

# The effects of the introduction of the European Digital Single Market of mobile roaming in the Netherlands: the impact over the social values

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## Preface

### **Caminante no hay camino – Walker, there is no path. Antonio Machado (1875-1939)**

Wanderer, your footprints  
are the only way and no other.  
Wanderer, there is no way.  
you make your way by going farther.  
By going farther, you make your way  
Till looking back at where you've wandered,  
You look back on that path you may  
Not set foot on from now onward.  
Wanderer, there is no way;  
Only wake-trails on the sea.

Caminante, son tus huellas  
el camino y nada más;  
Caminante, no hay camino,  
se hace camino al andar.  
Al andar se hace el camino,  
y al volver la vista atrás  
se ve la senda que nunca  
se ha de volver a pisar.  
Caminante no hay camino  
sino estelas en la mar.

### **La utopía – The utopia Eduardo Galeano (1940-2015)**

Utopia is on the horizon.  
I move two steps closer;  
it moves two steps further away.  
I walk another ten steps  
and the horizon runs  
ten steps further away.  
As much as I may walk,  
I will never reach it.  
So, what is the point of utopia?  
The point is this: to keep walking

Ella está en el horizonte.  
Me acerco dos pasos,  
ella se aleja dos pasos más.  
Camino diez pasos  
y el horizonte se corre  
diez pasos más allá.  
Por mucho que yo camine  
nunca la voy a alcanzar.  
¿Para qué sirve la utopía?  
Sirve para eso: para caminar.

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J. P. Nieto Stabile  
*Delft, August 2017*

## Executive summary

The European Union (EU) has been regulating roaming since 1997, and has developed different policies aiming to promote transparency in prices and improve competitiveness across the members. With both positive and negative outcomes, the European Commission (EC) had a long learning process where different regulatory measures were introduced and modified according to the results obtained. Despite the fact regional mobile usage has been increasing since the first attempt on regulation, roaming has been limited by other factors such as wholesale and retail prices.

While Europe faces challenges related to political extremism, large refugee influxes, economic stagnation, and scepticism related to European integration, the EC aimed for a tangible policy that could show the benefits of the supra-national body to the citizens. After different economic analyses commissioned by the EU showed a feasible possibility of eliminating roaming surcharges, a new step was proposed. Since mid-June 2017, mobile phone users across the European Economic Area (EEA) started experiencing a new European Union (EU) policy related to the roaming usage. The Roaming Like At Home (RLAH) policy became a milestone in the European political process towards a Digital Single Market. Mobile users were benefitted by avoiding roaming surcharges when travelling across countries of the EEA, while telecom operators were limited in the maximum prices they could charge to other foreign operators for the wholesale market. Operators were protected by fixed price caps and a Fair Use Policy (FUP) aimed to avoid abuses from users, as the differences between domestic markets across Europe are still large.

The EC based the decision in a market failure of the roaming market, which needed regulation to be solved. By analysing the behaviour of the market, the prices across the Union, among other factors, the EC believed that the RLAH policy would be a correct regulatory approach to solve the market failure, while promoting a Digital Single Market across countries. However, the justification was based merely in economic values, usually obtained from a Neo-classical (NCE) or New Institutional (NIE) economic perspective. The social values behind the policy were not explicitly considered in the analysis and were not used as justification for the decision process.

As different journalists, organizations and influential persons argue that the EU has become a technocratic body where the voice of Europeans is not heard, it becomes paramount to understand what is behind the European policies and if the social values are being implicitly considered by the stakeholders involved in the decision-making process. Thus, this thesis aims to answer the following research question: **“How can we assess the societal values related to the implementation of the Roaming Like At Home (RLAH) policy of the European Union for the case of the Netherlands?”**

The report initially develops a deep analysis on the different steps and motivations of the EC related to the policy, especially in the regulations from 2007 and onwards. It aims to understand the reasons behind the regulations, and concludes that both NCE and NIE are not enough to justify the intervention, using Original Institutional Economics (OIE) for it. A discussion on the public and social values is followed, where specific definitions are used to determine what are the most important social values to be considered within the policy. With the help of experts, a short list of ten values is obtained.

A stakeholder analysis is used to determine which are the actors involved in the policy, including those supra-national bodies, domestic and international lobby groups, telecom operators and regulatory bodies. By using the Best-Worst Method (BWM), a Multi Criteria Decision Analysis (MCDA) method which allows to determine hierarchies between non-measurable criteria, the short list of values is used as criteria for surveys performed to those stakeholders willing to answer. In order to determine the position of the Dutch population, as this report scope is limited to the Netherlands, a combination of three stakeholders is used to determine the hierarchy of the social values: the Ministry of Economic Affairs, Consumentenbond and the Bedrijfscommunicatie Grootgebruikers (BTG).

The results of the report show alignment between the hierarchy of values of the EC and the Dutch people's representatives, but strong differences between the latter and the regulators and telecom representatives. Although the stakeholder analysis does show alignment regarding publicly-available interests of some of

the stakeholders, such as economic values, the intangible interests seen in the results of the hierarchy demonstrate a different guiding compass for each organization.

The thesis also shows how the actual approach for the determination of the value of a policy is not considering the intangible values that are behind any human person or organization. It is proposed to promote thinking in “humane” markets, rather than perfect markets, and to consider non-measurable criteria to assess the final value of a policy. It also questions whether the policy values can be separated from the individual values, as there is a close relation between them; thus, avoiding considering the individual value perspective of citizens could lead to future problems in the values a policy defends.

As the research faces different limitations, several future steps are proposed. Firstly, it is proposed to analyse whether the results obtained can be discussed with those representatives of the Dutch population in the parliament by comparing their expectations with the answers obtained in the BWM, aiming to analyse the representativeness of political decision-makers towards this policy. Secondly, the research also proposes using the results of the value hierarchy, and attempting to create a Willingness To Pay for values, as some of the considered ones could be measurable in an utilitarian perspective. A third proposal refers to analyse how the hierarchy of values of the policy differs across the domestic markets in Europe by using theories in transplantation of policy, aiming to overcome the geographical limitation of this thesis. Finally, a different theoretical approach could be used with the capability theory, focusing the criteria to be used in the future capabilities of the population, rather than the functionings.



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## List of Acronyms

AHP	Analytical Hierarchical Process
ARP	Alternative Roaming Provider
AT	Austria
BE	Belgium
BEREC	Board of European Regulators for Electronic Communication
BWM	Best-Worst Method
CZ	Czechia
DE	Germany
DG	Directorate General
DG CONNECT	Directorate General for Communications Networks, Content and Technology
DSM	Digital Single Market
EC	European Commission
EEA	European Economic Area
EL	Greece
EP	European Parliament
ES	Spain
EU	European Union
EVS	European Values Survey
FR	France
FUP	Fair Use Policy
HR	Croatia
HU	Hungary
ICT	Information and Communication Technology
IE	Ireland
IoT	Internet of Things
IOT	Inter Operator Tariff
IRS	International Roaming Service
IS	Iceland
IT	Italy
ITU	International Telecommunication Union
LU	Luxembourg
M2M	Machine to Machine
MCDM	Multi-Criteria Decision Making
MEPs	Members of the European Parliament
MNO	Mobile Network Operator
MT	Malta
MVNO	Mobile Virtual Network Operator
NCE	Neoclassical Economics
NIE	New Institutional Economics
NL	Netherlands
NRA	National Regulatory Authority
OIE	Original Institutional Economics
PL	Poland
PT	Portugal
RLAH	Roaming Like At Home
RLAL	Roaming Like A Local
RO	Romania
ROI	Return On Investment
SK	Slovakia
SMP	Significant Market Power
UK	United Kingdom



# 1 Introduction

## 1.1 Problem description

After mid-June 2017, the users of mobile telephony across the European Union (EU) started facing a major change, as roaming tariffs have been abolished. The progressive decrease of price caps since previous regulations has reached its final point when telecommunication operators were prohibited of charging their customers more than their domestic prices for the three massive services of voice, SMSs and data. Several studies have been done by consultants and scholars related to the possible impacts of this policy (BEREC, 2014; European Commission, 2016c; Spruytte, Van der Wee, de Regt, Verbrugge, & Colle, 2017). Issues such as the effects of Roaming Like At Home (RLAH) in domestic tariffs, the arbitrage opportunities, the creation of new non-legal markets, etc. have been addressed deeply by National Regulatory Authorities (NRAs) in the last years, and debated by politicians in the European Parliament (EP), Council of the European Union (Council) and European Commission (EC).

However, no insights have been discussed related to the social value of this policy. The impact of the policy over the society can be partially considered within the economic values of the reports, but the social perception related, for example, to ideologies and emotions, is difficult to be taken into account. The possible effects on public good and well-being have been assumed and not-considered by stakeholders involved in the debate. The true value of the social impact has not been measured by the different actors, which have based their findings in the competitive effects of the policy. This MSc thesis proposes to provide insights on what are the social values addressed by the EU Roaming policy and, specifically, how these affect the perception within the Dutch population.

## 1.2 Scientific relevance

The EU is constantly facing challenges from different fronts. From geo-political encounters on the Eastern border with military interventions, the increase of refugees' inflows from Middle-East and Africa to the rise of extremist groups among domestic members, the Union needs to constantly re-adapt to the changes to survive. Nevertheless, one of the most disquieting situations is related to the trust of EU citizens towards the Brussels' government, as the last measurement of citizens' confidence in EU institutions has shown a very low average of 42%, with the extreme cases being 27% (United Kingdom) and 61% (Lithuania) (Eurostat, 2014). Eurosceptic parties have grown across the continent and have been able to convince large parts of the population in favour of their ideology, a tendency confirmed by the British decision of leaving the EU after a popular referendum in 2016 and the high voting turnout of Le Pen's National Front in France in 2017 (The Guardian, 2017).

The EU institutions have been criticized for being extremely technocratic and not representative of the true will of the population (Habermas, 2015; Hopkin, 2012; The Guardian, 2011; Varoufakis, 2016). This feeling, summed with the natural asymmetries of power among Northern and Southern countries and the still non-solved 2008 economic crisis, generates a critic-prone environment that only weakens even more the citizens' feeling in a negative feedback loop.

Different theories can explain the motivation of decision-makers towards certain policies. Ticu (2013) argues that two of the main theories are Maslow's (1943) "hierarchy of the needs" and Herzberg's (1959) "theory of the two factors". The first one refers to a hierarchy of needs starting from physiological, security, social, assessing ones and ending in self-development ones and it argues that decision-makers are motivated in fulfilling these needs in this order. Herzberg's theory discusses the degree of satisfaction as main motivator for policy-makers to carry on with a direction, and they may decide where to go ahead depending on factors such as the type of administration of the organization and how they consider their position within.

Maslow's theory can explain the motivational steps, but does not include the possibility of having a different perception of reality with "blinded" decision-makers, referring to EU workers without a clear view of the actual situation of the Union. Even without an intention, EU decision-makers may believe certain

needs are better covered than the common EU citizen; thus, changing the expected decision-making hierarchy. On the other side, Herzberg's theory has a more intentional perspective, arguing decision-makers may be motivated towards certain direction depending on their satisfaction. In this case, an EC dominated by politicians with elitists views may take the entire Union towards fulfilling their own desires, which may not be related to the citizen's will. This theory also acknowledges that the type of organization may affect the perception of the decision-makers. EU workers have been deeply criticised by not being aware of what is happening outside Brussels, and this can affect their perception of the most important goals to be achieved.

The economic costs and values have been deeply researched and analysed by several academics. This information has been used by the EU to justify the implementation of the policy and its normative. Impact Assessments and Cost-Benefit Analysis are some of the possible methods used to understand the costs and values of the policy. Although debates arise as social welfare can be measured in different ways, changing the Willingness To Pay of actors, modifying discount rates, etc., these issues have been properly addressed and used by the EC into the EU Roaming policy. However, other non-economic values do affect the preferences of citizens, and the justification of the policy has not acknowledged them.

Based in the academic work by Commons (1934), Correljé & Groenewegen (2009), Rogers et al. (1998), and Veblen (1923), this research defines non-economic social values as intangible collective preferences of citizens that cannot be measured with a monetary unit. These non-economic social values may have an effect on the policy, which is hard to be addressed by the usual economic methods; thus, although rational, a decision made purely on economic aspects is not enough to consider the real will of, or cover the value citizens give to the policy across Europe. Aiming to start a debate on how social values can be considered within policies, the thesis takes as an example the EU Roaming regulation assessment. This policy, which is described in further chapters, is related to the elimination of roaming surcharges for every EU customer within the Union. The social values addressed by the stakeholders involved, although not mentioned explicitly in official documents, are analysed and compared with the perspectives of the representatives of the Dutch population. The research aims to give insights in how the EU can have a better understanding of the intangible preferences of citizens towards future decision-making processes in general and telecommunication policies in special.

### 1.3 Research questions

As mentioned in the previous paragraph, the challenge of the thesis is determining what were the social values affected in the EU Roaming policy and comparing them with the perception of the citizens; thus, the main research question will be:

**“How can we assess the societal values related to the implementation of the Roaming Like At Home (RLAH) policy of the European Union for the case of the Netherlands?”**

The research question is addressed in different steps, aiming to provide a walkthrough for the research and give clarity to the steps. Initially, this chapter describes what is the problem to be solved, describing the situation and the scientific relevance of the topic. After the context of discovery is explained, the following sub-questions are addressed:

#### 1.3.1 First research question

**“What is the EU Roaming policy?”**

The first research question is addressed on the EU Roaming policy and its details, looking forward to giving an introductory reference regarding the EC's steps over time. This stage is divided in four different steps:

- a) *What do we refer with roaming?*
- b) *How roaming markets work?*

- c) *How the EU Roaming policy has been developed through the years?*
- d) *What are the possible economic consequences of the EU Roaming policy?*
- e) *What is the EC stance over the regulation?*

This question is developed by both literature review and desk research (Halbac, 2015). Firstly, an analysis of different scientific articles and economic literature in telecommunication literature is performed, followed by a research into different press articles, demonstrating the possible technical, social and political motivation of the policy. All of these questions are also worked with the help of ACM, by providing their expertise in regulatory areas.

### 1.3.2 Second research question

#### **“What are the social values of telecommunication regulation?”**

In order to solve this research question, it is needed to understand what it is referred with the concept of social value. Aiming to do so, the following questions are also addressed:

- a) *What are public values?*
- b) *What are social values?*
- c) *What are the key social values impacted by the EU Roaming policy?*

A deep literature review is done into the concept of values. Public values are also introduced and an adaptation of a previous framework is done to include the intangible social effects on costs and values of a policy. A new definition of social value of a policy is achieved, and a literature review of the possible telecommunication and social values is done. Finally, by interviewing experts, the key social values of the policy can be determined, looking forward to questioning the stakeholders about the weight they give to these values.

### 1.3.3 Third research question

#### **“Who are the actors involved in the policy and what is their position?”**

The fourth sub-question addresses a complete stakeholder analysis, aiming to map the actors' interests and power. The actors are evaluated according to their participation in the policy and the possible gaps between their expected situation and the possible results of the policy. The following questions are also discussed:

- a) *Who are the actors involved?*
- b) *What are the actors' problems?*
- c) *What is the power and position of the actors?*
- d) *How are they interdependent among each other?*

This section includes, besides the previously mentioned desk research, literature review and comments of ACM's experts, realization of interviews to the stakeholders. These interviews are focused in understanding their position and opinions regarding the regulatory policy. The actors are also asked about the social values they believe this policy impacts, aiming to solve the following sub-question.

#### 1.3.4 Fourth research question

**“What are the most important social values of the EU roaming policy, according to the stakeholders?”**

This research question includes the following sub-questions:

- a) **How can the social values be determined?**
- b) **What method can determine the hierarchy of the values?**
- c) **What are the preferences of the stakeholders?**

By analysing the argumentations within the EU institutions, the press releases of the different actors, and the results of the performed interviews, the most important social values can be obtained. A complete list is later done, looking forward to preparing the new interviews of the next steps, focused in the Best-Worst Method.

#### 1.3.5 Fifth research question

**“What are the most important social values of the EU roaming policy according to the Dutch population?”**

This research question includes the following sub-question:

- a) **How do these values differ/coincide with those from the stakeholders?**

After the list of values is obtained from the different stakeholders participating in the policy, these are faced against the interests of the Dutch population. The initial approach of this report assumed that the population is represented by politicians from those political parties with representation in the Dutch parliament. A second approach proposes a combination of major actors who have been accepted as representative of the Dutch ideas. By using the Best-Worst Method, values can be weighted and compared with the answers of the stakeholders, to conclude if the perspective of the Dutch users is being taken into account in the creation of the policy. The results are followed with a reflection on how social values can be considered in future EU policies.

### 1.4 Research scope

The research needs to determine boundaries, to define clear and feasible objectives that can be achieved within the required difficulty and time-frame of an Engineering and Policy Analysis MSc thesis.

Firstly, the research is limited to the social values of the EU Roaming policy, particularly in the effects of the last stage of the policy with the RLAH feature. The thesis will not evaluate if other social values have been affected in previous stages of the regulation (2007, 2009, 2012 and 2015) or if there has been an evolution in the acceptance of the policy within the approval of the first roaming regulation and this last stage.

Secondly, the social values to be considered are those of the Dutch population. Different studies have shown differences between the values, norms and practices of nations within Europe, demonstrating that the public opinion related to a same topic could greatly vary depending on the country interviewed. The scope is limited within the effect over the Dutch customers.

However, many stakeholders considered in this thesis exceed the scope of the country, as they interact with other foreign actors or belong to trans-national institutions. These stakeholders were still used, as they brought useful insights on the Dutch social values being considered.

The research does not try to develop theories related to ontology in the definition of values and assumes specific definitions from academics. The same occurs with the economic theories and the regulatory perspective shown in Chapter 4.

## 2 Methodology

The previous chapter introduced the research questions of this thesis and a short summary of their research methodology. This section provides a deeper analysis of the methodology proposed to answer them, including the justification of the selected approach. It is divided in different sub-sections which represent the chapters of the research, aiming to help the reader to follow the argumentation path used:

### 2.1 The EU Regulation in Mobile Roaming

As the research is based in the roaming policy of the European Union (EU), it is important to provide the reader with a basic knowledge in roaming concepts. Although the technical aspects are superficially mentioned, as they are out of the scope of the thesis, they are significant to understand how roaming markets work, in order to comprehend how and why the different regulatory tools are selected by the EU.

The thesis aims to show how social values are being considered by the decision-making institutional bodies; thus, it is necessary to analyse the motives that led to the selected regulations and what theories are behind their determination. The following steps, which can be found in chapter 3, are taken to address these methodological needs:

Firstly, a literature review is performed over international mobile roaming markets, including determining how wholesale and retail markets work and the extent of the participation of Mobile Network Operators (MNOs) and Mobile Virtual Network Operators (MVNOs). Experts from the Authority for Consumers & Markets (ACM) help in the definition of these concepts.

The following step is related to the different phases the EU has completed since 2007, ending in the Roaming Like At Home (RLAH) policy. The research is done with both literature review of scientific articles explaining the process, as well as performing a historical press research of the different positions of stakeholders. The main press sources have been digital newspapers such as The Guardian, Politico.EU, El País, Telecompaper, among others, and press releases from the European Commission and different lobby groups.

Finally, by performing a desk research, the EC is also analysed, aiming to understand the policy and justification of the Commission to continue in this regulatory path. This type of research was used to analyse the regulatory path of the EU towards the RLAH policy, and the regulatory guidelines used by regulators in the time frame between the creation of the policy and July 2017.

The methodology allows to answer the first research question **“What is the EU Roaming policy?”** and its five sub-questions:

- a) *What do we refer with roaming?*
- b) *How roaming markets work?*
- c) *How the EU Roaming policy has been developed through the years?*
- d) *What are the possible economic consequences of the EU Roaming policy?*
- e) *What is the EC stance over the regulation?*

The results can be found in Chapter 3 of this report.

### 2.2 Public and Social Values

After an introduction to the roaming market concepts and an analysis of the justification of the roaming regulation is done, it is necessary to introduce the state-of-the-art research related to the concepts of public and social values. The methodology requires an initial discussion on the definition of the concepts and the interpretation this research uses. The reader is introduced into the different theories and the idea of intangible externalities on public values, a concept of utmost important to understand the effect of those criteria which cannot be easily seen or measured, but still affect the value of a policy. This discussion is later

used as the basic academic argumentation for a Multi-Criteria Decision Analysis (MCDA), where different stakeholders assign a value to concepts that are difficult to measure with the traditional economic perspective.

Social values also need to be defined and determined, as they will be the ones assessed by the research. The methodology proposes a discussion on the definitions of “social value”, and of the concept of “collective”, to provide a clear scope of work.

As social values group a vast number of concepts, and in order to consider only those values that mostly affect the policy, the research needs to create a shorter list of values which can represent those that are directly involved in telecommunications and regulation. The list is obtained with the help of experts, together with a literature review of the values involved in the mentioned areas of study. The literature review is performed with databases provided by the Delft University of Technology Library and Scopus, together with the internal database access of the Authority for Consumers and Market (ACM). Key words related to public and social values are used and a combination of relevance of the source with citation metric helps to select those sources with more value to the thesis.

This methodological step is performed in Chapter 4 and answers the question **“What are the social values of telecommunication regulation?”**, and its three sub-questions following:

- a) *What are public values?*
- b) *What are social values?*
- c) *What are the key social values impacted by the EU Roaming policy?*

### 2.3 Actors analysis of mobile roaming in the Netherlands

As the research aims to determine the impact over the social values of the roaming policy, it is important to understand which were the actors involved on this policy. Performing a stakeholder analysis can help to obtain insights on the number of actors, their problems, their power and position and the interdependency between each other.

Obtaining this information is valuable, as the list of stakeholders can be used to perform interviews and obtain information regarding their social values and interests. This information can be compared with the results of the MCDA method which will be applied on further steps of the research, and determine if there is any relation between the hierarchy of values and the results of this analysis.

As mentioned, this section provides a full stakeholder analysis over the EU Roaming policy in the Netherlands, aiming to discover who are the most important players in the decision-making process. The methodology includes assessing the power, interest and expected situations of the stakeholders, as well as identifying the different actors with three different approaches: a) a reputational approach where experts within ACM are asked regarding the different interests of the stakeholders; b) a positional approach where by desk research and literature reviewing actors can be found; c) a social participation approach where actors can also suggest other players that can affect the policy. The method, based in Enserink et al. (2010), is extensively described in Chapter 5.

The actual analysis also includes semi-structured and exploratory interviews, performed over those available actors, that provide a clearer and direct view from the player’s perspective. These interviews also include some questions that could help in further steps, such as those related to evaluating the policy or arguing about the social values of policies. The interview template can be found in Appendix III and the summaries of the interviews can be found in Appendix IV.

This methodological step is performed in Chapter 5 and answers the question: **“Who are the actors involved in the policy and what is their position?”**, together with its four sub-questions:

- a) *Who are the actors involved?*
- b) *What are the actors’ problems?*

- c) *What is the power and position of the actors?*
- d) *How are they interdependent among each other?*

## 2.4 Social values of stakeholders

After the social values that mostly affect telecommunication regulation are found thanks to the help of experts and the literature review performed, and the stakeholders are determined by the actor analysis, the methodology requires to determine how each actor gives value to those social values. The results of this method may determine how aligned are the most important stakeholders related to the values they consider important, and provide valuable information related to what are those values that guide their decisions. The information obtained will be later compared with the Dutch perspective in the matter, aiming to find relations between the value hierarchy of each group.

Social values, as criteria, can have economically measurable and non-measurable choices. For example, the value of “prosperity” of a policy may be measured in economic terms, but the value of “integration” may include other emotional factors, hard to measure with the mainstream economic perspective. Thus, a Multi-Criteria Decision Analysis (MCDA) that allows non-economically measurable criteria to be compared is needed to estimate the “real” value of those social values. The Best-Worst Method (BWM) (Rezaei, 2015, 2016) is chosen for the MCDA; it allows to determine hierarchy between criteria and uses a pairwise comparison to contrast criteria between each other. This method requires stakeholders to answer a short survey, where they select a “best” or most important value and a “worst” or least important value, and compare them with the rest of the values using a numerical scale of 1 to 9. The BWM defines a hierarchy of values for each of the actors, and provides a ranking from the most to the least important.

As mentioned, the list of social values to be considered is large and, in many cases, some of these concepts overlap because of similar definitions, which could lead to confusion when applying the BWM; thus, a reduced list of ten values is used to help the stakeholders to answer this survey. Actors are unified in groups with similar interests, and a complete explanation of why those values are considered is done. A list of values definitions is done to avoid misunderstandings in the next stages. This can be found in Section 4.2.3.

With the obtained results, chapter 6 addresses the research question **“What are the most important social values of the EU roaming policy, according to the stakeholders?”** and its three sub-questions can be answered:

- a) *How can the social values be determined?*
- b) *What method can determine the hierarchy of the values?*
- c) *What are the preferences of the stakeholders?*

An important remark needed for this section is related to two of the main stakeholders considered: the European Parliament (EP) and the Council of the European Union (Council). These two stakeholders, different from the EU’s executive branch (European Commission), are formed by very diverse actors, which form among themselves complex alliances based on ideologies, compromises, closeness in values or borders, etc. Because of the complexity of their organization, the stakeholders were not considered in the research. Further explanation can be found in Chapter 10.

## 2.5 Dutch Social Values

After stakeholders have shown their opinions regarding what social values are mostly impacted by the roaming in telecommunications and regulation, the next step is towards learning which of those values are most appreciated by the Dutch population. The BWM needs to be applied again, with the same justification as the previous sub-chapter. However, the main challenge for this section is whom to ask to answer the BWM survey.

The most suitable methodology for this stage would be assessing directly the citizens’ opinion with field polls across the country. This would require performing surveys across the different regions of the Netherlands, considering parameters such as income, age, gender, etc., and obtaining a representative

number of samples to develop a statistical analysis. However, due to financial, time and scope constraints, this is not possible and a different approach is needed.

A possibility could be to use different public databases with values data. Below, a list of examples can be found:

- a) European Values Study (EVS). This database provides information from four different group of surveys (or “waves”) done in 1981, 1990, 1999 and 2008. Unfortunately, the fifth group of surveys will be performed in autumn 2017; thus, the answers will not be available on time for the end of this research. The database is based in human values, providing “(...) insights into the ideas, beliefs, preferences, attitudes, values and opinions of citizens all over Europe” (European Values Study).
- b) World Values Survey (WVS). This database is formed by a network of social scientists across the world, analysing the changes in values and attitudes and the impact on social and political life. The organization plans waves of surveys every five years and is structured along 14 thematic sub-questions. Unfortunately, the 7<sup>th</sup> wave of the survey is being performed between 2017 and 2018 and the answers will not be available on time to be assessed. However, information obtained from previous waves can be used (World Value Survey Association, 2017).
- c) Eurobarometer. This database is a survey performed by the Directorate-General for Communication of the EC. It provides insights on the values and opinions of the Europeans within the EU (and in some case, within the EEA) related to issues such as very diverse issues, from inflation to terrorism or religion (European Commission, 2017c).

These databases provide information regarding the values Dutch users value the most, or at least consider important. However, the databases are limited as they do not ask about the specific situation of the EU Roaming policy, or even regarding telecommunication issues. Thus, a different and more specific option is required.

