

An Analysis of the
Estonian National Reform Program Action Plan 2019-2020

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Abstract

Each year, EU member states submit their National Reform Programs (NRPs). A large volume of text and complex policies is accumulated. NRPs are accompanied by Action Plans which describe the specific measures the government is going after in order to achieve the goals and fiscal limits set in the NRP. This is the case with Estonia, a nation regarded as the Baltic miracle. What does the Estonian NRP Action Plan 2019-2020 talk about? Is Estonia moving on the right track? In order to answer we go one step further by combining traditional analysis with Natural Language Processing (NLP) and computational Statistics. Estonia focuses disproportionately on the development of its Private Sector and on Innovation in a wider sense. The young age of the state and the events in Crimea led Estonia to develop this course of action. Estonia seems willing to continue building upon industry, businesses and research but fails to implement a satisfactory amount of measures on social resilience and energy security creating dangers for the future. Despite that, the Action Plan is considered to be benefactor for the Estonian nation.

Table of Contents

Abstract	2
Introduction	4
Topic.....	4
Aims and Objectives	4
Definitions	4
Methodology	5
Main Body.....	6
The National Reform Programme of Estonia: “ESTONIA 2020”	6
Manual Analysis.....	6
“EDUCATED PEOPLE AND COHESIVE SOCIETY”	6
“COMPETITIVE BUSINESS ENVIRONMENT”	7
“ENVIRONMENTALLY SUSTAINABLE ECONOMY AND ENERGY”	8
“SUSTAINABLE AND ADAPTIVE STATE”	8
Computer Analysis	9
TF-IDF	9
Topic – Modeling	12
Text Summarization	14
Code Weaknesses	16
Conclusion.....	17
Assessment of the Action Plan	17
External Policy	18
Private Sector & Finance.....	19
Education.....	19
Technology.....	20
Government and Society	20
Concluding Remarks	20
Paper’s Relevance, Significance, And Importance	20
References	21

Introduction

Topic

The present paper is an analysis of the 2019-2020 Action Plan, a complementary document to the National Reform Program of the Republic of Estonia titled “ESTONIA 2020” (Government of the Republic of Estonia 2019).

Aims and Objectives

The aim of the paper is to offer critical analysis on the Estonian NRP Action Plan 2019-2020. Specifically, to: A) Answer which are the main themes of the Action Plan B) Evaluate the choices of the Estonian Government.

In order for the above aims to be met, four objectives have been set as prerequisites. Firstly, (1) background information and definitions need to be provided as the foundation of the present paper. Secondly, (2) a manual reading and analysis of the NRP will be done. Thirdly, (3) a computer powered analysis will supplement objective 2. Lastly, (4) External sources, manual and computer analysis findings will be used to evaluate the Action Plan.

Definitions

National Reform Programme: *“document(s) issued by EU Member States to the European Commission on an annual basis (since 2011), detailing the specific policies they will implement to boost jobs and growth and prevent/correct imbalances, and their concrete plans to comply with the EU's country-specific recommendations and general fiscal rules”* (European Foundation for the Improvement of Living and Working Conditions 2018)

Action Plan: *“a detailed set of instructions to follow in order to solve a problem or achieve something”* (Cambridge Business English Dictionary n.d.)

Natural Language Processing: *“a theoretically motivated range of computational techniques for analyzing and representing naturally occurring texts at one or more levels of linguistic analysis for the purpose of achieving human-like language processing for a range of tasks or applications”* (Liddy 2001)

Methodology

The current paper is an analytical case-study. Based on a qualitative document with mostly textual data in the format of fiscal policies and broader goals. The provided NRP Action Plan will be analyzed twice, at first manually through human reading (conducted by the author of this paper) and then via computerized Natural Language Processing and statistical analysis. The outcomes of both analyses will be studied before extracting any concluding remarks and comments.

Open-source data are examined with the main document in focus being distributed by the EU and the official Estonian Government websites.

The aims described in the respective section will be discussed in the Conclusion part of the paper while the objectives will be achieved throughout the paper with the first one (background information and definitions needed for the foundation of the present paper) being discussed on the Introductions part and the second and third in the Main Body part. Lastly, the fourth objective concerns the Conclusion section.

