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POLICY ANALYSIS OF MULTI-ACTOR SYSTEMS
FINAL ASSIGNMENT

Tackling the Problem of Highland's Nurse Shortage

POLICY ANALYSIS FOR THE MINISTRY OF HEALTH OF HIGHLAND

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1 Context Setter

According to the WHO estimates, mankind will face a shortage of 15 million health workers by 2030 with around nine million being nurses [International Council Of Nurses, 2019]. Although most of them are needed in low and mid-income countries, nations at all socioeconomic development stages are affected [World Health Organization, 2022a]. Hence, due to demographic characteristics, high-income countries will face an increasing need for health workers as the absolute and relative numbers of elderly who need more care will rise [Pamas, 2022]. Inside the U.S., for example, the number of people 65 years of age or older will approximately increase 73% by 2029 [Haddad et al., 2022]. Consequently, the shortage in combination with the future demand increase challenges health systems all over the world as they rely on health workers. Hence, improving health services and attainable standards of health are dependent on their availability, accessibility, acceptability and quality.

1.1 Problem Owner

Highland, a high-income country has trouble providing those standards as it finds itself in a negative spiral. In Highland, nurses face long working hours, inadequate professional support, a perceived discrepancy between work demands and rewards, and a lack of social and financial appreciation [Pamas, 2022]. In addition, nurses, as intermediaries between an overburdened health system and its patients, are more likely to be victims of violence [Sato et al., 2013]. As a result, young people are discouraged from pursuing a career in the health sector. Therefore, further increasing the current workforce shortage. In addition, the workforce is ageing and consequently shrinking over time. The result is then a crushing workload for those who remain. This workload leads to dissatisfaction, pronounced negativity or an increasing number of burnouts. As a result, working conditions deteriorate further and the cycle goes on. This mechanism of action is in line with the WHO report *Ticking timebomb: Without immediate action, health and care workforce gaps in the European Region could spell disaster* which states that long working hours, inadequate professional support and serious staff shortages promote poor mental health within the workforce [World Health Organization, 2022b]. Furthermore, the COVID-19 pandemic has exacerbated these problems as eight out of ten nurses reported mental health problems due to the pandemic. Moreover, nine out of ten nurses had declared their intention to quit their job at some point [World Health Organization, 2022b]. As the highest institution of health, Highland’s Health Ministry aims to ensure the general health and mental well-being of the population. With almost half of the world’s healthcare workforce being nurses which provide nearly 80% of hands-on care, nurses play a critical role in the healthcare system [International Council Of Nurses, 2019]. Furthermore, it has been shown that the nursing shortage poses serious clinical implications. For instance, the number of treatment errors is related to a high nurse-patient ratio. Furthermore, the mortality and failure-to-rescue rates are higher and patient satisfaction decreases [Moloney et al., 2018]. Thus, at the end of this policy analysis, the Ministry will have a clear framework of where it should focus its efforts to reduce the shortage of nurses and thereby improve the overall health of citizens.

2 Problem Demarcation, Objectives, and Criteria

First, the problem of nursing shortage is analyzed using a means-ends diagram. A focal objective is selected and a problem statement defined. Lastly, an objective tree including criteria to measure and monitor side effects is constructed.

2.1 Means-Ends Diagram

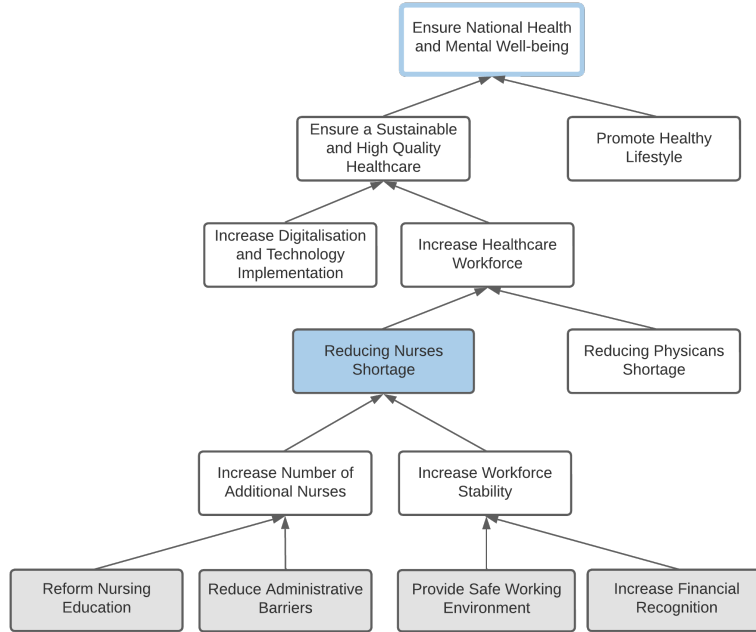


Figure 1: The means-ends diagram provides a broad problem overview. The highest goal is to ensure national health and mental well-being. The focal objective is marked blue. The focal means which describe measures to achieve the focal objective are marked grey.

2.2 Focal Objective

The Health Ministry of Highland, as the highest institution of health, ultimately aims to ensure the general health and mental well-being of its citizens. Promoting preventive measures such as highlighting the importance of a healthy lifestyle would be one approach. The increase in total and relative numbers of elderly, however, calls for sustainable and high-quality healthcare solutions. Besides implementing the highest technological standards, increasing human resources for health is critical. The ministry commissioned this analysis to address the current nurse shortage. Nevertheless, it should be highlighted that nurses are only one of many occupations in the health sector. For instance, in Highland, 40% of the physicians are already aged 55 years or older [World Health Organization, 2022b]. Given the high retirement rates in all health professions, focusing only on the nursing shortage is deceptive, as the problem is more complex and multi-layered. It is also likely that concentrating on one profession will raise the question of the lack of improvements for other healthcare workers. Other professions might demand similar improvements. They may also feel less valued and discriminated against. This could have a negative impact on workplace culture and thus reduce health services.