A different option can be found in the parliamentary system. With a score of 8.8/10 in 2016, the Netherlands is considered a full democracy and ranks 12<sup>th</sup> in the world, according to the Democracy Index (The Economist Intelligence Unit, 2017). The Netherlands is a long-lasting parliamentary democracy since 1848 and some of its institutions, like the water boards (waterschappen) have been democratically elected since the 13<sup>th</sup> century. This situation could lead to think the Dutch people have a strong democratic ideology, which indeed is true according to the last survey in democratic satisfaction performed by Statistics Netherlands (Centraal Bureau voor de Statistiek, 2013); thus, it seems the elected representatives do actually “represent” the population. If so, political parties are useful to learn about the social values of the population.

However, some limitations arise. Firstly, although Dutch are confident with democratic principles, they are not with the institutions that represent them. A Statistics Netherlands survey from 2014 showed that the trust in politicians, Dutch parliament, Dutch political parties and EP, in a score between 0 and 10, did not pass the mediocre 5.2 (Centraal Bureau voor de Statistiek, 2017), exposing a lack of belief in Dutch representatives. Secondly, not all Dutch people do vote. Although the number of voters can be considered high, 19% of the population did not participate in the last parliamentary election of 2017 (Chandler, 2017) and it can be argued that part of these citizens are not represented by politicians. Finally, not every person living in the Netherlands has the right to vote. As this research is focused in roaming regulation, users of telecommunications are not directly represented by politicians, as they could be part of diverse groups such as minors (not old enough to vote), international students or workers, immigrants, refugees, etc.

The methodology required a representative of each political party to be contacted and to agree to answer the BWM survey. The survey had a small but important variation from the one done to the mentioned stakeholders. Instead of asking what are the values they feel most important regarding the EU Roaming regulation, the question is general and enquires about what social values from the list they believe most important. The idea is to understand if the values Dutch people consider everyday are aligned with the values considered in the EU Roaming regulation. Finally, after the answers are received, the values are weighted according to the voting percentages of the last parliamentary election.



However, it is important to point out that no political party accepted to participate in the survey. Only one party answered to the request (CDA) but could not provide information on the subject. This created an unexpected situation on the initial methodology.

Aiming to obtain a representation of the Dutch social values, a different approach was chosen. The research considers some of the stakeholders mentioned in the actor analysis as representative of the population, and discusses their vision regarding the different positions of the other players. The Ministry of Economic Affairs, Consumentenbond and Bedrijfstelecommunicatie Grootgebruikers (BTG) are selected as a combined representative group of the Dutch perspective. These stakeholders represent different perspectives of the Dutch population: government, regular consumers and large businesses.

Different scenarios are analysed, assigning to each of the three actors different weights related to diverse argumentations of their possible representativeness for the Dutch population. A final ranking is obtained with the hierarchy of values expected from the Dutch population. Chapter 7 explains the process of selecting the three representatives and how each of them was weighted, together with the final list of values.

The research question **“What are the most important social values of the policy according to the Dutch population?”** is addressed in Chapter 7. Its sub-question *“How do these values differ/coincide with those from the stakeholders?”* is answered in chapter 8, Discussion, with a case by case analysis between the actors and the Dutch perspective.

## 2.6 Discussion, conclusion and further research

After the five research questions are answered, sufficient information and discussion has been performed in order to address the main research question: **“How can we assess the societal values related to the implementation of the Roaming Like At Home (RLAH) policy of the European Union for the case of the Netherlands?”**.

A first stage to summarize the findings is to develop an analysis case by case between the stakeholders and the Dutch perspective. This study allows to understand if the social values are shared between stakeholders involved in the policy, and to conclude if the different actors, especially those institutional decision-making bodies, share the same hierarchy as the Dutch population. The results are interpreted with the information obtained in the literature review of chapters 3 and 4.

A second point is to propose the discussion between the mainstream economic perspective of perfect markets with other perspectives that include non-measurable criteria. This is necessary as the results of the BWM and the analysis case by case of the results show measurable and non-measurable criteria combined in the ranking of importance. If a non-measurable criterion has a higher ranking than a measurable one, it means the mainstream economic perspective may not be aligned to reality. A final aspect to discuss is related to the separation between individual and policy values. The values assessed by the surveys are considered to be organizational values, as the representatives answer their institution’s perspective. However, the methodology requires to question this fact, and to provide theoretical insights on how trustable is the representativeness of the interviewees related to their organizational perspective.

The section is complemented by a reflection on the results, and proposals for future research in different aspects that were considered out of the scope for this thesis.

## 2.7 Summary

The research proposes an argumentation line based on literature research in roaming aspects, and public and social values. The European roaming decision-making process is analysed and its justification is discussed. The definitions of public value are debated and the concepts of intangible externalities added. Social values of the policy are defined according to the scope of the thesis.

This is followed by a stakeholder analysis of the EU roaming process in the Netherlands and the determination of a short-list of social values that mostly impact the areas being researched in this thesis. A Multi-Criteria Decision Analysis method called Best-Worst Method (BWM) is performed to the most important stakeholders and provides a ranking of values from the most to the least important. A group of stakeholders is used as representative of the Dutch population, and the BWM is applied to the group. The results are compared and used to find conclusions regarding the alignment of the social values behind the actors involved and the Dutch population.

The following table summarizes the steps, research questions and methodological process:

*Table 1. Flow and methodology of the thesis.*

Chapter and title	Research question	Method
3: The EU Regulation in Mobile Roaming	“What is the EU Roaming policy?”	Literature review and desk research.
4: Public and Social Values	“What are the social values of telecommunication regulation?”	Literature review, desk research, interview assessment and expert consultation.
5: Actor Analysis of Mobile Roaming in the Netherlands	“Who are the actors involved in the policy and what is their position?”	Stakeholder analysis, semi-structured and exploratory interviews.
6: Social Values of Stakeholders	“What are the most important social values of the policy, according to the stakeholders?”	Semi-structured and exploratory interviews. Best-Worst Method.
7: Dutch Social Values 8: Discussion	“What are the most important social values of the policy according to the Dutch population?”	Semi-structured and exploratory interviews. Best-Worst Method.

## 3 The EU Regulation in Mobile Roaming

In order to understand the impact of the social values of the Roaming policy in the Netherlands, a first introduction to the roaming concepts is needed. The research aims to assess the impact of the roaming policy; thus, it is important to understand why the different regulatory steps were taken, and what was the justification of the decision-making institutions towards proposing the Roaming Like At Home (RLAH) policy. This section intends to answer the research question: **“What is the EU Roaming policy?”** and its sub-questions:

- a) **What do we refer with roaming?**
- b) **How roaming markets work?**
- c) **How the EU Roaming policy has been developed through the years?**
- d) **What are the possible economic consequences of the EU Roaming policy?**
- e) **What is the EC stance over the regulation?**

The chapter develops a basic introduction to the technical aspects of roaming to provide the reader with what mobile roaming means, together with the explanation of how wholesale and retail markets work. It is followed by the different decision-making steps by the EU, showing how the justification of the regulations has been changing since the first attempt to regulate. An analysis over the EC position is performed to find the values behind the political discussion. A final step assesses the justification provided by the EC with the different economic perspectives and theories, to understand the theoretical reasons behind the decision.

The European Commission (EC), through its Directorate General for Communications Networks, Content and Technology (DG CONNECT), has developed the Digital Single Market (DSM) strategy aiming to provide “(...) free movement of persons, services and capital (...) where the individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence” (European Commission, 2016b). The strategy is based in three main pillars (European Commission, 2015b):

- Better access for consumers to digital goods and services across Europe
- Creating the right conditions and a level playing field for digital networks and innovative services to flourish
- Maximising the growth potential of the digital economy.

Among the second pillar, the EC aims to “make the telecoms rules fit for purposes”, where the final elimination of roaming surcharges is proposed (European Commission, 2015a). However, the European Union (EU) has walked a long path before reaching this point.

### 3.1 What is roaming?

Firstly, the sub-question *“What do we refer with roaming?”* needs to be addressed. The word “roaming” comes from the verb “roam”, which is defined as “to move about or travel aimlessly or unsystematically, especially over a wide area” (Oxford Dictionaries). Although this word comes from ancient times, the noun became the symbol of mobile cross-border usage. Curiously, Oxford Dictionaries use an interesting example for the noun: “EU officials have been cutting the fees companies can charge for roaming” (Oxford Dictionaries).

Mobile roaming refers to the situation when a mobile device within a domestic cellular network connects to a foreign cellular network, without modifying the initial subscription with the domestic network. This connection should be done in an almost seamless way, as users do not need to modify parameters of their devices to access the foreign network. However, the seamless experience highly depends on the technology used and the agreements between operators.

Avoiding entering into a historical review of mobile roaming technologies, the actual technologies deployed across developed countries already allow a seamless experience for users, that can use their mobile devices

in the same manner as their domestic networks. As similar standards were adopted across the European Economic Area (EEA), the integration between different domestic telecommunications operators became a natural development (Sutherland, 2008).

It is important to clarify that for this research, the term “mobile roaming” refers only to roaming between foreign and domestic cellular networks. Different technologies are also capable of roaming, such as Wi-Fi, WiMAX, Bluetooth, etc. However, the EU policy is focused in the cellular market.

## 3.2 Wholesale and retail markets

In order to understand how roaming is regulated, it is important to analyse how businesses and users interact to use or provide this service; thus, this sub-chapter answers the sub-question “*How roaming markets work?*”. Among the mobile roaming communications, two different types of markets arise. These are the wholesale and retail markets, which differ in the relation between the MNOs (Mobile Network Operators)/MVNOs (Mobile Virtual Network Operators) and the customer. This sub-chapter will introduce the main characteristics of both markets and how do they work in the European Union.

### 3.2.1 Wholesale markets

To obtain mobile services abroad, customers need to connect to a foreign mobile network that can provide them. However, nowadays mobile roaming users do not need to interact with the foreign network by changing any configuration on their devices or incorporating specific hardware such as a new SIM card. The device automatically connects to the foreign network and provides similar services as the domestic network of the customer. For this to happen, the foreign telecommunication operator must have an agreement with the domestic network operator of the user, so the billing of the consumption can be properly done. These deals are part of the wholesale market.

The wholesale market is a business-to-business relation where MNOs and MVNOs achieve deals to provide their customers (domestic) with a continuous and seamless service while abroad. These services may vary depending on the agreements between operators, as they can provide different data transfer speeds, Calling Line Identification, free access to domestic voice-mails, etc. The agreements are done in bilateral directions between 2 MNOs/MVNOs or through intermediate brokers. Brokers centralize the roaming services of different operators and interconnect them, avoiding both technical and administrative burden, as there are hundreds of operators across the world each with their particular features (Miñarro López, 2008).

### 3.2.2 Retail markets

As mentioned in the introduction of the chapter, the retail market represents the agreement between the customer and its domestic operator, in order the first can receive mobile roaming services. The customers pay a domestic tariff to obtain the domestic services, and, in case it needs to roam, the domestic operator must develop agreements in the wholesale market with foreign operators, charging an additional retail fee to the user. This additional fee has always been matter of debate and is discussed extensively in this research.

### 3.2.3 Mobile Network Operators (MNOs) and Mobile Virtual Network Operators (MVNOs)

As their name mentions, the difference between these two types of mobile operators is the infrastructure used to provide their services. While MNOs install and manage their own infrastructure to provide mobile services, from core to edge, MVNOs need to use parts of MNOs’ infrastructure to provide them. This means MNOs can provided an end-to-end solution of mobile telephony while MVNOs depend on arrangements with MNOs to sell their services. The reason for the existence MVNOs is merely economic; it creates more competition as not every party is able to invest in their own mobile infrastructure, it allows the already existing infrastructure to have a more efficient usage, and allows to divide the market into segments, giving customers a larger number of mobile offers that can adapt to their own situation.

MVNOs are an important part of the Dutch mobile market. According to data from Telecompaper’s Market Research (TP:Research, 2017), MVNOs have a 34% of the market share, where 50,8% are independent MVNOs and 49,2% are MVNOs that belong to an MNO. As mentioned in the previous paragraph, MVNOs need to use the infrastructure from MNOs. The mentioned report estimates that MVNOs are split in the usage of MNOs services, as shown in the table below:

Table 2. Share of MVNO customers by network host (TP:Research, 2017)

MNO	Percentage
KPN	39,0%
VodafoneZiggo	30,8%
T-Mobile	18,8%
Tele2	11,4%

Although this business models fits in a domestic market, roaming traffic may provoke strong imbalances between them. When a customer of a domestic MNO travels abroad, this domestic MNO agrees with a foreign party to provide services for him. The same happens with a customer from a foreign MNO. So, a sum and rest of traffic between both operators may end balancing the traffic, avoiding payments between each other (although the customers are still charged). In case of a MVNO, as they do not have infrastructure, they cannot compensate the traffic because it is always outbound. MVNO users travel abroad and pay for their roaming services to their domestic MVNO, and this MVNO pays to the foreign MNO. But, foreign users (both MNO and MVNO users) cannot compensate this outbound traffic, as they do not hire MVNO’s services when travelling. The situation creates an imbalance that has been addressed in the following chapters related to the EU Regulation.

The following image shows a simplified version of the market:

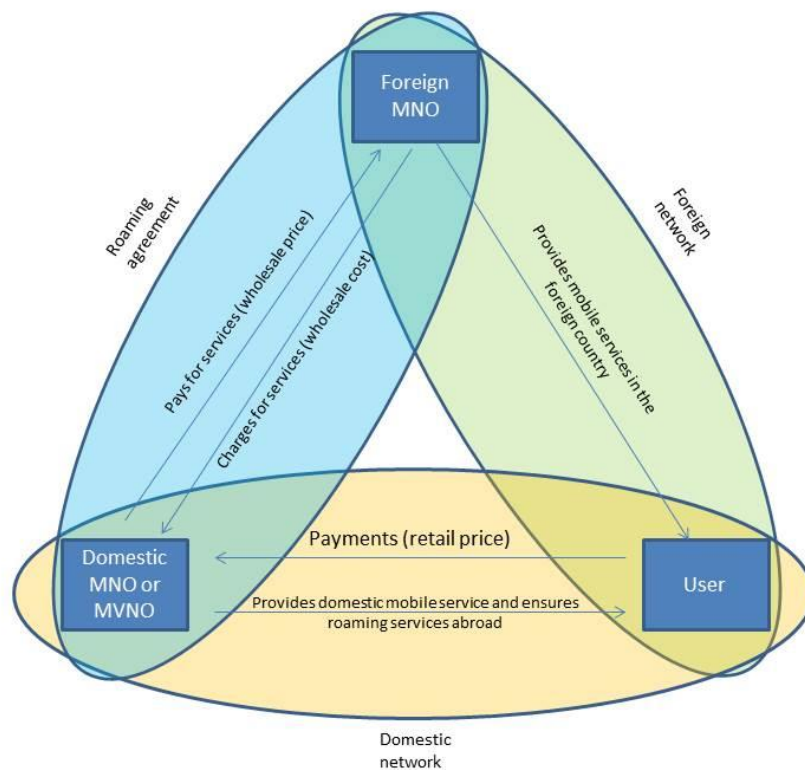


Figure 1. Simplified structure of roaming markets.

### 3.3 The first steps

Aiming to understand the different steps and reasons why the EC has been regulating roaming, it is interesting to analyse the political decision-making process and the different justifications of each regulation. This sub-chapter is based on the work of Infante & Vallejo (2012) and Spruytte et al. (2017), who developed a historical summary of the different stages of the EU roaming regulation process, answering the sub-question “How the EU Roaming policy has been developed through the years?”.

The EC has tried to regulate the roaming market since 1997 by discussing different methods such as the elimination of Inter Operator Tariffs (IOTs), promoting transparency in prices and forcing infrastructure sharing among operators. At this moment, it did not seem the EC was looking forward to a common mobile market across the EU. Sutherland (2008) argues that the EC had a chance of allowing Vodafone to introduce pan-European subscriptions, but it decided in favour of protecting the domestic mobile markets across the continent.

By 2002, the EC intended to improve the efficiency of the digital markets and created guidelines for regulators to assess market power (European Commission, 2002). The Commission started a revision process over different telecommunication services, where the wholesale roaming market was included, and it demanded the different National Regulatory Authorities (NRAs) to analyse if the roaming market was working efficiently (European Commission, 2003). This meant NRAs should be able to define relevant markets, evaluate effective competition, and analyse the existence of Significant Market Power (SMP), assigning if there was any need for regulation (Hylkema, 2003). After no NRA found any SMP behaviour on any operator or found any argumentation towards the bad functioning of the mobile roaming market (Sutherland, 2008) and a strong political interest towards solving this issue existed (Infante & Vallejo, 2012), the EC started a new regulatory initiative, later to be known as the 2007 Roaming Regulation.

#### 3.3.1 2007 Roaming Regulation

The 2007 Roaming Regulation was the answer of the EC towards the high prices of the mobile roaming, as it can be read from the first motivation of the regulation:

*“The high level of the prices payable by users of public mobile telephone networks, such as students, business travellers and tourists, when using their mobile telephones when travelling abroad within the Community is a matter of concern for national regulatory authorities, as well as for consumers and the Community institutions. The excessive retail charges are resulting from high wholesale charges levied by the foreign host network operator and also, in many cases, from high retail mark-ups charged by the customer's own network operator. Reductions in wholesale charges are often not passed on to the retail customer. Although some operators have recently introduced tariff schemes that offer customers more favourable conditions and lower prices, there is still evidence that the relationship between costs and prices is not such as would prevail in fully competitive markets.” (European Commission, 2007)*

The regulation proposed to introduce a cap to International Roaming Services (IRs) for both wholesale and retail levels in voice services. The “Eurotariff”, a given retail price that could suffice the margin for operators while encouraging competition among operators, was created by this regulation. It also included free roaming SMSs for obtaining information of tariffs while abroad and applied for both Mobile Network Operators (MNOs) and Mobile Virtual Network Operators (MVNOs) (European Commission, 2007, p. 1).

#### 3.3.2 2009 Roaming Regulation

After the revision of the policy, done in 2009, the results concluded there was a need to continue the cap regulation, the possibility to add caps to SMSs and a first attempt to regulate the prices of data in the wholesale market. It also included an automatic limitation of user expenditure of EUR 50 (excluding VAT), where the customer could be informed when the roaming services have reached 80% of the agreed financial volume and a per second basis charging. This revision can be called 2009 Roaming Regulation (European Commission, 2009).

After different BEREC (Board of European Regulators for Electronic Communications) reports showed that wholesale caps reductions in data were not aligned as expected with a reduction of retail pricing levels (BEREC, 2009, 2010, 2011b, 2012b; Infante & Vallejo, 2012; Spruytte et al., 2017), the regulatory institution recommended changes in order to improve the situation (BEREC, 2011a). BEREC also suggested that although price caps were not achieving the expected results, they were still the preferred method to improve the competitiveness of the market. These comments were to be considered inside the 2012 Roaming Regulation.

### 3.3.3 2012 Roaming Regulation

The 2012 Roaming Regulation (European Commission, 2012) was the first mentioning the strategy of “A Digital Agenda for Europe”, a first movement towards the actual DSM. It mentions explicitly the difficulty of developing a knowledge-based economy with the actual roaming prices and the unique characteristics of both retail and wholesale market that need regulatory enforcement. The regulatory safeguards were to end by mid-2012, and the EC believed that intervention was needed to continue to ensure the functioning of the European market. The regulation also acknowledged the difficulty of border users with non-expected roaming services by being connected with the foreign network without knowledge of it, and recommended MNOs to interact between each other in order to implement special proposals to those users.

Alternative Roaming Providers (ARPs) were introduced for the first time. Two types of ARPs were used. First, an ARP could make a deal to resell roaming services of a MNO. MNOs were forced by regulation to allow ARPs reselling their services, by offering a wholesale price (which was limited by EU Regulation); thus, an ARP could provide lower retail prices benefitting the customer. As an example, a Dutch MNO user could choose to buy a roaming bundle from an ARP, instead of the offered bundle from its own MNO. A second option was the Local Breakout. This concept, allows users to “break” from their own network when roaming and use the local services. Although this was only available for data, it provided an alternative for the users as they could buy local data services. However, both regulations failed, partly because of the fast movement of the EC towards eliminating roaming charges in a future (European Commission, 2013). The guidelines of this regulation were given by BEREC, specifying article 3 of Wholesale Roaming Access and article 4 of Alternative Roaming Providers decoupling in two separated documents (BEREC, 2012a, 2013a, 2013b).

As mentioned previously, the EC demonstrated interest in going towards a telecoms single market shortly after the implementation of the 2012 Roaming Regulation. The main interests of the EC were focused in (European Commission, 2013):

- EU-wide and free European roaming
- Simpler rules to help companies invest more and expand across borders
- Net neutrality
- Abolishing premiums for international calls within the EU.

The free roaming initiative did not help in implementing articles 4 and 5, as ARPs would not be needed in case of a free roaming market; thus, it can be argued that the EC made these articles worthless short time after their approval. This press release of 2013 was also the start of the 2015 Roaming Regulation, aiming to progressively eliminate extra surcharges of roaming prices for voice, SMSs and data within the European Economic Area (EEA).

### 3.3.4 2015 Roaming Regulation

By 2013, the EC proposed changes in legislation towards a “Connected Continent”, which went through Parliament and Council and was finally approved by ends of 2015. Regulation N° 2015/2120 establishes the abolition of retail roaming surcharges from 15<sup>th</sup> June 2017 and demands a review of the wholesale market by the EC (European Commission, 2015c). This mentioned review has been approved on 6<sup>th</sup> April 2017 by the European Parliament (EP) (European Commission, 2017b) and has determined the wholesale roaming caps until 30<sup>th</sup> June 2022 (European Parliament, 2017).

Besides the wholesale market regulation, the issue of fair use arises. As markets within Europe are significantly different and subscription plans differ from region to region, some markets may be more exposed than others to “free” roaming costs for users. The EC demanded an impact assessment to determine the possible effects of the policy (European Commission, 2016c), which showed vulnerabilities for Northern countries because of travelling and consumption patterns of users. It also acknowledges the need of a proper fair use policy (FUP), which has been strongly debated by every stakeholder involved and has caused political complications for the EC Presidency of Jean-Claude Juncker (Plucinska, 2016).

Finally, the EC approved by the end of 2016 a version of the regulation that allowed “Roaming Like At Home” (RLAH) by users inside the EEA, within a FUP (BEREC, 2017). The FUP was part of a Commission Implementing Regulation (European Commission, 2016a) and consisted on the following main features:

- Control of users’ normal residence or stable links within a country.
- Stop organised resale of SIM cards that benefit from arbitrage opportunities.
- Establish limits for open bundles and pre-paid subscriptions for data, as high traffic volumes are expected.

Although BEREC has established the guidelines for the FUP, it is still not clear how the different MNOs and MVNOs will react towards the changes. The following table shows the evolution of wholesale and retail price caps for voice, SMS and data services between Roaming I and RLAH regulations, followed by graphs showing how price caps have been decreasing since the implementation of the policies.

Table 3. Price caps for wholesale and retail markets for outgoing calls, SMSs and Data services between Roaming I and RLAH Policy (excluding VAT).

		Wholesale market			Retail market		
		Outgoing calls (€c per minute)	Outgoing SMSs (€c per SMS)	Data (€c per MB)	Outgoing calls (€c per minute)	Outgoing SMSs (€c per SMS)	Data (€c per MB)
2007 Roaming Policy	30/08/07	30	-	-	49	-	-
	30/08/08	28	-	-	46	-	-
2009 Roaming Policy	01/07/09	26	4	100	43	11	-
	01/09/10	22	4	80	39	11	-
	01/09/11	18	4	50	35	11	-
2012 Roaming Policy	01/07/12	14	4	25	29	9	70
	01/07/13	10	2	15	24	8	45
	01/07/14	5	2	5	19	6	20
	01/07/15	5	2	5	19	6	20
2015 Roaming Policy	30/04/16	5	2	5	Domestic price + 5	Domestic price + 2	Domestic price + 5
	15/06/17	3,2	1	0,77	Domestic price	Domestic price	Domestic price
	01/01/18	3,2	1	0,6	Domestic price	Domestic price	Domestic price
	01/01/19	3,2	1	0,45	Domestic price	Domestic price	Domestic price
	01/01/20	3,2	1	0,35	Domestic price	Domestic price	Domestic price
	01/01/21	3,2	1	0,3	Domestic price	Domestic price	Domestic price
	01/01/22	3,2	1	0,25	Domestic price	Domestic price	Domestic price



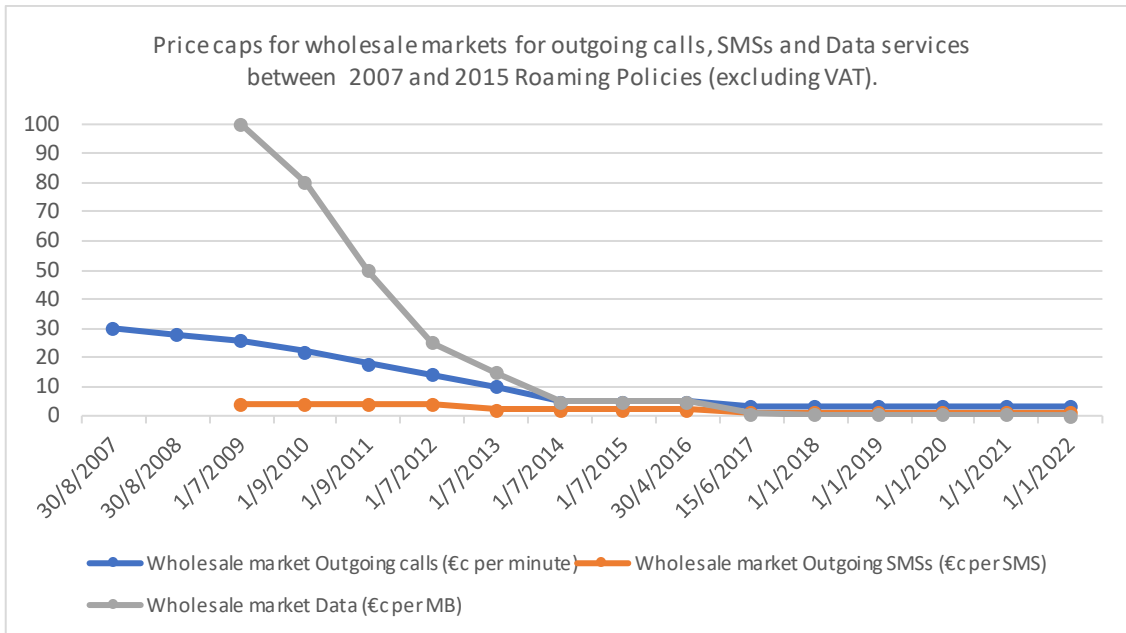


Figure 2. Price caps for wholesale markets for outgoing calls, SMSs and Data services between 2007 and 2015 Roaming Policies (excluding VAT).