Specific details regarding each approach of analysis will be provided at the beginning of related sections within the Main Body.

Main Body

The National Reform Programme of Estonia: “ESTONIA 2020”

The version of the Action Plan being examined is the one adopted by the Government of the Estonian Republic on 30 May 2019. It is a 21-page long tabular document. It was firstly formed in 2011 and has been updated annually by a government decision since then. The Action plan is generated every year as an accompanying document to the National Reform Programme which is updated annually taking under consideration measurements and past year evaluations.

Manual Analysis

Four main pillars set the course of the action plan. These pillars are: “*EDUCATED PEOPLE AND COHESIVE SOCIETY, COMPETITIVE BUSINESS ENVIRONMENT, ENVIRONMENTALLY SUSTAINABLE ECONOMY AND ENERGY and SUSTAINABLE AND ADAPTIVE STATE*”. Under every pillar there is a group of strategies (numbered) under which specific objectives (Latin-numbered). Each objective is achieved through numerous activities/measures (alphabetically numbered). The action plan is well structured with clear timeframes for each action and attribution of accountability. Furthermore, an evaluation of past and future actions for each measure is provided. The manual analysis will follow the order of the pillars as described above.

“EDUCATED PEOPLE AND COHESIVE SOCIETY”

Contains 74 actions which in majority can be grouped into education, social services and health specific. This pillar is the second larger in regard to the amount of actions it consists of.

Education-related objectives focus on raising teacher’s wages, boosting the teaching of the Estonian Language, assisting Estonian high-schooler enrollment in IB programs and making Estonian Universities attractive to foreign students with an ultimate goal of creating a higher education industry. Most of the tasks falling under the education umbrella are mostly a matter of increased funding which past Estonian Governments were eager to provide hence the high percent of goal fulfillment.

Social services goals include a wide range of vocational and labor market related measures, family support services, workplace safety and health initiatives mainly connected to alcohol and tobacco. Many measures focus on the development of good habits and practices from a young age in the duration of the formal education process while other measures aim to curb the usage of alcohol and tobacco through higher taxation, a measure observed in many EU

member states. Once again, the Estonian government has carried through with most of initiatives which can only be assessed on the long run.

Health, is centered around hospital and care center optimization with few instances of measures focused on citizens' wellbeing. A distant timeframe has been set without any signs of results yet.

“COMPETITIVE BUSINESS ENVIRONMENT”

Contains 124 measures oriented towards reducing bureaucracy, boosting entrepreneurship, assisting exports, bringing foreign investment, accelerating R&D and innovation, upgrading and expanding infrastructure and means of public transport.

On the case of bureaucracy, Estonia has both realized the importance and exhibits willingness to reduce procedures and paperwork but long timeframes and legal barriers seem to slow down the process. Specifically, in the case of "*Speeding up bankruptcy and execution proceedings; preparing the amendments to the laws related to bankruptcy and enforcement proceedings*" (Government of the Republic of Estonia 2019) the legal revision started in 2016 and the act to amend was adopted in February 2019.

At the same time, entrepreneurship is boosted through decisive financial measures which seem to move faster than the legal matters. This is the case with "*To support the development of the business environment by using SF measures*" "*Improving regional competitiveness*" and "*Development of regional competence centres*" which has provided the amount of 129.5 million euros in the form of financial support. On the other hand, the case of "*Developing and implementing a green paper of Estonian industrial policies*", an activity political in essence, has seen little to no progress.

On an interesting note, the majority of exports-oriented tasks are not economic in nature. Most of such measures offer a holistic approach to the subject of goods and services exports. A variety of programs, legal frameworks and various other sub-projects are already being implemented.

There are few objectives aimed at foreign investment when considering the overall length of the Action Plan. More on that will be discussed on the conclusions section of the present paper.