On the other hand, the nursing workforce accounts for almost half of the healthcare workforce and provides around 80% of hands-on care. Moreover, the nursing shortage is related to poor overall health treatments. Thus, addressing the nursing shortage promise a stronger and more resilient health system. Therefore, reducing the nursing shortage is defined as the focal objective.

Two pathways have been identified. On the one hand, the ministry should focus on increasing the stability of its nursing workforce. Nine out of ten nurses, that have thought about dropping out, underlines the importance. Measures should focus on providing a safe work environment. Discrepancies between work demands and rewards could be handled by increasing financial recognition. On the other hand, the ministry should actively increase the number of nurses. In the short and medium-term the ministry ought to increase international recruitment to secure the immediate increase in supply. Another option would be to encourage former nurses to return. In addition, the number of nursing graduates should be increased. This way, the system will be prepared for future demand in the health sector.

Therefore, the policy includes a short as well as long-term component. The ability to address both time scales promises a versatile tool set in order to reduce the nursing shortage. While the first mainly focuses on improving current working conditions, the second exclusively concentrates on measurements that are directly linked to an additional workforce increment.

2.3 Side Effects

Reduce Administrative Barriers

- Insufficient examination of qualifications. – recruiting fewer or unqualified personnel.
- Could be exploited.
- Time for distinguishing between suitable and unsuitable applications increases – Slows down application-speed – decreases recruitment numbers.

Reform Nursing Education

- Time costly.
- No immediate changes.
- Domain-specific information gets lost.
- Different training programs increase inequalities

Provide Safe Working Environment

- Increases the working shortage.
- Flexible working hours reduce planning reliability. Might impact healthcare reliability.
- Other healthcare workers feel discriminated against.

Increase Financial Recognition

- Other healthcare workers feel discriminated against.
- Does not promise better working conditions.
- Difficult to measure.
- Nurses reject one-time payments, perceived as "paying out"
- Cost-intensive.
- Other healthcare workers demand higher salaries.

2.4 Problem Statement

How can the Ministry of Health in Highland achieve a sustainable reduction in the nursing shortage accepted by the health sector, while ensuring the highest standards of health care with low realisation costs?

2.5 Objective Tree

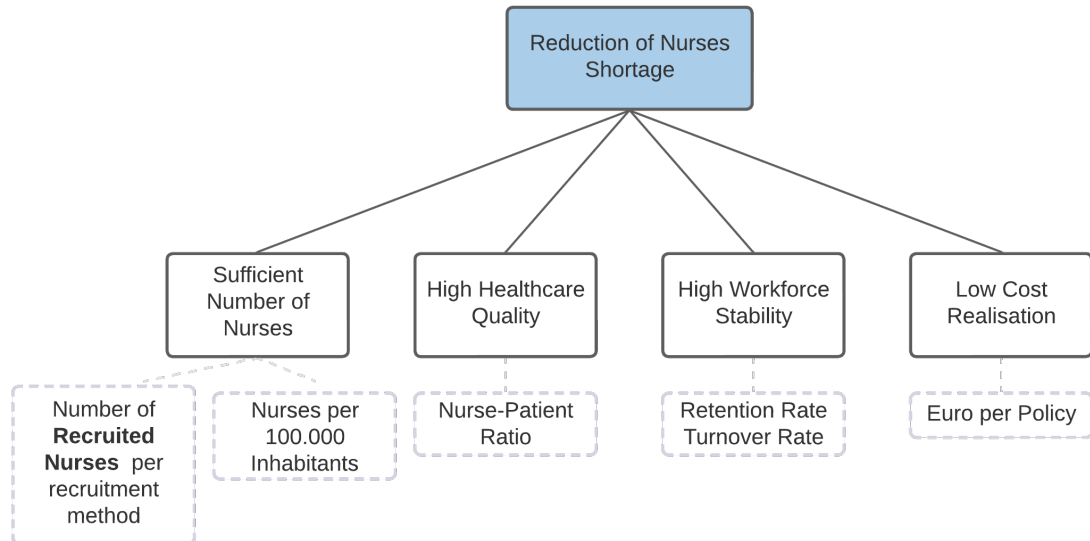


Figure 2: The objective tree displays how the abstract objective - Reduction of nurses shortage - can be defined in terms of measurable factors. The objective is measured by four KPIs. Sufficient number of nurses, high healthcare quality, high workforce stability, and low cost realisation

2.6 Criteria

Table 1

Criteria	Measurement	Desired Effect
Number of Nurses	Number of nurses per 100.000 citizens	Increase
Healthcare Quality	Nurse-patient ratio	Decrease
Stability of Workforce	Retention rate	Increase
	Turnover rate	Decrease
Realisation Costs	In USD	Low

3 System Diagram

In this section, the structure of the problem, factors, and causal relationships are explored within a system. A system diagram - see Figure ?? - was created to analyze the effect of means (M1-M4) and external factors (X1-X3) on the criteria (C1-C4) chosen in Section 2.6.

