands. This changes the family composition, which could cause the procedure to be redone. Information is needed on how often such situations occur, preferably per nationality.

Another shortcoming of the model is the simplified sub-models for KMar, AVIM and DT&V. During the research, it became clear that the most important bottleneck was at the Asylum department of IND. Therefore, an extensive sub-model for the human resources of IND was build. Such sub-models should also be build for KMar, AVIM And DT&V in order to make better simulations towards a robust future for these organisations. Furthermore, the task of the municipalities should not be underestimated. At this point, the model forecasts targets of 800 statusholders per week. A housing model could help determine if these targets are achievable. At last, a better sub-model could be used to generate different scenarios. For example, seasonal fluctuations should be taken into account.

7.3 Reflection on the results

Until this point, the results were only discussed considering the effects on the different organisation of the migration chain. However, the effects of the results go beyond the organisations and could also affect society and politics. In this section, these effects will be discussed. Furthermore, some insights gathered during the process will be mentioned.

As proven by the model, the different organisations in the migration chain strongly affect each other. Policies from IND or municipalities can strongly influence the amount of asylum seekers in COA locations. During the process, it became clear that the financing of these organisations does not support efficient decision making. A promising solution for the current problems is flexible deployment of IND staff members. For example, a combined job at another governmental organisation could be created. However, this requests a stable money inflow for IND. At this moment, the IND is financed using the inflow of asylum seekers of the previous year (Tweede Kamer der Staten-Generaal, 2018). This causes strong fluctuations in the financial resources of IND. This in turn results in unstable capacities, while it is important for the IND to have a long term vision and sufficient capacity to respond to fluctuations in the amount of asylum requests. Besides that, COA is financed using a p*q system (Centraal Orgaan Asielopvang, 2013). This means that an increase of asylum seekers in COA locations is absorbed by extra money for this organisation. Of course COA needs enough money to house all the asylum seekers in the Netherlands, but this system does not give any incentive to fasten the IND procedures. In fact, the incentive is the other way around. More asylum seekers in COA locations results in more financial assets for COA.

At the end of the migration chain, another problem arises when implementing the policies offered. Solving the current problems will always result in a growing outflow to municipalities and DT&V. In order to decrease the AZC capacity, all statusholders need to be housed in municipalities. However, this results in targets up to 800 each week. At this moment, the housing market is not ready for such amounts of statusholders. Furthermore, the question rises what consequences this could have for society. Statusholders are allowed to work in the Netherlands, but it further research needs to be done considering the availability of jobs for these amounts of statusholders. If statusholders are not able to get a job, they will still put heavy pressure on the Dutch society. Besides the increase in statusholders, there will also be more rejected asylum requests. This results in an increase in DT&V procedures and a possible increase in asylum seekers going of the radar. This increases the chance of asylum seekers ending up in criminal environments, which again has a huge impact on society.

Before the policies recommended in this research are ready to be implemented, further research is necessary. First the model needs to be improved and the policies need to be tested again. Thereafter, further research needs to be done on the political and societal effects of these policies. These recommendations for further research will be discussed in Chapter 8.

Chapter 8

Recommendations

During this research, different insights were obtained. In this chapter, some recommendations will be done. These recommendations can be distinguished in two groups. First the recommendations considering the model will be done. Thereafter, some recommendations for further research will be given.

As mentioned before, the current model has different shortcomings that should be solved before it is reliable reflection of reality. At first a diversification needs to be made considering nationalities. Besides nationalities, data is needed about age, family composition, religion and sexual orientation. Considering organisation, more insight is needed in especially the KMar, AVIM and DT&V. At this moment, KMar and AVIM have a negligible impact on the model. DT&V should be modelled in more detail, in order to research if the organisation is able to handle the increased outflows when the IND completes the procedures for waiting asylum requests. Furthermore, the different COA locations could be modelled in more detail. Spatial distribution of COA locations in the model could also be an interesting future for policy makers. Considering IND, a better structure could be used to reproduce the repeating procedures. However, in order to do this, more data is needed. Another improvement of the model would be a better representation of the housing market to investigate if the simulated municipality targets are achievable.

In order to complement this report, different areas of further research could be interesting. With an improved model, a more extensive exploration of uncertainty of the different input variables could be researched. Furthermore, in needs to be researched if a flexible deployment of IND employees could be a solution to prevent capacity not being used. Another important political problem is the possible "pull" effect on asylum seekers when activating track 3 and 5. More research on the effects of different policies on politics and society are also necessary. For example the effect of large amount of statusholders being housed in municipalities. At last, more realistic future scenarios should be generated in which seasonal effects and the pulling effect of family living in the Netherlands are taken into account.

All together, a lot of work still needs to be done in order to make the model more realistic. However, once fully operational, the simulation model could be a good foundation for future policy making considering the Dutch migration system.

Chapter 9

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Appendix A

Process diagram

Figure A.1: System dynamics steps from problem symptoms to improvement (J. W. Forrester, 1994)

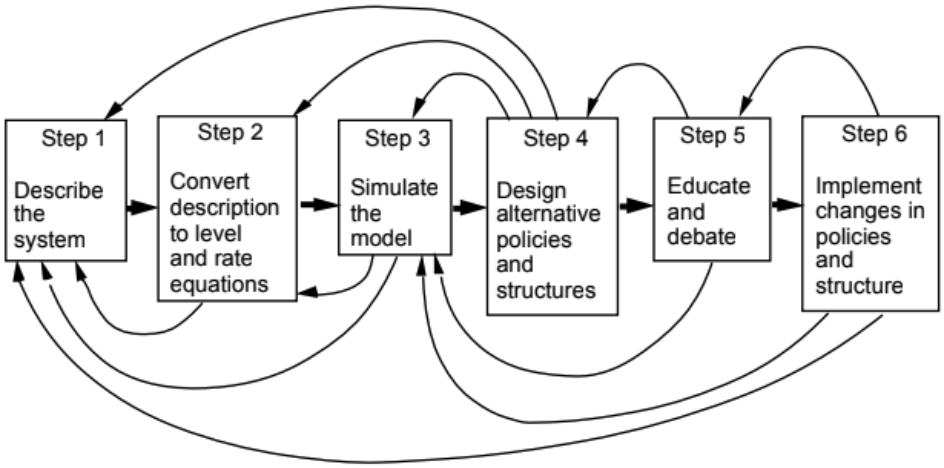


Figure A.1 shows a process diagram for system dynamics. Already in 1994, the founder of System Dynamics J. W. Forrester (1994), developed the process diagram shown in Figure A.1. Twenty five years later, this diagram is still relevant. However, in order to make it suitable for this research, some adjustments were made. These adjustments are described in Section 2.1.

Appendix B

The asylum procedure

In this Appendix the BPMNs for the asylum procedure are shown. Figure B.1 shows the complete asylum procedure from the request from an asylum seeker until the outflow at DT&V. Figure B.2 shows the general asylum procedure. The procedure is thoroughly explained in Section 3.3.

Figure B.1: Complete Asylum Procedure

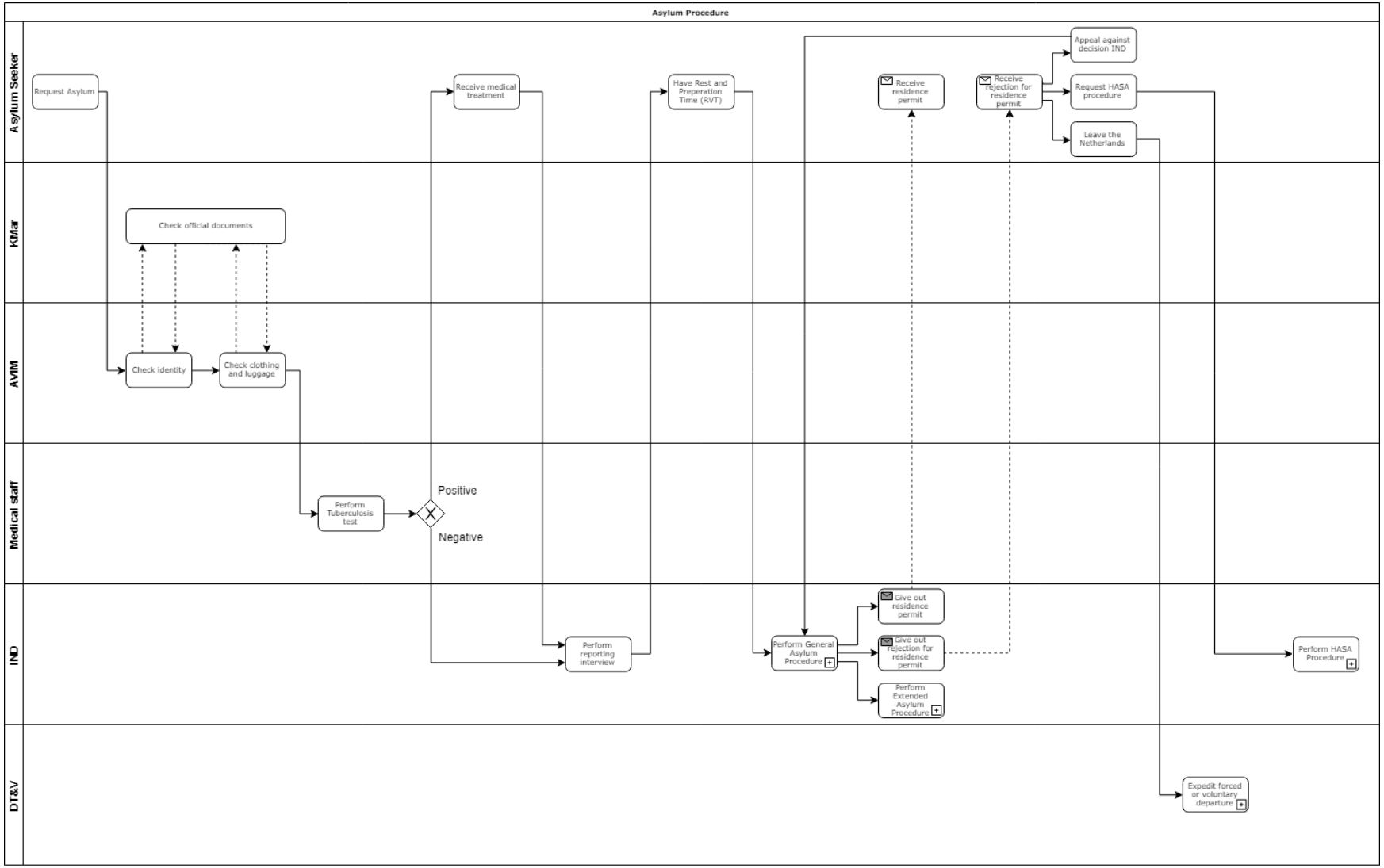
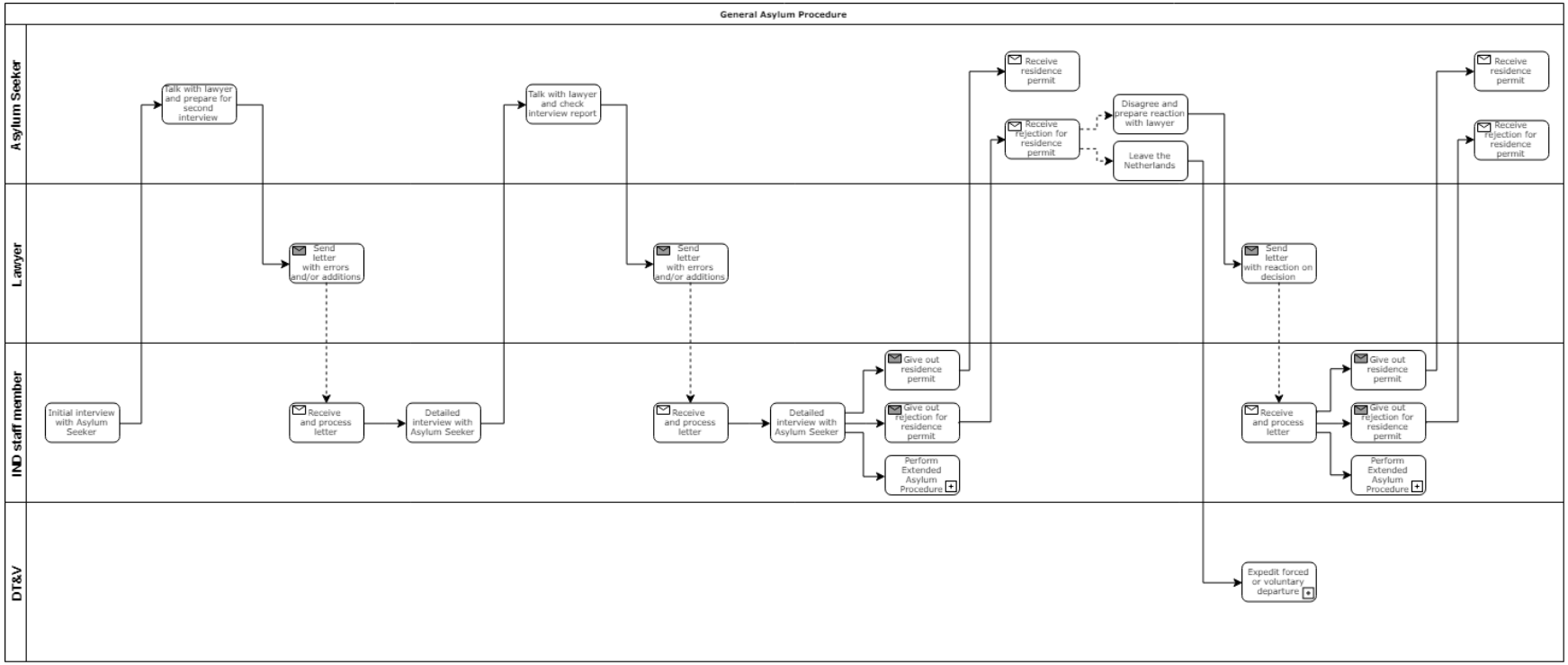


Figure B.2: General Asylum Procedure



Appendix C

The Model

In this Appendix the different variables of the model are discussed. Section C.1 gives an overview of all the decision variables that are used in the model. Section C.2 gives an overview of the output variables of the model. These could be used to further investigate the causes of certain behaviour from one of the KPIs. Section C.3 gives an overview of the standard norms that are used by the different organisations in the model. Section C.4 shows the initial values used in the model.