Contrary to the above; R&D, innovation and research are central themes. Estonia does not fall short of its fame as one of Europe's most advanced states in terms of technology and innovation. With numerous efforts to further build upon existing foundations Estonia wants to use technology as an accelerator for all efforts mentioned above. Activities range from bringing expertise through foreign IT professionals who will pursue a better life in Estonia to multilateral research in the context of the EU and lastly to e-governance. An exhaustive list and description of activities falling under this category requires a whole new paper. Furthermore, not only does Estonia plan to use technology and R&D for industrial and administrative reasons only but also

inside higher education institutions through the creation of strong bonds between universities and private sector initiatives. Contrary to political issues discussed before, the Estonian Government is way faster in tackling political and legal issues when research and innovation are at stake hence the shorter timeframes and higher rate of accomplished targets.

Infrastructure upgrades are mostly aimed to airports, ports and railway. Most of the projects have a long timeframe but does mean in any case lack of initiative.

Lastly, activities concerning public means of transport are optimization oriented rather than physical. The implementation of new technologies like AI in “Developing the legislation facilitating safe introduction of autonomous vehicles and the relevant standards of interoperability, safety and monitoring” is dominant in most respective efforts.

“ENVIRONMENTALLY SUSTAINABLE ECONOMY AND ENERGY”

Contains 38 activities which form the most sector-specific pillar. Sustainability and energy are in focus throughout this section of the Action Plan. A multi-faceted approach includes R&D, infrastructure, optimization and international cooperation. Contrary to the pillars described before, “ENVIRONMENTALLY SUSTAINABLE ECONOMY AND ENERGY”, is difficult to split into subsections due to the fact that few activities are included and their goals are relatively homogenous. Most measures are ongoing with deadlines which are sure to surpass 2020. Energy diversification with measures such as but not limited to: *“Preparing and implementing energy infrastructure projects to improve the internal energy market (LNG Terminal, BalticConnector, third interconnection with Latvia)”* runs in parallel with the European trend. Even though this pillar is small in terms of activities’ quantity it is detrimental for the national interest and future development as will be discussed on the conclusions section.

“SUSTAINABLE AND ADAPTIVE STATE”

Contains 27 measures. As implied in the title, this pillar focuses on the state itself. Most measures could be described as related to either fiscal, digitalization or social goals. Interestingly, even though this pillar includes less measures compared to “ENVIRONMENTALLY SUSTAINABLE ECONOMY AND ENERGY”; its measures seem to cover a wider spectrum of fields. The summary of implementation shows that the Estonian Government has worked the previous years thus has built good foundation to build upon for the future. Even though most measures have long timetables

Computer Analysis

The Computer analysis was executed with the use of python 3.8 programming language. The IDE used is JetBrains PyCharm Community Edition 2019.2.2 x64. For details regarding code please refer to the Annex. The computer analysis aims to supplement the manual analysis done above by providing a quantitative picture of the main topics covered within the Action Plan. TF-IDF, Topic Modeling and text Summarization will be executed in the respective order. Overall, the main themes of the Action Plan will be discovered and quantified.

TF-IDF

Term Frequency–Inverse Document Frequency (TF-IDF n.d.) was implemented on the Action Plan. All non-verb vocabulary has been stemmed to its root, hence root words below. Sector-specific words have been manually highlighted in the same color while non-underlined words are considered irrelevant to our analysis.

TF - IDF Outcomes			
1 activ 0.0489	14 govern 0.0223	27 entrepreneur 0.0166	40 health 0.0140
2 develop 0.0419	15 project 0.0219	28 fund 0.0165	41 analysi 0.0140
3 implement 0.0393	16 school 0.0217	29 teacher 0.0160	42 train 0.0140
4 measur 0.0373	17 sector 0.0215	30 polici 0.0155	43 transport 0.0139
5 programm 0.0361	18 innov 0.0210	31 action 0.0154	44 network 0.0139
6 research 0.0328	19 work 0.0197	32 cooper 0.0152	45 act 0.0138
7 servic 0.0282	20 infrastructur 0.0186	33 prepar 0.0151	46 use 0.0135
8 plan 0.0276	21 state 0.0186	34 invest 0.0150	47 compani 0.0133

9 educ 0.0258	22 busi 0.0179	35 level 0.0147	48 centr 0.0130
10 support 0.0257	23 commun 0.0175	36 export 0.0146	49 languag 0.0129
11 energi 0.0246	24 market 0.0174	37 institut 0.0145	50 budget 0.0129
12 system 0.0234	25 propos 0.0170	38 studi 0.0142	
13 industri 0.0227	26 area 0.0167	39 order 0.0141	
Light Green: General Pink: Innovation Blue: Private Sector Cyan: Energy		Yellow: Education Dark Green: Government Red: Finance Bordeaux: Health	

The word “development” ranks second due to its frequent presence within the text. More importantly, according to the NRP “Estonia 2020” it is part of the main objectives outlined in the Introduction. Its wide definition and frequent use thrust it on the second overall position.