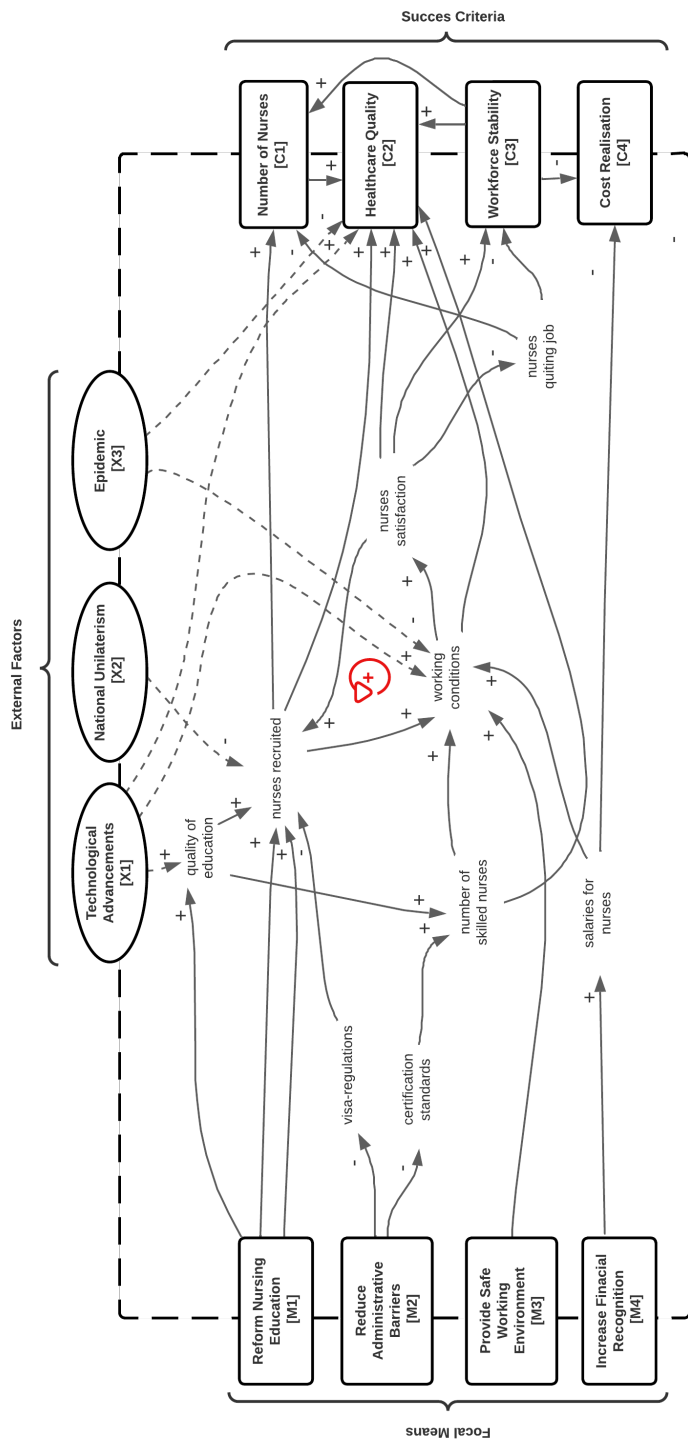


Figure 3: The system diagram displays the causal relationships between the client's means (M1-M4), external factors (X1-X3) and the criteria (C1-C4). Internal variables and arrows of different polarities define the system's behaviour. Positive relations are indicated by a Plus (+) and negative ones with a Minus (-). The reinforcing loop is marked red. All paths from a mean to criteria are called causal paths. By following the causal paths starting from a mean, it is possible to estimate the impact of a certain mean on the system objectives.

3.1 Means and Causal Links

Reforming Nursing education (M1) increases the number of nurse graduates because drop-out rates are decreased. It is also assumed that the Reformation increases the attractiveness of the nursing profession.

Reducing administrative barriers (M2) provides a fast and simple recruitment process. Altogether, it is assumed that reducing administrative and financial barriers will contribute to higher short and mid-term recruitment numbers. However, concerns regarding healthcare quality should not be overlooked.

Providing a safe working environment (M3) promotes a healthy work-life balance and protects the health and mental well-being of nurses. Hence, the working conditions of nurses increase.

Increasing financial recognition (M4) addresses the perceived discrepancy between work demands and rewards or the lack of social and financial appreciation are addressed.

3.2 Reinforcing Loop

One reinforcing loop is identified. The growth of recruited nurses reduces workload contributing to a healthier work-life balance. This change will translate to better working conditions increasing nurse satisfaction. Nurses who are vocal about improved conditions change the public image, make the profession more attractive and thus increase the number of new nurses. This cycle should be embraced because the system itself amplifies the effect, making the policy more efficient and resource-saving.

3.3 External Factors

Technological Advancements (X1) are essential for healthcare [Pertiwi and Hariyati, 2019] Highlands healthcare research is assumed to be average. Thus, Highland depends on other countries developing state-of-the-art technologies to further improve working conditions and the quality of health care.

National Unilateralism (X2) threatens global solutions. Since nine million nurses are needed within the next eight years, competition between countries, wanting to recruit foreign nurses, increases. Additionally, unilateralist countries from which nurses are recruited adapt national legislation constraining work migration and thus limiting the number of internationally recruited nurses.

Epidemics (X3) illustrate the danger of healthcare shock that can occur at any time and challenge the functioning state of every health system. Delayed surgeries, increased triage decisions or increased overtime work are examples of how healthcare quality and working conditions decline during a pandemic. [Raimi and Gift, 2020].

4 Qualitative Impact Assessment and Scenarios

The overall robustness and flexibility of the policy is assessed during this section.

4.1 Qualitative Consequence Table

Table 2: The qualitative consequence table summarizes the effects of means on criteria. Plus (+) and minus(-) are used to indicate the direction of change. Colours indicate desired (green), undesired (red), and conflicting (yellow) effects.

Criteria/ Means	[C1] Sufficient Number of Nurses	[C2] Healthcare Quality	[C3] Workforce Stability	[C4] Cost Realisation	Performance
[M1] Reform Nursing Education	+/+/+/+/+/+/+	+/+/+/+/+/+/+ +/+/+/+/+/+/+	+/+/+/+	-/-/-/-	4/4
[M2] Reduce Administrative Barriers	+/+/+/+/+ +/+/-/-	+/+/+/+/+/+/+ -/-/-/-	+/+ -/-	+/+ -/-	0/4
[M3] Provide Safe Working Environment	+/+/+/+	+/+/+/+/+/+	+/+	+/-/-	3/4
[M4] Increase Financial Recognition	+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/+	+/+/-/-	3/4

4.2 External Factor Analysis

Table 3: The external factors qualitative consequence table displays how efficient the policy, including the influence of external factors, is.