C.1 Decision variables

Table C.1: Decision variables

Variable	Value	Explanation/Source
pc ingewilligd SP1	0,03	Percentage of asylum seekers in track 1 that receives a residence permit (IND, 2018).
pc in beroep SP1	0,6	Percentage of asylum seekers in track 1 that appeals after not getting a residence permit (IND, 2018).
pc ingewilligd na beroep SP1	0	Percentage of asylum seekers in track 1 that receives a residence permit after appealing (Assumption).
pc in hoger beroep SP1	0,6	Percentage of asylum seekers in track 1 that appeals again after not getting a residence permit (Assumption).
pc ingewilligd na hoger beroep SP1	0	Percentage of asylum seekers in track 1 that receives a residence permit after appealing for the second time (Assumption).
pc ingewilligd SP2	0,11	Percentage of asylum seekers in track 2 that receives a residence permit (IND, 2018).
pc in beroep SP2	0,68	Percentage of asylum seekers in track 2 that appeals after not getting a residence permit (IND, 2018).
pc ingewilligd na beroep SP2	0	Percentage of asylum seekers in track 2 that receives a residence permit after appealing (Assumption).
pc in hoger beroep SP2	0,68	Percentage of asylum seekers in track 2 that appeals again after not getting a residence permit (Assumption).
pc ingewilligd na hoger beroep SP2	0	Percentage of asylum seekers in track 2 that receives a residence permit after appealing for the second time (Assumption).
pc ingewilligd SP3	0,8	Percentage of asylum seekers in track 3 that receives a residence permit (Assumption).
pc afgewezen SP3	0,1	Percentage of asylum seekers in track 3 that does not receive a residence permit (Assumption).
pc van SP3 naar VA SP4	0,1	Percentage of asylum seekers in track 3 that goes to track 4 VA (Assumption).
pc in beroep SP3	0,8	Percentage of asylum seekers in track 3 that appeals after not getting a residence permit (Assumption).
pc ingewilligd na beroep SP3	0,6	Percentage of asylum seekers in track 3 that receives a residence permit after appealing (Assumption).
pc afgewezen na beroep SP3	0,2	Percentage of asylum seekers in track 3 that does not receive a residence permit after appealing (Assumption).
pc van SP3 naar VA na beroep SP3	0,2	Percentage of asylum seekers in track 3 that goes to track 4 VA after appealing (Assumption).
pc in hoger beroep SP3	0,6	Percentage of asylum seekers in track 3 that appeals again after not getting a residence permit (Assumption).
pc ingewilligd na hoger beroep SP3	0,3	Percentage of asylum seekers in track 3 that receives a residence permit after appealing for the second time (Assumption).

Variable	Value	Explanation/Source
pc afgewezen na hoger beroep SP3	0,6	Percentage of asylum seekers in track 3 that does not receive a residence permit after appealing for the second time (Assumption).
pc van AA naar VA na hoger beroep SP3	0,1	Percentage of asylum seekers in track 3 that goes to track 4 VA after appealing for the second time (Assumption).
pc ingewilligd SP4 AA	0,58	Percentage of asylum seekers in track 4 AA that receives a residence permit (IND, 2018).
pc afgewezen SP4 AA	0,21	Percentage of asylum seekers in track 4 AA that does not receive a residence permit (Assumption).
pc van AA naar VA SP4	0,21	Percentage of asylum seekers in track 4 AA that goes to track 4 VA (Assumption).
pc in beroep SP4 AA	0,68	Percentage of asylum seekers in track 4 AA that appeals after not getting a residence permit (IND, 2018).
pc ingewilligd na beroep SP4 AA	0,5	Percentage of asylum seekers in track 4 AA that receives a residence permit after appealing (Assumption).
pc afgewezen na beroep SP4 AA	0,25	Percentage of asylum seekers in track 4 AA that does not receive a residence permit after appealing (Assumption).
pc van AA naar VA na beroep SP4	0,25	Percentage of asylum seekers in track 4 AA that goes to track 4 VA after appealing (Assumption).
pc in hoger beroep SP4 AA	0,68	Percentage of asylum seekers in track 4 AA that appeals again after not getting a residence permit (Assumption).
pc ingewilligd na hoger beroep SP4 AA	0,5	Percentage of asylum seekers in track 4 AA that receives a residence permit after appealing for the second time (Assumption).
pc afgewezen na hoger beroep SP4 AA	0,25	ercentage of asylum seekers in track 4 AA that does not receive a residence permit after appealing for the second time (Assumption).
pc van AA naar VA na hoger beroep SP4	0,25	Percentage of asylum seekers in track 4 AA that goes to track 4 VA after appealing for the second time (Assumption).
pc ingewilligd SP4 VA	0,5	Percentage of asylum seekers in track 4 VA that receives a residence permit (IND, 2018).
pc in beroep SP4 VA	0,74	Percentage of asylum seekers in track 4 VA that appeals after not getting a residence permit (IND, 2018).
pc ingewilligd na beroep SP4 VA	0,58	Percentage of asylum seekers in track 4 VA that receives a residence permit after appealing (Assumption).
pc in hoger beroep SP4 VA	0,74	Percentage of asylum seekers in track 4 VA that appeals again after not getting a residence permit (Assumption).
pc ingewilligd na hoger beroep SP4 VA	0,58	Percentage of asylum seekers in track 4 VA that receives a residence permit after appealing for the second time (Assumption).
pc ingewilligd SP5	0,8	Percentage of asylum seekers in track 5 that receives a residence permit (Assumption).
pc afgewezen SP5	0,1	Percentage of asylum seekers in track 5 that does not receive a residence permit (Assumption).
pc van SP5 naar VA SP4	0,1	Percentage of asylum seekers in track 5 that goes to track 4 VA (Assumption).

Variable	Value	Explanation/Source
pc in beroep SP5	0,8	Percentage of asylum seekers in track 5 that appeals after not getting a residence permit (Assumption).
pc ingewilligd na beroep SP5	0,6	Percentage of asylum seekers in track 5 that receives a residence permit after appealing (Assumption).
pc afgewezen na beroep SP5	0,2	Percentage of asylum seekers in track 5 that does not receive a residence permit after appealing (Assumption).
pc van SP5 naar VA na beroep SP5	0,2	Percentage of asylum seekers in track 5 that goes to track 4 VA after appealing (Assumption).
pc in hoger beroep SP5	0,6	Percentage of asylum seekers in track 5 that appeals again after not getting a residence permit (Assumption).
pc ingewilligd na hoger beroep SP5	0,3	Percentage of asylum seekers in track 5 that receives a residence permit after appealing for the second time (Assumption).
pc afgewezen na hoger beroep SP5	0,6	Percentage of asylum seekers in track 5 that does not receive a residence permit after appealing for the second time (Assumption).
pc van AA naar VA na hoger beroep SP5	0,1	Percentage of asylum seekers in track 5 that goes to track 4 VA after appealing for the second time (Assumption).

C.2 Output variables

Table C.2: Output variables

Variable	Explanation
AZs wachtend op behandeling SP1	The amount of asylum seekers awaiting a decision in track 1.
AZs wachtend op behandeling na beroep SP1	The amount of asylum seekers awaiting a decision after the first appeal in track 1.
AZs wachtend op behandeling na hoger beroep SP1	The amount of asylum seekers awaiting a decision after the second appeal in track 1.
AZs wachtend op woning SP1	The amount of asylum seekers waiting for a place to live in municipalities in track 1.
AZs totaal gemeenten SP1	The total amount of asylum seekers living in municipalities in track 1.
AZs uitgestroomd SP1	The total amount of asylum seekers that went to DT&V in track 1.
AZs wachtend op behandeling SP2	The amount of asylum seekers awaiting a decision in track 1.
AZs wachtend op behandeling na beroep SP2	The amount of asylum seekers awaiting a decision after the first appeal in track 1.
AZs wachtend op behandeling na hoger beroep SP2	The amount of asylum seekers awaiting a decision after the second appeal in track 1.
AZs wachtend op woning SP2	The amount of asylum seekers waiting for a place to live in municipalities in track 1.
AZs totaal gemeenten SP2	The total amount of asylum seekers living in municipalities in track 1.
AZs uitgestroomd SP2	The total amount of asylum seekers that went to DT&V in track 1.
AZs wachtend op behandeling SP3	The amount of asylum seekers awaiting a decision in track 1.
AZs wachtend op behandeling na beroep SP3	The amount of asylum seekers awaiting a decision after the first appeal in track 1.
AZs wachtend op behandeling na hoger beroep SP3	The amount of asylum seekers awaiting a decision after the second appeal in track 1.
AZs wachtend op woning SP3	The amount of asylum seekers waiting for a place to live in municipalities in track 1.
AZs totaal gemeenten SP3	The total amount of asylum seekers living in municipalities in track 1.
AZs uitgestroomd SP3	The total amount of asylum seekers that went to DT&V in track 1.
AZs wachtend op behandeling SP4 AA	The amount of asylum seekers awaiting a decision in track 1.
AZs wachtend op behandeling na beroep SP4 AA	The amount of asylum seekers awaiting a decision after the first appeal in track 1.

Variable	Explanation
AZs wachtend op behandeling na hoger beroep SP4 AA	The amount of asylum seekers awaiting a decision after the second appeal in track 1.
AZs wachtend op woning SP4 AA	The amount of asylum seekers waiting for a place to live in municipalities in track 1.
AZs totaal gemeenten SP4 AA	The total amount of asylum seekers living in municipalities in track 1.
AZs uitgestroomd SP4 AA	The total amount of asylum seekers that went to DT&V in track 1.
AZs wachtend op behandeling SP4 VA	The amount of asylum seekers awaiting a decision in track 1.
AZs wachtend op behandeling na beroep SP4 VA	The amount of asylum seekers awaiting a decision after the first appeal in track 1.
AZs wachtend op behandeling na hoger beroep SP4 VA	The amount of asylum seekers awaiting a decision after the second appeal in track 1.
AZs wachtend op woning SP4 VA	The amount of asylum seekers waiting for a place to live in municipalities in track 1.
AZs totaal gemeenten SP4 VA	The total amount of asylum seekers living in municipalities in track 1.
AZs uitgestroomd SP4 VA	The total amount of asylum seekers that went to DT&V in track 1.
AZs wachtend op behandeling SP5	The amount of asylum seekers awaiting a decision in track 1.
AZs wachtend op behandeling na beroep SP5	The amount of asylum seekers awaiting a decision after the first appeal in track 1.
AZs wachtend op behandeling na hoger beroep SP5	The amount of asylum seekers awaiting a decision after the second appeal in track 1.
AZs wachtend op woning SP5	The amount of asylum seekers waiting for a place to live in municipalities in track 1.
AZs totaal gemeenten SP5	The total amount of asylum seekers living in municipalities in track 1.
AZs uitgestroomd SP5	The total amount of asylum seekers that went to DT&V in track 1.

C.3 Standard norms and delay times

Table C.3: Standard norms and delay times

Variable	Value	Explanation
duur KMar 1e onderzoek	0,5 day	Time it takes the KMar to perform the identity check.
duur AVIM IR	0,5 day	Time it takes the AVIM to perform the identity check and check luggage.
duur RVT	1 week	Rest and preparing time for the asylum seekers.
duur AZs eerste gehoor IND	1 day	Initial interview of the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur AZs voorbereiding nader gehoor RvR	1 day	Preparation detailed interview of the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur AZs nader gehoor IND	1 day	Detailed interview of the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur AZs bespreking nader gehoor RvR	1 day	Discussing detailed interview of the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur AZs voorgenomen beslissing IND	1 day	Initial decision for the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur AZs zienswijze RvR	1 day	Reaction on initial decision of the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur AZs beslissing IND	2 days	Final decison for the general asylum procedure (Immigratie- en Naturalisatiedienst, 2019).
duur beslissing na beroep SP1	1 day	Time it takes the Legal department of IND to make a decision after the first appeal.
duur beslissing na hoger beroep SP1	1 day	Time it takes the Legal department of IND to make a decision after the second appeal.
duur 1e VTG	1 day	Time it takes DT&V to perform the first departure interview.
duur AZs maatregel opgeleggen	1 day	Time it takes DT&V to impose a restrictive measure.
duur vertrekopties checken	1 day	Time it takes DT&V to check departure options.
duur AZs reisdocument verkrijgen	1 day	Time it takes DT&V to receive travelling documents
duur laatste VTG	1 day	Time it takes DT&V to perform the final departure interview.

C.4 Initial values

Table C.4: Initial values

Variable	Value	Explanation
ini AZs in col	450	Initial amount of asylum seekers in the central reception locations from COA.
ini AZs in pol	8.000	Initial amount of asylum seekers in the central reception locations from COA.
ini AZs in AZC	13.500	Initial amount of asylum seekers in the asylum reception centres.
ini COA reguliere capaciteit col	1.000	Initial COA regular capacity for col locations.
ini COA reserve capaciteit col	250	Initial COA reserve capacity for col locations.
ini COA reguliere capaciteit pol	7.500	Initial COA regular capacity for pol locations.
ini COA reserve capaciteit pol	500	Initial COA reserve capacity for pol locations.
ini COA reguliere capaciteit AZC	15.000	Initial COA regular capacity for AZC locations.
ini COA reserve capaciteit AZC	500	Initial COA reserve capacity for AZC locations.
ini capaciteit IND Asiel	600 FTE	Initial amount of IND staff in Asylum department.
ini capaciteit IND Juridisch	250 FTE	Initial amount of IND staff in Legal department.

Appendix D

Presentations, meetings and workshops

Table D.1 shows the different activities that were organised during this research. They are sorted by date and consist of three types: Workshop, Presentation and Meeting. For every activity, an explanation is given. Figure D.1 shows the different organisations and policies that were used during the Forio workshops.