The sector of innovation even though it does not include many terms in quantity seems to have some of the highest weights with research ranking sixth above every other sector with innovation following close by at position eighteen. It is also worth mentioning that R&D is also included in the 100 most important factors but is positioned below fifty.

The Private Sector seems to be the strongest sector overall; both quantitatively and qualitatively. Services on position seven seem to spearhead the group with industry, business, exports and entrepreneurship all securing high places. The Private Sector, with industry and business as contents, is indeed the first priority and objective of the action plan. This is proved through the large amount of related measures as outlined on the manual analysis and now further supported through the TF – IDF analysis.

Energy is represented only by one term, highly located. This is very interesting for our analysis considering the special regime of Estonia regarding energy. More on this on the conclusions section.

Education includes an important amount of words which rank in intermediate positions across the table of top 100. Education seems to be omnipresent yet not omnipotent, a role which belongs to the private sector. What the present computer analysis cannot discover but the manual can is the fact that a large part of education measures within the Action Plan refer to vocational training on a professional level. The term language can also be attributed to political reasons for the sake of national interests as discussed on the conclusions.

A notable amount of terms is attributed to the Government which secures a middle position over finance and health. In that regard, it seems that the Estonian Government is mostly aiming at enlarging the private sector of the country rather than expanding itself. Many conclusions can be deducted regarding the political culture of the country; all of them discussed on the respective section of the present paper.

Terms referring to the financial sector form a group which occupies middle to lower positions. A characteristic of this group is that it is not clearly defined due to the fact that the terms it consists of (market, funding, investment, budget) may refer both to public or private sector. Because of this technical weakness this group should be carefully studied with low confidence on any conclusions. This group could be combined with Private sector due to close semantics of their terms thus further strengthening Private Sector.

Lastly, health consists of just one term making it in the top 50. The advantage is that the term is clearly and well defined. Within the Action Plan there are numerous referrals to health from healthy workplace practices to healthy lifestyle guidelines. Even though health does not seem to be the dominant sector in the NRP it can be discovered as an underlying theme throughout its length.

Sectors Ranked by Total Weight (based on top100 terms)	
1. Education	0.1156
2. Private Sector	0.1135
3. Government	0.0961
4. Finance	0.0816
5. Innovation	0.0644
6. Energy	0.0246
7. Health	0.0140

After sorting the top 100 terms in tf-idf weights and then manually placing them into sector-specific groups we can then calculate the total wight per section. The weakness of this method is the subjectivity of including each term in sectors yet the advantages are the wide acceptance of tf-idf as a statistical method and the easy visualization of quantitative characteristics.

Education appears to be marginally over Private Sector. This happens because education exists as a subsection of a wide spectrum of activities. From higher education, to vocational

training and language teaching, a mostly political measure in essence. Private Sector on the other hand loses some of its power to Finance which contains words which have a close semantic relation. As stated before, the low position of Energy will be discussed in Conclusions where more factors are taken into consideration.

Topic – Modeling

With the use of Latent Dirichlet Allocation topic extraction was carried out on the Action Plan. A total of twenty topics consisting of five terms each were generated. Due to weaknesses of our implementation, which will be discussed below, not all topics are useful for our analysis due to the lack of consistency between their terms. As of that, only few will be displayed and used for our analysis. Semantically-close words in bold. Since development is a main theme met in almost all topics it is deducted. The words “active(ity/ies)” and “measur(e)” are also ignored as being general and too wholistic.