Criteria/ External Factors	[C1] Sufficient Number of Nurses	[C2] Healthcare Quality	[C3] Workforce Stability	[C4] Cost Realisation
[X1] Technological Advancements	+/+	+/+/+/+	+/+/+	-
[X2] Nursing Shortage in Other Countries	-/-/-/-	-/-/-/-/-/-	-/-/-/-	+/+
[X3] Pandemic	-/-	-/-/-/-	-/-/-	+

4.3 Scenario Analysis

Based on the qualitative consequence table the flexibility and robustness of M1 and M3 are explored.

S1. "Old, Older - Healthcare" - Best Case

Demographic changes cause a global nursing shortage. However, nations around the world have agreed on solving the problem globally. Education programs are standardised on multinational levels. Countries lacking resources are supported with know-how, labour and technology. Based on high-multinational collaborations, research thrives. New technologies are being developed. Highland, as a high-income country, benefits strongly from these developments leading to an efficient, technology-assisted healthcare system.

S2. "Healthcare and VR" - Middle Case

Demographic changes cause nursing shortages worldwide. Countries from which nurses have been recruited face shortages themselves and increased national unilateralism lead to new restrictions on labour migration. High-income countries vie for the last remnant of foreign nurses. Highland as a high-income nation imports state-of-the-art technologies. Hence, transforming the healthcare system into a technology-guided healthcare system.

S3. "A Pandemic turns 69" - Worst Case

The new pandemic Spahndrea-42 breaks out and spreads within Highland and stresses the health system. Healthcare, struggling to cope with increasing numbers of older people, is being pushed to the brink of collapse. The economic impact of Spahndrea, causes budget cuttings for long-term oriented policies such as research. Hence, limiting technological advancements.

Table 4: [Policy-Scenario Consequence Table] The policy-scenario consequence table displays how well the selected policies perform in a scenario. Three scenarios are designed, which together span from the best possible scenario to the worst possible scenario.

Criteria/ Scenario	[C1] Sufficient Number of Nurses	[C2] Healthcare Quality	[C3] Workforce Stability	[C4] Cost Realisation
[S1] Healthcare and VR (X1+, X2=, X3=0)	-/-/-/ +/+/+/+/+ +/+/+ +/+/+/+	-/-/-/ +/+/+/+/+ +/+/+/+/+ +/+/+/+/+	-/-/-/ +/+/+/+/+ +/+/+/+	+/+/+ -/-/-/-/-
[S2] Old, Older Healthcare (X1=+ , X2=+ , X3=0)	-/-/-/- +/+/+/+/+ +	-/-/-/- - +/+/+/+/+ +/+/+/+	-/-/-/- +/+/+/+/+ +	+/+/+ -/-/-
[S3] The next Pandemic (X1=0, X2=0, X3=+)	-/-/-/- - +/+/+/+/+ +	-/-/-/- -/-/- +/+/+/+/+ +	-/-/-/- -/- +/+/+/+/+ +	+/+/+/+ -/-/-

4.4 Robustness and Flexibility Evaluation

S1 leads to an energy price relaxation thanks to a decreased tension in fossil fuel supply. The public supports the energy policy. In this scenario, the EU should probably give priority to a long-term solution : M3 and M4.

S1 leads to a relaxation within the healthcare workforce. In this scenario, the need for immediate short-term solutions decreases due to a multinational approach and technological advancements. Therefore, the long-term oriented policies M1 and M3 perform well.

In S2 the need for short and mid-term solutions increases. Under those circumstances, the impact of reforming the nursing education is constrained, as improvements take time due to long-term implementations. Hence, Highland has to focus on fast improvements of workforce stability. M3 performs well. Furthermore, taking M4 into account is beneficial. Additionally it highlights the dependency on technological advancements. Hence, Highland should consider to extensive its effort within this field.

S3 illustrates the impact of rapid demand peaks within the healthcare system. Both selected policies M1 and M2 are not sufficient to tackle this. Therefore, Highland ought to increase its efforts reduce administrative barriers, as it is the only policy that promise an immediate increase in additional numbers of nurses. It is assumed that M4, reduce turnover rates due to Spahnderas workload increase. This way the level of workforce is kept, important for post-spahnderas times.

Overall, a policy including all means (M1 + M2 + M3 + M4) is robust to external factors and scenarios. Due to budget constraints, it is advised to opt for one short, mid-term and one long-term oriented policy. This way, the policy promise high flexibility. To account for rapid demand peaks, the number of practicing nurses have to increase as soon as possible. Therefore, reducing administrative barriers (M2) is advised. On the other hand, recruiting foreign nurses increases dependencies. Thus, Highland has to consider the long-term policy, reform nursing education (M1), to increase the amount of self-educated nurses. Additionally, it enables Highland to determine the quality of education and make it specific to its health needs (demographic change). Hence, increasing the quality of healthcare.

5 Actor Analysis

The most important actors are described according to their interests, roles in the institutional context, and resource dependence.