Table D.1: Overview of Workshops, Presentations and Meetings organised during this research

Date	Activity	Explanation
24 January 2019	Workshop	Workshop with the migration partners in which System Dynamics was explained and how it could be used to solve the problems in the Dutch migration chain.
29 January 2019	Workshop	Workshop with the migration partners in which a first sketch of the model was made.
05 March 2019	Presentation	Presentation of the model at IND.
14 March 2019	Presentation	Presentation of the model for GPA.
25 March 2019	Presentation	Presentation of the model for the Programme Board of Flex.
02 April 2019	Meeting	Meeting with Programme Manager GPA to discuss progress.
04 April 2019	Presentation	Presentation for COA, IND and DTV.
09 April 2019	Meeting	Meeting with Programme Manager and Project Manager GPA to prepare workshop.
11 April 2019	Workshop	Workshop at "Dag van de Migratieketen" in Amersfoort. During this workshop, the Forio model was used.
07 May 2019	Workshop/Meeting	Forio workshop for GPA and discussing data quality.
13 May 2019	Presentation/Workshop	Presentation and workshop with the Programme Board of FLEX.
23 May 2019	Meeting	Meeting with specific people from IND to collect information for the model.
06 June 2019	Meeting	Meeting with IT specialist from J&V to discuss implementation of the model.
14 June 2019	Meeting	Meeting to discuss IND resources model.
14 June 2019	Meeting	Meeting to discuss data quality from GPA.
18 June 2019	Meeting	Meeting to discuss data quality from GPA.
01 July 2019	Presentation	Demo of the model for GPA.
10 July 2019	Presentation	Presenation of the model for the Director-General Migration.
11 July 2019	Meeting	Update for GPA considering the model.
15 July 2019	Meeting	Meetingh with KMI to collect data.
08 August 2019	Meeting	Discussing the simulation model with business analysts from GPA.
15 August 2019	Meeting	Meeting to discuss a pilot for the model.

Figure D.1: Screenshot of Forio Dashboard

Appendix E

Python code

E.1 EMA Workbench

```
if __name__ == "__main__":
    # Load model
    ema_logging.log_to_stderr(ema_logging.INFO)

    model = VensimModel("Migration", wd=r'Model_09-04',
        model_file='model_final.vpm')

    # Specify outcomes
    model.outcomes = [TimeSeriesOutcome('AZs totaal wachtend op behandeling
        Asiel'),
                TimeSeriesOutcome('totaal IND Asiel capaciteit niet in
                    gebruik'),
                TimeSeriesOutcome('AZs totaal wachtend op behandeling
                    Juridisch'),
                TimeSeriesOutcome('totaal IND Juridisch capaciteit niet in
                    gebruik'),
                TimeSeriesOutcome('COA capaciteit col totaal'),
                TimeSeriesOutcome('COA capaciteit pol totaal'),
                TimeSeriesOutcome('COA capaciteit AZC totaal'),
                TimeSeriesOutcome('COA capaciteit totaal'),
                TimeSeriesOutcome('AZs uitstroom naar gemeenten totaal
                    cumulatief'),
                TimeSeriesOutcome('AZs uitgestroomd totaal'),
                TimeSeriesOutcome('AZs uitstroom naar gemeenten totaal
                    wachttijd')
               ]

    # Specify uncertainties
    model.uncertainties = [# IntegerParameter('SWITCH scenario', 1, 6),

                           # We need this variable if we want to run the Scenario
                               Generator
                           IntegerParameter('random uncertainty', 0, 1)
                          ]
    model.constants = [
                       # Random Scenario Generator (Put this on if you want to
                           generate random scenarios!)
                       Constant('SWITCH scenario', 0), Constant('SWITCH XLS0 MOD1
                           UA2 RND3', 3),
                      ]
```

```
# Separate policies
KMar_AVIM = [
        Policy('Current',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('KMar_AVIM',
               **{
                    'SWITCH geen0 vertraging1 door capaciteitstekort KMar
                       AVIM':1
                })
        ]

Educate_IND_Staff = [
        Policy('Current',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Educate_400',
               **{
                    'opleidingsgolf IND capaciteit BS':100,
                    'opleidingsgolf IND capaciteit VN':100,
                    'opleidingsgolf IND capaciteit NG':100,
                    'opleidingsgolf IND capaciteit EG':100
                }),
        Policy('Educate_800',
               **{
                    'opleidingsgolf IND capaciteit BS':200,
                    'opleidingsgolf IND capaciteit VN':200,
                    'opleidingsgolf IND capaciteit NG':200,
                    'opleidingsgolf IND capaciteit EG':200
                })
        ]

Activate_3_5 = [
        Policy('Current',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Open_3_5',
               **{
                    'SWITCH SP35 dicht1 open2':2,
                    'pc IND gekozen inzet politiek SP1 BS':0.0625,
                    'pc IND gekozen inzet politiek SP1 VN':0.0625,
                    'pc IND gekozen inzet politiek SP1 NG':0.0625,
                    'pc IND gekozen inzet politiek SP1 EG':0.0625,
                    'pc IND gekozen inzet politiek SP2 BS':0.0625,
                    'pc IND gekozen inzet politiek SP2 VN':0.0625,
                    'pc IND gekozen inzet politiek SP2 NG':0.0625,
                    'pc IND gekozen inzet politiek SP2 EG':0.0625,
                    'pc IND gekozen inzet politiek SP3 BS':0.025,
                    'pc IND gekozen inzet politiek SP3 VN':0.025,
                    'pc IND gekozen inzet politiek SP3 NG':0.025,
                    'pc IND gekozen inzet politiek SP3 EG':0.025,
                    'pc IND gekozen inzet politiek SP4 AA BS':0.0375,
                    'pc IND gekozen inzet politiek SP4 AA VN':0.0375,
                    'pc IND gekozen inzet politiek SP4 AA NG':0.0375,
                    'pc IND gekozen inzet politiek SP4 AA EG':0.0375,
```

```
                    'pc IND gekozen inzet politiek SP4 VA BS':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA VN':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA NG':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA EG':0.0375,
                    'pc IND gekozen inzet politiek SP5 BS':0.025,
                    'pc IND gekozen inzet politiek SP5 VN':0.025,
                    'pc IND gekozen inzet politiek SP5 NG':0.025,
                    'pc IND gekozen inzet politiek SP5 EG':0.025
                })
        ]

Shifting_Focus = [
        Policy('Current',
                **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Workload',
                **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':2
                }),
        Policy('Chances',
                **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':3
                }),
        ]

Involve_Municipalities = [
        Policy('Current',
                **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Constant',
                **{
                    'SWITCH GEMEENTEN taakstelling1 constante2
                        wachttijd3':2
                }),
        Policy('Waiting',
                **{
                    'SWITCH GEMEENTEN taakstelling1 constante2
                        wachttijd3':3
                }),
        ]

# Combined policies
Educate_Activate35 = [
        Policy('Current',
                **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Educate200_Activate35_Targets',
                **{
                    'opleidingsgolf IND capaciteit BS':50,
                    'opleidingsgolf IND capaciteit VN':50,
                    'opleidingsgolf IND capaciteit NG':50,
                    'opleidingsgolf IND capaciteit EG':50,
                    'SWITCH SP35 dicht1 open2':2,
                    'pc IND gekozen inzet politiek SP1 BS':0.0625,
                    'pc IND gekozen inzet politiek SP1 VN':0.0625,
                    'pc IND gekozen inzet politiek SP1 NG':0.0625,
```

```
                'pc IND gekozen inzet politiek SP1 EG':0.0625,
                'pc IND gekozen inzet politiek SP2 BS':0.0625,
                'pc IND gekozen inzet politiek SP2 VN':0.0625,
                'pc IND gekozen inzet politiek SP2 NG':0.0625,
                'pc IND gekozen inzet politiek SP2 EG':0.0625,
                'pc IND gekozen inzet politiek SP3 BS':0.025,
                'pc IND gekozen inzet politiek SP3 VN':0.025,
                'pc IND gekozen inzet politiek SP3 NG':0.025,
                'pc IND gekozen inzet politiek SP3 EG':0.025,
                'pc IND gekozen inzet politiek SP4 AA BS':0.0375,
                'pc IND gekozen inzet politiek SP4 AA VN':0.0375,
                'pc IND gekozen inzet politiek SP4 AA NG':0.0375,
                'pc IND gekozen inzet politiek SP4 AA EG':0.0375,
                'pc IND gekozen inzet politiek SP4 VA BS':0.0375,
                'pc IND gekozen inzet politiek SP4 VA VN':0.0375,
                'pc IND gekozen inzet politiek SP4 VA NG':0.0375,
                'pc IND gekozen inzet politiek SP4 VA EG':0.0375,
                'pc IND gekozen inzet politiek SP5 BS':0.025,
                'pc IND gekozen inzet politiek SP5 VN':0.025,
                'pc IND gekozen inzet politiek SP5 NG':0.025,
                'pc IND gekozen inzet politiek SP5 EG':0.025,
                'SWITCH GEMEENTEN taakstelling1 constante2
                    wachttijd3':1
            }),
        Policy('Educate200_Activate35_Waiting',
            **{
                'opleidingsgolf IND capaciteit BS':50,
                'opleidingsgolf IND capaciteit VN':50,
                'opleidingsgolf IND capaciteit NG':50,
                'opleidingsgolf IND capaciteit EG':50,
                'SWITCH SP35 dicht1 open2':2,
                'pc IND gekozen inzet politiek SP1 BS':0.0625,
                'pc IND gekozen inzet politiek SP1 VN':0.0625,
                'pc IND gekozen inzet politiek SP1 NG':0.0625,
                'pc IND gekozen inzet politiek SP1 EG':0.0625,
                'pc IND gekozen inzet politiek SP2 BS':0.0625,
                'pc IND gekozen inzet politiek SP2 VN':0.0625,
                'pc IND gekozen inzet politiek SP2 NG':0.0625,
                'pc IND gekozen inzet politiek SP2 EG':0.0625,
                'pc IND gekozen inzet politiek SP3 BS':0.025,
                'pc IND gekozen inzet politiek SP3 VN':0.025,
                'pc IND gekozen inzet politiek SP3 NG':0.025,
                'pc IND gekozen inzet politiek SP3 EG':0.025,
                'pc IND gekozen inzet politiek SP4 AA BS':0.0375,
                'pc IND gekozen inzet politiek SP4 AA VN':0.0375,
                'pc IND gekozen inzet politiek SP4 AA NG':0.0375,
                'pc IND gekozen inzet politiek SP4 AA EG':0.0375,
                'pc IND gekozen inzet politiek SP4 VA BS':0.0375,
                'pc IND gekozen inzet politiek SP4 VA VN':0.0375,
                'pc IND gekozen inzet politiek SP4 VA NG':0.0375,
                'pc IND gekozen inzet politiek SP4 VA EG':0.0375,
                'pc IND gekozen inzet politiek SP5 BS':0.025,
                'pc IND gekozen inzet politiek SP5 VN':0.025,
                'pc IND gekozen inzet politiek SP5 NG':0.025,
                'pc IND gekozen inzet politiek SP5 EG':0.025,
                'SWITCH GEMEENTEN taakstelling1 constante2
                    wachttijd3':3
            }),
    ]
```

```
Shifting_Focus_Activate35 = [
        Policy('Current',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Shifting_Focus_Activate35_Targets',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':2,
                    'SWITCH SP35 dicht1 open2':2,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                       wachttijd3':1
                }),
        Policy('Shifting_Focus_Activate35_Waiting',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':2,
                    'SWITCH SP35 dicht1 open2':2,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                       wachttijd3':3
                }),
        ]

Shifting_Focus_Educate = [
        Policy('Current',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Shifting_Focus_Educate200_Targets',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':2,
                    'opleidingsgolf IND capaciteit BS':50,
                    'opleidingsgolf IND capaciteit VN':50,
                    'opleidingsgolf IND capaciteit NG':50,
                    'opleidingsgolf IND capaciteit EG':50,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                       wachttijd3':1
                }),
        Policy('Shifting_Focus_Educate200_Waiting',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':2,
                    'opleidingsgolf IND capaciteit BS':50,
                    'opleidingsgolf IND capaciteit VN':50,
                    'opleidingsgolf IND capaciteit NG':50,
                    'opleidingsgolf IND capaciteit EG':50,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                       wachttijd3':3
                }),
        ]

Policies_Compared = [
        Policy('Current',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':1
                }),
        Policy('Shifting_Focus_Educate200_Waiting',
               **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3':2,
                    'opleidingsgolf IND capaciteit BS':50,
                    'opleidingsgolf IND capaciteit VN':50,
```

```
                    'opleidingsgolf IND capaciteit NG':50,
                    'opleidingsgolf IND capaciteit EG':50,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                        wachttijd3 ':3
                }),
            Policy('Shifting_Focus_Activate35_Waiting',
                **{
                    'SWITCH CapInzet politiek1 workload2 kansrijkheid3 ':2,
                    'SWITCH SP35 dicht1 open2 ':2,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                        wachttijd3 ':3
                }),
            Policy('Educate200_Activate35_Waiting',
                **{
                    'opleidingsgolf IND capaciteit BS':50,
                    'opleidingsgolf IND capaciteit VN':50,
                    'opleidingsgolf IND capaciteit NG':50,
                    'opleidingsgolf IND capaciteit EG':50,
                    'SWITCH SP35 dicht1 open2 ':2,
                    'pc IND gekozen inzet politiek SP1 BS':0.0625,
                    'pc IND gekozen inzet politiek SP1 VN':0.0625,
                    'pc IND gekozen inzet politiek SP1 NG':0.0625,
                    'pc IND gekozen inzet politiek SP1 EG':0.0625,
                    'pc IND gekozen inzet politiek SP2 BS':0.0625,
                    'pc IND gekozen inzet politiek SP2 VN':0.0625,
                    'pc IND gekozen inzet politiek SP2 NG':0.0625,
                    'pc IND gekozen inzet politiek SP2 EG':0.0625,
                    'pc IND gekozen inzet politiek SP3 BS':0.025,
                    'pc IND gekozen inzet politiek SP3 VN':0.025,
                    'pc IND gekozen inzet politiek SP3 NG':0.025,
                    'pc IND gekozen inzet politiek SP3 EG':0.025,
                    'pc IND gekozen inzet politiek SP4 AA BS':0.0375,
                    'pc IND gekozen inzet politiek SP4 AA VN':0.0375,
                    'pc IND gekozen inzet politiek SP4 AA NG':0.0375,
                    'pc IND gekozen inzet politiek SP4 AA EG':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA BS':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA VN':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA NG':0.0375,
                    'pc IND gekozen inzet politiek SP4 VA EG':0.0375,
                    'pc IND gekozen inzet politiek SP5 BS':0.025,
                    'pc IND gekozen inzet politiek SP5 VN':0.025,
                    'pc IND gekozen inzet politiek SP5 NG':0.025,
                    'pc IND gekozen inzet politiek SP5 EG':0.025,
                    'SWITCH GEMEENTEN taakstelling1 constante2
                        wachttijd3 ':3
                }),
            ]

    # Specify number of scenarios
    nr_scenarios = 1000

    # Run model
    with MultiprocessingEvaluator(model) as evaluator:
        results = evaluator.perform_experiments(scenarios=nr_scenarios ,
            policies=Shifting_Focus_Educate)

# Saving results
save_results(results, r'./random/Shifting_Focus_Educate.tar.gz')
```