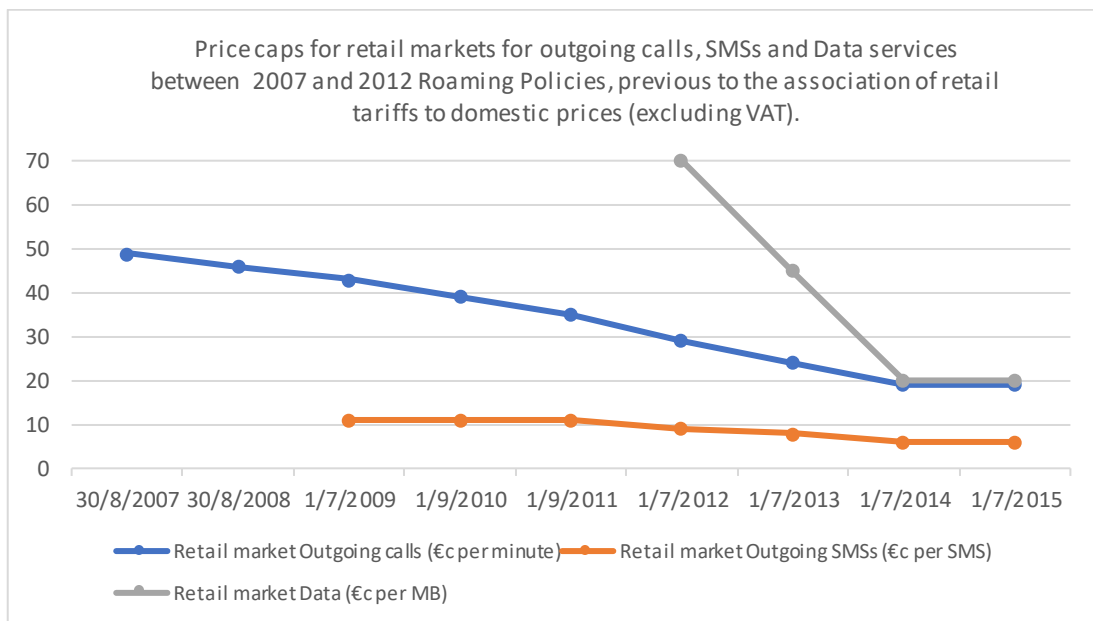


Figure 3. Price caps for retail markets for outgoing calls, SMSs and Data services between 2007 and 2012 Roaming Policies, previous to the association of retail tariffs to domestic prices (excluding VAT).

As shown in Table 3 and Figures 2 and 3, the different policies have sensibly decreased the prices of both wholesale and retail markets. One of the most important changes between the 2007-2012 Roaming Policies and the 2015 Roaming Policy has been the association of retail prices to domestic tariffs, in order to reach the elimination of roaming surcharges after mid-June 2017.

### 3.4 Economic consequences of the 2015 Roaming Regulation

As the 2015 Roaming Regulation has already started to be applied, and the RLAH policy starts to be implemented after mid-June 2017, different opinions have emerged regarding to the possible economic consequences of it. This sub-chapter addresses the sub-question “What are the possible economic consequences of the Eu Roaming policy?”. Spruytte et al.(2017) mention three main impacts for telecommunication operators:

- a) Impact of geographical coverage. Multi-national companies with pan-European coverage may have an advantage over others, by avoiding negotiations and only considering wholesale as a normal cost. The following table shows the four largest pan-European groups and their subscribers summing the different countries of operation, demonstrating that an advantage over only-national operators in roaming may arise.

Table 4. List of largest MNOs by number of SIMs in the EEA (Digital Fuel Monitor, 2017).

MNOs	Countries in the EEA	Approx. SIMs (millions)
Vodafone	13 – CZ, DE, EL, ES, HU, IE, IS, IT, MT, NL, PT, RO, UK	119
Deutsche Telekom	10 - AT, CZ, DE, EL, HR, HU, NL, PL, RO, SK	90
Telefónica	3 – DE, ES, UK	85
Orange	7 - BE, ES, FR, LU, PL, RO, SK	80

- b) Impact for MVNOs. As already mentioned in previous paragraphs, MVNOs fail to be able to balance the traffic, as they do not provide infrastructure services. If the bundles offered by MVNOs are used in foreign countries, the virtual operators may have an economic burden not possible to compensate. Besides the traffic imbalance, MVNOs suffer from a weak position in negotiation. Their lack of volume and negotiating power against bigger MNOs affects in an even larger way their position, as they have larger wholesale costs in roaming than their competitors (BEREC, 2016a).
- c) Impact for MNOs: geographical location. This point refers to the different travelling patterns of countries, with Northern European travellers with a tendency to visit Southern countries such as Spain or Italy, not corresponded with those Southern customers' travel behaviour. Eurostat's tourism statistics (2017) show that while countries such as Luxembourg, Ireland and the Netherlands have between 25 and 12 average nights spent abroad per inhabitant, Southern countries such as Greece, Portugal, Italy and Spain have an average between 1 and 3 nights spent. This leads to an intention of Southern operators in keeping wholesale prices high, as Northern operators have no choice rather to use their services, and Southern customers do not have a travelling pattern to the North.<sup>1</sup>

Eurostat publications give some indication on how the touristic consumption is divided between income quartiles. The following table shows the number of nights spent by Dutch people, regarding their economic position, which is divided in four quartiles; the first quartile refers to the lowest income and the fourth quartile refers to the highest income.

Table 5. Nights spent abroad and economic position of Dutch citizens.

Economic position:	Number of nights spent (at least one night) in domestic trips by household income (2015)	Number of nights spent (at least one night) in outbound* trips by household income (2015)	Ratio Outbound: Domestic travel	Distribution of income in percentages by quartiles (2015)
1 <sup>st</sup> quartile	20.550.893	27.449.994	1,336	13,1
2 <sup>nd</sup> quartile	21.721.334	30.218.217	1,391	19,9
3 <sup>rd</sup> quartile	32.856.351	61.039.749	1,858	25,7
4 <sup>th</sup> quartile	18.184.032	48.889.654	2,689	41,2
Total	93.312.610	167.597.614	1,796**	100

\* Outbound refers to non-domestic trips.

\*\* Average.

<sup>1</sup> Cyprus has not been considered in the report, although it has an average of nights spent abroad per inhabitant over 20. This can be explained by two facts: the isolated location of the country and the close cultural relation with Greece, leading to increased travel by Cypriots to mainland, and the political division of the country between the Republic of Cyprus and the Turkish Republic of Northern Cyprus.

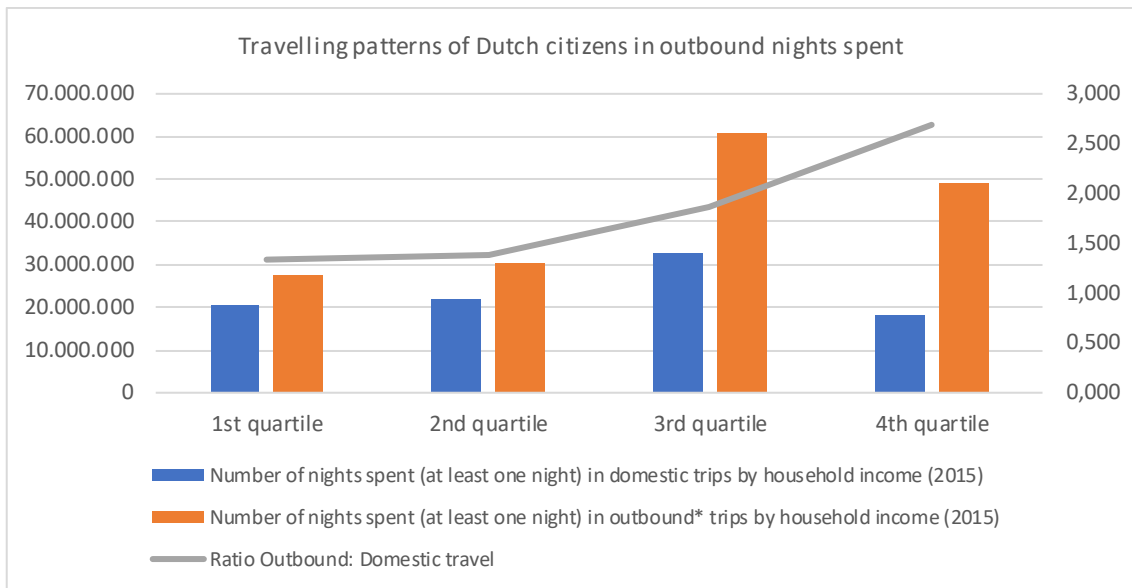


Figure 4. Travelling patterns of Dutch citizens in outbound nights spent.

Table 5 and Figure 4 also show that the higher the quartile, the more international nights are used, related to the domestic consumption. If MNOs/MVNOs need to raise domestic tariffs to compensate possible roaming losses, this leads to think that the lower quartiles of the population may “pay the lunch” of the higher quartiles.

The phrase “there is no such thing as a free lunch” may be used for this case. Operators in different countries could need to increase the domestic prices to compensate their losses because of roaming usage by visitors. Socially, this could have negative effects as customers who do not travel are compensating those who do, which in many cases are business users who do not need this type of regulations to use their roaming services. It could mean that users with lower income could be paying the fees of higher income population.

Some other consequences, related to technologic developments, may affect the way this regulation is implemented. Virtual or soft SIM technology is being employed by some operators across Europe. This technology allows to easily switch telecommunication providers, avoiding the need of physically swapping cards and configuring or changing numbers in each country. Smartphones with the feature of handling more than one SIM can keep their domestic service while buying a local virtual SIM and roam like a local. The system would allow the user to have the best prices of the market by using its domestic or foreign services depending on the prices. As telephones and SMSs numbers are maintained by the domestic operator, and inbound tariffs do not vary, the customer can send voice and SMSs by the virtual SIM if the prices are convenient, in relation with the domestic operator. The same happens with data services, especially in some countries such as the Baltic, where data prices are low (European Commission, 2016d) and foreign users may prefer to roam like a local rather than to use their domestic roaming service. The EC is aware of this fact, and ruled to keep the Local Breakout policy, which was developed in the 2012 regulation, active under the current RLAH obligations.

### 3.4.1 The challenge of IoT/M2M

One of the technologies that is growing in a fast pace is related to devices in the area of Internet of Things (IoT). IoT is not a specific technology, but a concept that includes those devices that traditionally worked independently from any world network, and now are being linked to the Internet. These devices may vary from household appliances to healthcare, from parking sensors to remote monitoring, etc. IoT systems are not limited to a specific communication technology and may use different standards, from RFID, Bluetooth, 3G/4G networks, among others. As the processing power of the devices increases and the access to the network becomes easier for the population, cheap hardware and software is being installed in places that were not predicted by the initial planning of mobile networks. Several challenges arise in this area, not only for connectivity but also for security, as the simplicity and lack of standardization of the devices make them

an easy target for hackers, and privacy becomes an issue. In case of interest, a general description of the challenges of the technology is available by Gubbi et al. (2013) and Miorandi et al. (2012).

IoT devices can be also part of the Machine to Machine (M2M) technology. M2M is a generic concept referred to the information link between two remote devices (machines). The difference between this concept and IoT, is that M2M is just responsible for providing IoT with connectivity so its capabilities are enabled (Telefónica IoT Team, 2013). However, although this minor difference, both concepts are used indistinctly by BEREC.

The regulators across Europe face several challenges regarding the mobile network adaptation to the technology, which has been initially planned for a different number of devices and systems. In 2014, it was estimated that 5 billion M2M devices were already in use across the world, where 256 million are connected by cellular connections. By 2024, it is expected that 27 billion devices will be connected, with 2,2 billion of them linked by the cellular network (Machina Research, 2016). With this significant growth, it becomes clear that networks need to promptly adapt to the new conditions.

The DSM strategy acknowledges the use of M2M devices in Europe, especially the issues related to the movement of those devices across the Union (Viola, 2015). Within this context, M2M has specific features that differentiate it from the typical roaming connection by a single user. BEREC has established guidelines to provide a legal certainty to the European NRAs with the new situation of the RLAH policy, as it has not been clear how to recognize when a device is a person or a machine, and even how the travelling patterns vary. More information can be found in BEREC (2016b).

As IoT devices become commonly used by customers across Europe, where many of them need roaming services, the roaming policy has a huge impact on the technological advances

### 3.5 The EC stance

In order to understand the justifications that led the EU to regulate, this sub-chapter aims to answer the sub-question *“What is the EC stance over the regulation?”*.

#### 3.5.1 The EC policy over regulation

EU Regulations are legal acts with general application across the members (and for the roaming policy, including the EEA), which are binding in their entirety (EUR-Lex, 1957, 2012). They may vary from trade-tariffs to sizes of fruits and vegetables, and are treated in a regular process starting from the EC, followed by approval in the Council and EP. As the regulation is sent by the EC, it strongly depends on the political thinking of the elected members of it, although it should later be approved by the other chambers.

The first influential EC commissioner that started with EU roaming regulations was the Luxembourgish Viviane Reding. As European Commissioner for Information Society and Media, Reding pushed forward the price cap regulation and started the 2007 Roaming Regulation Policy (European Commission, 2008). The regulation was later followed by the Dutch Neelie Kroes, European Commissioner for Digital Agenda. Kroes strongly continued the roaming policy and went even further by proposing RLAH, which will be finally implemented by the German Günther Oettinger, the new European Commissioner for Digital Economy and Society.

The path, which was followed by two different EC Presidents (José Manuel Barroso and Jean-Claude Juncker), shows a continuous strategy towards a DSM. However, the general regulatory policy has been in debate as different politicians and scholars do not agree with the degree of intervention of the EC into peoples' lives (Linacre, 2006; Renda, 2015). The EU has started a new process of improving how regulatory decision-making is done by strengthening preparation, improving consultation, confirming EU laws fit their purpose, ensuring quality, increasing cooperation among institutions and by cooperating in international regulatory discussions (European Commission, 2017a). Still, there is no explicit guideline explaining what should or should not be regulated by the EC (within the sovereign limits), leaving this to political debate among their EMPs (European Members of Parliament), Councillors and Commissioners.

### 3.5.2 Justifying roaming regulation

Regulation can be defined as “a process involving the sustained and focused attempt to alter the behaviour of others according to defined standards or purposes with the intention of producing a broadly defined outcome or outcomes” (Black, 2001). The EC has repeatedly argued and justified the regulatory movements in market failures, which according to Black’s definition it would mean the EC tries to have a competitive market as outcome. According to Neoclassical Economics (NCE), the intervention of the EC can be explained by the non-optimum behaviour of mobile roaming markets across the EU. NCE justifies the intervention because of three situations (Correlje & Groenewegen, 2009):

- a) Public goods: when actors cannot be excluded from the consumption, and the consumption of the good does not reduce the availability of it to other actors. Example: highways in the Netherlands.
- b) Natural monopoly: when the most efficient way of producing is a monopoly, due to the nature of the technology. Example: electricity transmission in New Zealand.
- c) Externalities: Behind the already considered costs and values of a policy, there are costs and benefits over people that have not been directly involved in the decision making. Example: opening a new factory in a city may imply to increase traffic, leading to disadvantages to people who use roads through the city every day.

From these definitions, we can deduct that the European mobile roaming market does not apply for the first two cases. Firstly, mobile roaming is not a public good, as consumers can be easily excluded (blocking the services) and the use of some consumers may limit the use of the others, by limiting the spectrum availability. On this point, it could be argued that although mobile roaming could be blocked, this does not happen with other data access points abroad such as WiFi hotspots. However, the experience of searching for WiFi hotspots abroad is distant from the mobile roaming experience, and this research considers it cannot be comparable as it creates difficulty on the users.<sup>2</sup>

Secondly, mobile roaming across the EU cannot be considered a natural monopoly, as the liberalization implemented by the EU in the early 90s has led to increased competition between actors and reduced prices to consumers (Liikanen, 2001; Pons, 1999). It may be said that certain companies have advantages regarding their roaming deals because of their size or branches, but a monopoly is clearly not the case.

Regarding the third case, externalities do exist in the telecommunication market. External effects such as development of other industries, the increase in travel among citizens, etc., can be considered as positive (or negative) externalities of the telecommunication industry. Models show that a good policy in ICT leads to industry development, and finally configures an increase in socio-economic impact (Katz, 2009).

However, the argumentation of the EC is focused on the immobility of the market prices. Mobile roaming subscription prices were not decreasing until the price caps were introduced. The situation leads to think NCE is not enough to understand the EC decision on regulating the market.

New Institutional Economics (NIE) can help by providing the concept of transaction costs. Different actors are bound to rationality and behave opportunistically, leading to a different behaviour as actors protect themselves from others. NIE can show an important failure of the initial roaming market. Table 5 shows the list of the largest MNOs across Europe and their investments across different countries. As mentioned in sub-chapter 3.4, these operators have an advantage by reducing their wholesale costs, as they buy and sell roaming services between their own branches. By having reduced wholesale costs, retail prices can also decrease in comparison with smaller or only-national operators. The situation can create an oligopoly, as

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<sup>2</sup> This assumption is difficult to be demonstrated without a research that compares the user experience between mobile roaming abroad and the use of WiFi hotspots. However, it cannot be denied that a true seamless data solution across countries cannot be performed with WiFi hotspots, which are mostly located in unknown locations for the travelers and may also create a burden, as there is a need to configure a device to access it (even if it is as simple as touching a button and filling a form).

few big players may dominate the market, while smaller operators could suffer from price pressures and low bargain power. It can also be argued that operators behave in an opportunistic stable market, as no party is too interested in lowering their prices. Besides the behaviour of pan-European companies, this chapter showed that roaming became an important source of income for smaller domestic companies; thus, there is no real incentive by parties to lower their prices and the EC needs to regulate.

Different from the two previous perspectives, the Original Institutional Economics (OIE) provides a diverse version of human nature, by considering a self-interested behaviour based in three wishes: equality, liberty and security. This evolutionary perspective shows that choices of institutions are not always based on efficiency, but also on pre-defined mental models, shaped by environmental and social structures (Correlje & Groenewegen, 2009). For the case of mobile roaming, OIE could focus on possible public values changes regarding with intra-European integration and the internalisation of the effects of integration into the policy. When I refer to intra-European integration, I assume this not only includes the economic value of it, but the social and emotional values within, which will be discussed in further chapters. Thus, OIE gives insights regarding the justification of the EC in intervening the market, due to more aspects than just market-failure, although this is not explicitly addressed in the official justification.

### 3.6 Summary

Starting with an initial description of roaming and its markets, this chapter summarized the history behind the regulation and how the EU has been justifying intervention in roaming markets. An analysis related to the economic theory behind the justification is performed. In conclusion, this chapter has addressed the question **“What is the EU Roaming policy?”** and its sub-questions:

**a) *What do we refer with roaming?***

Mobile roaming is a concept that includes the different information technologies that allow users of mobile devices within a domestic cellular network to travel across different countries with a seamless experience.

**b) *How roaming markets work?***

Roaming markets can be differentiated in two cases: wholesale and retail. Wholesale markets are those where MNOs and MVNOs develop agreements in price and billing mechanisms to allow their customers to roam abroad. These agreements allow the telecom operators to provide services in the retail market, which is the contract relation between the customer and the operator.

**c) *How the EU Roaming policy has been developed through the years?***

The EC has tried to regulate the market since 1997, promoting transparency in prices and forcing infrastructure sharing among operators. By 2002 the EC began a revision process which ended in the 2007 Roaming regulation, a first attempt to limit the high level of prices of roaming services across the EEA. After three revisions of the policy (2009, 2012 and 2015) and the political decision of aiming towards a DSM, the RLAH policy was created, allowing users of mobile services (voice, SMS and data) to avoid extra charges of roaming while travelling across the EEA.

**d) *What are the possible economic consequences of the EU Roaming policy?***

Some economic impacts are already being considered as highly likely after the implementation of RLAH: a) the impact of the geographical coverage with multi-national companies, who benefit from their pan-European licenses; b) the traffic imbalances of MVNOs that generate uncertainty in their business plans and; c) the different impact over the MNOs depending on their geographical location, as touristic areas may receive the higher benefits of the policy. A socio-economic perspective leads to argue that the population with the least resources may be “paying the bill”, as they do not use as many roaming services as the higher income population, but they can anyway be charged to compensate for the roaming expenditure of the richest groups. Finally, a debate is proposed regarding the IoT devices, which can alter the rules of the game and provoke a need to restructure the regulation. IoT devices may provoke further

modifications in the actual regulatory framework, as new products that need partial or constant roaming services disrupt the actual marketing strategy of operators, together with their costs.

***e) What is the EC stance over the regulation?***

The EC has justified the first roaming regulations by economic reasons, specifically because of the immobility of prices. When the new EC strategy of DSM was implemented in Barroso's administration, followed by Juncker's presidency, the institution considered roaming as a major topic. The abolition of extra charges for users could not only lead to reduction of prices for users, but to improve the business opportunities and general wellbeing across the EEA. Although the EC does not acknowledge, the OIE perspective could explain social motivations behind the policy, including political motivations, based in a common mindset across citizens related to the values involved.

In conclusion, this section showed the development of the EU roaming regulation and how it mutated from a price cap limitation to improve the market to a strategic decision of DSM with RLAH policies. The justification of the policy is not entirely explained by mainstream economics, although market failures and possible oligopolistic behaviour are found. OIE may be used to explain the internalisation of externalities into a "bigger purpose" such as DSM, although this thesis will not deeply analyse these aspects. The question that can be still inquired is how can the public values be considered within the economic aspects of the policy, as there is not only a problem of measurement, but even of definition.

## 4 Public and social values

As mentioned, the scope of this thesis is to research the impact of public and social aspects of the EU Roaming Regulation policy in the Dutch market. The previous chapter showed the legal background of the policy and an approach towards the economic consequences of it. The EC, together with BEREC, focused on economic aspects of the regulation and justified across the different proposals (2007, 2009, 2012 and 2015) a need for action related on creating a European single market. However, no deep analysis on the impacts in public and social values have been done.

The different reports have shown an economic perspective to justify the regulatory policy, avoiding researching intangible values that could affect the well-being of the citizens. This chapter will provide an analysis over the definitions of public and social values, followed by a discussion related to how they may coincide and/or collide. It is proposed to answer the research question: **“What are the social values of telecommunication regulation?”** with its three sub-questions:

- a) What are public values?
- b) What are social values?
- c) What are the key social values impacted by the EU Roaming policy?

Firstly, an introduction to the concept of public values is done, discussing the different perspectives on what is meant with “public”, how public value can be created and destroyed, and how to consider or try to measure the public values. The full costs and values of a policy are used, considering non-measurable aspects which are not considered by the economic analysis.

This is followed by an introduction to social values, and a literature review on the most important authors that have researched within the concept. An adapted definition of social values in policies is created, and the concept of what is “social” is limited within the cultural scope of the Netherlands. Aiming to search for the social values involved in the roaming policy, a literature review in telecommunication and regulation values is performed, and with the help of experts, a final extensive list of values that could be applied to this thesis is obtained.

### 4.1 Public values

The first sub-question to answer is *“What are public values?”*. Different approaches can be found of public values, but several scholars reference Mark Moore’s (1995) research (Meynhardt, 2009; O’Flynn, 2007; Smith, 2004; Spano, 2009; Talbot, 2011), which can provide a starting point. Firstly, the words value and public should be analysed, to create a proper definition for the future steps of the research.

#### 4.1.1 The rhetorical idea and the creation of public value

Moore argues about the “rhetorical idea” of the analogy between private and public value (Moore, 2014). If private managers work to create private value, then public managers should work to create public value, using public assets. The idea sounds compelling at a first sight, although it depends on the economic perspective if it can be considered sound.

The notion assumes the government has a “task” of creating value, clashing with the libertarian idea of governments as a neutral party to provide order and rules. According to the Neoclassical Economics’ (NCE) perspective, governments should intervene only in cases of market failures such as public goods, natural monopolies and externalities’ problems, based on the rational decision-making of Adam Smith’s theory: the invisible hand of market competition will force the different parties to adapt (Correlje & Groenewegen, 2009). Moore states: “The word value implicitly rejected neoliberal ideas that sought to limit government’s concerns to technical efforts to counter various forms of market failure” (Moore, 2014, p. 465). Talbot (2011) complements arguing the public sector can be positively considered in public values if it aims to the make the “good society”, and it does not need to act only in cases of market failure.



It seems clear that markets do not behave perfectly and governments are needed to perform enforcement and regulatory tasks. However, the number of extra-tasks a government can perform besides the minimum required to avoid market failures greatly depends on other factors such as the culture, values or history of a nation. What a Latin-American citizen can think of a public value may not be the same as the European perspective. This can also occur within countries inside a continent like Europe, with very different types and qualities of services provided by governments. Health services, tolls in roads, military services, etc., are government services that can differ from country to country and region to region.

Besides the above fact, the idea of governments intervening to achieve market perfection avoids the debate over public preferences (Kelly, Mulgan, & Muers, 2002). A government cannot stimulate markets of products that do not have public approval, such as body parts, leading to think that there is something more than just economic concepts in the decisions and leaving the NCE perspective short-sighted.

The concept of “public” is linked with democracy, as it is “the people” through their representation both in their voice, direct voting or by their elected representatives that value not only their individual interest, but the interest of others and the overall conditions of the society (Moore, 2014). The idea also seems to contradict NCE’s perspective of rational-decision making behaviour, as citizens can decide to benefit others without receiving any monetary advantage. Democracy does not limit citizens to only think about themselves, and they may shrink or broaden the scope of people they want to affect (both positively and negatively).<sup>3</sup>

The situation is addressed by Talbot (2011), in a framework with three concepts that summarize public values: self-interest, public interest and procedural interest.

- a) Self-interest refers to the neo-liberal perspective. People demand good quality and efficient services from the government while paying the minimum possible.
- b) Public interest explains the aim of citizens towards improving the common good by providing taxes.
- c) Procedural interest shows a new concept of how citizens need fairness and equity, together with a due process. Users may trade-off efficiency for a fairer process of decisions and sometimes, every party could end up losing by participating in a “proper” procedure.

These concepts clash between each other, and show a more complex scenario in the decision-making process in comparison with the classical economic perspective. If institutions need to address how the population thinks about the effects of a policy, the use of monetary arguments only cannot be considered enough.

Moore (2014) evaluated the different questions that an institution or a person asks to determine how public is a value. When a social condition is evaluated, these questions may help to assess how public is the value mentioned, and give insights to further analysis related to costs and benefits of it. The next table, obtained from Moore’s research, shows the different degrees of publicness of social conditions.

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<sup>3</sup> It is assumed that democratic societies “protect and encourage individuals to develop and act on their own individually held views of what they would like to do for others as a matter of altruism, how they understand their duties to one another as a matter of moral obligation and how they envision a good and just society” (Moore, 2014, p. 466)

Table 6. Degrees of "Publicness" in the Valuation of Social Conditions (Moore, 2014).

		Valued Objects			
		Less Public -----> More Public			
		Material Welfare	Welfare of Others	Duties to Others	Concepts of a Good and Just Society
Arbiters of Value	Less Public ↓ <b>Individuals</b>	What do I think is good for me?	What do I think is good for family, friends, neighbors, and fellow citizens?	What do I think I owe to family, friends, neighbors, and fellow citizens?	What conditions do I think characterize a good and just society?
	↓ <b>Collective I : Social Movements/ Voluntary Associations</b>	What do we private individuals want to do together to promote our material well-being?	What do we private individuals want to do together to help needy or deserving individuals?	What do we private individuals think we owe to one another as a matter of civic or public duty?	What do we private individuals think constitutes a good and just society, and what would the pursuit of that ideal require of us?
	↓ <b>Collective II: Democratic Government and Public Policy</b> ↓ More Public	How do we citizens want to use the powers of government to improve the material welfare of individuals in society?	How do we citizens want to use the powers of government to improve the material welfare of particularly needy individuals in society?	How do we citizens want to use the powers of government to protect the rights and impose the duties associated with citizenship in society?	How do we citizens want to use the powers of government to create a good and just society?