5.1 List of Related Actors

International Actors

- International Labour Organization (ILO)
- The Organisation for Economic Co-operation and Development (OECD)
- World Health Organisation (WHO)
- The World Bank

Supranational Level¹

- European Nursing Council
- European Federation of Nurses Associations
- European Public Health Alliance

National Actors

- Head of Government
- **Ministry of Health (MoH)**
- Ministry of Finance (MoF)
- **Ministry of Education (MoE)**
- **Ministry of Work (MoW)**
- **Ministry of Foreign Affairs and Immigration (MoFA&I)**
- **Nurse Associations (NAs)**
- Patients Associations
- **Hospital Associations (HAs)**
- Medical Companies
- Nurse Training Institutes

5.2 Actor Selection

Actors on the governmental level have overlapping responsibilities. To keep the analysis concise, most important actors within the government are selected. The Ministry of Finance is dropped as the implementation of M1 and M2 does not fall within its remit. In addition, it is acknowledged that Patient Associations are a part of the problem. However, they don't have a direct influence on changing healthcare. International and supranational actors are not considered because they operate internationally. Nevertheless, scenario one displayed the importance of multinational solutions. Hence, the MoFA&I will increase cooperation efforts, such as contributing to the United Nations Multi-Partner Trust Fund (MPTF). Training institutions for nurses are dropped as they are subordinate to the MoE. All other non-mentioned actors are being dropped from the analysis due to a lack of influence.

The MoH, as the problem owner, is interested in the solution. The MoE is a key actor in organising the reformation of nursing education. The MoFA&I is identified as relevant because it organises recruiting processes internationally. Reducing visa limitations or implementing more international work agreements with other countries are essential. Those efforts should be organized with the MoW to ensure smooth transitions into the working market. Within healthcare, Nurse Associations are involved as they are directly affected by this policy. As hospitals are in most cases the workplace for nurses, they are responsible for the implementation of new policies. Therefore, Hospital Associations are taken into account. Thereby, private and governmental funded hospitals are considered.

¹Due to the Highexit, Highland left the European Union. However, due to geographic/societal contiguity, Highland remains part of the European Healthcare alliance

5.3 Interests, Objectives and Possible Actions of Relevant Actors

Table 5: This interest table summarizes the main interests, objectives, and possible actions of all relevant actors.

Ministry of Health	
Interests	Improve the general health and mental well-being of Highlands inhabitants
Objectives	Organize Human Resources for Health Increase healthcare quality
Possible Actions	Interferes if health-standards are missed
Ministry of Education	
Interests	Provide accessible education to all Deliver excellent standards of education, training and care
Objectives	Increase the number of people starting a nurse education program Increase number of nursing graduates Reduce number of drop-outs
Possible Actions	Reform the education process towards a concept-based curriculum Creating new training paths e.g. study programs, Highlight career opportunities for nurses
Ministry of Foreign Affairs & Institutions of Immigration	
Interests	Promote the interests of Highland citizens with international partners
Objectives	Increase the number of foreign recruited nurses Reduce visa regulations
Possible Actions	Reduce financial obstacles for work permits Enter into treaties with other states concerning nurse workforce Participate at MPTF
Ministry of Work and Pensions	
Interests	Increase the total number of working people
Objectives	Encourage people to work and make work pay Provide decent income for people of pension age
Possible Actions	Increase reintegration of former nurses Provide information for reintegration programs
Nursing Associations	
Interests	Promote good working and training conditions Increase the number of members
Objectives	Increase the number of working nurses Increase social and financial recognition Promote flexible shift planning Increase days of holiday
Possible Actions	Working strikes
Hospital Associations	
Interests	Increase healthcare efficiency Provide healthcare
Objectives	Increase efficiency within healthcare Increase retention rate Decrease turnover rate
Possible Actions	Implement two-shift days Increase technology implementations Increase working conditions

5.4 Institutional Context

Institutions have rules and expectations regarding behaviour in a social context. Obligations within the actors' operating environment, their granted rights, and their prohibitions are listed.

Table 6: To understand the institutional context of each relevant actor, their respective obligations, rights, and prohibitions are displayed in this table.

Actor	Obligations	Rights	Prohibitions
Health Ministry	Improve citizen's overall health and mental well-being	Invest in the healthcare system Regulate the healthcare system	Must stay in state budget
	Secure basic healthcare for everyone		
	Govern healthcare system		
Ministry of Education	Prevent the spread of diseases etc	Change educational programs Create new educational programs Change educational standards	Must stay in state budget
	Provide accessible education for all at all levels		
	Increase education standards		
Ministry of Foreign Affairs Institutions of Migration Affairs	Promote the interest of Highlands citizens with international partners	Change migration policies	
Ministry of Work and Pension	Contribute to national economic growth	Change working regulations Change working conditions	Obey to International Law
		Organise association-wide strike	Obey national law
Nursing Associations			
Hospital Associations within own hospitals	Provide basic healthcare to everyone Must follow governmental legislation	Change working conditions	