E.2 Saving pictures

```
# Load results

ema_logging.log_to_stderr(ema_logging.INFO)
file_name = r'./random/Shifting_Focus_Educate.tar.gz'
experiments, outcomes = load_results(file_name)

# Specify outcomes
outcomes_list = [#'AZs uitstroom naar gemeenten totaal wachttijd',
                 'AZs totaal wachtend op behandeling Asiel',
                 'AZs totaal wachtend op behandeling Juridisch',
                 'COA capaciteit col totaal',
                 'COA capaciteit AZC totaal',
                 'AZs uitstroom naar gemeenten totaal cumulatief',
                 'totaal IND Asiel capaciteit niet in gebruik',
                 'totaal IND Juridisch capaciteit niet in gebruik',
                 'COA capaciteit pol totaal',
                 'COA capaciteit totaal',
                 'AZs uitgestroomd totaal']

# Show results
scenario_ids = np.arange(0, 500, 100)
experiments_to_show = experiments['scenario'].isin(scenario_ids)

for i in outcomes_list:
    fig, axes = lines(experiments, outcomes, group_by='policy',
                  #density=Density.KDE,
                  show_envelope=True,
                  experiments_to_show=experiments_to_show,
                  outcomes_to_show=i)
    fig.set_size_inches(9,5)
    # we can access each of the axes and make changes
    for key, value in axes.items():
        # the key is the name of the outcome for the normal plot
        # and the name plus '_density' for the endstate distribution
        if key.endswith('_density'):
            value.set_xscale('log')
    fig.savefig(r'Plots/New/'+i.replace(' ', '_')+'.png')
    crop_figure = Image.open(r'Plots/New/'+i.replace(' ', '_')+'.png')
    crop_figure = crop_figure.crop(box)
    crop_figure.save('Plots/New/'+i.replace(' ', '_')+'.png')

plt.show()
```

Appendix F

Results

In this appendix a complete overview of the results from all the simulations is given. First the base case scenarios will be shown. Thereafter, the different policies will be discussed, and at last a reflection on the combined policies will be given. Considering the different policies, the results are interpret separately for the six base case scenarios and the deep uncertainty using 1.000 scenarios created by the random scenario generator.

F.1 Results from base case scenarios

In Figure F.1, the results from the base case scenarios are presented. As can be seen, in every future scenario from the base case scenarios, asylum seekers are awaiting a decision. Therefore, the IND asylum capacity is constantly in use. This results in the IND legal capacity to have a relatively stable inflow besides the initial asylum seekers that were in the simulation when it started. Thereafter, the amount of asylum seekers awaiting a legal decision is relatively stable. It is interesting that the legal capacity is not constantly fully in use. The central reception centre (col) capacity of COA fluctuates between 500 and 3.000, apart from the peak when the simulation starts. The process reception centre (pol) capacity keeps increasing in every base case scenario. This is caused by the fact that the asylum capacity from IND is insufficient. This results in the AZC capacity being relatively stable, apart from the peak in the beginning and further fluctuations due to the unstable outflow to municipalities. The total COA capacity keeps increasing due to the increasing pol capacity. Notice that the outflow to municipalities is based on the municipality targets from 2015 to 2019. During the policy testing in Chapter 5, other policies considering municipalities will be tested. At this moment, the statusholders going to municipalities is almost the same for every scenario. This is caused by the fact that the municipality targets are constantly achieved for every base case scenario, because all the other asylum seekers are awaiting a decision on their first asylum request. The total amount of asylum seekers that were rejected and went through DT&V differs because of the different scenarios.

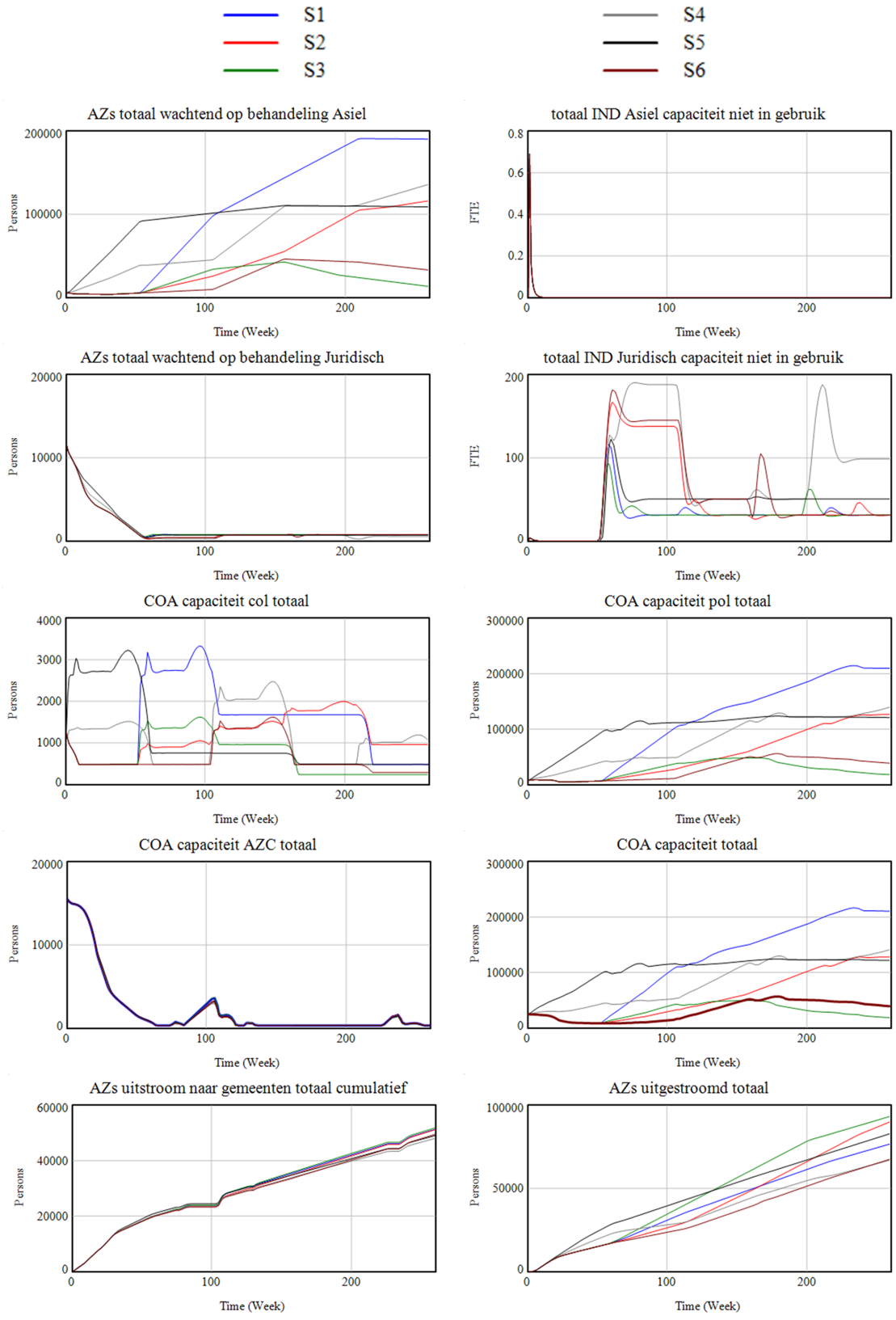


Figure F.1: KPIs for base case scenarios

F.2 Results from different policies

In this section, the different policies will be explained and simulated. First a simulation will be done for the 6 base cases. Thereafter, 1.000 random scenarios will be simulated for each policy. This will be done using the random scenario generator. Since the density of the lines becomes too high to interpret the results, an envelope is used which shows the lowest and highest simulation. Besides that, some of the simulations were drawn to show the separate scenarios. However, in this stage of the research, the behaviour of the envelopes is more important than separate scenarios.

F.2.1 KMar and AVIM capacities

Base case scenarios

As shown in Figure F.2, this policy results in only a very small change in the amount of people awaiting a decision from the IND Asylum department. Furthermore, during both policies (current and KMar/AVIM capacity), the total amount of the IND Asylum capacity is constantly used. There is no change in the amount of people awaiting a legal decision from the IND, and there are very small changes in the capacity used by the Legal department of the IND. As expected, there are significant changes in the col capacity from COA. This is caused by the fact that asylum seekers are delayed during the identification and registration process. During this process, they stay in col locations. The effects on pol and AZC capacity are negligible. As a result, the change in total COA capacity is also negligible, because the changes in col capacity are small compared to the amount of asylum seekers in pol and AZC locations. At last, there is no change in the outflow to municipalities or DT&v.

Randomly generated scenarios

The results from the randomly generated scenarios for KMar and AVIM are comparable to the six base case scenarios. There are no major changes in the amount of asylum seekers awaiting a decision. There are no changes in the amount of asylum seekers awaiting a legal decision. There is a small change in the asylum capacity from the IND that is not used. There are small changes in the capacity not used in the Legal IND department. The biggest changes are logically in the col capacity from COA. This is caused by the fact that more people have to wait for the KMar and AVIM procedures, due to a shortage of employees. The amount of asylum seekers in pol and AZD locations does not change. Logically, the outflow to municipalities and DT&V does also not change.