#### 4.1.2 The destruction of public value

There is a close link between the concepts of "value" (economy) and "values" (human, social, etc.). Wrong decisions based in inappropriate "values" may lead to the destruction of public "value" (Kelly et al., 2002). Spano (2009) sustains three situations can provoke a loss in value:

- a) the needs to be satisfied, refers to a bad decision by decision-makers to choose certain policies with lower public value creation over others. The situation creates a loss of potential public value, besides the possible legitimacy consequences of citizens, losing trust in decision-makers. Example: a municipality develops a sport programme, although citizens were expecting an improvement in transport to the city.
- b) the strategies to satisfy the selected needs, refers to the correct selection of the needs to be satisfied, but a wrong strategy taken to solve them, leading to a lower satisfaction than expected. Example: a municipality decides to go forward with the improvement in transport, but the plan distorts the city movements for 15 years. During this time, the population does not get any benefit and suffers the problems related to the construction.
- c) the processes to produce and deliver public services, refer to complying with both needs and strategy, but not the way the services are created and delivered. Example: a municipality develops a new public transport system on time, but the frequency of buses, trams and trains are not as expected.

Public values take time to be developed, leading to another weakness: constant changes in values. Citizens engage in debating and they may change their perspectives with discussions or experience (Kelly et al., 2002). A constant overview of public perspectives is needed in order to adapt policies and actions to the altered public opinion, especially in projects with long-term span.

As mentioned, bad decisions do not only produce a loss of potential public value, but a reduction of trust and legitimacy on the authorities. The next sub-chapter will describe the costs of developing policies in public values, behind the monetary and measurable costs.

#### 4.1.3 The value and cost of public values

Public values not always imply monetary terms. As mentioned in 4.1.1, public interest and procedural interest reflect that citizens' views over policies are not related to cost-benefit relations of tangible assets only. Granting coercive powers to the government, disclosing private information, giving time to activities, etc. are examples of actions citizens may be able to perform (Kelly et al., 2002), but difficult to measure in the traditional mainstream economics perspective.

Figure 5 shows an adaptation of Correljé & Groenewegen's (2009) and Rogers et al.'s (1998) concepts of costs and values for a good. The adaptation is based on the concepts of public values behind mobile roaming policies and gives an approach of a framework towards next chapters.

Costs				Values		
Intangible Externalities			<b>Full Cost</b>	Intangible Externalities		<b>Full Value</b>
Economic Externalities		<b>Full Economic Cost</b>		Value of Strategic Effects	<b>Full Economic Value</b>	
Opportunity Cost	Price			Value of Indirect Effects		
Capital Charges	<b>Full Supply Cost</b>	<b>Value to Consumers (Price)</b>				
Maintenance Costs						
Operation Costs						

Figure 5. Costs and values of mobile roaming policies.

On the left side, the costs are detailed. Firstly, O&M and the Capital Charges explain the cost of the supply of the good (roaming mobile services), which includes the domestic costs and the deals achieved between MNOs/MVNOs to supply international services. These costs vary from country to country, and if the MNOs/MVNOs are part of the same business group or not. The Opportunity Costs are added to reach the price of supplying the service. This price is in both wholesale and retail markets regulated, so the opportunity cost is limited by regulation.

After the initial cost and price, two other costs may explain the entire picture. Economic Externalities refer to those costs that are not considered in the price, but have an economic impact on the different actors. For example, if international mobile roaming regulation leads to the destruction of some of the MVNOs, this could lead to negative economic externalities and an increase in the Full Economic Cost.

On the right side, values are detailed. Firstly, the Value to Consumers is related to the price the users are willing to pay for the service. Nevertheless, the economic value can be considered higher thanks to Indirect Effects such as the increase in work productivity across the EU, and the Strategic Effects such as how the EU is positioned globally in the mobile industry development.

However, in both costs and values, there are Intangible Externalities, which are those externalities that are not considered explicitly by decision-makers. These are the hardest to consider, as they are not always clear nor measurable, and may strongly vary from country to country, or even area to area. The political position of a citizen towards a government, the way the policy is defended, the values of a culture, etc., could affect the determination of the cost and value of a policy. As an example, countries with high democratic values may consider highly valuable to invest in electronic polling stations, while others may believe this investment is too costly. The opinion of citizens is not always based in rational-thinking but, as explained above in Talbot's theory, by a combination of self-interest, public-interest and procedural-fairness.

The modern concept of Intangible Externalities was initially built by Thorstein Veblen (1923) and defined it as "(...) the present value of the future bargaining power of capitalists" (Commons, 1934, p. 651). This concept was different from other perspectives about intangibility, such as the ones determined by the United States Supreme Court, that accepted the intangibilities always with a "reasonable value" (Commons, 1934, p. 651). The two visions show that although intangibilities are considered in any business, they also have their limitations if a "reasonable value" concept is used.

Original Institutional Economics (OIE) may also provide insights regarding Intangible Externalities. As mentioned in Chapter 3, OIE assumes citizens wish to fulfil three main wishes: equality, liberty and security. Nevertheless, each society has pre-selected choices within shared mental maps by actors, leading to a collective behaviour that can alter the costs and values of Intangible Externalities. Connecting this concept with Hofstede's theories, the pre-selected choices of users may strongly depend from the cultural background; thus, what the Dutch population considers of a public value may differ from another country's perspective. In order to understand how these effects can be considered and to obtain a first insight over its importance, the following sub-chapter will develop the concept of social value and how shared mindsets, culture and emotions may play an important role on the value users give to a policy.

## 4.2 Social values

Sub-chapter 4.1 provided an approach on the concept of public value. Within public values, different types of values can be included such as artistic, historical, social, cultural, economic, etc. (Spano, 2009), which may be difficult to measure and define. Decision makers, and especially in this case the EC, use economic values as main criteria to decide. This may happen because economic values are easier to define, measure and compare, while others such as historical or social may not be easy to describe or to determine how the outcomes affect the population. Also, economic values can be materialized, as citizens use monetary units to describe the value of something.

It is true that other types of values can also be monetized by using, for example, the idea of Willingness To Pay to understand how much a person believes that value is worth. However, the difficulty of measuring these non-economic values transform the economic ones into those more commonly used and accepted, as they can seem "less subjective". In order to assess the effects of the mobile roaming policy regarding social values, it is needed to understand what do we mean with this concept; hence, this sub-chapter answers the sub-question "*What are social values?*".

Firstly, the concept of value differs from the purely-economic version. The value of a product has a different meaning than the values a person has, and in this sub-chapter the latter will be referred. Without entering into a philosophical debate on the definition of value, which has been extensively discussed by different experts, this research uses the following definition: "(Values are) enduring beliefs that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach, 1973). For further analysis of the definitions of values, it is recommended to read "Values: Reviving a Dormant Concept" by Hitlin & Piliavin (2004).

Social values can be defined as "(...) socially collective beliefs and systems of beliefs that operate as guiding principles of life" (Tsirogianni & Gaskell, 2011). Adapting this definition to the thesis scope and providing a socio-economic perspective, the social value of a policy can be defined as the worthiness that the socially collective beliefs and systems of beliefs give to the policy. Those values that determine the total social value of the policy can be considered within the system of beliefs.

The definition is not clear on how broad is the concept of "collective". The meaning of this adjective is extensive (Oxford Dictionaries) and could be applied from a group of nations to a group of friends; thus, it is needed to clarify the scope of the definition. To align with the scope of the thesis, the collective extension will be considered within the Dutch nation.

Hofstede et al. (2010) argued that societies are different from nations. The first ones come from a historical developed societal organization, where members share culture (values, rituals, heroes and symbols), meanwhile the latter is a rather new concept based in political units. Although in many cases nations do

share the same culture as societies, this is not always the case as it can be seen in different colonial divisions in Latin-America, Middle-East or Africa where people are divided by political borders but not by culture. However, the need to classify and order information leads to the divisions into nations, as these have defined boundaries and facilitates the organization. Without debating about the different Dutch regions, religions or dialects, this thesis will assume the Netherlands to be a single nation and a single society, which coincide among each other. This could be considered a daring hypothesis, but it is needed to limit the scope of the research.

The “collective belief or systems of beliefs” can be considered within the concept of culture. If it is assumed societies share a common culture and, for this case, nations are equivalent to societies, it can be argued that the Netherlands has a common culture within the country. By using this simplification, the different data gathered to understand social values among the country will be assumed to be uniform.

Social values are also difficult to limit with strict boundaries. What some persons may think about how “social” is one value, may be different from another. Democracy, for example, can be considered a political value or a social value, depending on the perspective of the respondent. This also happens with economic and environmental aspects, which are tough to limit with definitive boundaries.

As mentioned in the previous sub-chapter, the weight of these values over a policy may also be difficult to assess. To obtain a clearer picture about the social values involved, it is firstly needed to understand what are the values that are mostly affected by telecommunications and roaming services, and regulation.

#### 4.2.1 The social values in telecommunications and international mobile roaming

Telecommunications have been one of the driving forces towards improving human development in the last era. Since the invention of the telegraph, followed by the telephone, radio, television and internet, telecommunications have become a transversal sector in the society that has affected each person in the world and have been the driver of the information revolution. The effect on the society has not been only economic, but also social and cultural as improving communication allows to facilitate the flow of information between people, companies and institutions. However, aiming to understand what is the social impact of telecommunications, it is firstly needed to find what values are the most important.

González (2015) argues there are two types of values in technology; internal and external. Internal values are those of endogenous characteristics and contribute to what technology is and ought to be. They are of extreme importance regarding the possibility, operability and availability of telecommunications. On the other hand, external values are exogenous and relate to the context of the technology such as the legal, social, environmental, etc. aspects. This differentiation can be used also with policy-making processes. While internal values may be related to how the policy is processed, regulated, applied across countries, etc., the external values are the different exogenous effects of it. For this case, the external values González mentions are considered, particularly those social.

Another strong statement from the author is related to the fact that “(...) technology is ontologically social as a human doing (...)”; thus, it “(...)can be evaluated according to values accepted in the society”(González, 2015, p. 15). Again, the same argument can be used on the EU Roaming policy and considered that as it is a human construction, it can be assessed with human (or social) values.

Friedman et al. (2006) list 12 different human values that may be important for the areas of ICT, related to Value Sensitive Design (VSD); human welfare, ownership and property, privacy, freedom from bias, universal usability, trust, autonomy, informed consent, accountability, courtesy, identity, calmness and environmental sustainability. As it can be seen, these values may justify the importance of telecommunications for the EC, but not the creation of a pan-European market itself; probably only the value of identity could be used as a social (and individual) value of the policy. Although some analogies related to technological and policy values have been made, Friedman et al.’s approach shows that technological design may not be aligned with policy design as the expected situation varies: one is aimed into the technology itself, while the latter is aimed on the public good. Thus, the uncertainty is related to what are the values needed to comply with the ends of policies. Dewey (1952) argues that ends should be

determined by rational democratic decision-making but it does not seem easy to use rationality when other aspects of human experience are involved such as emotions (Mitcham, 2015).

Emotions play an important role in peoples’ decision making. Sometimes seen as a distortion of the rationality of decisions, emotions may reveal important personal and moral values which could be directly aligned to rational thinking (Desmet & Roeser, 2015). Telecommunications, being part of the technological world, invoke “side effects” that can cause, for example, happiness or sensorial pleasure, in both individual and social life. The discussion regarding the real reasons behind emotions could lead to analyse different scholars who research in areas related to how to rationalize those values, but this is not the aim of the research.

Social values can even be found in legal texts related to telecommunications. The International Telecommunication Union’s (ITU) Constitution (2011), in the Preamble of the text, acknowledges the importance of telecommunications with the concepts of preserving peace and social development among the states, facilitating peaceful relations and international cooperation. These values are complemented by universality, which is addressed by promoting the general access of telecommunications in all geographical areas (Huldtgren, 2015; MacLean, 1997). Many other values can be considered within telecommunications and roaming and, as mentioned in the previous sub-chapter, it is very hard to limit the scope of a value and strictly categorize it within a group. There is no vast scientific literature regarding the social values in telecommunications; thus, the opinion of experts may provide insights on the topic.

In order to detect which are the worthiest social values for the different stakeholders, it is helpful to limit their number first. The methodology requires interviewing different actors of the EU Roaming policy and assess which social values are the most considered by them. However, some open lists of values may have more than 400 options (Clear, 2017; Hilrich; Pavlina, 2004), which would be hard to consider for the interviewees. By personal brainstorming and receiving feedback from experts at ACM, a shorter list has been done. The following table is an arbitrary example that shows the list of values with many possible candidates that could apply to this topic.

*Table 7. Examples of social values applied to telecommunications.*

Accessibility	Constitution of rule and law	Fairness	Integrity	Rationality	Synergy
Approachability	Control	Flexibility	Interdependence	Reliability	Trust
Autonomy	Democracy	Freedom	Justice	Resilience	Unity
Availability	Dependability	Friendship	Love	Respect	Universality
Awareness	Diversity	Generosity	Openness	Safety	Vision
Closeness	Economy	Growth	Peace	Security	
Community	Efficiency	Happiness	Power	Sharing	
Competition	Empathy	Harmony	Presence	Simplicity	
Connection	Equality	Integration	Prosperity	Stability	

As it can be seen, the amount of possible values to be considered within telecommunications is vast. Social values can be also considered as a combination of personal values; thus, personal values are determining the social values. This is a very discussed argument, as it would imply admitting the existence of free will, something that the deterministic philosophical approach denies. If the society determines the acts of people or the people determine the acts of the society, is a non-solved matter and could be even considered one of the most debated in the history of philosophy (Kane, 2005b). The thesis will not consider this discussion in depth as the research could lose its focus, and it is recommended for those interested in the topic to read Kane’s (2005a) work.

This is also connected with the political perspective of the population, which is linked with the social values. Schwartz et al. (2014) argue that personal values can explain core political values, and that they can be differenced. For example, people who consider security as a high priority may tend in favour of nationalistic

policies. However, aiming to simplify the scope of the thesis, it will be assumed that social values include the combination of personal values across the society, which includes the political values in it.

The following questions to ask are which of those mentioned values are the most important and how can they be weighted. To provide insights on how the different actors of the policy assessed the EU Regulation and its costs and values, including those intangibles, the following chapter will develop a stakeholder analysis among the different actors of the EU Regulation.

#### 4.2.2 The social values in regulation

Regulation can be used to intentionally produce outputs aimed by governments. With a proper design, the policies can help in developing “modalities”, trying to change the individual behaviour (in this case, trying to increase the cross-border movements) or reducing the probability of an undesired outcome (such as citizens not using their mobile phones because of prices) (Yeung, 2015). This means that governments trying to improve the wellbeing of the population may design policies related to the social values of the citizens.

Correljé et al. (2015) address that when economists (or regulators) decide for a value of something, this decision is not value-free but based in a previous set of values, which underlie the decision. The authors connect the concepts of facts and values, as they are not exclusive, and the importance of the facts may be decided according to the importance of the values behind the policy.

In previous chapters, it was mentioned that there are different theories regarding why the EC started regulating the market. Assuming the NCE perspective is not enough to explain the regulatory decision, it can be argued that NIE can provide more complete insights of the situation. Players behave opportunistically using stable roaming prices which provide constant and extraordinary profits to their balances, showing market failures; thus, considering “there is no free lunch”, somebody is paying this failure. Indeed, the users have been the ones paying for these high roaming costs. It seems there are enough arguments to regulate the market in economic terms, but a social regulation may also be needed.

It is important to consider two different aspects of regulation, the “economic” and the “social” regulations (Crandall, 2003). The first one is related to the classical regulatory controls proposed to eliminate imperfect markets, such as control of pricing, entry conditions, etc. The second one seeks for other aspects, sometimes hard to measure, such as environment, health, etc. The clarification is indeed important, as economists usually observe the first type of regulations as the ones to be considered, although the social concepts, which address social values, are also considered by decision-makers. In the case of electronic communications, as an example, the idea of universal service may not be proposed within an economic regulation, but within a social one (Cawley, 2007).

OIE is closer to social regulation. Institutions such as de the EC do not only argue in purely rational and economic terms, but also within a common mindset. Social values may be enough to explain the regulatory intention from the EC in developing rules to improve the “European well-being” within a common set of “European” values, although those values may only be seen from the city of Brussels. OIE allows theories and models which have more than one dimension as they are not only driven for efficiency (Correljé et al., 2015), allowing a more complex environment where policy makers can work

Nooteboom (2014) argues that besides the idealized notion of perfect competition of economists, where regulation could help to avoid non-perfect behaviour, there are more human and less technocratic concepts to be addressed. He acknowledges four types of markets: idealized, social, cooperative and humane, and argues that only the humane market, where markets are limited if the “good life” is harmed, may provide the best option for a market. Although it can be said that “good life” could be added to a utilitarian perspective, this thesis mentioned the difficulty of measuring some of the concepts that could develop this “good life”. This notion is closer to OIE, showing mindsets or pre-defined knowledge that confronts with the rational decision-making of economic theories.

If Nooteboom is right, and using Crandall’s concept of two different regulations, it can be said that EU regulation itself has more than just economic values. The social well-being can be improved (or damaged)

by properly regulating the market, as it can affect values not always considered by the economic regulation. However, it is clear that still the most important aspect of regulation on public utilities is to give access to the service to the largest amount of people with reasonable prices (Melody, 1997).

By analysing the previous literature, some social values can be easily obtained. Firstly, the affordability and universality of the service of telecommunication is paramount in any policy. The EU Roaming regulation aims to lower the prices and facilitate the usage of roaming for European users; thus, it could be said that universality and affordability may be social values of this roaming policy. On the other hand, regulation intends to compensate those imperfections that do not align with the idea of competitive markets, so it can be argued competition is also a social value carried by the concept of regulation. The freedom of decision by users (Nooteboom, 2014) may also be considered a social value, as more competitors play in the same market. Finally, regulation can be done not only for economic purposes, but also for social ones. This refers to the notion of representativeness, as the social will is represented by a group of actors that propose the regulation.

The following table can summarize the values obtained in the literature review:

*Table 8. Social values applied to regulation.*

Affordability
Competition
Freedom of choice
Representativeness
Universality

#### 4.2.3 Towards a list of social values

As the list of possible social values within both telecommunications, roaming and regulation is vast (see Table 7), it is hard to be used to question different stakeholders. Some of these values may not be of great importance and others may partially overlap, both increasing the difficulty of the assessment procedure of stakeholders. Thus, it is proposed the determination of a reduced list of social values with the help of experts in these areas of interest, aiming to reduce the complexity of the methodological application of the BWM, described in the initial chapters of this thesis. This sub-chapter answers the sub-question “*What are the key social values impacted by the EU Roaming policy?*”.

Four different experts were considered within the analysis. The long list of values is used as guidance for them, although they are allowed to select other values not previously considered in the research. Via electronic mail, the experts were asked: “Regarding the EU Roaming policy, what are the social values you believe are most importantly affected by the policy? Please list up to 10 values”. The limitation on the number of values is done to avoid increasing the complexity of the Best-Worst Method, that will be used in further steps. Several values are overlapping (example, democracy and republicanism), a fact that may become a problem for pairwise comparison. Also, the number of experts was limited to four due to time-constraints of the research.

Besides the experts’ opinions, two other methods were used to determine values. Firstly, the literature reviewed performed in this chapter and chapter 3 is used to include those values that could not have been considered by the experts, but are still detected in the research. Secondly, the interviewees performed with the involved stakeholders of the policy (which are detailed in Appendix IV) added insights on their vision regarding values.

It is important to clarify this research acknowledges that the method of asking experts for their opinion about social values and creating a summarized list mostly based on this information is a limiting factor of the thesis. This point is addressed in chapter 10, where the reasons are properly explained. The experts interviewed, the surveying process, the added values of the stakeholders and their answers can be found in Appendix IV.



Finally, a summarized list can be obtained from the experts' opinions plus the added social values, together with the definition of each of them:

*Table 9. List of social values considered for the research.*

Social value	Definition
<b>Accessibility</b>	Refers to the possibility of using the roaming service across the EEA.
<b>Affordability</b>	Refers to the financial capacity of a person to be able to use the roaming services across the EEA.
<b>Approachability</b>	Refers to the benefit obtained by users because of the easiness to be in contact with another person by roaming services.
<b>Availability</b>	Refers to the value of having a mobile service ready to use abroad.
<b>Certainty</b>	Refers to the value of being certain about a situation or scenario.
<b>Competition</b>	Refers to the value of different parties competing within a market.
<b>Connection</b>	Refers to the value of connectivity for the society.
<b>Control</b>	Refers to the value of being able to control something or someone.
<b>Democracy</b>	Refers to having a society within a system that allows each citizen to be represented towards a government with equal rights.
<b>Economy</b>	Refers to having a healthy economic background within a society.
<b>Fairness</b>	Refers to the benefit of having fair prices (not abusive margins).
<b>Flexibility</b>	Refers to the value obtained by having flexibility related to mobile communication abroad.
<b>Freedom</b>	Refers to the social value of being free to decide
<b>Freedom of choice</b>	Refers to the value of being free from any economic or regulatory aspect to choose regarding the roaming service.
<b>Friendship</b>	Refers to the value of being in contact with someone else with a relation of mutual affection.
<b>Growth</b>	Refers to the idea of growth in social terms.
<b>Honesty</b>	Refers to the value of being honest.
<b>Integration</b>	Refers to the value of closeness and interaction between cultures and nations within the EEA.
<b>Prosperity</b>	Refers to the value of a prosperous society in social terms.
<b>Reliability</b>	Refers to the value of relying or trusting the mobile service abroad.
<b>Resilience</b>	Refers to the value of having a roaming system that is able to maintain their correct status after being stressed by traffic.
<b>Safety</b>	Refers to the value of being safe thanks to the roaming service.
<b>Sharing</b>	Refers to the value of sharing something thanks to the roaming services.
<b>Simplicity</b>	Refers to the value of using mobile services abroad avoiding complex technical, commercial or regulatory matters.
<b>Transparency</b>	Refers to the value of being part of transparent processes.
<b>Unity</b>	Refers to the value of union among EU citizens.
<b>Universality</b>	Refers to making all people successful users of the roaming service (Friedman et al., 2006).

As it can be seen from the previous table, the amount of values is long and some of them may overlap because of their similar definitions.

### 4.3 Summary

Sub-chapter 4.1 has shown that the full cost and value of a policy does not depend only on economic costs, but also on intangible externalities. The different social effects, as well as the environmental and emotional, are hard to monetize and compare within a NCE perspective, and need to find methods to be considered in the policy debate. Decision-makers can use these effects in both positive and negative ways, but there is still a need for analysing how can they be properly addressed.

Sub-chapter 4.2 has given insights regarding social values and has created a definition of the concept in a socio-economic perspective. An introduction into the values of telecommunications and roaming has been given, and an initial and extensive list of possible values has been obtained.

In order to understand how important are these values, the next research step will develop a stakeholder analysis among the most important actors of the EU Roaming policy within the Netherlands. These actors will be assessed regarding their interests and positions, and their opinion related to the social values they consider important to address.

It can be concluded that the research question **“What are the social values of telecommunication regulation?”** and the following sub-questions have been addressed:

***a) What are public values?***

Public value is a complex concept that includes the economic value of the public good and those intangible externalities difficult to be considered by the mainstream economics' perspective. It refers to how much value something (in this case, the Roaming policy) has in the public sphere. The public sphere should not only include material impacts, but also social, emotional, political, etc. impacts that could also affect the public value.

***b) What are social values?***

Social values can be defined as “(...) socially collective beliefs and systems of beliefs that operate as guiding principles of life” (Tsirogianni & Gaskell, 2011). For this research, social values related to the concepts of telecommunications, international mobile roaming and regulation were used, and an adaptation of this definition was created. The social value of a policy can be defined as the worthiness that the socially collective beliefs and systems of beliefs give to the policy.

***c) What are the key social values impacted by this policy?***

The complete list of values can be found in Table 9.

## 5 Actor analysis of mobile roaming in the Netherlands

As chapter 3 introduced the discussion on the justification of the decision-making institutions into regulating roaming, and chapter 4 debated the concepts of public and social values, the methodology requires to obtain practical information related to the perspectives shown by the actors in the case of the EU Roaming policy. The thesis aims to determine the impact over the social values of the roaming policy; thus, it is needed to understand the insights, interests and opinions of the actors involved related to the policy.

Although users of mobile roaming should be considered to be the focus group in the research, as they are the ones that are mostly impacted in their social values by the policy, the different actors involved in the policy do also represent sectors of the society, which are affected by it. Discussing only the consumer's perspective would limit the findings of the research, as the impacts over the social values do not occur only to users, but also to organizations. This analysis adds value to the research, as it provides a broader perspective on the vision behind the regulation, obtaining information from actors that are not easily detected from the public perspective. Thus, this chapter aims to answer the research question: **“Who are the actors involved in the policy and what is their position?”**, together with the sub-questions:

- a) Who are the actors involved?
- b) What are the actors' problems?
- c) What is the power and position of the actors?
- d) How are they interdependent among each other?

An actor analysis, according to Enserink et al. (2010), may help to clarify values and arguments of each player, improve the quality of the analysis by research and map the positions, interests, resources and relations between the actors. Although actor analyses are done before policies are implemented, the proposal of the thesis is to create an ex-post analysis to acknowledge the different positions of actors and what values may they consider as more important.

Actors, or stakeholders, can be defined as “any group or individual who can affect or is affected by the achievement of an organization's purpose” (Freeman, 1984). There are no independent stakeholders and very few of them have a the power to unilaterally determine a policy (Johnson & Scholes, 1993). Low-powered stakeholders may try to interfere with high-powered towards moving the direction of a policy in a specific route; thus, a proper assessment of high and low stakeholders is needed to understand the position and behaviour shown in the policy.

Stakeholder analysis will be used as the actor analysis technique and the following steps are required:

- a) Formulation of the problem
- b) Inventory of actors involved
- c) Mapping formal relations
- d) Understanding the problem formulation of the actors
- e) Analyse interdependencies
- f) Compare the initial problem formulation with the findings.

### 5.1 Formulation of the problem

Stakeholder analysis requires formulating the problem as initial approach. This can be done from a problem owner perspective, or an analyst perspective (Enserink et al., 2010). For this case, the latter will be used. This perspective can be used after an initial exploration of the issues involved, which was done in the previous chapters. The problem of the thesis is how to address the social values involved in the EU Roaming

regulation. However, this is not a problem possible to address by stakeholder analysis techniques, as these are focused on practical, not theoretical problems.

In order to use this method, which can give rich insights on the actors' positions, a different formulation is needed. The problem proposal for this case is focused in how the policy can affect the different stakeholders, what are the gaps that move them to approve or disapprove it and the desires of them towards the implementation.