5.5 Resource Dependence

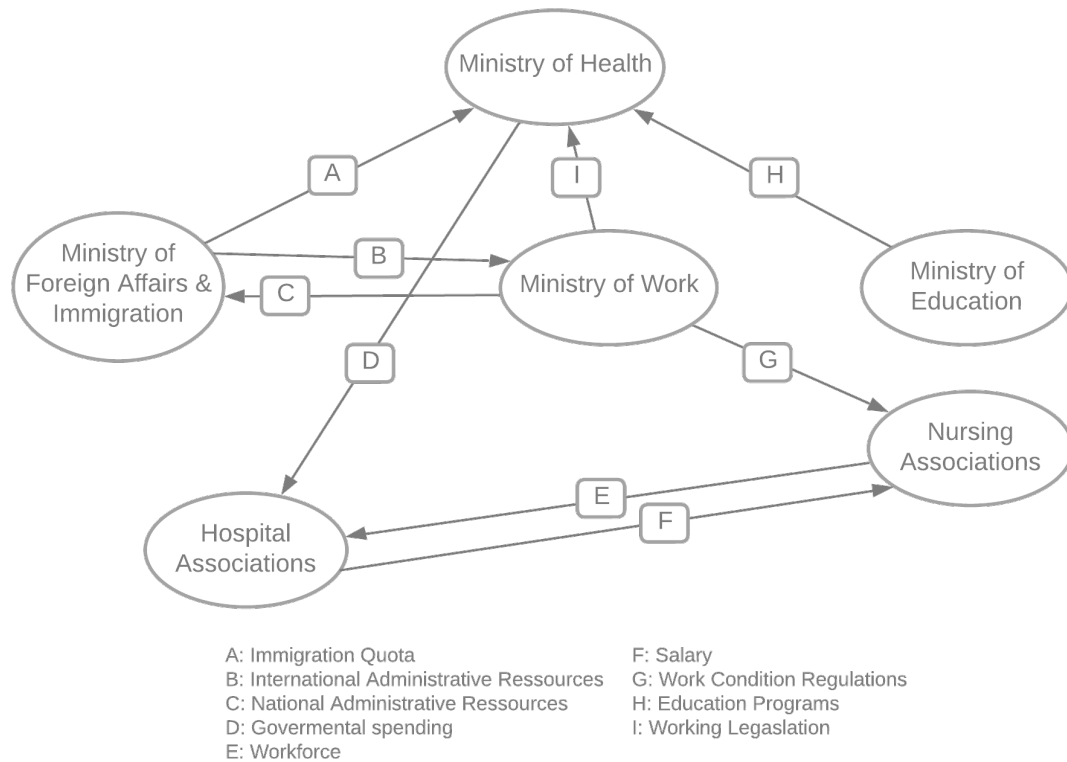


Figure 4: The Resource Dependence Diagram of the relevant actor displays dependencies with arrows between actors. The actor at the arrowhead is dependent on the actor at the bottom of the arrow. In this diagram, a higher position of an actor relative to another actor indicates a higher level of power in the problem context.

The MoH is depending on the MoE to adapt education programs (H). To increase the number of foreign nurses the MoH is dependent on the MoFA&IoI (A). In order to simplify the reintegration process for former nurses the MoH depends on the MoW which has to adapt working legislation (J).

The MoFA&I and MoW are in a mutual dependency, as administrative processes have to be handled on an international (B) and national level (C) in order to integrate foreign nurses into the local workforce.

As public hospitals are financed by state trust funds administered by the MoH, HAs are dependent on the MoH (D). For private hospitals, this dependency does not hold.

NAs are dependent on the MoW, because in order to provide better working conditions, the MoW has to pass new work regulations (G).

HAs and NAs are both dependent on each other. Hospitals provide work and hence payments (F) while nurses provide labour (E).

5.6 Power-Interest Relations

Based on the actor analysis, the interest table (5, institutional context Table 6 and the corresponding resource dependence Figure 4, a power-vs-interest matrix of the relevant actors is obtained.

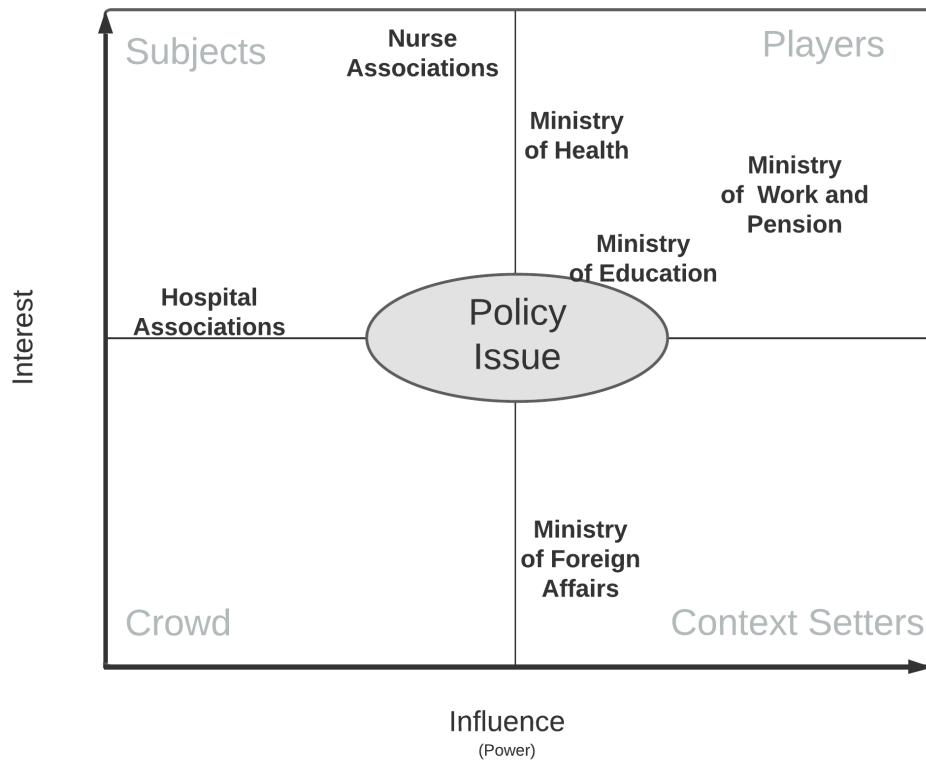


Figure 5: The figure displays a power vs. interest diagram of the relevant actors. The influence is plotted on the x-axis and the subjective interest on the y-axis. Bot from low to high.

NAs, representing the individual needs of their union members, are considered to be the most affected actor. Hence, it has the highest interest in reducing the nursing shortage. NAs have the right to strike and thus possess relatively high influence to demand their interests. Nevertheless, due to high consequences and ethical constraints, it is unlikely that nurses will enforce the whole potential. Therefore, their influence is reduced and they are identified as subjects. HAs have a lower interest, as they primarily want to increase the efficiency of healthcare. Private hospitals, additionally have the objective to be profitable. However, HAs are also interested in a stronger workforce, as high retention and low turnover-rates decrease efficiency.