LDA Topics	
1	0.063*"develop" + 0.040*"eu" + 0.036*"plan" + 0.028*"activ" + 0.023*"portal"
2	0.070*"develop" + 0.070*"research" + 0.033*"project" + 0.029*"area" + 0.028*"support"
3	0.109*"servic" + 0.037*"care" + 0.028*"act" + 0.024*"road" + 0.023*"peopl"
4	0.038*"govern" + 0.036*"programm" + 0.028*"servic" + 0.027*"concept" + 0.024*"implement"
5	0.063*"transport" + 0.040*"sector" + 0.032*"govern" + 0.030*"project" + 0.025*"use"
6	0.058*"programm" + 0.036*"research" + 0.033*"develop" + 0.031*"measur" + 0.031*"studi"
7	0.036*"develop" + 0.033*"measur" + 0.024*"servic" + 0.019*"busi" + 0.018*"enterpris"
8	0.078*"plan" + 0.046*"career" + 0.036*"servic" + 0.029*"activ" + 0.022*"school"
9	0.038*"fund" + 0.038*"work" + 0.031*"develop" + 0.027*"peopl" + 0.022*"measur"
10	0.108*"research" + 0.079*"activ" + 0.046*"develop" + 0.044*"measur" + 0.041*"cooper"

Topic (1) discovers a very important aspect of the Action Plan. The word “eu”, which has the highest weight in the topic (of bold words – the ones being considered in our research) introduces for the first time an EU oriented facet of Estonian policy. Estonia, as a relatively recent EU member has grasped the importance of the EU in development. It is a common belief that the EU is detrimental for the economic development of its members, something that Estonia is aware of to such an extent that it includes practical measures in the Action Plan. Interestingly, the weight of EU related measures is not that obvious to the naked eye through the reading of the Action Plan. It is only after the implementation of the LDA model that it becomes obvious to what extent EU related activities affect it.

Topic (2) clearly refers to research projects which should be supported. As we know from the reading of the Action Plan, support may come from either the government, the EU or the Private Sector in the context of Universities or start-up companies.

Topic (3) introduces a subject not discussed in the TF-IDF analysis above. Even though Social Services were not discovered by the top50 terms they managed to occupy one of the ten topic positions. With keywords “service(e/es)”, “care” and “people(e)”. Once again, the manual reading did not provide us with enough to consider this topic as one of the top ten topics. Data proved the opposite.

Topic (4) was much expected since it discusses governmental programme implementations; discussed in great extent before both at the TF-IDF and manual reading sections. It is obvious that no Action Plan of National Reform Programme can exist without government and bureaucracy being central to it.

Topic (5) introduces transportation as another dimension of the Action Plan. Topic five also includes “govern(ment)” which means that the transportation sector is viewed in the public sphere. It would be safe to generalize and claim that this topic represents governmental efforts to upgrade all types of infrastructure thus discovering an extra underlying set of activities aimed at infrastructure.

Topic (6) repeats the concept of research and innovation but in the context of education “studi(student, study, studies)”. As discussed in Topic two, innovation goes in hand with higher education.

Topic (7) recalls the financial sector as discussed on the TF-IDF part of the paper. A generally defined sector which could also be embodied with the Private Sector in general.

Topic (8) underlines a topic briefly discussed; vocational training. The Estonian government promotes various levels of vocational training and youth employment support measures.

Topic (9) could be characterized as a cross-over between topics (7), (8) and (3). Government supported employment is seen as a form of social service. This topic uncovers an important aspect of the Estonian political and social thinking, discussed in the conclusions section.

Topic (10) repeats the topic of research but also includes the word cooperation. Research (including R&D and innovation) acquires central position in the Action Plan in juncture with entrepreneurship, education and political cooperation.

Text Summarization

Text Summarization was done with the use of TextRank, an extractive and unsupervised text summarization technique (Joshi 2018). The code of PRATEEK JOSHI in (Joshi 2018) was used with few updates regarding file handling and preprocessing. Underlying has been done manually and concerns the points made after the body of text.