## 5.2 Inventory of the actors

A list of actors involved is required as a second step of the analysis, and to answer the sub-question "*Who are the actors involved?*". This list, although extensive, needs to be limited as the policy problem affects in different degrees every person of the continent; thus, the selection of actors will be properly acknowledged regarding the importance of the effect on their position. According to Enserink et al. (2010) and Mitroff (1983), different actor identification approaches can be used depending on the problem to be addressed and the accessibility to the information. The following methods are used for this analysis:

- a) Positional approach: Reviews the existing policies and provides a first identification of actors by their formal participation in the process. The research process can be seen in Chapter 3.
- b) Reputational approach: By using key informants with experience in the research area and asking to give their opinion on which are the most important stakeholders. A snowballing process may also appear, as the found stakeholder can lead to other new stakeholders (Wasserman & Faust, 2009). The reputational approach also applies to the interviews performed to the already considered actors, that can bring more players into the considered scenario.
- c) Social participation approach: By analysing which actors participated in meetings related to the policy. This is particularly important for lobbying groups, which may not be interested in publicly pressuring decision-makers. Information has been obtained from EU Integrity Watch (Transparency International EU, 2017).

This inventory produced an extensive list of stakeholders, where it can be seen that their interests may overlap or be contradictory. However, some of these stakeholders can be considered secondary, as their power or level of interest may not be high enough to be relevant for the thesis. The next-subchapter maps the different relations among them, aiming to determine their importance in the policy. The complete list of stakeholders can be found in Appendix II.

## 5.3 Mapping formal and informal relations

To analyse how actors interact with each other, it is important to map the formal and informal relations among them. Formal relations have been found on publicly available documents of every public institution, as mentioned in the social participation approach of the previous sub-chapter. Informal relations have been found by press articles or institutional definitions. The research into obtaining the relations has also been done on Chapter 3. Finally, interviews were performed with the stakeholders to verify the findings of the previous research. The following picture shows a first insight in the connections between the stakeholders:

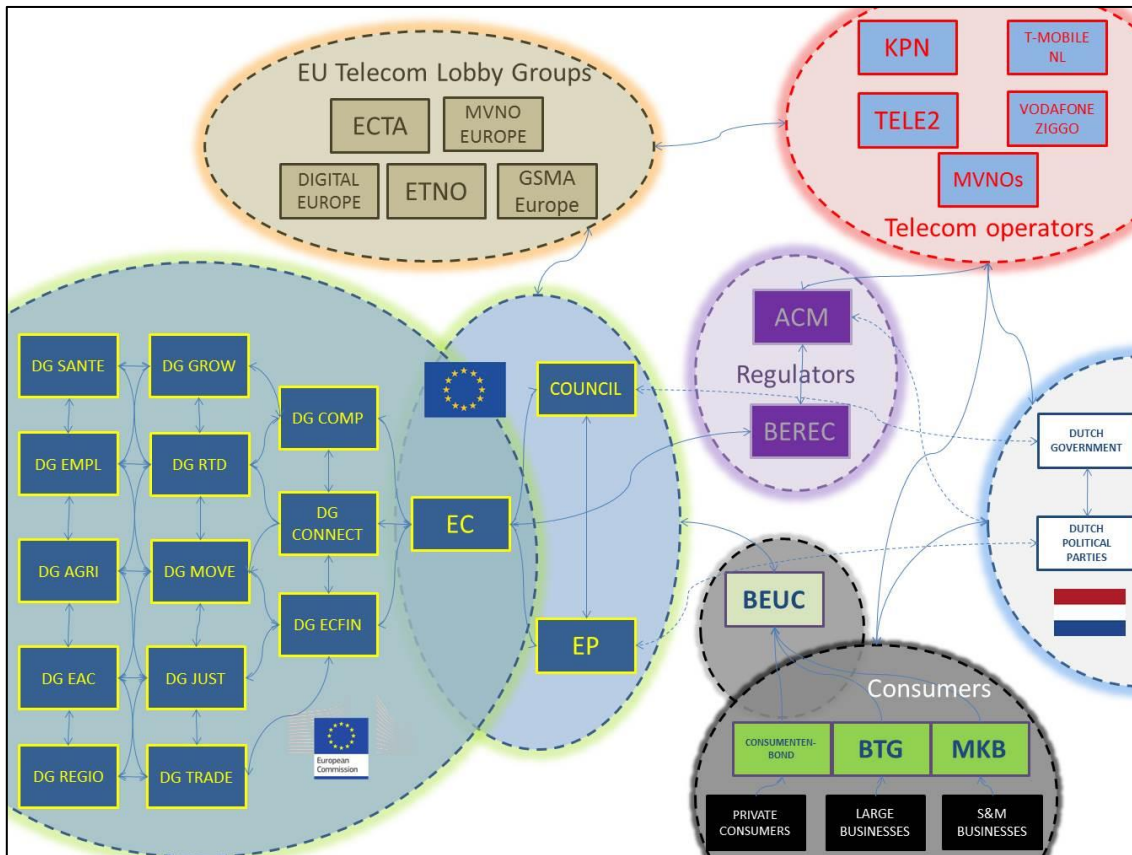


Figure 6. Stakeholders' map and relations.

The following groups can be detected:

Table 10. Groups and actors.

Group	Actor
European Commission	Every DG involved in DSM
	EC
European Union	EC
	Council
	EP
Regulators	ACM
	BEREC
Consumers	Consumentenbond
	BTG
	MKB
	Private Consumers
	Large Businesses
	Small & Medium Businesses
	BEUC
Dutch Politics	Dutch government
	Dutch political parties
Telecom operators	MNOs (KPN, T-Mobile NL, VodafoneZiggo, Tele2)
	MVNOs
EU Telecom Lobby groups	ECTA
	ETNO
	DIGITALEUROPE
	GSMA Europe
	MVNO Europe

The first group, the European Commission, is organized by the President, seven Vice-Presidents and twenty Directorate Generals (DG), each of them with one Commissioner. As it can be seen from the picture, not every existing DG has been considered within the scope of the analysis. This is because they have not been included inside the DSM policy, which englobes the EU Mobile Roaming policy. The second group is the European Union itself, with the combination of the European Commission, the European Parliament and the Council of the European Union. These three bodies determine the proposal and approval of legislation within the EU. The separation between DG-EC and EU-institutions has been done because of the different interests within themselves. Although all part of the EU, the EC-DG relations are executive policies and each of the units within the EC may have different interests (such as ministries within a domestic government) and the complexity of understanding the final behaviour of the EC may increase. Meanwhile, the EU main institutions also have different behaviours as the interests of the EP are representative of European citizens while the interests of the Council are representative of domestic governments.

The third group is composed by the Dutch regulator ACM and the European regulator BEREC. They relate to the EU mainly through the EC, but are also in touch with Consumers, Dutch politics and Telecom operators. Although part of the same group, they have also been separated as ACM interacts with domestic issues while BEREC carries the regional responsibility.

The fourth group, Consumers, includes the private consumers, large businesses and medium & small businesses. This separation is done because of the different organizations that represent their interests: Consumentenbond, BTG and MKB respectively. Consumentenbond is also represented towards the EU institutions by the non-profit lobby organization BEUC. As fifth group, Dutch politics include the Dutch government (Rijksoverheid) and the different Dutch political parties. At this stage, the political parties are unified to soften the burden of the research, but will be separated in future steps of the research.

The sixth group is composed by the telecommunication operators, formed by the four big Dutch MNOs and the MVNOs, both part of same MNOs economic groups or not. These groups have similar interests, although they may vary in some positions as it can be seen in Appendix II.III. Finally, Lobby groups represent the seventh group. They defend the interests of Telecom operators and different IT players towards the EU, mainly the EC and EP. As lobby needs closeness with institutions, these organizations are located close to decision-makers to provide insights and opinion related to telecommunication matters.

In order to provide information on how these players interact between each other, a summarized and detailed analysis can be found in Appendix II, showing both formal and informal relationships.

## 5.4 Understanding the problem formulation of the actors and analysing interdependencies.

Problem formulations of different actors may overlap, be contradictory or fully coincide. These steps aim to understand the positions of each of the players by providing the interests, objectives and perceptions and interdependencies, and to answer the sub-questions *“What are the actors’ problems?”* and *“How are they interdependent among each other?”*. As the group of actors considered is still extensive, and many of them may not have the power to be sufficiently relevant for the policy, their criticality and positions need to be assessed. Table 11, based on the template provided by Enserink et al. (2010), is used to classify the actors.

Table 11. Overview table for classification of interdependencies for the EU Roaming regulation.

	Dedicated actors		Non-dedicated actors	
	Critical actors	Non-critical actors	Critical actors	Non-critical actors
<b>Similar/ supportive interests and objectives</b>	COUNCIL DG CONNECT EC EP	BEUC BTG CONSUMENTENBOND MKB	DG COMP DG ECFIN	DG AGRI DG EAC DG EMPL DG GROW DG JUST DG MOVE DG RTD DG SANTE DG TRADE
<b>Conflicting interests and objectives</b>	BEREC	ACM ECTA ETNO GSM EUROPE MVNO EUROPE KPN MVNO EUROPE T-MOBILE NL TELE2 VODAFONEZIGGO	DUTCH GOVT.	DIGITALEUROPE DUTCH POL. PARTIES

A unique MVNOs Association responsible for the lobby duties in the EU has not been considered within this list, as there is not a condensed organization that represents the interests of all the MVNOs across Europe, different from the situation with the MNOs (which have strong lobby groups). MVNOs do not require a large business and operational structure as MNOs, as they only resell services from infrastructure providers and, in some cases, perform the billing tasks. As the business plans greatly vary from MVNO to MVNO (for example, some MVNOs are fully dedicated to business users), it seems logic that a single organization representing their interests could be difficult to create. However, the lobby association named MVNO Europe does represent an important percentage of MVNOs across the continent, and has been considered for interviews.

The table can be complemented by the Power/interest matrix, which gives insights on how actors should be considered by the decision-makers (Bryson, 2004; Johnson & Scholes, 1993). The matrix divides stakeholders in four categories:

- Key players: High power and high interest
- Context setters: High power and low interest. Need to be kept satisfied.
- Subjects: Low power and high interest. Need to be kept informed.
- Crowd: Low power and low interest. Require minimal effort.

This table, which answers the sub-question “What is the power and position of the actors?” can be found in Appendix II.III:

Aiming to reduce the number of actors, the following image shows a reduced version of Figure 6, by mapping only those stakeholders with high interest within the groups of Key players and Subjects. The context setter DG COMP could stop the policy in case some specific economic points are not properly managed by the other actors. However, this would not be likely, as DG CONNECT does consider the input of DG COMP in their reports, and acknowledges the need for proper competition between actors.

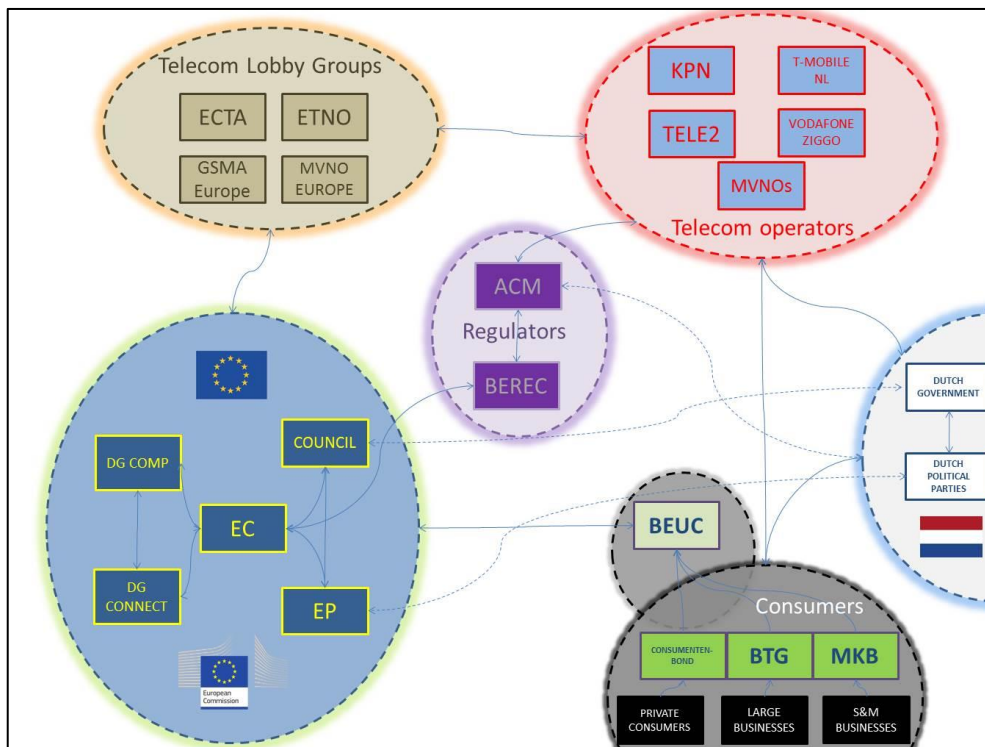


Figure 7. Reduced stakeholders' map and relations.

The DGs considered as Crowds, although part of the DSM project, are not actively participating in the EU Roaming policy. DIGITALEUROPE did comment about the roaming policy, but it is not focused on this topic and the stakeholders of this policy do not consider them as a representative in this area.

The groups of stakeholders are unified by interest groups to help the reader in understanding sharing interests. The different EU institutions are over a blue circle, representing the EU itself. The different Telecom Lobby groups are also together as, although independent among themselves, they have the same type of interaction with the EU and their clients, the Telecom operators. Telecom operators also are grouped, although MNOs and MVNOs have different effects. They do interact with the Telecom Lobby groups, which are hired to represent them in the EU, with the regulators, as they are monitored by them, the Dutch authorities by lobbying with politicians and the Consumer groups which defend consumers' interests.

Regulators are joined together but interact differently; BEREC interacts with the EU, while ACM interacts in the Dutch environment. The dotted line between Dutch politics and ACM shows that although ACM is independent, it may be influenced by the opinions in the political system. Dutch politics are part of the same environment, although the different may be diverse depending on the actor. They do interact with ACM, the EU's Parliament and Council in an indirect way, but have a formal connection with the Consumer associations and Telecom operators. Finally, Consumer associations interact with the EU through BEUC, and the domestic organizations interact with the Dutch political system and the Telecom operators to defend consumers' interests.

## 5.5 Interviews and interests

The previous sub-chapter reduced the number of considered stakeholders, looking forward to diminishing the complexity of the analysis. As this stage was reached, it is important to confirm that the previous explanation of how the actors interact between each other is correct. Aiming to do so, interviews with representatives can provide the validation. Requests for interviews were sent to every stakeholder, and two more cases were added:



- a) Permanent Representation of the Netherlands in the EU: This stakeholder corresponds to the vision of the Dutch government in the EU institutions. Particularly, the Permanent Representation works closely with the Council, representing the interest of the government of the Netherlands.
- b) Ministry of Economic Affairs (NL): This institution is the specialized party within the Dutch government that has worked in roaming policies. Besides the technical aspects, which could be addressed by regulatory parties, the Ministry represents the economic interest of the government and was involved in the negotiations of the RLAH policy, closely with the Permanent Representation of the Netherlands in the EU.

The interview template can be found in Appendix III, together with the complete list of interviewees.

## 5.6 Results of the interviews

After conducting the different interviews, many pages of raw data with the opinions and perspectives of the stakeholders were obtained, which can be found in Appendix IV. As this information is difficult to be understood and organized for any reader, this sub-chapter develops an analysis of the most important arguments of each of the actors, and their different perspectives in similar matters. Each of the sections of the sub-chapter is based on specific sections of the interview.

### 5.6.1 Background of interviewees

The interviewees related to public policy departments share similar backgrounds related to their academic and professional life, mainly based in legal areas connected with regulation and competition, except for one case that includes technological expertise. In the case of regulation institutions, both interviewees share a combination of economic and technological backgrounds. Finally, consumer associations have a more diversified background, related to a more artistic perspective in design.

The backgrounds seem to fit with their professional perspectives. Public policy officers need to have knowledge on EU law and telecommunication regulation. Regulatory institutions need a combined approach of knowledge in economic terms such as competition, while also acknowledging technological aspects. Finally, the perspective of designers may help to defend the consumers' interests, as these studies specialize in understanding the needs and values of the users.

### 5.6.2 The outcomes of RLAH

An interesting point mentioned by KPN's representative, is related to the concept of seamless roaming. He argues there is a general idea that roaming is a seamless experience, although technologically it is not. By crossing borders, it does not matter which commercial agreement MNOs/MVNOs have between each other, the communication will be cut temporarily while the device registers in the new network. The comment may seem just a detailed clarification, but is important to discuss the costs involved for the MNOs/MVNOs to modify their systems to comply with the commercial seamless experience.

Almost every stakeholder mentions the avoidance of bill shocks as the main positive aspect of the policy. Users were afraid of using their mobile services because of the high prices, and regulators were used to receive complaints from customers with unpayable bills. From a consumer perspective, users will stop "fearing" the operators.

Some actors mention a political perspective on this matter. The idea of Europe as one entity or country, which can be considered between a social and political concept, creates the need of a single market. The EC developed the idea of a DSM, which although it could have an economic motivation, different players is more a political one. BTG's representative mentions the positive aspects of starting a process of harmonization in telecommunication matters, something that will be described in the following sub-chapters.

This point shows different perspectives, depending on the actor. MNOs argue there is a risk of larger average costs, because of an increase in wholesale total costs, which exceed the average domestic cost for the operator. Within this point, some actors argue that there could be a negative effect in pricing, as “there is no free lunch” and somebody would have to pay the costs. The Netherlands, as a country with more outbound travellers than inbound, is a net sender of customers that may be able to use the RLAH service.

Opposite to this perspective, DG CONNECT argues that it is not that costs increase, but it should be seen as a reduction of very high revenues. This EU Directorate coincides with the vision of the respondent of the Permanent Representation of the Netherlands in the EU regarding there are little negative effects that can be detected yet, as the information of the effects will take some time to be obtained.

Regarding the position of who pays the policy, BEREC’s representative has argued that operators are allowed to abolish roaming services in their offers. This would mean that users that few days a year require roaming services, and may pay for them, will no longer be able unless they accept a complete RLAH over their subscription. Consumers may have to decide between total or no roaming, affecting the population with lower resources on the matter. The situation is combined with the idea, mentioned by some stakeholders, that business users are the most benefitted stakeholder, as they travel often and will see their bills reduced, although they were going to pay for them anyway.

The lobby groups GSMA Europe and ETNO, find this policy risky towards investment. An increase in costs, would lead to a reduction in ROI and risk the long-term health of the telecommunication sector. Losing state-of-the-art services, combined with a possible lag in the European position in telecommunication may happen as consequence of the policy.

A different point is shown by Tele2’s representative, arguing a possible pan-European consolidation because of the advantages of large operators with the non-existent wholesale costs. Domestic MNOs have a worse bargaining position than pan-European operators.

Finally, a particular point is shown by one of the stakeholders, mentioning that tourists may prefer not to actually be connected in roaming. The possibility of free roaming may take that “calmness” that could take the users out of their routine.

### 5.6.3 The perception of users towards the policy.

Most stakeholders are aligned in the position of considering Dutch consumers as benefitted on this policy. They understand the travel patterns of the Dutch population may be different from other European countries; thus, the policy may be perceived differently depending on the place in Europe. However, the regulatory parties ACM and BEREC feel somehow sceptical on the situation, and on how the users appreciate this policy. There seems to not be enough data regarding how users perceive the policy, and stakeholders have not been able to justify their position. DG CONNECT has mentioned social media statistics while some operators argued that roaming was not a major concern for their users. However, as the introduction of this research also mentioned, there are no proper studies on the importance of this policy for the users, and how it can be perceived by them.

### 5.6.4 The EU process towards the regulation

Most stakeholders believe the process has been long and messy. The scope changed from the initial approach towards the final decision. Some stakeholders hardly criticise the situation of the ARPs, where the EC changed its direction in a non-expected way. The decoupling idea, and the posterior modification of the approach, generated uncertainty and delusion in some parties. The representative from the Ministry of Economic Affairs mentions in one of these situations that “they have put the horse behind the wagon”.

Two other points are regarding the deadlines. Stakeholders criticise that deadlines were determined before the regulation was decided, generating an enormous amount of pressure towards each of the actors, as the outcomes were expected although not agreed yet. MVNOs also argue that they were poorly considered by the EC.

Transparency is also shown as a problem of the process. Although the EU institutions argue the information was available, some parties mention it was difficult to follow the processes and sometimes could not even report internally to their directors regarding what was expected to occur. However, on the other side, the EU institutions argue the process was normal in comparison to other EU processes, and that information was available for every party. The representative from ACM argues that DG CONNECT did quite a good job, considering the number of variables and challenges this policy had.

#### 5.6.5 Inevitability and sustainability

These aspects of the policy have different opinions, even between same interest groups. KPN, VodafoneZiggo and Tele2 argue a regulation was necessary, although the motivation differs for each of them. KPN suggests it was inevitable to protect domestic operators against pan-European operators, a concept shared with Tele2. In the case of VodafoneZiggo, it is argued that the market was not working in an efficient way in the initial roaming regulation (many years before RLAH), and that could justify that decision, although the company does not agree with the approach taken by the EC. DG Connect shares this perception, although it focuses in the RLAH decision, mentioning it would not be possible to develop this policy without proper enforcement.

Many stakeholders (including public institutions) admit the market was heading to lower prices, but still argue the RLAH would have been hard to achieve without intervention from the EC. MNOs/MVNOs and Telecom Lobby groups criticise the details of the regulation (some of them are not needed) and the approach taken to the FUP. Not every party is totally convinced with the approach of the EC to the RLAH policy, including consumer associations such as Consumentenbond. Many parties, distributed in every interest group, argue this was a political decision, more than an inevitable situation, based on the principles of DSM.

Regarding sustainability, most parties prefer not to answer, as it seems not clear. It is mentioned that FUP still leaves room to abuse, and the effectiveness is not yet proven. However, almost all the actors agree it is still too soon to decide about this point, and more information is needed to evaluate the sustainability.

#### 5.6.6 Spectrum normalization and European harmonization

Within the answers, two parties have shown interest in the harmonization of standards and spectrum within Europe. BTG's representative, argues there are no clear rules regarding how the FUP are planned to be applied in each of the countries, and each NRA may have an excessive independence to differ from a neighbours' decision regarding BEREC's guidelines, adding uncertainty to the situation.

This actor, together with the view of ETNO's representative, criticises the situation with the spectrum harmonization, as each country has different rules. BTG argues this generates uncertainty, for example, in devices' configurations, which could lead to higher costs. On the other hand, ETNO mentions each country has different costs in their spectrum auctions, and the roaming costs vary from region to region. There is a need to harmonize these concepts.

#### 5.6.7 MVNOs vs MNOs

The considered MVNOs, Lebara and Simpel, mention they have not been considered in the same level as MNOs. Their main arguments related to the natural only-outbound traffic they have in roaming services and how could this affect their business plans, leading to a reduction in the competitiveness of the market, were not properly considered by the decision-makers.

#### 5.6.8 Critics to the EU approach

Another point almost every stakeholder shares is the critical perspective towards the approach used by the EU. Firstly, VodafoneZiggo's representative suggests there was an excessive involvement by the EU in the business plans of the companies. The roaming policy could lead to a harmonization of commercial prices, reducing the differentiation between brands. He argues in favour of a more progressive approach.

T-Mobile NL's representative argues the market was heading in the right direction, and could have adapted itself without reaching such complex intervention. The FUP effects are not yet clear and are not easy to implement. The latter comment is also mentioned by ETNO's representative. He also argues that the results may not be the optimal ones because of the complexity achieved.

KPN's representative considers the policy positions the MNOs/MVNOs have may result with a negative view of the consumers, as they may have to perform negative changes, for example, in the prices of subscriptions, while the politicians will become "heroes".

#### 5.6.9 Critics to MNOs/MVNOs behaviour

Stakeholders are somehow self-critical regarding the behaviour of the telecom industry in roaming. Some of them mention that a regulation was needed to stop the excessive roaming prices, and that it was possible that operators would not modify anything in case there was no regulation. Of course, how strong is this position depends on the MNO or MVNO considered, although it can be seen a clear distinction between the Dutch and pan-European groups. Tele2 is considered with a Dutch behaviour, as it is much smaller than the Vodafone and Deutsche Telekom groups.

#### 5.6.10 Uncertainty

Every actor suggests there is uncertainty in the process outcomes and in some of the implementation procedures. The point is connected with the sustainability discussion. However, there is a clear divergence between operators and the other groups. Operators do believe there is not only uncertainty regarding the FUP, but also economically. MVNOs and MNOs share this concern equally, although the personal interview experience showed more concern in the MNOs side. From the other groups' perspective, although uncertainty is acknowledged, it is not believed that this could lead to major issues and that the regulation can protect the actors.

This initial stakeholder analysis has given a clearer view on the most important actors of the policy. The following steps will be based in assessing the perception of the actors regarding the policy, to understand how important do they believe social values are in the policy, and how they could be weighted. These actors have been also assessed with their problem formulations and gaps between actual and expected situations. The summarized table, based on Enserink et al. (2010), can be found in Appendix II.

### 5.7 Summary

Firstly, the stakeholder analysis helped by providing those critical actors involved in the EU Roaming policy within the Netherlands case. The first extensive list was shortened thanks to the input of experts and actors, through brainstorming and by literature research. A second step was to understand the different positions and interests of the involved actors, aiming to recognise their stance towards the policy. The chapter shows a very summarized version of a stakeholder analysis, which is complemented by Appendixes II, III and IV. The tool was not developed further, as the information needed was already obtained.

This analysis has shown different perspectives regarding the actors. As mentioned in the introduction of the chapter, the method provides a broader perspective where the opinions and insights of all the most important actors involved in the policy are considered. The research question allows this report to understand the vision of the actors, and the interest, and their thoughts related to those social values mostly impacted by the policy. This is important, as it may help to understand the answers obtained from the BWM, which is applied in the next chapter 6.

In summary, this chapter has answered the research question **"Who are the actors involved in the policy and what is their position?"** and its sub-questions:

**a) *Who are the actors involved?***

The different stakeholders were found by using a positional, reputational, and social participation approach. By analysing the data obtained, a list of 38 initial stakeholders was created. The list was later reduced to consider only those most involved in the decision-making process. The short-listed actors were later interviewed related to their preferences and thoughts about the policy. The complete list of actors can be found in Appendix II.I.

**b) *What are the actors' problems?***

The different groups of actors show different problem formulations, based on different interests, objectives, expected situations and causes. From domestic actors based on local interests to European bodies focused on regional needs, actors were clustered in eight groups that share same formulations. The results of the interview, together with the literature review performed over the actor, has shown different problems regarding the same regulatory approach, which in many cases may seem contradictory. The problems will be used to add value to the discussion of further steps of this thesis, after the BWM is applied to the actors. A complete list can be found in Appendix II.II.

**c) *What is the power and position of the actors?***

Aiming to understand the positions of the actors, these can be aligned in a power/interest matrix. The table helps grouping those actors in four different groups:

- Key players: High power and high interest
- Context setters: High power and low interest. Need to be kept satisfied.
- Subjects: Low power and high interest. Need to be kept informed.
- Crowd: Low power and low interest. Require minimal effort.