The MoH, MoE and MoW are identified as players since all are in a position of governmental power on a national level. Being the client, the Ministry of Health has a particularly high interest in achieving the focal objective. Moreover, as the MoH is dependent on the other ministries its influence is limited - see Section 5.5. The MoE possesses high interest because the negative image of being a nurse indirectly decreases the attractiveness of its nursing training programs. By Changing the curriculum or educational infrastructures the MoE has an influence on solving the problem. The same holds for the MoW which has legislative power to change working regulations such as limiting working hours. Additionally, they aim to provide sustainable working conditions and increase workforce stability. The MoFA&I is identified as a context setter. It inherits influence because the ministry plays a critical role in recruiting foreign nurses and promoting international collaborations. However, as the scope of work is restricted to international tasks, the influence on the national level is limited. The interest in reducing the nursing shortage is low because the domain of healthcare is assumed to be outside of its responsibility.

6 Multi-Actor System Diagram, Analysis, and Diagnosis

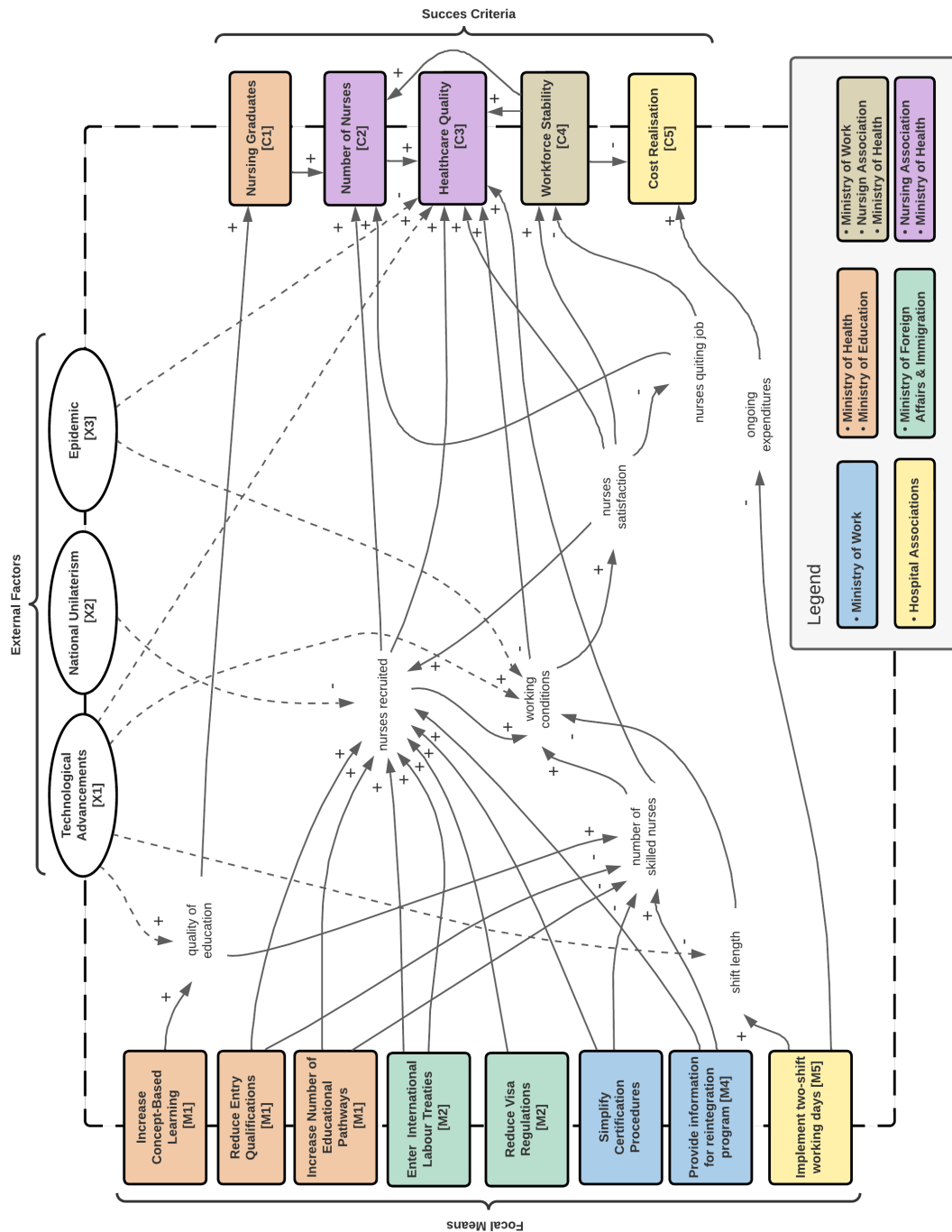


Figure 6: The multi-actor system diagram incorporates information from the system diagram, and the actor analysis. Together it displays the key actors, possible alliances of interest (illustrated by colour), internal means, causal relation, and external factors.

The multi-actor system diagram highlights the complexity and interconnectedness of the issue at hand. Almost no actor is identified to be able to perform any means alone. For instance, reforming the education program includes the MoH which provides insights about future healthcare needs and determines quality standards for future nursing. The MoE, on the other hand, then adapts education programs accordingly. The MoW, identified as the player with the most power - see Section 5, is participating in multiple means, underlining its importance. To assure an effective policy implementation, state organs are ought to work together. Policy pathways like recruiting international nurses and then integrating them into the industry have to be streamlined. This way, the implementation process is faster and more cost-effective.

Two interest conflicts are identified. The MoH and NAs, both have an interest in increasing the number of nurses in order to reduce the nursing shortage and thus improve healthcare standards. Opposed to that are the HAs, which primarily focus on healthcare efficiency and profitability. For instance, reducing a working day from three to a two-shift system reduces resources, as the handover of work is reduced. This stands in contrast to NAs interests since shift flexibility decreases and shift length increases. The MoW, using its high influence, should act as a mediator in this conflict. Convincing hospitals about the financial benefits of a stable workforce [Duffield et al., 2014] is favourable. This way, hospitals are also more likely to implement new working regulations aiming to improve working conditions for nurses faster. Hence, increasing the effectiveness of the policy.