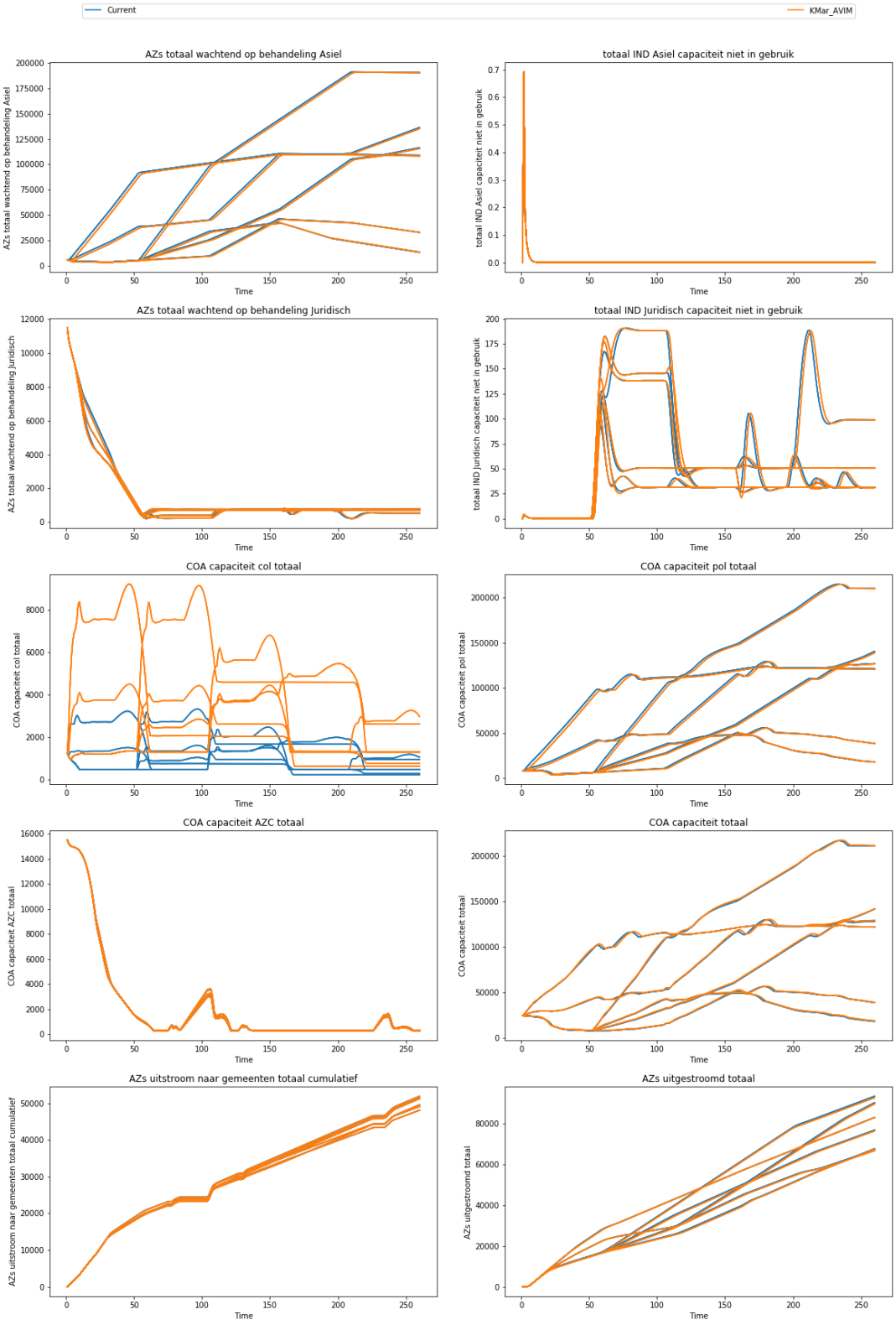


Figure F.2: Base case scenarios for KMar and AVIM capacities

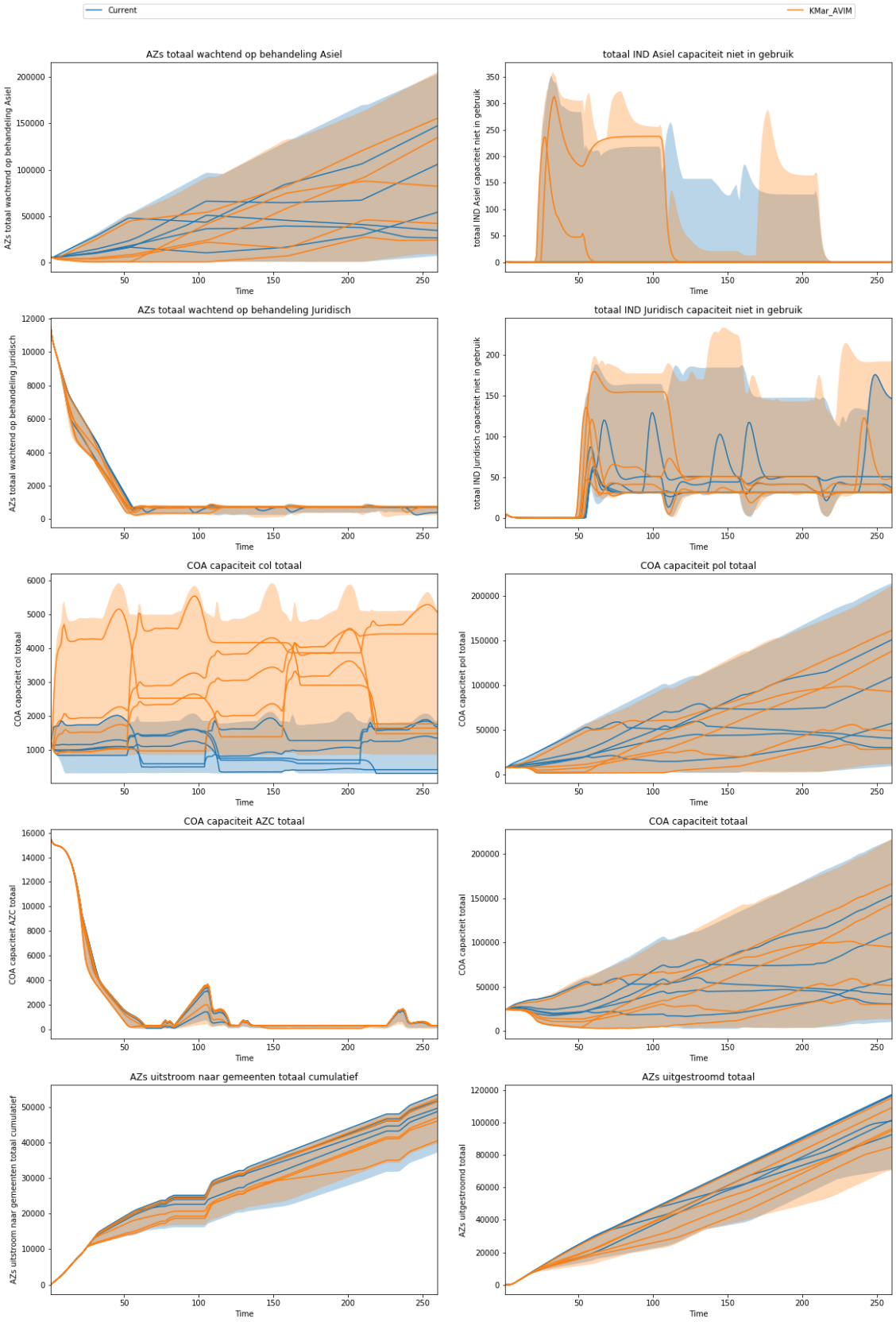


Figure F.3: Randomly generated scenarios for KMar and AVIM capacities

F.2.2 Educate IND staff

Base case scenarios

In Figure F.4, the results of the base case scenarios for the educate policy are shown. As can be seen, educating IND staff has a significant effect on the amount of people awaiting a decision from the IND Asylum department. Both policies even cause some scenarios to have no asylum seekers waiting anymore. However, in some of the scenarios this results in IND asylum capacity not being used. The increased amount of people going through the asylum procedure also causes an increase in capacity needed for the IND Legal department. Therefore, more asylum seekers are awaiting a decision there. This also results in more IND legal capacity being used. There are no changes in the COA col capacity, because asylum seekers are already in pol locations when the decision on asylum takes place. The increased amount of asylum decisions causes an increase in statusholders awaiting housing in municipalities, and therefore an increase in AZC capacity. However, the total COA capacity needed has overall been decreased. There is a significant increase in outflow to municipalities and DT&V.

Randomly generated scenarios

In Figure F.5, the results of the simulations for the "Educating IND staff" are shown. As can be seen, the education has a direct impact on the amount of asylum seekers awaiting a decision. Where the average amount of people awaiting a decision in the current situation after five years is around 80.000, this is decreased to 50.000 with 400 staff members being educated, and further decreased to 20.000 with 800 staff members being educated. Further increasing the amount of people educated seems pointless, since there will always be asylum seekers waiting during the process. Of course the increased amount of staff members results in capacity not being used. How this capacity could be used more efficiently should be further researched. Just like the base case scenarios, the increased amount of asylum seekers going through the asylum procedure without waiting causes an increase in people awaiting legal decisions. As a result, the legal capacity is used more efficiently. There are no changes in the col capacity. The pol capacity has decreased as a result of fastened asylum procedure. This causes an increase in AZC capacity. However, the total capacity used by COA is still decreased. Less asylum seekers waiting also causes an increase in the outflow to municipalities and DT&V. In Appendix F.3, the effect of different policies for municipalities in combination with education will be discussed. As mentioned before, there is no sub-model for DT&V capacity. The effect of an increased outflow to DT&V needs to be further researched.

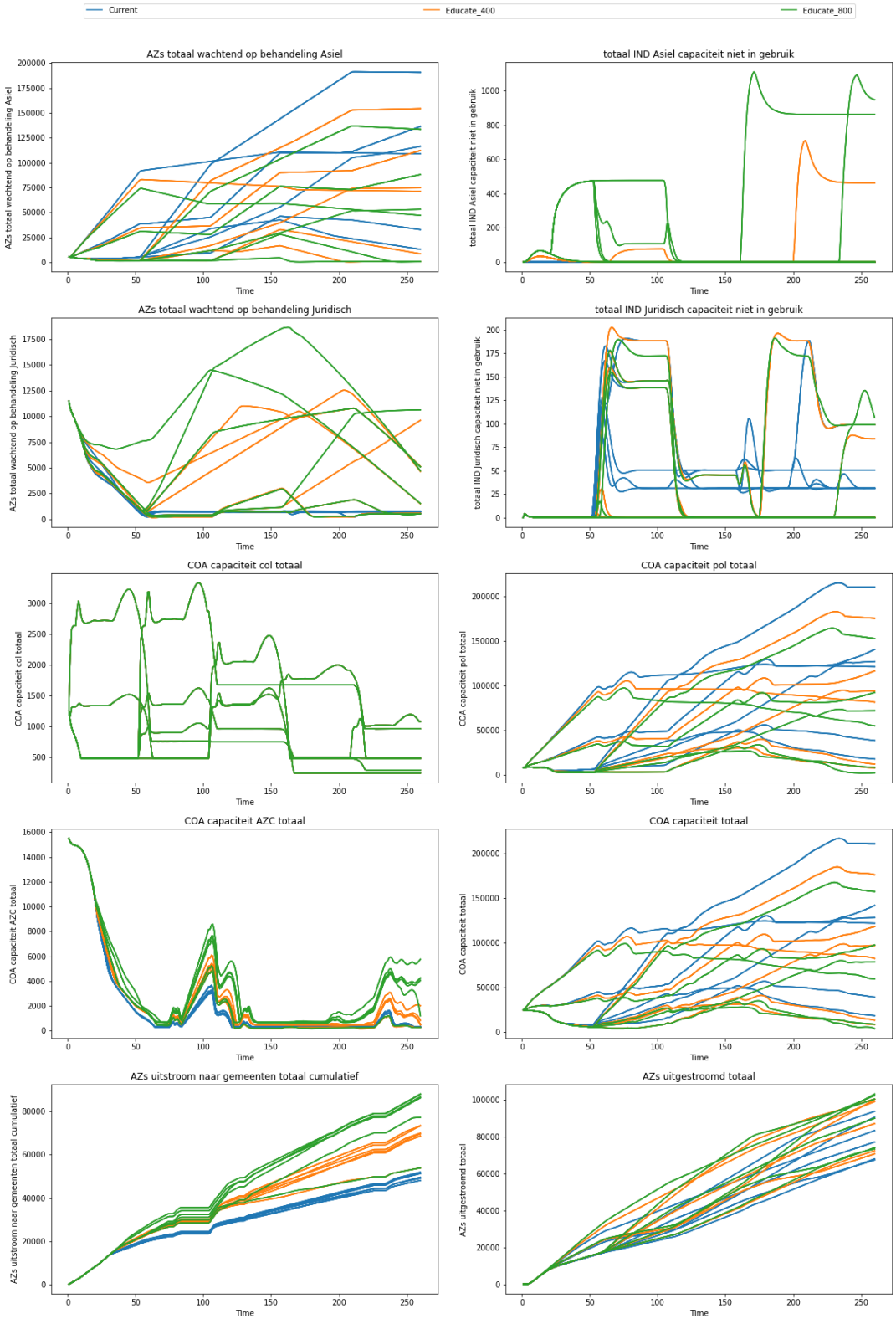


Figure F.4: Base case scenarios for Educate staff

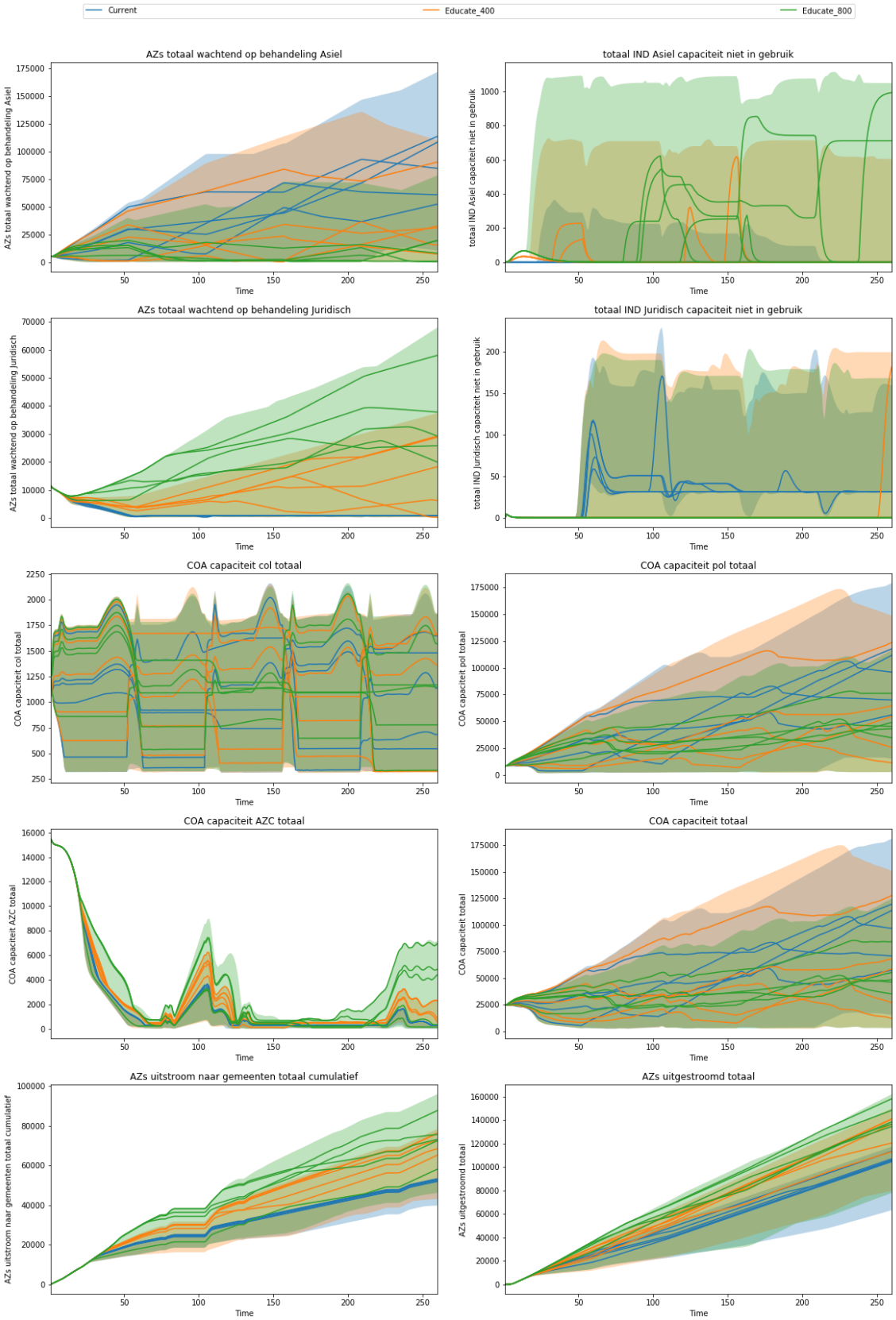


Figure F.5: Randomly generated scenarios for Educate staff

F.2.3 Activate track 3 and 5

Base case scenarios

In Figure F.6, the results from the base case scenarios for the track 3 and 5 policy is shown. As can be seen, this policy has effect on the amount of asylum seekers awaiting an asylum decision from IND. However, it does not affect the capacity used by IND staff. The amount of people awaiting a legal decision is slightly influenced, as is the legal capacity used by the IND. The col capacity of COA is not influenced. The pol capacity has decreased, while the AZC capacity has increased. However, the total capacity used by COA has decreased. Although it is not surprising that opening track 3 and 5 has a significant effect on the amount of statusholders. This could be interesting for further research, considering the effect of employing statusholders. The amount of asylum seekers leaving the Netherlands through DT&V was not significantly influenced by this policy.