In order to cluster the actors, the matrix allowed to group them according to their power and interest, to reduce the complexity on the next BWM step. The complete list of power and positions can be found in Appendix II.III.

**d) *How are they interdependent among each other?***

The actors have complex interdependencies between each other. The way each stakeholder acts with another one differs greatly depending on regulatory, power, geographical, etc., aspects. As mentioned in the previous sub-questions answers, interdependency also may show patterns that explain answers in the BWM step. A complete list of relations between themselves can be found in Appendix II.IV.

The following chapter deepens the stakeholder analysis by providing the actors' views over social values.

## 6 Social values of stakeholders

After obtaining information from different public sources related to the importance, position and expected outcomes of the stakeholders of the EU Roaming policy, this chapter will provide a closer look into their motivations. The actors have shown different opinions regarding the policy outcomes, justification and procedure. However, the values behind those answers are not yet explicit and need a different methodology to be obtained.

This chapter aims to answer the research question **“What are the most important values of the policy, according to the stakeholders?”** and its sub-questions:

- a) **How can the social values be determined?**
- b) **What method can determine the hierarchy of the values?**
- c) **What are the preferences of the stakeholders?**

Initially, from sub-chapter 4.2.3, a summarized list of social values has been obtained, thanks to the support of experts in the area and a literature review. In order to assess the importance of values and their hierarchy, the MCDA tool called Best-Worst Method (BWM) is used. The method requires to perform a survey to those stakeholders considered from the previous chapter 5, and allows to obtain a final list of preferences of each one, ranking the values according from most to least important.

The chapter starts by describing what is the Best-Worst Method (BWM) and why it has been chosen for this research. Following, each actors' preferences will be listed and the results of the method will be shown. The results of the method are compared with the answers in the interview in Appendix IV.

### 6.1 Multi-Criteria Decision Making: the Best-Worst Method

The research is focused in understanding what are the social values considered within the EU Regulation policy in international mobile roaming, and how they can be weighted. However, values are not numerical concepts that can be addressed with classical mathematical or statistical tools and, as sometimes they may overlap or even contradict, a different method is needed. As an example, when buying a car, the list of criteria could be larger than just the price, and it could include the safety, public reviews, green standards, etc. These criteria cannot be always measured in numerical terms, and may need a different evaluation method.

Aiming to answer the sub-question *“What method can determine the hierarchy the values?”*, Multi-Criteria Decision Making (MCDM) can be considered as a method concerned with designing mathematical tools to support the subjective evaluation of performance (Zavadskas, Turskis, & Kildienė, 2014). It is a generic term for every method that can help people decide according to preferences that sometimes are conflicting (Ho, 2008). Different methods can be used within the MCDM concept, depending on the available information, such as if it is qualitative or quantitative, the scope of the research or the type of results expected. However, this research does not try to develop an extensive analysis of the dozens of available methods, which can be easily found in the available literature (Köksalan, Wallenius, & Zionts, 2013; Mardani et al., 2015; Triantaphyllou, 2000).

The proposed method for this thesis is called the Best-Worst Method (BWM), developed by Dr. Jafar Rezaei, actual Assistant Professor at the Engineering Systems and Services department of the Faculty of Technology and Management of the Delft University of Technology (TU Delft, 2017c). BWM can be considered within the method of pairwise comparison firstly introduced by L. L. Thurstone in 1927. Pairwise comparison refers to the method were by comparing one criteria against another, the preference of actions in situations where it is not possible to provide scoring estimates (Rezaei, 2015).

BWM advantages are related to direction and strength of preferences. As the best and worst methods are selected from the start and later compared, the respondent can not only show the score (strength), but also the direction of the decision, reducing the possibility of inconsistency and giving an advantage over other MCDM such as Analytical Hierarchical Process (AHP), which may be confused with this BWM.

The method has been applied several times by students, researchers and professionals (Guo & Zhao, 2017; Gupta, Anand, & Gupta, 2017; Kothadiya, 2016; Rezaei, Hemmes, & Tavasszy, 2017; Salimi, 2017). A large number of examples can be easily found on the method's official web page ([www.bestworstmethod.com](http://www.bestworstmethod.com)).

BWM uses pairwise comparisons to determine the best and the worst criteria against the other proposed criteria. It consists of 5 steps to be performed which, based in Rezaei (2016) work, are listed below:

- 1) Determine a set of decision criteria.  
In this research, the decision criteria will be chosen from the answers of experts, desk research and a literature review. The shortlist of social values obtained will be considered as the decision criteria for the respondents.
- 2) Determine the best and the worst criteria.  
The respondents need to determine which of the list can be considered the best, or most important, and the worst, or least important, criteria.
- 3) Determine the preference of the best criterion over all the other criteria.  
Respondents are asked to score the rest of the criteria related to the best, and to the worst methods. This means that after selecting a criterion as the best, they should rank from 1 to 9 the rest of the criteria relating their importance to the first criterion. The table below shows a simple example:

Table 12. Example of application of scores of the Best-Worst Method with colours as criteria.

List of criteria	Best criterion	Other criteria	Scores	Worst criterion	Other criteria	Scores
Blue	Black	Blue	5	White	Blue	3
Yellow		Yellow	2		Yellow	7
Black		White	9		Black	9
White		-----	-----		-----	-----

As it can be seen, the best criterion selected by the respondent is the black colour, and he/her has assessed white is the least important or desirable colour comparing it with the initial black. The respondent selects white as the worst criterion, and classifies the rest of the colours comparing it with the worst case.

- 4) Find the optimal weights.  
This step is to understand how much is the weight of each criterion in the measurement. Different equations are used for this purpose, which can be found in Appendix VI based on Rezaei (2016). The example results of the equations can be seen in the table below:

Table 13. Example of weight calculation of Best-Worst Method.

List of criteria	Weight	Consistency
Blue	0,11917	0,06477
Yellow	0,29793	
Black	0,53109	
White	0,05181	

The results show that Black ranks with the largest weight, followed by Yellow, Blue and finally White. This means that the preference of the user is the colour with the largest weight, which could be expected from the obtained data. Although this method may seem trivial, as by making a quick scan of the first numbers these results could be predicted, in cases where more values and respondents are involved BWM can help us with its analytical power.

The consistency ratio helps in providing how robust is the method with the data introduced. The lower is the number, the more consistent is the method and the more trustable are the results. As a rule of thumb,

it can be assumed that numbers below 0,2 can be considered within the range of trustiness. Appendix VI describes the complete theoretical application of the method, based on Rezaei (2015,2016).

These results were obtained by Microsoft Excel's Solver function, in a template created by Dr. Rezaei and slightly changed for the research. The template will be used for the following sections.

#### 6.1.1 Methodology of the surveys

Firstly, there is a need to reduce the list of criteria to be considered and to answer the first sub-question "How can the social values be determined?". The values obtained in Chapter 4 should be used for the BWM, but the list is so extensive that respondents may be confused because of the number of criteria to select. Aiming to diminish the complexity of the method, a list of 10 values were used considering those more repeated between experts, literature research and stakeholders.

Table 14. List of values used in BWM.

Integration
Universality
Certainty
Availability
Freedom
Prosperity
Transparency
Flexibility
Economy
Fairness

Integration was used as a value that unifies the values of friendship, sharing and unity. Universality also can unify the values of approachability, accessibility and connection. Certainty can consider the value of control within itself. Availability was considered to group the value of resilience and reliability. Freedom was considered as unifier of freedom of choice and competition (this last because it allows more freedom of choice for users). Prosperity considers also growth. Flexibility also includes the value of simplicity within itself. Economy includes the affordability for the user. The values of safety and democracy were not considered, as they were mentioned only once each.

After the stakeholders have been interviewed, a second stage requires them to answer the BWM survey. The formulation of the survey is done according to the guidelines of the Best Worst Method (Rezaei, 2015, 2016), and the surveys have been done in the software SurveyGizmo. An e-mail was sent to each of the stakeholders (after previous communication) with a link to the online survey. The survey consisted on five questions:

- 1) Personal details (Name, organization and e-mail).
- 2) Decision of most important social value.
- 3) Comparison of best social value against the other values.
- 4) Decision of least important social value.
- 5) Comparison of worst social value against the other values.

A summary of the survey template can be found in Appendix V.II. The results have been divided per group of stakeholders.



### 6.1.2 Stakeholders' answers

The final sub-question requires to answer *“What are the preferences of the stakeholders?”*. Although the intention of the research was to receive answers from every stakeholder, this was not possible for different reasons. Some of the stakeholders did not answer to the request of interview of the previous chapter and it was not possible to assess their interests regarding the BWM. Other actors excused themselves because of anonymity, as the thesis requires them to represent an institution (although the names of the respondents could be kept anonymous). Finally, some stakeholders did not want to answer the survey, maybe because of internal policy issues of their organizations. The list of respondents of the survey can be found in Appendix V.I.

### 6.1.3 Weights within a non-formal group

The previous chapter clustered actors within groups that represented similar interests between themselves. This facilitates understanding the complex interaction between interest groups and avoids summarizing the analysis of the data obtained from them. However, the problem of the weight of each of the actors within the group arises.

The following conflicts can be detected:

- a) Clash of interests between the consumer associations Consumentenbond and BTG. These associations represent very different groups that negotiate with different power and interests with Telecom operators; thus, what it may be important to a private consumer, may not be for a large business.
- b) Clash of interests between MNOs and MVNOs, as MVNOs suffer a constant imbalance of traffic of roaming, mentioned in previous chapters. What MVNOs may aim for this policy may differ from MNOs interests because of the payment capacity of each of them. The conflict may specifically arise between independent MVNOs and MNOs.

The situation leads to evaluate each case and discuss how can those actors' opinions be weighted accordingly. In the following steps, the actors of the groups are weighted; the opinion of the experts, desk research and literature review done in previous chapters justify the decision of the different weights. The results of all the calculation related to the method can be found in Appendix VII.

## 6.2 Regulators' values

BEREC and ACM are the regulatory bodies from the EU and the Netherlands respectively. They are independent from political systems, as they have freedom of decision to create guidelines and enforce regulations. However, these bodies are not isolated from the opinions of different stakeholders and may be influenced by them through direct and indirect contact. The results of the BWM are as follows:

Table 15. BWM Results of regulators.

BEREC		ACM	
Value	Result	Value	Result
Availability	0,260186105	Certainty	0,322665961
Universality	0,178877947	Universality	0,099973552
Flexibility	0,178877947	Availability	0,099973552
Economy	0,089438974	Economy	0,083311293
Integration	0,071551179	Prosperity	0,083311293
Prosperity	0,071551179	Freedom	0,083311293
Certainty	0,044719487	Transparency	0,07140968
Transparency	0,044719487	Flexibility	0,07140968
Freedom	0,039750655	Fairness	0,055540862
Fairness	0,020327039	Integration	0,029092833
<b>Consistency Ratio</b>	<b>0,01626163</b>	<b>Consistency Ratio</b>	<b>0,02953363</b>

The following graph shows the results of both actors assuming equal weight. The results have been separated to show a clear divergence between both stakeholders.

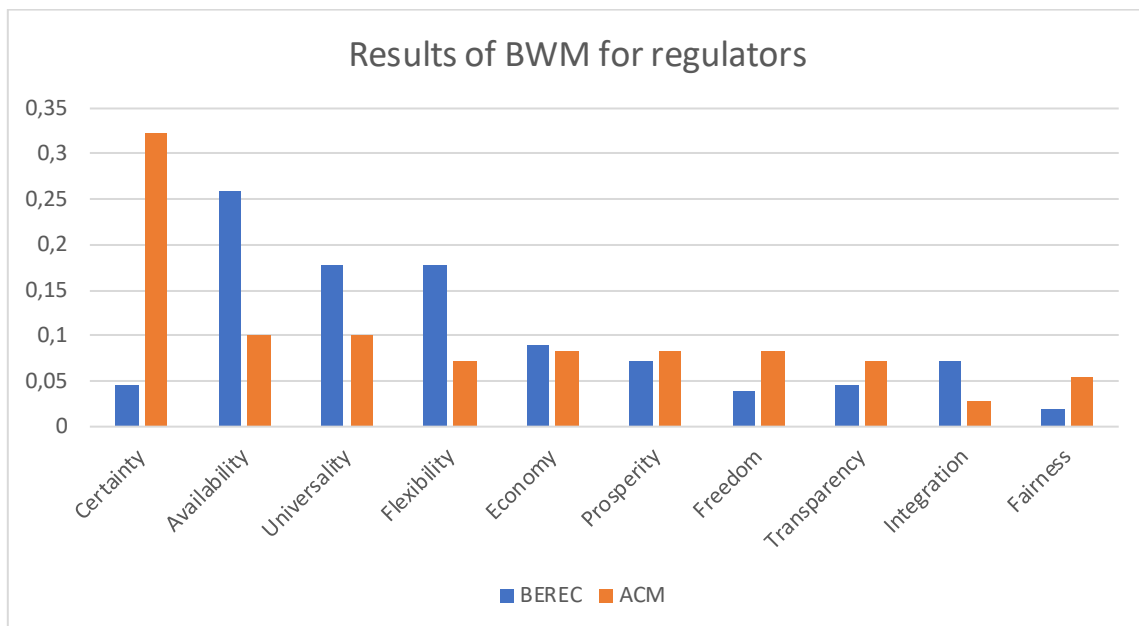


Figure 8. Results of BWM for regulators.

This specific type of graph was chosen to show the divergence in the answer of the interviewees. If both actors are considered to have the same weight, the final answer would be that certainty and flexibility are the most importantly considered values by regulators. However, it is clearly visible how the opinions diverge. In the first case of certainty, ACM believes it is of utmost importance while BEREK considers it between the 7<sup>th</sup> and 8<sup>th</sup> position of the list. Similarly occurs with availability, being considered 1<sup>st</sup> for BEREK while 3<sup>rd</sup> by ACM.

This graph also shows the different distributions selected by interviewees. ACM considered certainty not only as the most important value, but also far distanced from the second and third cases (universality and availability). BEREK had a not so extreme result, as the three first values (availability, universality and flexibility) are relatively close to each other. With these results, it would be very hard to determine a general regulator’s opinion of social values involved.

### 6.3 EC’s values

The European Commission is the “(...) politically independent executive arm” of the EU (European Union, 2017). Its main duties are proposing new laws, managing EU policies, allocating EU funding, enforcing EU law and representing the EU internationally. The institution is formed by 28 Commissioners formed by the President of the Commission, 7 Vice-Presidents and 20 area Commissioners. The different Commissioners work as ministers, representing the EC in specific areas of policy inside their own office, in some cases considered DGs (Directorate-General). As mentioned in the stakeholder analysis, DG CONNECT was considered as the most important source of feedback and decision-making of the EC within the EU Roaming policy.

In order to represent the EC’s perspective, the opinion of the DG is needed to perceive how the EC weights the social values. A representative of DG CONNECT has been interviewed and assessed in the previous chapter of Actor Analysis. It has also accepted to provide their own view of the hierarchy of the values. The following table shows the results:

Table 16. BWM results of DG CONNECT.

DG CONNECT	
Value	Result
Fairness	0,224420849
Universality	0,159266409
Certainty	0,106177606
Availability	0,106177606
Economy	0,079633205
Transparency	0,079633205
Prosperity	0,079633205
Freedom	0,079633205
Integration	0,063706564
Flexibility	0,021718147
<b>Consistency Ratio</b>	<b>0,01568532</b>

#### 6.4 EP's values

As mentioned in Chapter 2, this research will not consider the EP as a stakeholder, neither its political alliances within. The complexity of determining the different interests and movements within this institution would provoke this research to head out of scope.

#### 6.5 Council's values

As mentioned in Chapter 2, this research will not consider the Council as a stakeholder, neither its political alliances within. The complexity of determining the different interests and movements within this institution would provoke this research to head out of scope.

One of the interviewees may be considered to be part of it, as it works for the Dutch Permanent Representation to the EU. However, for this research, the opinion of the representative will be used for determination of general values and discussion of results, not for individual analysis.

#### 6.6 Telecom operators' values

The Telecom operators considered as stakeholders have been the four Dutch MNOs (KPN, VodafoneZiggo, T-Mobile NL and Tele2) and a representation of the Dutch MVNOs (Lebara and Simpel). These parties, although working within the same industry, have different business plans and perspectives. Of these stakeholders, T-Mobile NL did not answer the BWM survey. The results were divided between MNOs and MVNOs. The following results can be seen:

Table 17. BWM results of MNOs.

KPN		Tele2		VodafoneZiggo	
Values	Result	Values	Result	Values	Result
Economy	0,22785	Integration	0,19905	Certainty	0,25152
Certainty	0,15190	Availability	0,14218	Transparency	0,17712
Fairness	0,10127	Universality	0,14218	Availability	0,11808
Prosperity	0,10127	Economy	0,09479	Fairness	0,08856
Integration	0,07595	Transparency	0,09479	Flexibility	0,08856
Availability	0,07595	Prosperity	0,09479	Economy	0,07085
Transparency	0,07595	Freedom	0,09479	Prosperity	0,07085
Freedom	0,07595	Fairness	0,07109	Integration	0,05904
Flexibility	0,07595	Certainty	0,04739	Universality	0,05061
Universality	0,03798	Flexibility	0,01896	Freedom	0,02480
<b>Consistency</b>	<b>0,01266</b>	<b>Consistency</b>	<b>0,01421</b>	<b>Consistency</b>	<b>0,01712</b>

Table 18. BWM results of MVNOs.

Lebara		Simpel	
Value	Result	Value	Result
Fairness	0,256299213	Transparency	0,30234657
Economy	0,121259843	Certainty	0,110559567
Certainty	0,121259843	Availability	0,110559567
Integration	0,121259843	Universality	0,088447653
Transparency	0,090944882	Economy	0,073706378
Universality	0,090944882	Prosperity	0,073706378
Availability	0,060629921	Freedom	0,073706378
Flexibility	0,060629921	Fairness	0,063176895
Prosperity	0,051968504	Integration	0,063176895
Freedom	0,02480315	Flexibility	0,040613718
<b>Consistency Ratio</b>	<b>0,017913386</b>	<b>Consistency Ratio</b>	<b>0,02331528</b>

The following graphs, divided between MNOs and MVNOs, show the preferences of each. For both cases, same weights were used. It is true that weights could be determined by factors such as number of SIMs being used, annual revenue of the company, extent of the network, etc. However, aiming to reduce the complexity, every actor is considered with the same weight within each sub-group of MNOs and MVNOs.

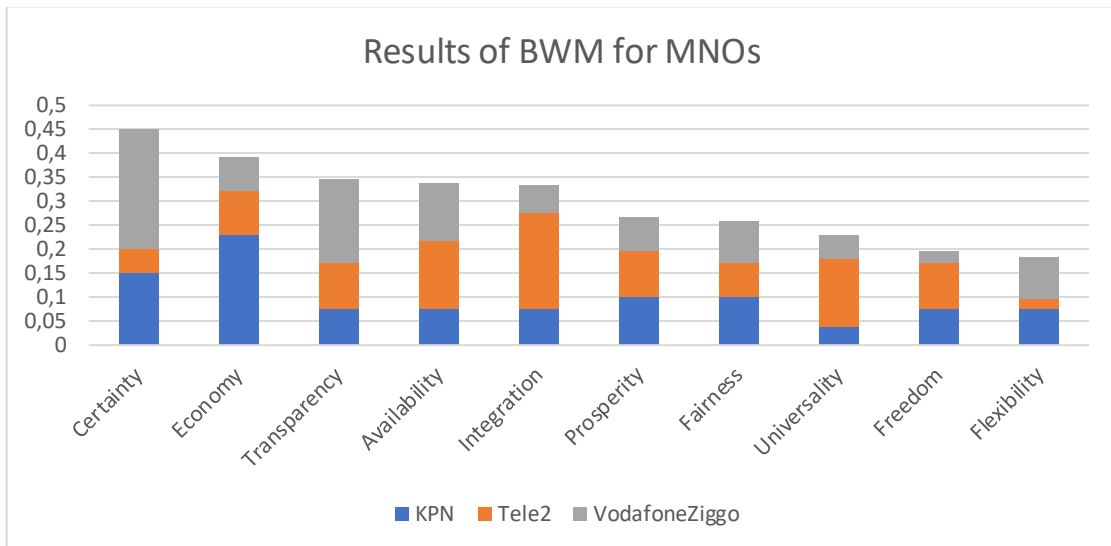


Figure 9. Results of BWM for MNOs.

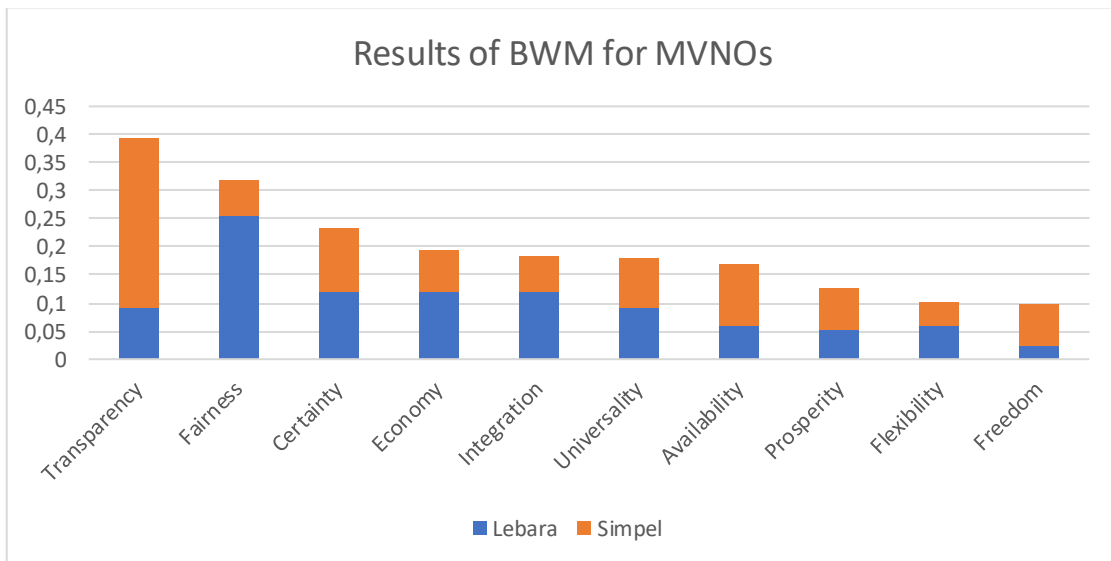


Figure 10. Results of BWM for MVNOs.

Both graphs show a strong divergence, not only between groups but within these operators. It does not seem that MNOs and MVNOs agree with the hierarchy, something that can also be seen in the interviews.

A possible explanation for this is the very different nature of each of the companies. Firstly, operators may be local or multi-national companies. KPN has different interests in roaming than VodafoneZiggo or Tele2, which have branches in other countries and regions. This argument can be used to justify KPN's preference for economy over other values, as the RLAH policy has been thought as risky for purely domestic operators.

A second point to mention is the selection of certainty as main value of MNOs. The interviews have shown doubts and distrust on how the regulation was going to be implemented. Although it is true that since the performance of the interviews, the NRAs have been clarifying locally doubts about the implementation, the economic effect of it are still uncertain.

Regarding the MVNOs, the first two ranked values do show important divergence, but are connected to the interviews performed. Lack of transparency is a claim MVNOs have made, related to the poor access they had to information of the process being performed at the EU. The fairness of the policy, especially related to how MVNOs are considered against MNOs, is also a major concern for them. Nevertheless, both companies have different backgrounds. Simpel has become an independent company since 2014 (Wokke, 2014), while Lebara is a multi-national company located in eight countries across world (Kandiah). The vision of both companies differs, and it could be true that Lebara, as a larger company, had more access to the regulatory policy than Simpel.

## 6.7 Telecom lobby groups' values

Lobby groups represent the interests of the Telecom operators towards the EU. They mainly interact with the EC and EP, and try to influence their decision-making process by constant communication with those areas. As they are strategically located close to the areas where European decisions are taken, they can help domestic providers by avoiding travelling burden. Besides these points, as Lobby groups represent major telecom providers, they have financial and analytical power, including access to confidential data, which can be used to prepare technical documents that could influence the decisions taken.

The actors selected for this group were ECTA, ETNO, MVNO Europe and GSMA Europe. From this list, ECTA decided not to participate in the research because of time-constraints and GSMA Europe preferred not to answer the survey because of the difficulty of representativeness of the answer. Unfortunately, ETNO also did not reply the survey.

Table 19. BWM results of telecom lobby groups.

MVNO Europe	
Value	Result
Certainty	0,368852459
Economy	0,073770492
Integration	0,073770492
Prosperity	0,073770492
Freedom	0,073770492
Flexibility	0,073770492
Fairness	0,06557377
Availability	0,06557377
Transparency	0,06557377
Universality	0,06557377
Consistency Ratio	0,036885246

The results show a clear preference towards certainty, again directly linked with the interview results. The interviewees have mentioned the uncertainty regarding the effects of the policy over its members and it could explain the weight of the first value. Regarding the rest of the criteria, the BWM does not show conclusive evidence, as there are two groups sharing weights, and the difference between the groups can be considered small.

## 6.8 Consumers' lobby groups

The consumer groups are considered of importance, as they are an organized way of representing the will of customers. In the Netherlands, three main consumer bodies for electronic communication can be found: Consumentenbond (for regular consumers), MKB (for small and medium companies) and BTG (for large consumers). In Brussels, BEUC is the organization responsible for lobbying and representing their interests.

From these organizations, MKB has not answered the attempts of contact. The other three organizations have responded the interview; the results can be found below:

Table 20. BWM results of consumers' lobby groups.