Computer-generated summary of Action Plan
<p>to establish a support scheme for involving the <u>development workers</u> in companies that make a significant <u>contribution to employment</u> but currently have low added value ministry of economic affairs and communications the development voucher measure is still open</p> <p>to increase the motivation of universities and businesses to <u>diversify financing sources</u>, by making use of the <u>research and development</u> needs of companies located <u>outside of estonia</u>, but also the <u>eu's various r&d&i financing programmes</u> (e.g., horizon 2020, era-net, jti, kic etc.)</p> <p>activities: a) information about <u>coming to work in estonia</u>, development and maintenance of a common <u>e-environment of information</u>, materials, and <u>public services</u>; b) increasing readiness of <u>entrepreneurs to involve foreign specialists</u>; c) it <u>labour force campaigns</u> in target countries, including the industrial sector; d) development of <u>settlement services for foreign specialists</u> and their families</p> <p>creating a system for <u>assessing work capacity</u>, the provision of services to the target group, the necessary information exchange <u>it solutions</u> for implementing the activities and condition for providing grants “the provision of <u>labour market services</u> to the work capacity reform target group” and “increasing the work capacity of the work capacity reform target group and promoting their working”) ministry of social affairs 1 the development and outreach activities required to ensure the sustainability of the new work ability support system are in progress and analyses are carried out to check the effectiveness of the system and detect areas which require further development</p> <p>ministry of economic affairs and communications the measure “the conditions and procedure for use of support intended to aid the development of <u>biomethane market</u>” is being implemented and as the result of the implementation of the measure, biomethane will be made available for end-users for the same price as natural gas</p> <p>development and testing of the <u>youth guarantee support system</u> to identify young people who are inactive without a reason, including neet youths, with the help of state registers and offering them help to continue their <u>studies or to move into the labour market</u> ministry of social affairs in 2018, the youth guarantee support system was created, which compiles a list for local governments of young people in their area who potentially need assistance (who do not work or study) based on register data, to offer them <u>support in returning to the education system or employment</u></p>

development of an electronic data exchange related to social insurance between the eu member states, so that people would be assured of rapid solutions for cross-border cases related to social insurance ministry of social affairs estonia officially joined the eessi platform in 2017; however, it was not possible to interface with the platform in 2017

proactively analysing the legal framework and promotion of the state information system, in order to support the initial testing and introduction of smart technologies (e.g., the internet of things, linked data) ministry of economic affairs and communications this work is continuous

to support the last mile construction, the ministry of economic affairs and communications prepared a support measure and the consumer protection and technical regulatory authority organised a public procurement, which was won by elektrilevi oü, who will construct in 2019–2023 the possibilities to connect via optical lines for the addresses situated all over estonia in the areas of market failure, costing prescribed support in the amount of 20 million euros

to develop a measure aimed at enterprises to encourage the use of r&d infrastructure, with the aim to increase the interest and possibilities of entrepreneurs in using the r&d infrastructure in the product development process ministry of economic affairs and communications, ministry of education and research 2 the estonian research council launched the so-called core infrastructures measure within the institutional research aid scheme

The summary of the Action Plan serves two purposes, at first, it uncovers a complex matrix of relations between the sectors discussed above and secondly it adds weight to sectors not given much attention prior.

The Private sector, as supported before, is heavily connected with r&d, innovation and education in the context of youth vocational training and first job initiatives. Education related activities are close knit to labor market measures rather than primary or secondary education reforms. Technology, in a broader sense, is omnipotent being used in combination with public administration, the Private Sector, energy and infrastructure and even viewed in a multilateral-EU external policy context. The sectors which appear to be strengthened by the summary are infrastructure and social services, with the later referring mostly to youth employment and vocational measures while infrastructure was not clearly distinguishable in the TF-IDF analysis yet to be discovered in the text summarization.

Code Weaknesses

The code developed for this paper can be divided into Cleaning & Preprocessing, TF-IDF, LDA and Text Summarization. The author is aware that Machine learning could have been used for better results but time constraints do not allow us to develop and implement them to a large extent. Furthermore, the present paper is focused on the political aspect of the Estonia NRP Action Plan rather than the optimization of software. Software applications are considered tools assisting towards the goal and not the goal itself.