Randomly generated scenarios

As shown in Figure F.7, activating track 3 and 5 does not have a significant impact on the amount of people awaiting an asylum decision. However, this could also be caused by the fact that the IND asylum capacity is constantly fully used except for a few scenarios. Therefore, it could be interesting to combine this policy with another policy in which more capacity is available, like the "Shifting focus" or "Educate staff". There is no significant change in the amount of asylum seekers awaiting a legal decision or the legal capacity used by the IND. The col locations of COA are not affected by this policy. However, there are some changes in the pol locations, although not significant. There are more asylum seekers in AZC locations. This could be caused by the fact that more statusholders are awaiting housing in municipalities. This increase is a result of more focus on asylum seekers with a higher chance of getting a residence permit due to the activation of track 3 and 5. This also causes less asylum seekers to go to DT&V.

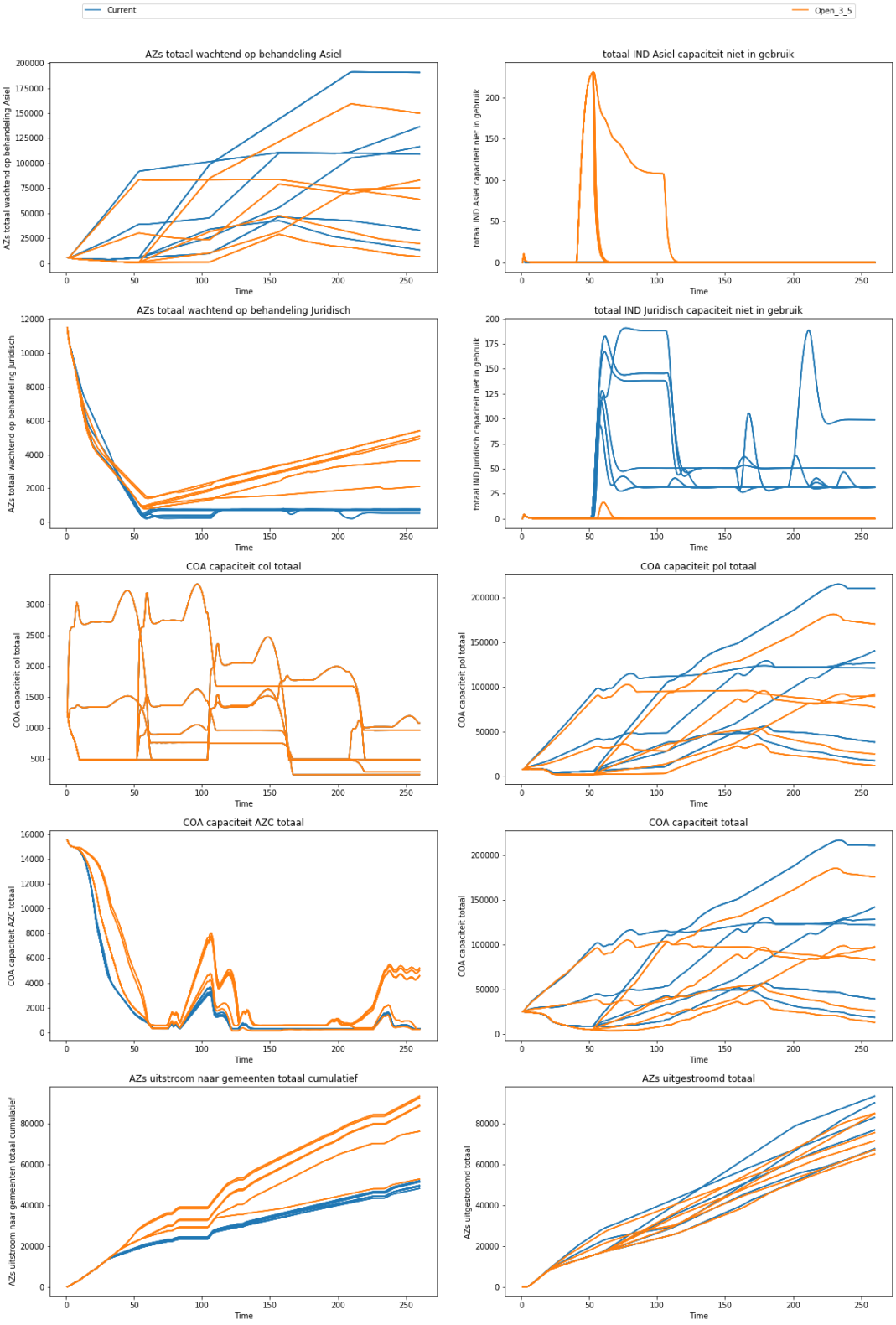


Figure F.6: Base case scenarios for Open track 3 and 5

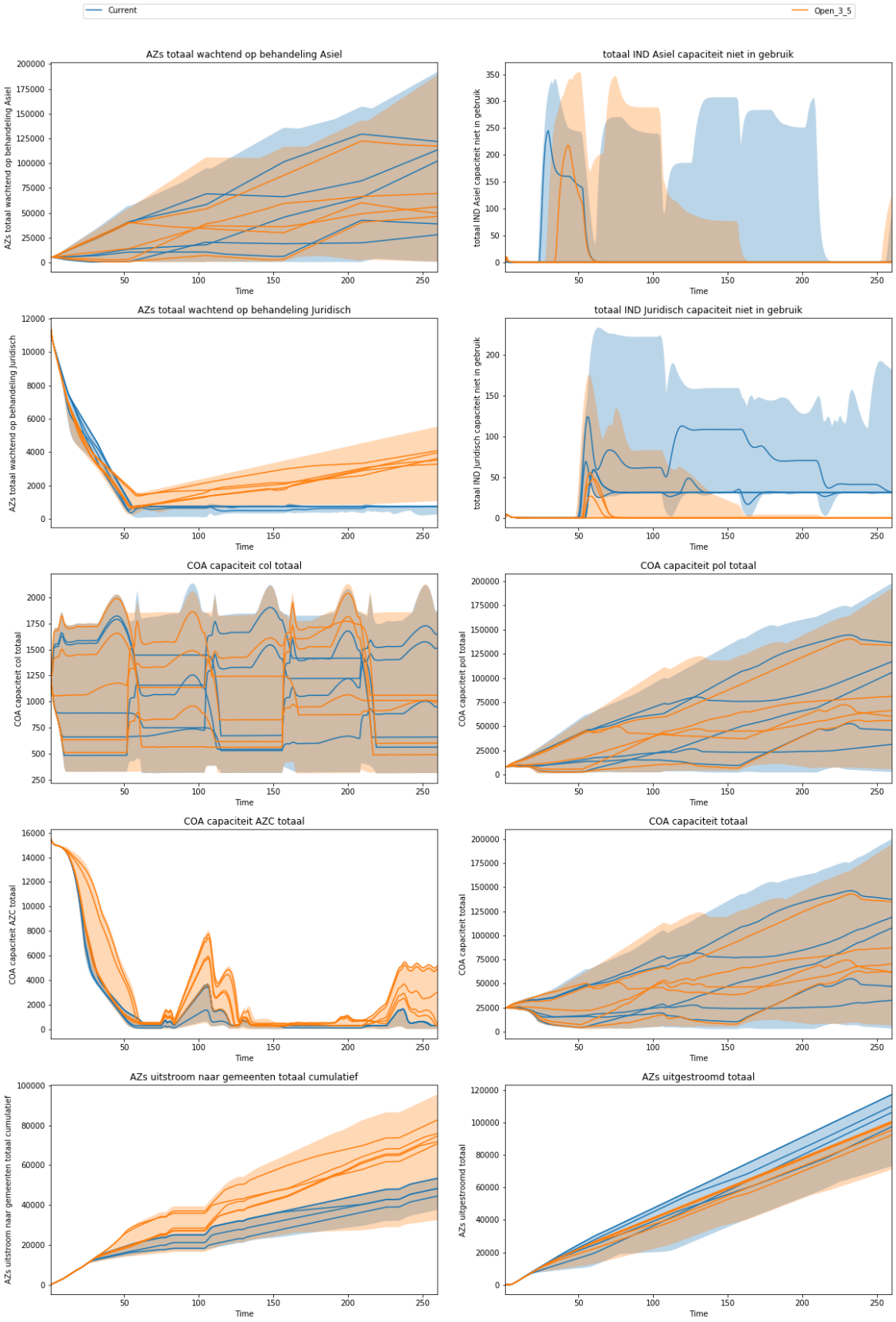


Figure F.7: Randomly generated scenarios for Open track 3 and 5

F.2.4 Shifting focus

Base case scenarios

As can be seen in Figure F.8, less people are awaiting an asylum decision for the "Chances" policy, and even less people with the "Workload" policy. However, this results in more IND capacity not being used. There are no significant changes in the amount of people awaiting a legal decision, but there is a slight increase in the legal capacity used at IND for the Chances and Workload policies. The col capacity does not change, and the pol capacity used by COA decreases as a result of the decreasing amount of asylum seekers awaiting an asylum decision. It is interesting to see that both policies result in a significant increase in AZC capacity used by COA. This is caused by statusholders awaiting housing in municipalities. The total COA capacity used still decreased. Both policies cause a significant increase in the outflow to municipalities. The outflow to DT&V increases, but not as much as the outflow to municipalities.

Randomly generated scenarios

Figure F.9 shows that using the "Chances" or "Workload" policies has a significant impact on the amount of people awaiting an asylum decision. This more effective us of IND capacity also results in more IND capacity not being used at certain moments. There are no notable changes in the amount of asylum seekers awaiting a legal decision. However, there are changes in the legal IND capacity used. The "Chances" policy results in less capacity not being used, while the "Workload" policy causes the opposite. There are no changes in col capacity from COA. The pol capacity from COA is almost halved when using the "Workload" policy. The AZC capacity shows a significant increase for both policies. The total capacity used by COA decreases for both policies, but most for the "Workload" policy. The total amount of statusholders housed in municipalities strongly increases for both policies. For the "Workload" policy, this is caused by the fact that more asylum seekers went through the procedure. For the "Chances" policy, this is caused by the fact that more IND capacity is used for track 4 due to the higher chances of receiving a residence permit. This effect could be even bigger when this policy is combined with a policy in which track 3 and 5 are activated. This will be further discussed in Section F.3.