BEUC		Consumentenbond		BTG	
Value	Result	Value	Result	Value	Result
Availability	0,228044639	Fairness	0,317892825	Transparency	0,173399015
Fairness	0,111596312	Availability	0,148349985	Integration	0,124137931
Economy	0,111596312	Economy	0,089009991	Availability	0,124137931
Integration	0,111596312	Universality	0,089009991	Freedom	0,124137931
Freedom	0,111596312	Freedom	0,074174992	Universality	0,124137931
Transparency	0,083697234	Certainty	0,063578565	Fairness	0,082758621
Flexibility	0,083697234	Integration	0,063578565	Flexibility	0,082758621
Certainty	0,066957787	Transparency	0,063578565	Certainty	0,082758621
Universality	0,066957787	Prosperity	0,063578565	Economy	0,062068966
Prosperity	0,024260068	Flexibility	0,027247956	Prosperity	0,019704433
<b>Consistency Ratio</b>	<b>0,017790716</b>	<b>Consistency Ratio</b>	<b>0,021192855</b>	<b>Consistency Ratio</b>	<b>0,012479475</b>

The following graph shows the summed results, assuming equal weights between the actors:

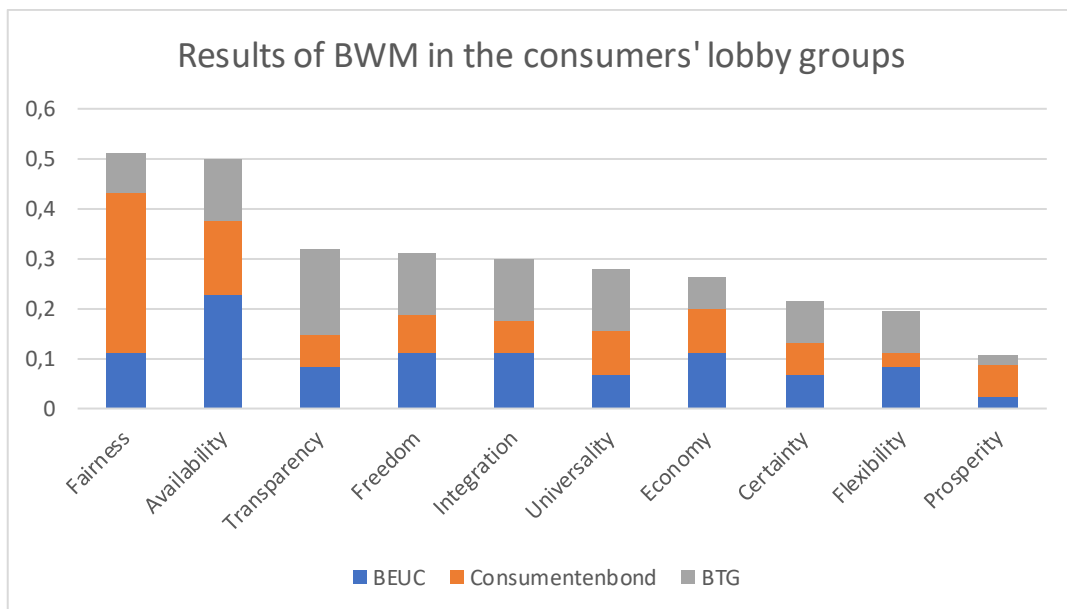


Figure 11. Results of BWM in the consumers' lobby groups.

The results show BTG has important differences with the other two actors. The three most important values for BEUC and Consumentenbond are shared between them, while only availability is used by BTG. This can easily be explained thanks to the direct contact between Consumentenbond and BEUC, as the latter is the representative of consumers in Europe. BTG has a more distant position in this case.

BTG mentions transparency as the most important value, which can be understood for the claims made by the interviewee related to the lack of access to information in the decision-making process.

## 6.9 Summary

This chapter presented the MCDA Best-Worst Method and introduced an example of application of it. It also introduced the online survey performed to the stakeholders regarding their values, and showed the results divided by each player. The actors were shown one by one, and the results evaluated against the answers obtained in the interviews.

This chapter has answered the research question **“What are the most important social values of the policy, according to the stakeholders?”** including its sub-questions:

**a) How can the social values be determined?**

After the initial list of values was obtained from the experts, and the interviews provided an extra set of values, a first value list was created. The list was examined regarding the overlapping of values and the times the experts and stakeholders repeated them. A shorter and final list of 10 values was obtained, to be later used for the BWM.

**b) What method can determine the hierarchy of the values?**

The method used is called Best-Worst Method. It is a MCDA method based in pairwise comparison developed by Jafar Rezaei (2015, 2016), that allows stakeholders to compare each of the values against the ones they consider are the most and least important. The method provides a hierarchical list of values of each of stakeholder, avoiding them to compare each value one by one.

**c) What are the preferences of the stakeholders?**

The different tables shown in each of the previous sub-chapters display the ranking of preferences of each actor. The lists are hierarchically ordered according to the weights obtained on the BWM, and they show the preferred values.

The following chapter focuses on using the same method to determine the Dutch social values, while Chapter 8, using the input provided by this chapter, develops a discussion on the results of stakeholders and the Dutch population.

## 7 Dutch social values

In the previous chapter, the values of the different stakeholders involved in the EU Roaming policy have been assessed with the Best-Worst Method (BWM). Now, it is necessary to compare these results with the vision of the Dutch users and to answer the research question **“What are the most important social values of the EU Roaming policy according to the Dutch population?”**. In order to do so, it is required to learn the Dutch customer’s opinion.

This chapter has been separated from the previous chapter 6 because of the difficulty in assessing the “Dutch” perspective. Different from organizations, where representatives can answer in name of an institution, the will of the Dutch population is not trivial to be found. An initial idea would lead to create a survey and ask a representative number of users across the Netherlands about social values. However, this would mean not complying with both cost and time-constraints of this research. A second approach was to require the performance of surveys to each elected political party in the last 2017 election (Kiesraad, 2017). However, this was not possible due to lack of answer of the respondents, as mentioned in Chapter 2 of Methodology.

Aiming to obtain a hierarchy of Dutch social values, three stakeholders are considered as representatives of the Dutch social values: Consumentenbond, BTG and the Ministry of Economic Affairs; thus, their answers are used as the Dutch view on the matter.

### 7.1 The representative trio

Because of the lack of answer of the political parties regarding this research, three stakeholders were considered as representative of the Dutch peoples’ will.

Firstly, Consumentenbond, the Dutch consumer’s association, is a non-profit organization aimed to protect the consumers with safer and fairer markets. It researches the market behaviour related to user satisfaction in both quality and prices and has contact with regulatory agencies, the Dutch government and the different private stakeholders to mediate between the users’ will and the stakeholders’ view. Consumentenbond does not represent the businesses, but the final consumers.

Secondly, BTG (Bedrijfstelecommunicatie Grootgebruikers) represents approximately 200 large and middle-sized companies regarding their ICT interests. By sharing information among members and having a structural lobby towards governments and suppliers, the organization invests in knowledge, knowledge sharing, collaboration and lobby (BTG, 2015).

The two previous stakeholders were already considered as stakeholders of the policy; thus, there is a need of another actor that can have a wider view the Dutch population needs. The Ministry of Economic Affairs was chosen as a representative stakeholder. The Dutch government is formed by a coalition of different political parties, who can determine the strategy of the Ministry regarding the roaming policy. Although it is true that political parties do not choose the civil servants (as they must be chosen from fair and transparent processes), they do choose the political positions within the Ministry, which determine the vision and mission of the institution for a period of time.

These three stakeholders were chosen as representative of the Dutch social values, as alternative to the direct contact with the political parties.

### 7.2 The BWM results

The results from Consumentenbond and BTG were obtained in the previous chapter. The new added results are those of the Ministry of Economic Affairs. Below, a complete list of the results of the representatives of the Dutch population can be found.



Table 21. BWM results for representatives of the Dutch population.

Ministry of Economic Affairs		Consumentenbond		BTG	
Value	Result	Value	Result	Value	Result
Fairness	0,206219313	Fairness	0,317892825	Transparency	0,173399015
Universality	0,206219313	Availability	0,148349985	Integration	0,124137931
Certainty	0,137479542	Economy	0,089009991	Availability	0,124137931
Transparency	0,127659574	Universality	0,089009991	Freedom	0,124137931
Freedom	0,091653028	Freedom	0,074174992	Universality	0,124137931
Availability	0,068739771	Certainty	0,063578565	Fairness	0,082758621
Economy	0,068739771	Integration	0,063578565	Flexibility	0,082758621
Flexibility	0,039279869	Transparency	0,063578565	Certainty	0,082758621
Prosperity	0,034369885	Prosperity	0,063578565	Economy	0,062068966
Integration	0,019639935	Flexibility	0,027247956	Prosperity	0,019704433
Consistency Ratio	0,011456628	Consistency Ratio	<b>0,021192855</b>	Consistency Ratio	<b>0,012479475</b>

### 7.3 The weight of each actor

The previous sub-chapter mentioned there are three actors that may represent the Dutch users. However, it does not give insights on how they may be weighted. Although the Ministry could represent the will of the government, which had to agree with a group of representatives of the political will of the population, it does truly represent the view of those that did not vote for it.

The other groups, Consumentenbond and BTG may also help by providing a transversal cut of the society, which does not depend on the ideology or political position of the person or organization. However, it becomes clear that none of them alone can represent the entire population.

If using the voting results obtained from each political party as measure of representativeness was a risky movement of this research, determining the weight of three supposed representative actors of the population is even more daring. As the scope of this research is limited by a strong time-constraint, determining a framework to measure how representative of the populations' desires are a combination of both public and private institutions is not feasible; thus, this research does not select a specific weight for each of the actors.

Nevertheless, the following sub-chapter will provide different scenarios considering diverse weights, to show how the value hierarchy could be modified depending on this selection. After analysing these scenarios, a final list of values can be obtained.

### 7.4 Scenarios of weights

As mentioned in the previous sub-chapter, it would be risky to determine a specific weight to the view of any of the stakeholders considered to be part of the Dutch social values determination. Nevertheless, it is interesting to develop a short sensitivity analysis to evaluate how the ranking changes depending on the strength of the actor. The following assumptions are used for this:

- a) Consumentenbond and the Ministry of Economic Affairs are considered the actors with largest representativeness and weight. The sensitivity analysis is based on them, as they are considered to have 80% of the weight of the total
- b) BTG, as large consumer group, affects the representativeness but not in a large extent. This is due to their participation exclusively representing large businesses. Although they are an important part of the Dutch economic and social environment, the opinion should not be considered as important as the other two representatives. A fixed coefficient of 0.2 is used to give a 20% weight to their opinion.

#### 7.4.1 First scenario

This scenario considers the following parameters of weights:

- 40% Ministry of Economic Affairs
- 40% Consumentenbond
- 20% BTG

The following graph shows the results and ranking of the values:

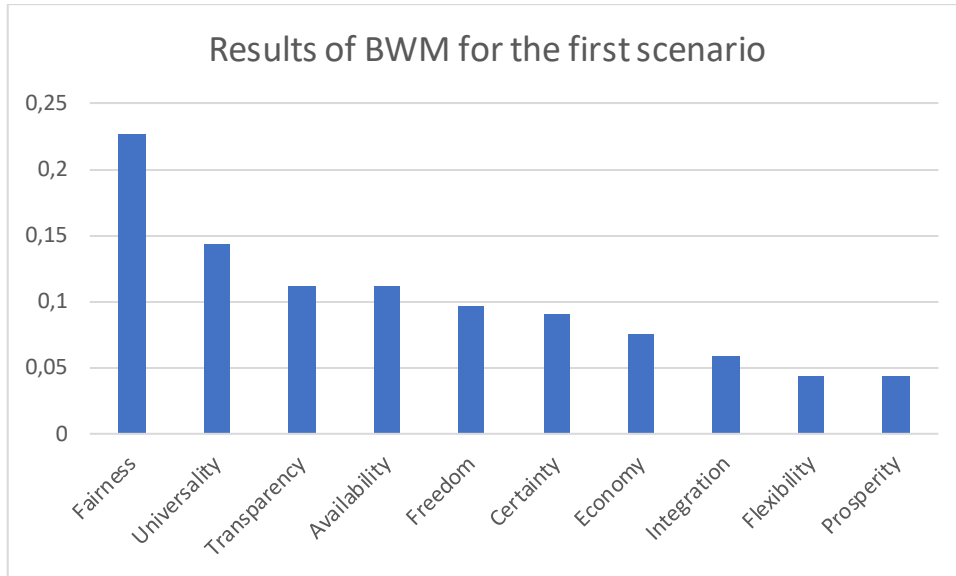


Figure 12. Results of BWM for the first scenario.

#### 7.4.2 Second scenario

This scenario considers the following parameters of weights:

- 60% Ministry of Economic Affairs
- 20% Consumentenbond
- 20% BTG

The following graph shows the results and ranking of the values:

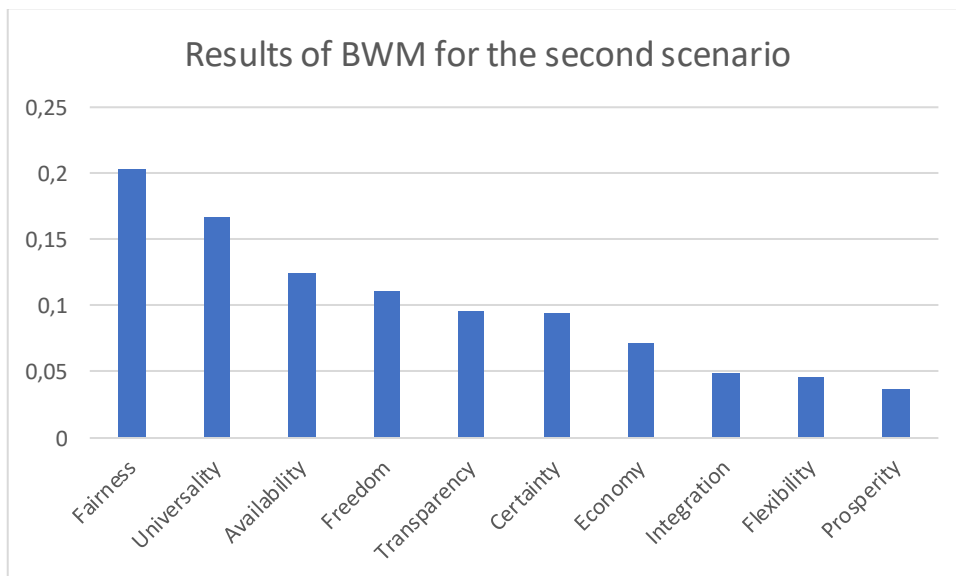


Figure 13. Results of BWM for the second scenario.

### 7.4.3 Third scenario

This scenario considers the following parameters of weights:

- 20% Ministry of Economic Affairs
- 60% Consumentenbond
- 20% BTG

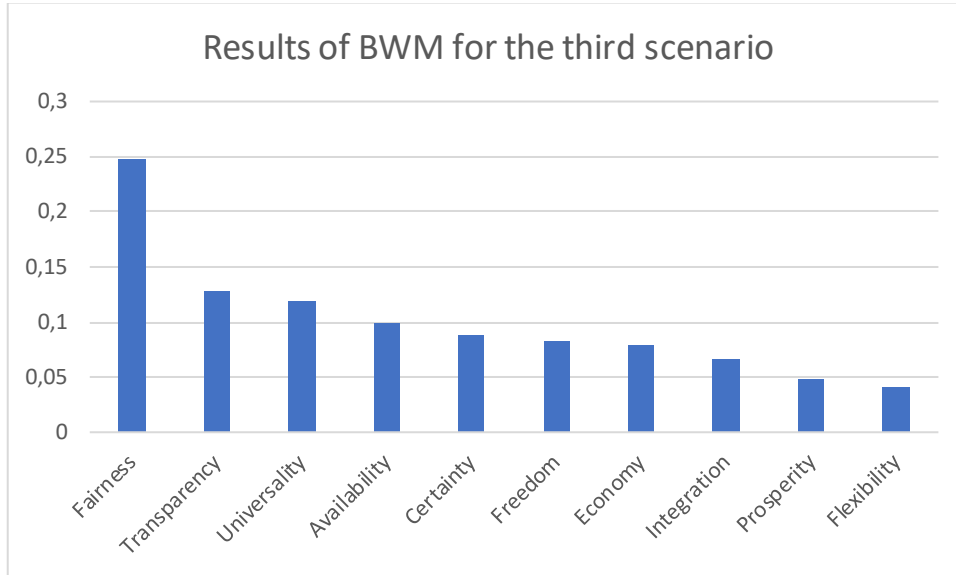


Figure 14. Results of BWM for the third scenario.

### 7.4.4 Results of scenarios

After the scenarios are applied, these results are obtained:

Table 22. Results of ranking per value in each scenario.

Value	First scenario	Second scenario	Third scenario	Range
Fairness	1	1	1	1
Universality	2	2	3	2-3
Certainty	6	6	5	5-6
Transparency	3	5	2	2-5
Freedom	5	4	6	4-6
Availability	4	3	4	3-4
Economy	7	7	7	7
Flexibility	9	9	10	9-10
Prosperity	10	10	9	9-10
Integration	8	8	8	8

By observing the range of results, some conclusions can be obtained:

- Fairness is considered the most important value for each of the scenarios.
- Prosperity and Flexibility are considered the least important values for each of the scenarios.
- Economy and Integration are considered 7<sup>th</sup> and 8<sup>th</sup> in every scenario.
- Universality is considered always within the first 3 most important values.

## 7.5 Summary

Firstly, this chapter provided the methodological approach towards determining the Dutch values. An initial method consisted in the utilization of the results of the last Dutch parliamentary election to determine the ideological position of the population. However, due to the lack of answer of the different political parties, a new approach was needed. By combining three representative stakeholders, a wide perspective of the social values of the Dutch population was obtained.

Different scenarios were proposed, considering diverse possibilities of representativeness for the actors involved. An analysis over the results of those scenarios lead to a final list of the hierarchy of the social values of the Dutch population.

This chapter answers the research question **“What are the most important social values of the EU roaming policy according to the Dutch population ?”**. The list obtained from the BWM results show the importance of the social values according to the three considered stakeholders. The following list shows a summary of the results obtained regarding their ranking position and a final position determined by using averages of ranking positions:

*Table 23. Ranking of Dutch social values.*

Position	Value possibilities	Final value
1	Fairness	Fairness
2	Universality - Transparency	Universality
3	Universality – Transparency - Availability	Availability
4	Availability – Freedom	Transparency
5	Transparency – Freedom – Certainty	Freedom
6	Freedom – Certainty	Certainty
7	Economy	Economy
8	Integration	Integration
9	Flexibility – Prosperity	Flexibility
10	Flexibility – Prosperity	Prosperity

This research question also included the following sub-question:

**a) How do these values differ/coincide with those from the stakeholders?**

In order to provide a complete analysis of the results between stakeholders, aiming to answer this sub-question, the following chapter will provide a discussion of the different aspects included in this research, which could lead to insights into the answer.

## 8 Discussion

After the values of the stakeholders were found, and the answers of a combination of actors were considered representative of the Dutch social values, the methodology requires an analysis between the results obtained from both groups. The objective of this step is to observe patterns of alignment between groups and to understand if the aim that is behind the interests of each actor follows a similar value hierarchy. In case the rankings differ, the stakeholders may have different perceptions on the effects on the values of the policy. This step also answers the pending sub-question from chapter 7: *“How do these values differ/coincide with those from the stakeholders?”*

This chapter also includes discussions connected with the theory that motivated the method and the practical results shown. The differentiation between the definition of Neo-Classical markets and Nootboom’s notion of humane markets is addressed and re-evaluated, as the ranking of some non-measurable values show a higher position than other economically-measurable values.

Finally, a discussion related to the representativeness of the stakeholders, related to the method applied is performed. The connection between individual values and policy values show that institutions may not have an own group of value hierarchy, but may be formed by a number of individual beliefs.

### 8.1 A comparison between the stakeholders’ perspective on social values and the Dutch perception

This sub-chapter may be considered as the main discussion of the results of this research. It intends to analyse the obtained outcomes from the BWM of the stakeholders, and make a qualitative analysis of the results.

It is important to remark the qualitative perspective of the analysis. Although the BWM delivers numerical weights, which could help in approaching the results with a quantitative methodology, the nature of the research could lead to uncertainty with this approach. Several interviewees have mentioned the difficulty they had in using the method because of the closeness between the social values being evaluated. Besides this, the already mentioned strain in determining the weight of each stakeholder within a group led to deciding to compare them between each other, and avoiding numerical methods to determine a “final” number. Thus, in order to reduce the risks of possible numerical mistakes, this comparison will be mostly done without the specific numerical results of the BWM, but with the rankings obtained.

#### 8.1.1 The Dutch social values

After obtaining the results from the Ministry of Economic Affairs, Consumentenbond and BTG, a clearer - image of the perspective of the representatives of the Dutch population is obtained. The different scenarios considered in the previous chapter have helped to determine a list of Dutch social values, which should be compared with the different stakeholders involved, aiming to search for clues whether the different actors considered in the policy are aligned or not with the “people’s will”. Table 23 from the previous chapter shows the results.

#### 8.1.2 A pure consumer perspective

The consumer lobby groups considered were the previously mentioned Consumentenbond and BTG, together with the EU lobby group BEUC. As it can be easily deduced by comparing these actors with those selected to represent the Dutch social values, two of them are repeated. The results of their ranking, assuming equal weights within the actors, is compared with the results obtained in the last chapter.

Table 24. Comparison between Dutch and Consumer lobby groups' values.

Consumer lobby groups' values	Position	Dutch social values
Fairness	1	Fairness
Universality	2	Universality
Transparency	3	Availability
Availability	4	Transparency
Freedom	5	Freedom
Certainty	6	Certainty
Economy	7	Economy
Integration	8	Integration
Flexibility	9	Flexibility
Prosperity	10	Prosperity

As it can be seen, both groups are almost equal in rankings. This was expected, as two of the three actors are repeated. The situation is a limitation of the research, as the initial methodology was modified when political parties did not answer the request to participate. It would be naïve to conclude anything from this first analysis.

### 8.2.3 The EC perspective

The EC is represented by DG CONNECT, the Directorate in charge of leading the development and introduction of this regulation. This position represents the European government's view of the policy, which is not only limited to NL but to the Union. The following table shows the comparison of the rankings of this actor with the Dutch social values.

Table 25. Comparison between Dutch and EC's values.

EC Position	EC's values	Dutch social values	Position
1	Fairness	Fairness	1
2	Universality	Universality	2
3-4	Availability	Availability	3
3-4	Certainty	Transparency	4
5-8	Freedom	Freedom	5
5-8	Transparency	Certainty	6
5-8	Economy	Economy	7
5-8	Prosperity	Integration	8
9	Integration	Flexibility	9
10	Flexibility	Prosperity	10

As the previous case, the EC shares the first values; fairness, universality and availability. Availability shares the 3<sup>rd</sup>-4<sup>th</sup> position with certainty, which anyway is not far located regarding the Dutch social values. The only important difference comes in the least important values. The EC considers flexibility as the least important, with a large difference to the next ranked, integration. However, in the case of the Dutch social values, flexibility is not the least considered, fundamentally because of the vision of BTG.

One limitation that could arise is regarding the repeated rankings of the EC. The BWM does not help in determining a more detailed separation of values for this actor, and it cannot be determined the relation of importance between the same ranked values. Nevertheless, it could be said that with these results, both stakeholders seem aligned.

## 8.2.4 Regulators' perspective

BEREC and ACM were considered as representative of the regulators' perspective<sup>4</sup>. As it could be seen in Chapter 6, both visions have a noticeable divergence in the results. Nevertheless, a ranking list is done assuming equal weights for both of them. It could be suggested to give more weight to ACM, as it is the Dutch NRA, but this research aims to compare the Dutch social values with all the stakeholders involved in the policy, not only those representing the Dutch perspective. Aiming not to increase the complexity of the analysis with a new scenario analysis, and considering that both groups complement each other within the Netherlands, as BEREC influences the domestic policy while ACM influences the European guidelines (ACM is an influential stakeholder of this policy), same weights are considered.

Table 26. Comparison between Dutch and regulators' values.

Regulators' values	Position	Dutch social values
Certainty	1	Fairness
Availability	2	Universality
Universality	3	Availability
Flexibility	4	Transparency
Economy	5	Freedom
Prosperity	6	Certainty
Freedom	7	Economy
Transparency	8	Integration
Integration	9	Flexibility
Fairness	10	Prosperity

The results show a strong divergence between both groups, especially related to the value of fairness. While the group of Dutch social values has fairness as the most important value, regulators have it as the least. This situation is also shared between both regulators considered, which select fairness as one of the least important.

Universality and availability share high importance for both of the groups, while the rest of the values are not aligned directly. It can be said that the hierarchy of the values which regulators work with, are not the same the Dutch population believes in. Some explanations can be easily found.

First, the value of fairness is understandable to be important for the society, but not that much for a regulator. These institutions do not determine policies, but advise decision-makers or enforce the regulations. When a decision is taken, regulators do not mind about the fairness of the decision, but about the legal rule that must be implemented. The fairness of the rule is not determined by them; thus, they may not be worried about it. However, a yellow light may appear for them. Implementing an unfair rule may determine the negative answer from the population, which is finally the one that receives the effect of the enforcement.

Secondly, flexibility can also be explained on enforcement matters. The regulators are aware of the technical problems of users that lose flexibility while travelling abroad in their communications, with devices that need to be re-configured because of not being able to seamlessly connect to other networks. This is something the population may not be aware of.

Finally, transparency, considered very important by the Dutch population perspective, is not high ranked by regulators. A possible explanation may be the fact NRAs are aware of the policy process and the implementation phase, not having problems in transparency matters. The interviews show the

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<sup>4</sup> A comment is needed for the case of BEREC. It is represented by a member of the Austrian NRA, whom excused herself of not being able to represent the entire organization. However, as this report is focused in the roaming policies, the research assumes this person is a good representative of the institution because of being deeply involved in the process of creating BEREC's guidelines.

interviewees are not that worried about this, opposite to other parties such as consumer associations and telecommunication operators.

#### 8.2.5 Telecom operators' perspective

The telecom perspective can be divided in two; MNOs and MVNOs. As mentioned in Chapter 6, these actors come from different backgrounds and may have different strategic objectives. However, the weight of each of them is considered equal, although the groups are still separated between MNOs and MVNOs.

Table 27 and 28. Comparison between Dutch and MNOs' values and comparison between Dutch and MVNOs' values.

MNOs' values	Position	Dutch social values	MVNOs' values	Position	Dutch social Values
Certainty	1	Fairness	Transparency	1	Fairness
Economy	2	Universality	Fairness	2	Universality
Transparency	3	Availability	Certainty	3	Availability
Availability	4	Transparency	Economy	4	Transparency
Integration	5	Freedom	Integration	5	Freedom
Prosperity	6	Certainty	Universality	6	Certainty
Fairness	7	Economy	Availability	7	Economy
Universality	8	Integration	Prosperity	8	Integration
Freedom	9	Flexibility	Flexibility	9	Flexibility
Flexibility	10	Prosperity	Freedom	10	Prosperity

MNOs and MVNOs share the perception certainty is a value needed within this policy. However, certainty is not considered within the top Dutch social values. Similarly, this occurs with economy, which is also highly regarded by operators. If these players aim to use arguments regarding these values, they should understand this is not what the population is worried about, and may backfire by pressing in those areas.

On the other side, universality of the services is something required by the Dutch population, although operators are not focused on it. If the users are finally able to use the roaming services, is something both MNOs and MVNOs seem not to focus on.

A difference arises in fairness. MVNOs are closer to the ranking given by the Dutch people's representatives. Fairness, in this research, refers to have fair prices and avoid abusive margins. Clearly, as MVNOs need to pay wholesale tariffs to MNOs, and final users need to pay for retail prices, the value seems much more important for them.

#### 8.2.6 Telecom lobby groups' perspective

Unfortunately, only one of the telecom lobby groups interviewed answer the BWM survey. MVNO Europe was the only actor that answered; thus, it would be very risky to determine any conclusion from this analysis. However, the table below shows the comparison between their results, and those of the Dutch trio.



Table 29. Comparison between Dutch and telecom lobby groups' values

Telecom lobby groups' position	Telecom lobby groups' values	Dutch social values	Position
1	Certainty	<b>Fairness</b>	<b>1</b>
2-6	Economy	<b>Universality</b>	<b>2</b>
2-6	Integration	<b>Availability</b>	<b>3</b>
2-6	Prosperity	<b>Transparency</b>	<b>4</b>
2-6	Freedom	<b>Freedom</b>	<b>5</b>
2-6	Flexibility	<b>Certainty</b>	<b>6</b>
7-10	Fairness	<b>Economy</b>	<b>7</b>
7-10	Availability	<b>Integration</b>	<b>8</b>
7-10	Transparency	<b>Flexibility</b>	<b>9</b>
7-10	Universality	<b>Prosperity</b>	<b>10</b>

The table shows a strong divergence with the opinion of the Dutch population. There are clearly three levels in the answers of the lobby groups' shown, which leads to believe the BWM could not obtain trustable data from it. However, certainty is clearly separated from the other levels, being synchronized with the answers of the lobby groups when being interviewed.