Another potential conflict is identified within the MoH because reforming the education program might conflict with the objective of increasing healthcare quality. The same dilemma holds for reducing administrative barriers. It is assumed that the MoE, by having a lower interest in reducing the nursing shortage is less biased towards the solution "no matter what". Therefore, to guarantee sustainable healthcare standards the MoE should inform the MoH on a scientific ground how to define healthcare standards.

All in all, the importance of state organs working together to provide an efficient policy implementation has to be stressed. In addition, it contributes to better communication which prevents one-sided approaches like valuing the number of nurses over the work quality of nurses. Because of its complexity, multiple state organs are involved. Their interests have to be streamlined, hence building a strong coalition to resolve the conflicting interests between the MoH and HAs.

7 Conclusion

7.1 Reflection

The analysis assessed Highlands problem scope of its shortage of Human Resources for Healthcare. In consolidation with the MoH the focal objective was narrowed down to analyse possible policies to reduce the current nursing shortage. The pros and cons of this selection were discussed. Four focal means were identified.

- (M1) Reform Nursing Education
- (M2) Reduce Administrative Barriers
- (M3) Provide Safe Working Environment
- (M4) Increase Financial Recognition

Afterwards, measurable criteria were defined - see Table ???. Based on most of this analysis the following problem statement was drafted.

How can the Ministry of Health in Highland achieve a sustainable reduction in the nursing shortage accepted by the health sector, while ensuring the highest standards of health care with low realisation costs?

Afterwards, a system diagram was drafted - see Figure 3 The causal effects of means influencing the criteria were explained. Additionally, three external factors spanning from Technological advancements increasing healthcare effectiveness, national unilateralism limiting international recruitment, and Epidemics creating healthcare shocks, were introduced.

In the third section, based on the qualitative consequence analysis M1 and M3 were selected - see table 2 Under the influence of three scenarios, spanning from best to worst case, M1 promised high robustness but due to time-limitations low flexibility. The causal influence of M3 was constrained by scenarios two and three indicating low robustness and flexibility. To increase the flexibility of the policy, the more short and medium-term mean M2 was selected over of M3.

Within the framework of the actor analysis, the influence of the following most important actors (for the implementation of M1 and M2) was examined.

- Ministry of Health - **MoH**
- Ministry of Education - **MoE**
- Ministry of Work - **MoW**
- Ministry of Foreign Affairs and Immigration - **MoFA&I**
- Nurse Associations - **NAs**
- Hospital Associations - **HAs**

Based on resource dependencies, The MoH, MoE and the MoW all inheriting high interest and influence were identified - see figure 5 The NAs display the overall highest interest in solving the problem statement, as they are the most directly affected stakeholder.

During the multi-actor system analysis, two interest conflicts were discovered. Hospitals' interests, aiming for healthcare efficiency, hence trying to keep the nurse-patient ratio high, conflict with the interest coalition of NAs and the MoH. Both are interested in a low nurse-patient ratio and a higher nurse-citizen ratio. Furthermore, increasing healthcare quality conflicts with reforming nursing education and changing educational standards.

7.2 Recommendation

Based on the analysis the problem statement is adapted to:

How can the Health Ministry of Highland achieve, in cooperation with hospital associations, a shock resilient and long-term oriented reduction in the nursing shortage, while ensuring the highest standards of health care?

The following recommendation answers this question.

To ensure a robust and flexible policy the Ministry of Health must first, in coalition with the Ministry of Education, reform the education program of nurses. Possible measures range from reducing entry qualifications to concept-based curricula to increasing the number of possible educational pathways. Implications of those measures should be the subject of another policy analysis. It is assumed that this way number of nursing graduates per 100.000 citizens will increase and students dropping out will decrease. Additionally, to ensure high healthcare quality the Ministry of Education is mandated to adopt the nursing curriculum every five years to the needs of Highlands healthcare. Secondly, it is advised to decrease the administrative barriers limiting international or former nurses to work in Highlands hospitals. Reducing visa regulations, simplifying certification procedures, providing information about reintegration programs or entering international treaties such as the Nations Multi-Partner Trust Fund should be considered. To implement those measures, the Ministry of Health has to cooperate with the Ministry of Foreign Affairs & Immigration. To provide a smooth transition into Highlands' health industry, all efforts have to be streamlined with the Ministry of Work.

Furthermore, to achieve cooperation with Highlands Hospital Associations, it is recommended that the Ministry of Work is mandated to use its influence to convince hospitals about the financial benefits of a stable workforce. This way, hospitals are more likely to implement new working regulations aiming to improve working conditions for nurses faster. Hence, increasing the effectiveness of the policy.

7.3 Limitation

The analysis highlights the complex problem dimension within the healthcare system. When facing the reduction of nurses, many actors, including international, supranational institutions, governmental actors, the healthcare industry or nursing institutions are involved. Those actors have different interests and influences. To not extend the scope of this analysis many actors have been excluded. The analysis acknowledges that this way the policy solution is reduced in complexity but also completeness. In addition, it is recognized that the Ministry of Health can choose from a wide array of possible policy sets. Future policy analysis could address this knowledge gap and investigate, for instance, policies that increase financial recognition.

As this policy focus solely on nurses, other professions within the healthcare system might feel less valued and discriminated against. This could have a negative impact on workplace culture and thus reduce health services. Additionally, other professions might demand similar improvements.

Conclusively, reducing the nursing shortage alone is not sufficient to address future healthcare demands. Given the high retirement rates in all health professions, future policies have to include other healthcare professions.

².

²Final Word Count: 3852 words

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