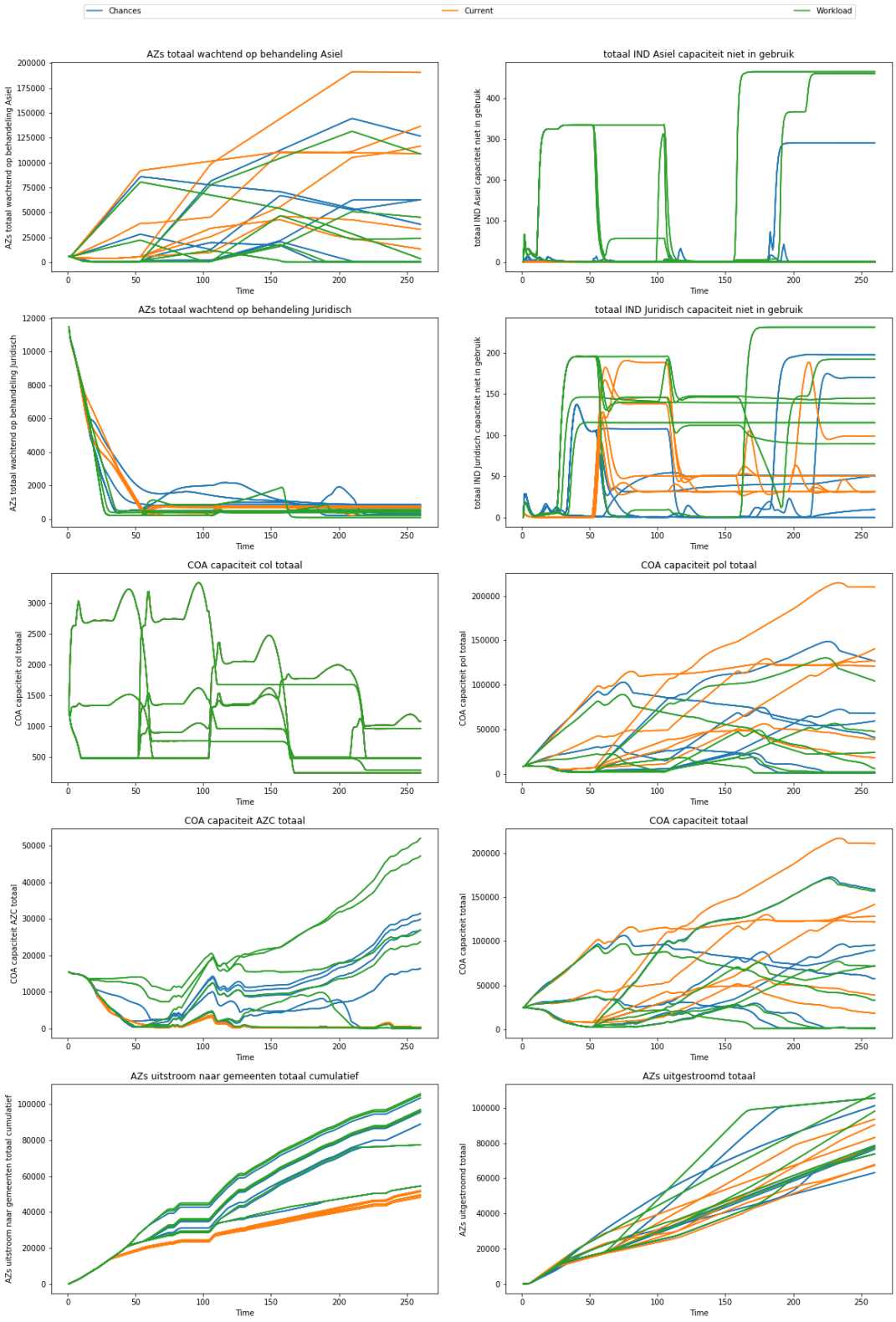


Figure F.8: Base case scenarios for Shifting focus

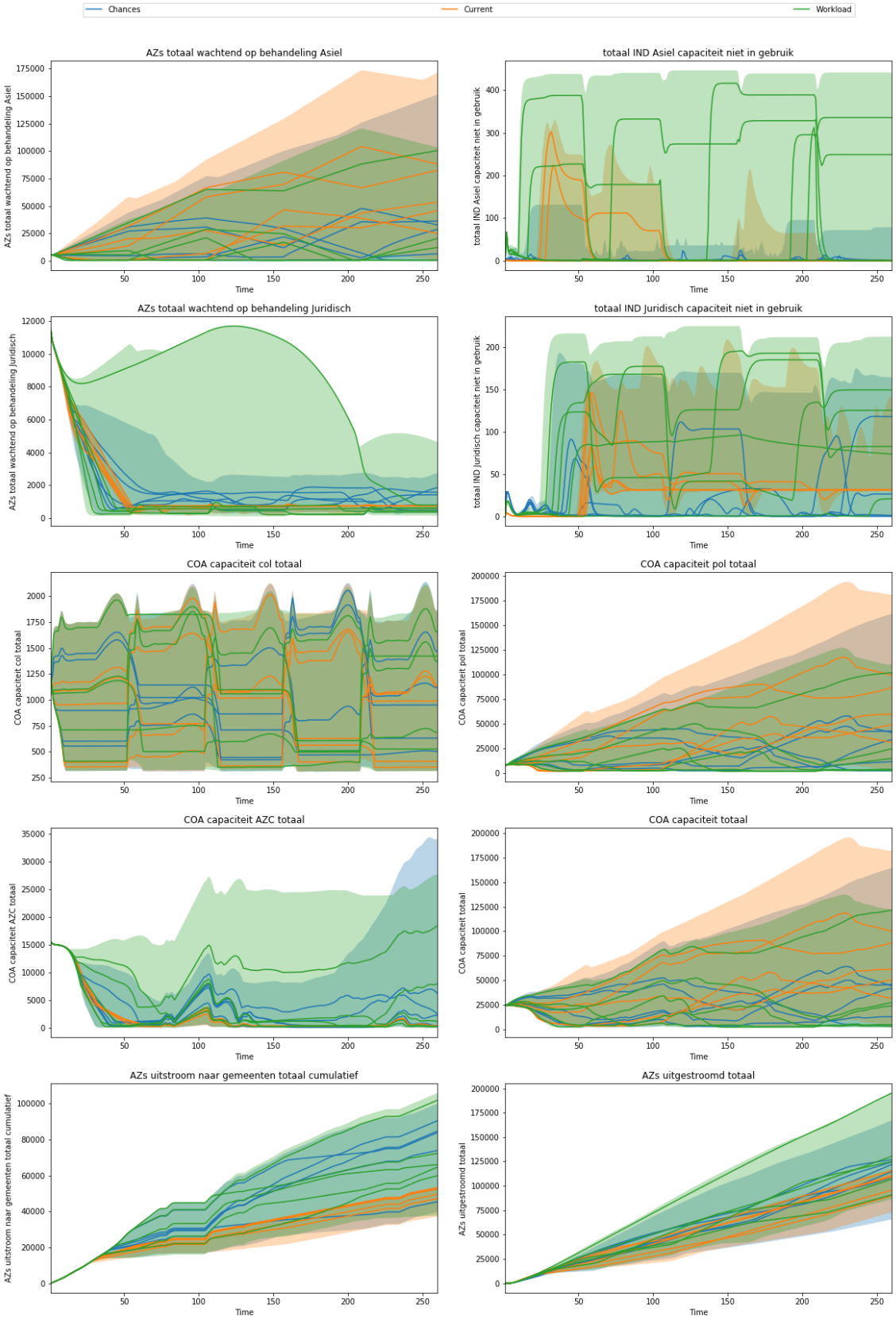


Figure F.9: Randomly generated scenarios for Shifting focus

F.2.5 Involve municipalities

Base case scenarios

In Figure F.10, the base case scenarios for different policies considering municipalities are shown. As can be seen, there are no differences in behaviour between the different policies for the majority KPIs. This is caused by the fact that these policies are not effective on their own, because they only affect the outflow of asylum seekers. As long as there is no change in behaviour earlier in the model, the outflows wont change. The only interesting change in behaviour is the total AZC capacity. As can be seen, in all six base case scenarios, there is no fluctuation in the amount of people housed in AZCs when a constant outflow of 400 statusholders per week is used. When a waiting time of 10 weeks is simulated, the AZC capacity stabilises around 2.500. This is caused by the fact that the inflow of asylum seekers gets flattened out by the capacity deficit of IND during the asylum procedure.

Randomly generated scenarios

The results for random scenarios in combination with the different policies for municipalities are shown in Figure F.11. The results are comparable to the results of the base case scenarios. There are no significant changes in most of the KPI variables. However, just as with the base case scenarios, the AZC capacity differs for each of the policies. At this point, the policies do not have a big effect. Nevertheless, in combination with other policies, this policy could still be interesting. For example, the "Waiting" policy could be used when the AZC capacity increases as a result of another policy. As explained, the "Waiting" policy could then determine the required municipality targets in order to avoid accumulations in AZCs.

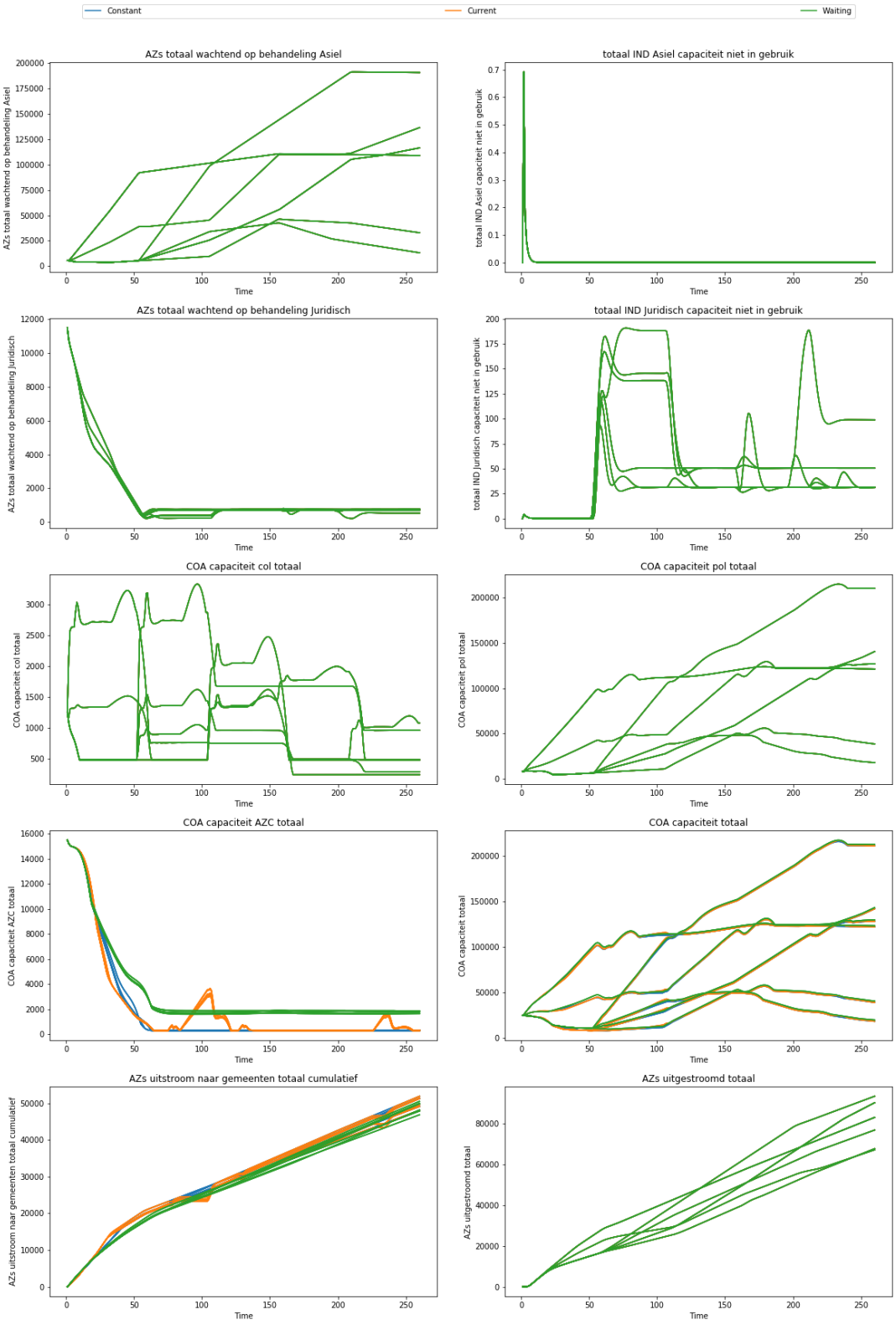


Figure F.10: Base case scenarios for Involve municipalities

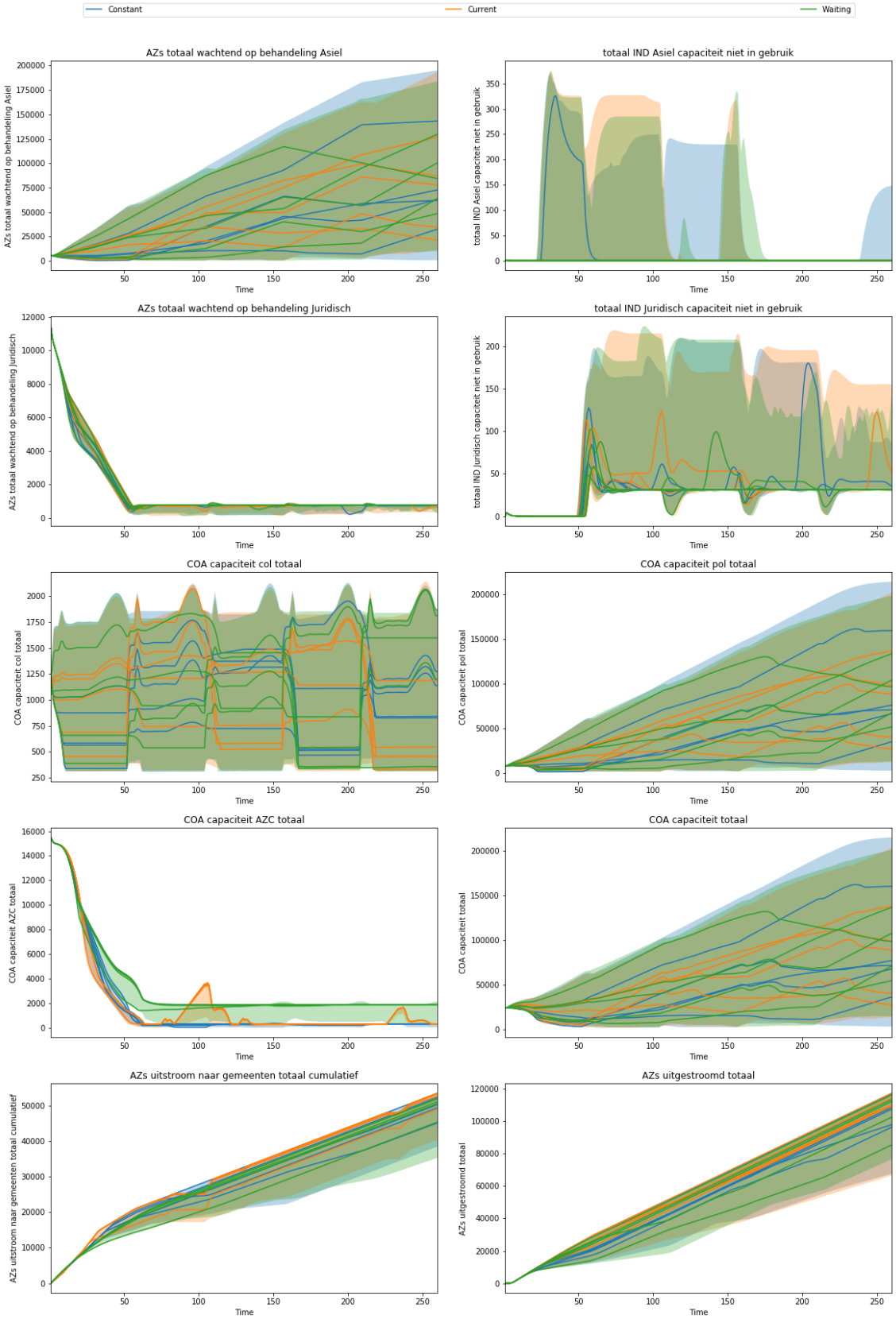


Figure F.11: Randomly generated scenarios for Involve municipalities

F.3 Combined Policies

F.3.1 Education, track activation and municipalities

In Figure F.12, the combined policy of education, track activation and involving municipalities is shown. In this case, 200 staff members for IND were educated and track 3 and 5 were activated. Furthermore, municipalities apply the known municipality targets, or the 10 week waiting time. As can be seen, in every scenario, the amount of asylum seekers awaiting a decision keeps increasing. However, the amount of waiting asylum seekers awaiting a decision in the combined policy simulations is certainly lower. The asylum capacity for IND is almost constantly fully operational. Therefore, it can be concluded that educating IND staff in combination with activating track 3 and 5 will in no scenario form a robust future. Another problem, is that the increased flow of asylum seekers through the asylum procedure causes a new bottleneck at the legal procedures of IND. Although not all the capacity is used, the amount of asylum seekers awaiting a legal procedure keeps increasing in several scenarios. The col capacity stays stable over time, while the pol capacity keeps increasing in all of the scenarios. The AZC capacity however, is stable during all the simulations. The total COA capacity keeps increasing, which is another indication of this policy being not suitable to create a robust future. The amount of asylum seekers going to municipalities and DT&V increases in all the scenarios. The amount of asylum seekers flowing out is higher with the combined policies, due to the increased amount of procedures completed.