Cleaning and preprocessing task have been done to an excellent degree due to the small size of the data which allows us to easily explore them and implement powerful regular expressions to get rid of noise. Furthermore, a plethora of available linguistic tools like NLTKs POS Tagger allow us to achieve fine-tuned results.

The TF-IDF method is straightforward in terms of mathematical equations and widely used and accepted. The problem it poses is the fact that it is a clearly statistical approach which is affected mostly by word frequencies while not considering the semantics of the words.

The Latent Dirichlet Allocation Topic Model is the greatest weakness of our code due to the fact that our corpus is very small (only 1 document) and the performance of such models is proportionate to the corpus' size. The Document was broken down to paragraphs each one considered a different document. This unconventional approach does not completely solve the issues of low model performance. Text Summarization or training a Topic Allocation model on other Action Plans before implementing it would be more appropriate but time constraints did not allow the time to do so.

Regarding Text Summarization, the execution of both abstractive and extractive approaches and then comparing the outcomes would be the optimal approach yet time and paper length limits do not allow the appropriate timeframe.

Conclusion

Three out of four objectives outlined in the Introduction have hopefully been met. Below, objective (4) “External sources, manual and computer analysis findings will be used to evaluate the Action Plan” will be met and then the two aims will be reached.

Assessment of the Action Plan

Based on the manual and computer analyses we can split the action plan on measures regarding (random order) 1) The Private Sector, 2) Education, 3) Energy, 4) Government (including foreign policy, social services and infrastructure), 5) Finance, 6) Innovation (including R&D and Research). Conclusions will be drawn upon these sectors. After taking under consideration the gravity and contents of each sector a general non-exhaustive outline looks like (descending importance):

1. Private Sector
 - a. Youth Employment (Government sponsored)
 - b. Exports
2. Technology
 - a. Business Innovation
 - b. Research
 - c. EU cooperation
3. Government
 - a. Bureaucracy reduction
 - b. Legal Framework simplification
 - c. Digitalization
 - d. Social services
4. Education
 - a. Vocational Training and specialization
 - b. Higher Education
5. Energy
 - a. Infrastructure
 - b. Diversification

Finance is considered an underlying theme met mostly within Private Sector, Technology and Government.

External Policy

Estonia and Russia have had a turbulent past from the Soviet Union times up to early 2000s when Estonia was targeted by multiple cyber-attacks (McGuinness 2017). After the annexation of Crimea by Russia, bilateral relations have deteriorated as feelings of insecurity expand across Europe's Eastern borders. Connecting with the Action Plan, the Estonian government focuses on a) Energy Diversification in order to limit dependency from Russia, b) resilience and c) Regional cooperation; all discussed in respective order below.

Energy can be seen as a sum of two components; the one being national energy security and the second being development. The development aspect will be discussed on the appropriate subsection below. Energy security is not a given for the newly founded Estonian nation which relies heavily on its oil-shale reserves (CIA 2017). Considering EU's zero-emission strategy (European Commission n.d.) Estonia needs to quickly adapt. LNG terminals are considered to be a solution which both provides an alternative resource while reduces dependency from Russian Gas imports. The Estonian government seems to be aware that the present situation is not viable for the future of the country and is taking appropriate measures. Unfortunately, considering the outcomes of the computer analysis, these measures don't seem to be enough and energy appears to be low in the agenda when it should be viewed more urgently in terms of both national security and EU integration.

Social resilience is once again a necessity stemming from Russia's policy in Crimea (EU Parliament Think Tank 2018). In the action plan, most measures are aimed towards reinforcing society's resilience. Such instances are language *"Increasing the quality of Estonian as a second language teachings in kindergartens through ensuring additional training for kindergarten teachers and the necessary study guides"* related programs. It is deemed that Estonia should pursue a more multifaceted approach to building resilience.

Regional cooperation in the form of EU integration is central in Estonia's Action Plan. The EU can be unconventionally characterized as Estonia's largest political and economic partner (EU Parliament 2019). The Topic Modeling and Text Summary techniques revealed how Estonia aims to expand cooperation with the EU. Estonia sees the EU as a safe haven from Russia's pressing policies. The Estonian governments, considering that their foreign policy is Russia-centered, believe in the future function of the EU as a mechanism of common foreign policy. Related measures are satisfactory both quantity and quality wise.