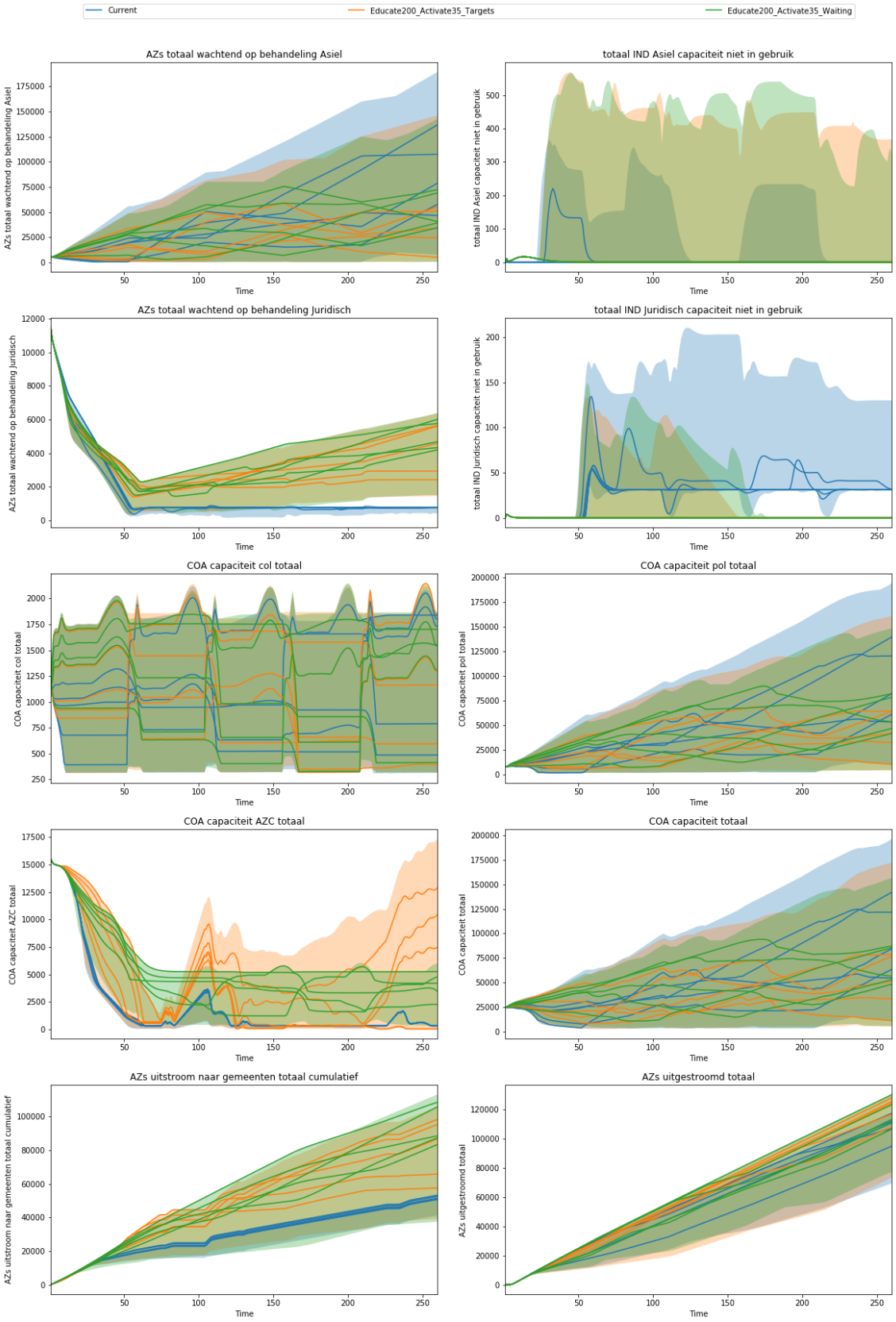


Figure F.12: Combined policies: Education, track activation and municipalities

F.3.2 Shifting focus, track activation and municipalities

In Figure F.13, the simulations for the combined policy of shifting focus, track activation and involve municipalities is shown. This policy seems to be more promising as the amount of asylum seekers awaiting a decision keeps relatively stable during all simulations for the combined policy. However, the more efficient use of IND capacity results in IND staff members being not used. Therefore, it could be interesting to further research flexible deployment of IND staff members. It is interesting to see that the shifting focus policy has solved the problem of accumulation in the legal IND procedures. However, this also results in staff of the IND Legal department being unused. The COA col capacity keeps stable. The pol capacity is stable in the vast majority of the simulations. The AZC capacity however, keeps increasing in some of the scenarios were municipalities use the "Waiting" policy. This once again confirms the importance of a suitable policy for municipalities. The total COA capacity keeps relatively stable over time. As expected, the outlfow of statusholders to municipalities increases over time, as does the outflow of rejected asylum seekers to DT&V. In order to indicate what the effect of the increased outflow of statusholders will be, in Chapter 5.4, the required municipality targets will be discussed.

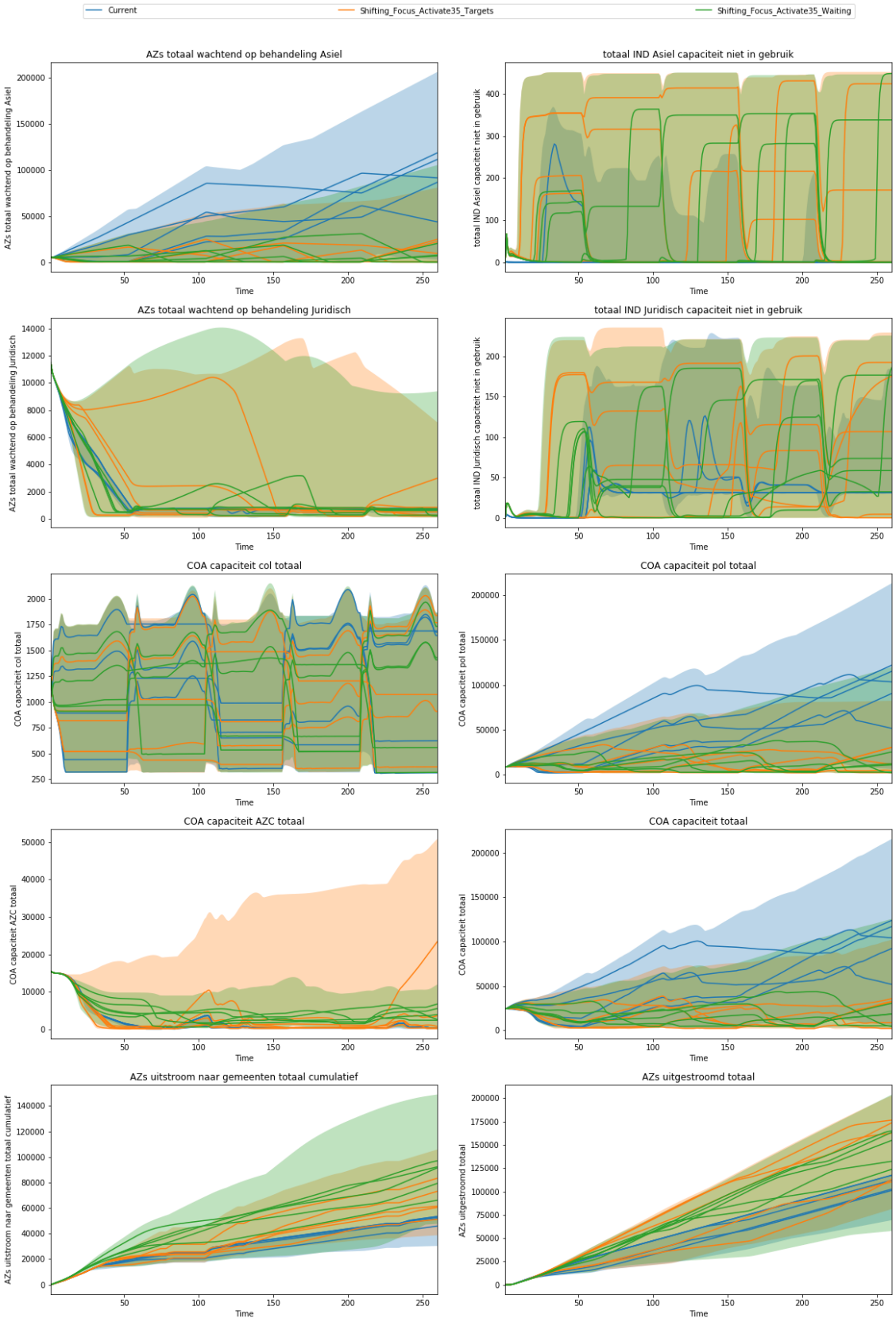


Figure F.13: Combined policies: Shifting focus, track activation and municipalities

F.3.3 Shifting focus, education and municipalities

In Figure F.14, the results for the combined policy of shifting focus, education and municipalities are shown. In this case, only 200 IND staff members were educated. These results are also promising, because the amount of asylum seekers awaiting a decisions remains stable with both policies. However, once again, a lot of the capacity from the IND asylum capacity is not used. It could be politically sensitive to attract more IND staff when little work is available. Therefore, flexible deployment of IND asylum capacity should be considered. The amount of asylum seekers awaiting a legal decision is relatively stable, except for some small fluctuations. The legal capacity not being used has increased. However, even in the "Current" scenario, capacity is wasted. The col capacity is stable over time. It is interesting to see that the pol capacity is very low during these simulations for both policies. The AZC capacity is fluctuating, and even increasing in some scenarios, for the "Waiting" policy from the municipalities. For the "waiting" policy, the AZC capacity is stable. The total capacity from COA is stable for both policies. As expected, the increased amount of procedures completed results in more statusholders living in municipalities, and more outflow to DT&V.

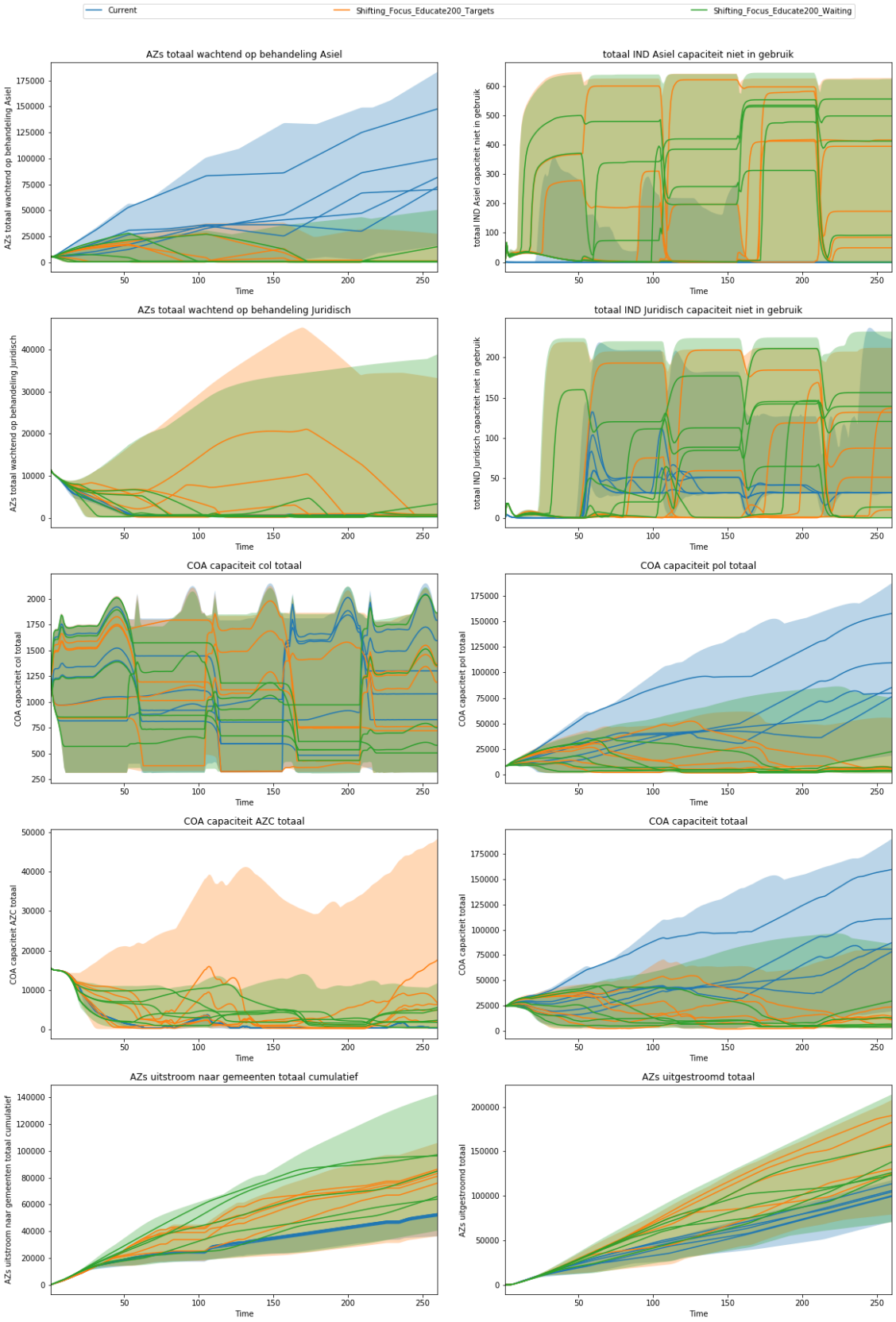


Figure F.14: Combined policies: Shifting focus, education and municipalities