A great example of combined measures are those related to the Ida-Viru county which seems to be a favorable exception within the Action Plan. Multiple measures are only valid for this region raising questions. Why is there a special focus on this region? At first, the county of Ida-Viru is home to the largest reserve of natural resources, namely oil shale, in Estonia (Republic of Estonia, Ministry of Environment 2015). Furthermore, Ida-Viru is a living monument of the violent past between today's Estonia and the Soviet Union under which extensive ethnic cleansing took place against Estonians in that county. As of that, Ida-Viru is the only Estonian county with a majority Russian population today (.Stat 2018). When the

strained relations between Estonia and Russia (Estonia Ministry of Foreign Affairs 2018) are taken under account it becomes evident that Ida-Viru is offered favorable treatment in the Action Plan for reasons of national interest.

Private Sector & Finance

The development of the Private Sector is definitely one of the top two priorities within the Action Plan. The amount of measures related to the expansion and support of the existing Private Sector dominates the Action Plan. The Estonian Governments are not interested in bringing foreign investment but rather boosting Estonian investment. This could be interpreted as a product of fear for Russian financial takeover or simply as a matter of political priorities and planning. Exports, infrastructure and education all have the private sector as common ground. The fact that social provisions and services aim to enable the Private Sector to employ citizens rather than provide directly to the society reveal the importance the Estonian Government places on entrepreneurship. The expansion of the private sector either in the form of goods or services seems to be the flag of the National Reform Programme. The newly founded nation is emphatically aiming to build capacity and capabilities through private initiative with the support of the state. It is extremely interesting to see how social services run through the Private Sector which in return is expected to give back to society; an idea considered a taboo in the European South. Furthermore, the private sector is in close contact and cooperation with the government which values and utilizes its feedback by creating many working groups which include businessmen and company owners. Trade is export oriented.

Funding seems to be ample. There are no mentioned budgetary restrictions within the Action Plan. The government is facing more setbacks with the formation of national strategies rather than the funding of their implementation. Amounts of money are mostly distributed to R&D, Vocational Training and Employment.

Education

Education in the action plan mostly refers to vocational training and specialization. Other aspects of education refer to language teaching, mostly for national reasons as described above, and higher education as a mean of research and talent acquisition mechanism.

Technology

Technology (R&D, research and innovation), is along with Private Sector one of the two dominant themes. Estonia is known to be a world class model in terms of digitalization. Estonia is more than willing to continue building upon this recent legacy. Technology is not placed only inside Universities but is also viewed in juncture with the EU in a frame of cooperation and common research. An important amount of activities hope to bring foreign nationals to work permanently in thus indirectly importing their technical expertise. There are also plans for the expansion of public administration's digitalization. Considering that technology not only forms Estonia's spearhead in terms of capabilities but also its national branding tool it is fully justified and well accepted for Estonia to build further upon this field.

Government and Society

The government is mostly portrayed in two roles within the Action Plan. Role a) being a sponsor to Private Business initiatives b) combatant against bureaucracy. Most measures of social services are related to employment and training. The government is seen as an assistant to the private sector rather than a strict regulator or a socialist construct with extended social provisions.

Concluding Remarks

The Estonian experiment has been successful so far considering the indexes (.Stat 2018). The small nation seems willing to continue its course while supplementing it with measures which will strengthen its industry and businesses all under the fear of the Russian aggression. Furthermore, Estonia seems to have studied the mistakes of other European countries by avoiding to expand its public sector and social services. On a personal note, the Action Plan is well-oriented but disproportionate. A moderate expansion of social services (focus on stronger communities) and energy related measures should take place against private sector and innovation. Overall, the Action Plan is deemed successful yet can be better optimized.

Paper's Relevance, Significance, And Importance

The present paper tackles a central element of European political debate being the national reform of its member states towards a more integrated EU. It attempts to use modern tools of NLP in hand with traditional analysis in order to quantify complex political, social and economic phenomena. It hopes to provide with spot on analysis while calling for more students to experiment with software solutions as tools to empower international relations studies.

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