As mentioned, the BWM in this case cannot be used because of the results obtained, which do not seem trustable. Chapter 10 describes the problems that have raised from not having enough respondents representing the groups.

### 8.2.7 Summary

After a first analysis case by case is done, a discussion is needed regarding the results. The different actors are compared to find patterns and insights on their similarities and differences. In order to facilitate the process, a list of rankings is done with each of the actors that answered the survey. This complete list per stakeholder can be found in Appendix IX.

An initial approach could be to add all the results into a unique graph to have a global perspective of the perception of stakeholders. However, this could be misleading, as it would be assumed that each of the parties has the same weight. For example, it becomes clear that although lobby groups are important within the policy, they are not as powerful as the EC.

The EC perspective is well-aligned with the Dutch social values obtained, as it is the consumer lobby groups' perspective<sup>5</sup>. However, the other stakeholders have shown important divergences related to the ranking used. Nevertheless, three values can be differentiated as having a lower value for most of the actors. Flexibility, freedom and prosperity have shown that besides exceptional cases, most of the stakeholders do not consider them as important as other values.

## 8.3 Perfect markets vs. humane markets

One of the discussions related to the method proposed and the economic theory selected, is related to the assumptions made in this research. As mentioned in Chapter 4, Nooteboom (2014) argues that markets can be categorized in four types: idealized, social, cooperative and humane. The first one is the one considered to be the one with the most traditional economic perspective, and the author considers it is based in a number of myths (or idols) that are not always true to work (such as the concepts of continuous growth, self-centrism, efficiency in markets, among others). The author heavily criticises the concept of "market" and how economists take it as a natural law.

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<sup>5</sup> This latter was expected because of the relation between the consumer lobby groups' and the Dutch perspective.

As a second option, Nootboom mentions the social market, related to the theory of capabilities of Sen and Nussbaum (which is discussed in the chapter 9). A third option, cooperative markets, is based in the cooperation that helps, for example, innovation (different from pure competition). Finally, and the concept the author introduces, the humane market is proposed.

The humane market can be considered a wider concept that includes not only the already known economic values, but also the "(...) wider dimensions of the good life, including compassion, health, moderation, and harmony with nature" (Nootboom, 2014, p. 21). The author mentions that these values may not be commensurable, something this research discusses, as social values may not be easy to consider within a classical economic analysis.

As it can be seen, this "humane" market clashes with the classical perfect market that "natural" laws may reach in the NCE or NIE perspectives, which were used to economically justify the European policy (although, according to this thesis view, they are not enough to explain the regulation). However, Nootboom's ideas have a closer contact with the OIE perspective. As mentioned previously in Chapter 4, OIE considers a self-interest behaviour of people based in three concepts: equality, liberty and security. These concepts are broader than the NCE and NIE perspectives and have a closer relation with the humane market. Nevertheless, Nootboom believes that self-interest may not only be the driver for how markets work.

Although it would be interesting to deepen the analysis between OIE and Nootboom's perspectives, this is not the objective of this discussion. The aim, is to suggest the lack of importance that the decision-makers have given to those intangible and difficult to measure effects on the population. A perfect market, complying with all the myths mentioned by Nootboom, does not mean a market that is good for the well-being of the people. Markets are not technocratic and people are the final decision-makers of buying or selling products. Using a group of numerical tools to predict the best outcomes or decisions may be of help, but does not mean the human part can be measurable and added. Further research is needed into how we can connect those in-commensurable concepts with the economic values and help policy-makers to determine the best paths to follow.

## 8.4 Individual values vs policy values

One of the assumptions made during this research was that representatives from organizations could represent the values of their institutions by answering the BWM survey. Although this is a strong assumption, it is based in the idea that individual and political values are combined. Schwartz et al. (2014) argue that personal values can explain core political values, and that they can be differentiated. For example, people who consider security as a high priority may tend in favour of nationalistic policies. This would mean that the risk of bias of an interviewee may be even higher than expected. It becomes hard to understand whether the interviewees answered regarding their own perception or regarding an institutional perspective, and this may be a limitation to address in future researches. However, Schwartz et al. discuss about individual and political values, not on policy ones.

Stewart (2009) argues that there is a difference between political and policy values. "Political values – such as freedom, democracy, equality – underpin the broad design principles of the government of nation states and change very little over time. Policy values manifest themselves in particular areas of government action – such as the design of health systems, or in the support given to regions – and change over time (...)" (Stewart, 2009, p. 14). It could be said that policy values are those that apply political values. Connecting this with Schwartz et. al arguments, it could be said that individual values determine policy values.

The question that arises is how can we determine the values of an organization, if individual values determine our political values, which determine our policy values. Organizations are composed of human beings, each of them with different values<sup>6</sup>. How the organization thinks in terms of values, should be the result of a combination of individual human values of its members and the final interests of it.

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<sup>6</sup> Although as mentioned in previous chapters, the individual values within the same culture could not be that different from each other.

According to Stewart, it can be argued that “values trump interests” (Stewart, 2009, p. 15). Policy needs a meaning besides the instrumental part, and that meaning can be given by values. Values can be seen in any policy, although they may not be explicit, such as the RLAH policy. Was the EU thinking on economic terms, or was something behind it, maybe intangible, that encouraged heading to the policy?

The interviewees have shown different perspectives on this. However, most of them admit that there is a strategy behind, mostly based in an integration value of the EU. The DSM strategy does not seem an economic decision, but a value-based one. Although the EU is heavily criticised as technocratic, it does not seem the RLAH policy was technically driven at all, something many stakeholders admit. Besides the reason why the EU boarded the ship towards mobile communication unification across Europe, it would be interesting to listen to those critical authors that consider the EC as a technocratic and non-humane body regarding this position. If the movement was strategic, only to maintain the power of the EC and justify its existence, if it was based in pure European values behind the organization, or if it was a combination of both, are questions that the reader should ask itself.

## 9 Conclusions

The aim of this thesis was to answer the main research question: **“How can we assess the societal values related to the implementation of the Roaming Like At Home (RLAH) policy of the European Union for the case of the Netherlands?”**.

In order to do so, the methodology required that the main research question was divided in five separated questions that could provide a path to obtain the answers for the final objective. In order to show the different conclusions achieved in each of the sub-questions, this chapter will address them separately:

### 9.1 Roaming

The first research question **“What is the EU Roaming policy?”** aimed to provide an introduction over the meaning of roaming and the definitions of the markets where its services are being traded. The different justifications of the European Commission (EC) were evaluated, together with a debate regarding the validity of the economic motivation for regulation. The following paragraphs show the results of this sub-question.

The roaming policy in Europe has evolved from an initial timid attempt to cap prices and increase competitiveness across markets, to the enforcement of RLAH, allowing users to roam freely within a FUP. The steps taken since the start have not been smooth and several changes of strategy have been influential in creating uncertainty between the actors. Some analyses performed in this report have shown that in case operators need to compensate the costs of RLAH, those who do not travel may be the most affected, both with prices increases or with the ban of roaming. Users that cannot afford higher bills and only roam few times a year, may now risk the benefit of roaming at all. It is still unclear how the policy will affect the markets across Europe, but the EC is assuming the risk of implementing a policy which many analysts believe it could fail. An error in estimations or implementations could affect the credibility of the EC and its Digital Single Market (DSM) strategy.

The interviewees have shown optimism, but it has been seen during the meetings that few of them show certainty over the policy implementation mechanisms (such as the Fair Use Policy), especially operators and telecom lobby groups. The second semester of 2017 will be important to determine if the policy has been a good choice, if it needs fine tuning, or if it should be re-evaluated. However, it does not seem feasible to go back one step and avoid RLAH.

The EU has justified immobility of prices to act over the market and create a regulation that can eliminate the market failure. However, the EU bases this in mainstream economic theories such as Neo-classical and New Institutional economics (NCE and NIE respectively), which cannot completely explain the market failure. It can be argued that NIE may consider the opportunistic behaviour of telecom operators to not reduce roaming prices; thus, the EC would need to control this behaviour by regulating the market. However, Original Institutional economics (OIE) seem to provide a better fit for the situation, as it considers self-interested human behaviour as a combination of three wishes: equality, liberty and justice. If the EC considers this perspective, it would mean that the need for regulation is not only on the market efficiency, but also on pre-defined mental models which are part of the European values. Nevertheless, these points are not addressed in the official justification.

### 9.2 Public and social values

Chapter 4 answered the second research question **“What are the social values of telecommunications regulation?”** and performed a discussion related to the different theories and approaches towards defining the concepts of public and social values.

Several theories can be applied to understand how public and social values can be found and measured. In an economic perspective, it does not seem smart to only observe those tangible, material effects that the policy generates. Intangible externalities should be estimated to determine the total value of any policy

implemented. As mentioned in Chapter 4, examples such as the political position of a citizen towards a government, the way the policy is defended, the values of a culture, etc., could affect the determination of the cost and value of a policy. A policy implemented by a dictator has not the same value for a person than one implemented by a democratic government. Thus, it is important to consider other factors that affect the perception of the value of a policy. The perspectives of Talbot, Commons and Veblen, among other scholars, can be used to determine how to estimate the real value of a policy considering concepts as self-interest, public-interest, procedural-fairness, equality, liberty and security.

As this policy affects society as a whole, social values should be considered. Social value can be defined as *the worthiness that the socially collective beliefs and systems of beliefs give to the policy*, adapting Tsirogianni & Gaskell's (2011) definition. Telecommunications, as a technology created by human beings, can be evaluated according to human values. Regulation, as a policy aimed to modify the individual behaviour of avoid unexpected behaviours of human systems, can also be evaluated with human and social values. The concept of regulation, although it comes from the economic theory, needs to address less-technocratic ideas, as regulation may improve or diminish the well-being of any member of the society, besides its economic aspect.

The conclusions found after this chapter show the need of considering non-measurable criteria when assessing the total value of a policy. The final value of any good (in this case, of the policy) cannot be only measured with mainstream economic indicators, but also considering those values behind the institutions and population, which may not only be based in self-interest, as traditional economic theories may refer.

The section also found out an extensive list of values that can be applied to the roaming policy, as requested by the research question. The list, found in Table 9 of this report, also shows the need of further reducing the number of values, as the definitions are broad enough to produce confusion between their application. Although values need to be considered to assess the real value, a challenge appears when they should be limited in scope to be measured in their impact.

### 9.3 Stakeholders

As third research question, the thesis aimed to answer **“Who are the actors involved in the policy and what is their position?”**. A thorough stakeholder analysis was done to find out those most important actors involved, considering not only those domestic players, but the trans-national institutions that participated in the policy. The final list of parties considered, separated between groups of stakeholders, can be seen below:

Table 30. Final list of the most important stakeholders of the policy.

Group	Actor
European Commission	DG CONNECT
	European Commission
European Union	European Commission
	Council
	European Parliament
Regulators	Authority for Consumers & Market (ACM)
	Board of European Regulators for Electronic Communications (BEREC)
Consumers	Consumentenbond
	Bedrijfstelecommunicatie Grootgebruikers (BTG)
	Bureau Européen des Unions de Consommateurs (BEUC)
Dutch Politics	Dutch government (Ministry of Economic Affairs and Permanent Representation of the Netherlands in the EU)
Telecom operators	MNOs (KPN, T-Mobile NL, VodafoneZiggo, Tele2)
	MVNOs (Lebara & Simpel)
EU Telecom Lobby groups	European Competitive Telecommunications Association (ECTA)
	European Telecommunications Network Operators' Association (ETNO)
	GSMA Europe
	MVNO Europe

Although almost every Directorate General (DG) of the EC is involved in the DSM strategy, only one of them was deeply involved in this specific area of roaming: DG CONNECT. This DG has represented the interest of the EC towards the other EU bodies (European Parliament and Council), and the other actors such as regulators, lobby groups, operators and the Dutch government.

Some stakeholders did not answer for the request of information and some complex bodies such as the European Parliament (EP) and Council were not evaluated because of the diversity of opinions within those actors. However, this research considers that the number of stakeholders and the importance they represented in the policy process are enough to provide a complete overview of the process.

The problems of, and interdependency between, the actors have shown to have a great complexity of this analysis. The stakeholders strongly vary their interests when they are dedicated to the telecom industry (such as regulators), or when they have a broader objective (such as consumer associations). The interviews performed exposed strong differences in perceptions, mostly in risk-assessment of the results of the policy, in the motivation towards this specific solution and related to the formality and transparency of the EU process.

#### 9.4 Comparison between Dutch and other actors' values.

After analysing the answer of experts in the areas of telecommunication and regulation, together with the literature review performed in previous chapters and the interviews done to the stakeholders, a list of ten social values was finally obtained, solving the research question **“What are the most important social values of the EU roaming policy, according to the stakeholders?”**. This was a necessary step, as the number of values considered possible was extensive and many definitions overlapped, increasing the difficulty of correctly applying the Multi-Criteria Decision Analysis (MCDA) tool. The final list of values considered within the roaming regulation, with their respective definitions, can be found below:

*Table 31. List of values and definitions considered for the roaming policy.*

Value	Definition
Availability	Refers to the value of having a mobile service ready to use abroad.
Certainty	Refers to the value of being certain about a situation or scenario.
Economy	Refers to having a healthy economic background within a society.
Fairness	Refers to the benefit of having fair prices (not abusive margins).
Flexibility	Refers to the value obtained by having flexibility related to mobile communication abroad.
Freedom	Refers to the social value of being free to decide or move
Integration	Refers to the value of closeness and interaction between cultures and nations within the EEA.
Prosperity	Refers to the value of a prosperous society in social terms.
Transparency	Refers to the value of being part of transparent processes.
Universality	Refers to making all people successful users of the roaming service

The Best-Worst Method (BWM) was used to obtain the hierarchy of the values for each of the stakeholders, limiting the criteria to the list shown above. Those stakeholders that accepted the survey provided valuable information regarding the importance of each of the values, comparing them between each other.

Finally, the Dutch social values, considered as a combination of the values of the Ministry of Economic Affairs, Consumentenbond and BTG, were found. This combination of actors differs from the initial methodological approach, a limitation that can be found in the next chapter 10. Different scenarios were considered related to the representativeness of the actors, and a final ranking of values that represent the perspective of the Dutch population was achieved, solving the research question **“What are the most important social values of the EU roaming policy according to the Dutch population?”**. The final is found in Table 32:

Table 32. Final ranking of values of the Dutch population.

Position	Value
1	Fairness
2	Universality
3	Availability
4	Transparency
5	Freedom
6	Certainty
7	Economy
8	Integration
9	Flexibility
10	Prosperity

The Dutch perspective was compared against the other actors' views related to the value ranking obtained. Some conclusions could be obtained from this analysis:

- a) As it could be expected, the Dutch perspective group showed almost same results with the consumer lobby group, because of sharing two of the three members of the group. It could be risky to interpret this result as an alignment of both groups, as the Dutch perspective is limited by the decision taken on choosing its three representative stakeholders. This is addressed in chapter 10.
- b) The EC representative showed very similar hierarchy than the Dutch consumer group. It can be concluded that both perspectives are aligned related to their value preferences..
- c) Regulators seem not to be aligned between themselves, neither with the Dutch user's perspective. Especially, the concept of fairness seems to be very differently considered, with the Dutch population having it as the most important value, and the regulators choosing it as one of the least important.
- d) Telecom operators were divided in two groups: MNOs and MVNOs. Both groups showed divergence between the actors, although some general insights can be observed. Fairness in prices does not seem important for MNOs, while it is for MVNOs and the Dutch people. Universality is also a value not highly considered by operators.
- e) Telecom lobby groups were represented only by one respondent (MVNO Europe), as the other actors declined to answer. The results of the BWM have been mostly inconclusive, as most values shared the same weight result, except for the first positioned value: certainty. Nevertheless, certainty is considered one of the least important values in the Dutch perspective, showing non-alignment between this stakeholder and the Dutch users' group.

## 9.5 Discussion and conclusion

The results obtained by the BWM show interesting conclusions. Firstly, the EC's perspective seems almost totally aligned with the Dutch user's perspective. Given the number of critics received by the Commission related to their "technocratic" view, these results show that at least related to social values, the Dutch people's perspective is linked with the EC's value hierarchy. This may be explained because of two reasons: very good lobbying skills by the Ministry (through the Council), Consumentenbond (through BEUC) or BTG (through INTUG), or because the EC is well aimed towards the values perceived by the population.

Regulators seem to have a more technocratic approach, as it would be expected from such institutions. Regulatory players are focused on implementing policies they do not decide. Although they may interfere with the process by providing advice to decision-makers, these organizations are not focused on how fair is a policy, but how available or universal are the services provided by the operators they regulate. However, this approach may lead to clashes with the public opinion. Regulators, as enforcers of the

regulation, may have to be aware of providing certainty to a population that is ignorant in these matters. Not educating the population could lead to a neutral effect of the policy, and to keep the “fear” of users for roaming usage. Nevertheless, it is true that both regulators consider universality and availability as important values, and it would be expected that NRAs should create educational campaigns to teach the population about their rights.

Telecom operators can be considered the most interesting interviewees regarding their diversity in opinions. Although it was expected to receive similar argumentations among the group, a strong diversity was found during the interviews; a fact confirmed by the BWM. The positions of each operator, differentiated by the MNO-MVNO condition, the domestic or international scope of the company, the number of users, etc. are very big differentiators. This diverse environment can explain the different answers received on this part of the research. However, some conclusions can be found:

Firstly, BWM results of MVNOs are aligned with their claim that they have been relegated from the discussion of the policy. Although different reports have shown risks for these companies, MVNOs have shown disappointment regarding the process inclusiveness and transparency. This is also followed by MVNO Europe’s argument as a lobby group, finding closed door to influence the decision-making. BWM combined results of MVNOs show this, by having transparency as the most important factor to consider.

Secondly, MNOs show preoccupation for the values of certainty and economy. The situation can be explained by their claim about the unclear process of guidelines development, and the doubts operators showed when NRAs had to determine the specifications of the regulation. An important remark is that the interviews and BWM surveys were done during the implementation process of the policy, where telecom companies were still solving their doubts regarding how the policy was proposed to be applied. This could have affected the answers regarding the position of the value of certainty. However, this is not the case for the value of economy, which can be considered a primary concern for MNOs.

Finally, the research cannot determine whether the telecom lobby groups are aligned or not with the Dutch social values. As only one of the actors answered, and the BWM could not give clear insights, it would be risky to determine any conclusion for the group. However, certainty clearly shows a first position, connected with the preoccupation of telecom operators related on how the policy will be implemented or will affect the economic performance of the companies.

These results have shown that many of the critical stakeholders of the decision may have not only different tangible interests, but may have differences in the perceived importance of values. In order to develop a smooth decision-making process, understanding what values are behind a policy decision may help stakeholders with opposite interests to reach common grounds.

## 9.6 Summary and remarks related to the main research question

The main research question of this report has been **“How can we assess the societal values related to the implementation of the Roaming Like At Home (RLAH) policy of the European Union for the case of the Netherlands?”**. In order to solve it, it was required to do research into the justification of the roaming policy by the decision-makers (first research question). It was followed by a discussion of the concepts of public and social values, obtaining a reduced list of the most important social values impacted in the areas of telecommunications and regulation (second research question). A stakeholder analysis was needed to obtain the insights of those actors involved in the policy (third research question) and a Multi-Criteria Decision Analysis (MCDA) was performed to stakeholders to obtain their vision about the hierarchy of the social values (fourth research question). Finally, a group of stakeholders were considered as representative of the Dutch population, and the MCDA was performed to them (fifth research question). A discussion of the results was done afterwards.

The European Commission has justified the intervention of the roaming market based in a market failure, with price immobility as its most visible symptom. In the official justification, there are no remarks of the motives behind the price immobility, but only references to the fact. In order to explain the theory behind the intervention, the Neo-Classical economic (NCE) perspective is limited. Two other perspectives can



justify regulating the market, such as the New Institutional Economic (NIE) and the Original Institutional Economic (OIE) perspective. Although the NIE perspective acknowledges “human” behaviour such as opportunistic behaviour, this thesis believes OIE fits in a better way to explain the need of regulation. OIE is based on a different perception of the human nature, and although it still considers self-interested behaviour as the motivator, it contemplates three wishes behind this: equality, liberty and security. These three wishes are beyond the classical measurable scope of economics, and are difficult to be measured with a pure utilitarian perspective. A different method to measure the impact of the regulation is needed, to address some of this “human” needs.

In order to assess which are the social values impacted by the RLAH policy, this research has found utmost important to consider the definition of public value. Complementing the OIE perspective, the theory proposed by Talbot (2011) adds the public need of assessing public values not only with self-interest, but with public interest and procedural interest. This is connected with Correljé & Groenewegen’s (2009) and Rogers et al.’s (1998) inclusion of the concept of intangible externalities to be considered within the costs and values of any good (or in this case, policy).

Intangible externalities can be also seen as parts of the total value of the policy which are not considered by the mainstream economic perspective. These externalities may not be measurable or clear to detect, and may strongly vary from region to region considered, such as political positions, values of a culture, etc. The idea of considering non-rational based externalities clashes with NCE and NIE perspectives in the behaviour of the consumers.

The research proposes the use of a Multi-Criteria Decision Analysis (MCDA) tool to evaluate how those values are assessed by the different organizations involved in the decision-making process. The tool, named Best-Worst Method (Rezaei, 2015, 2016), resulted in a list for each group of actors, with the hierarchical ranking of social values from the most to the least important. The results have shown that several actors consider values, which are not easily measurable or used by the mainstream economic perspective, with a higher ranking over other commonly used measurable values.

Thus, it can be concluded that in order to assess the social impact on the population regarding the EU roaming regulation, the mainstream economic perspectives fall short. Several “human” values need to be considered within the total value of a policy, and the difficulties in measuring or even defining them shows a lack of certainty on how to assess a policy. The fact that some non-measurable values show a higher position than other measurable and known ones, manifest the need of an academic debate on whether the actual methods used to assess the value of a policy or good are correct. The thesis has shown a methodology to assess these intangible values and help decision-makers to consider them within a policy process.

The research also concludes that the classical stakeholder analysis can be insufficient to detect those values behind the interests of an actor. In order to perform the method, several steps regarding the actor’s problems formulation and their perception regarding others are performed. Those tangible impacts, have an intangible asset based which is not considered in the traditional stakeholder analysis perspective, as there is no specific requirement related to understand what is behind the public (or known) perspective of the actors. The thesis suggests adding a “value layer” to the analysis, by forcing analysts to perform enquiries related to which are the values beneath the actors, aiming that the real value of the policy of the policy in their perspective can be found.

Having a correct consideration of the social values’ impact related to this, or any other policy, is of vital importance for decision-makers. Several technologies may find justification not on the purely economic areas, but on values that the population consider important. As an example, the Wifi4EU initiative of the European Commission, which aims to provide WiFi services to almost 8000 communities across the EU (European Commission, 2017d), provides a different justification. The motivation is not focused on a pure economic analysis, but on a combination of economic and social values, considering those intangible assets mentioned in this thesis (European Commission, 2016e). However, no specific method was applied to measure the added value of the policy, a situation that this research tries to change for the future.

A final remark of this research is that technology which may seem “neutral” does have a strong effect on the values of organizations and people. Roaming does not seem a life-changing technology for many experts, and has been adopted as a traditional technology provided by operators. However, a policy change regarding the availability and extension of the technology across the EU has generated strong debates, not only on the tangible side but on those European values that are within it. This has not only been acknowledged by public institutions, but also by private organizations which see a positive value of integration within it.

## 10 Recommendations, limitations and future research

The thesis research found comparisons between the perspectives of the policy makers, policy influencers and the representatives of the will of the Dutch population. However, several limitations arise from the methodology. The following sub-chapters describe the restrictions of the research that, in some cases, may be considered significant. It will also include some recommendations and proposals for further research, that could apply for future Master theses or PhDs.

### 10.1 A dynamic policy

The EU Roaming policy is in a constant revision by policy makers and regulators. This thesis research began between March-July 2017, and since this date the EC and BEREC have created different press releases and guidelines clarifying the rules and determining the maximum prices for the wholesale market. This constant-changing situation led to difficulties, as the perception of the actors changed could change depending on the moment of the policy. As an example, probably, citizens were not aware of the real effects of the policy until it was implemented in mid-June 2017. The time constraint of the thesis generated difficulty in assessing the perception of the actors before and after the start of the RLAH; thus, it can be said that the stakeholder analysis could not represent the final situation of the thesis when it was delivered.

It is proposed for future analysis, when this policy is already “daily” used by citizens, to re-assess the stakeholders’ positions. A new stakeholder analysis for a future report could be interesting to understand how the social values importance vary after the policy is implemented, maybe aiming to search a possible hindsight bias (Plous, 1993) by actors. Nevertheless, policies related to technology may always face this problem, as technology evolves faster than regulations.

### 10.2 The trust in actors

As actors have strong interests in this policy, they may not answer according to their real interests. Of course, it is clear that representatives from institutions answer for these organizations, not for themselves. However, and maybe aiming to distort and neutralize the results of the report, the respondents may not transparently discuss specific issues. The motivation arises from two perspectives; first, from an academic and transparent perspective, the respondents may feel threatened to give information that will remain “forever” in the databases and could be used against them; secondly, as the research is developed together with ACM, respondents may feel the thesis is part of one of the parties, and may act strategically towards a regulator.

These problems are hard to diminish, as a purely neutral position without affecting any of the parties is impossible to achieve. Each time the researcher locates himself in a different position, one of the actors could feel threatened or benefitted from their answers. As analysts, it is important to acknowledge this limitation, which occurs in every case.

### 10.3 Representativeness

One of the most important hypotheses used for this report is accepting one person can represent the opinion of an institution or a group of people. This hypothesis can be easily criticised, specially referring to public organizations. How representative are politicians or civil servants can be a matter of debate. As an example, in the Netherlands only 35% of the population tend to trust the politicians, with a 60% of opposite answers (European Commission, 2016f). However, it is still believed that politicians do represent people.

On the side of the institutions, it is also hard to consider the answers as representative of the entire will of the organization. Can a person, even the highest authority, truly represent the final will of the institution? Can it be said, for example, that the Juncker Commission represents the entire will of the EC? This question arises besides the power of the person itself, as even minority leaders may not totally represent the will of its voters.

A different approach for this research could have been to interview more than one sector within the institutions. However, a weighting problem appears. How can it be known the true weight of the opinion of each sector?

As seen in the research, the final representative group has been a combination between the Ministry of Economic Affairs, Consumentenbond and BTG. This combination has the mentioned limitation of uncertainty regarding the weight of each actor. Although they do represent parts of the population, it is hard to assess how representative they are of the Dutch society and how each sector's opinion weights.

## 10.4 Generalization

With a similar approach to the representativeness sub-chapter, the report has generalized institutions which are hard to summarize. The EC itself can be considered more than a typical national government and a conglomeration of very diverse ideologies and values across the continent. The need to generalize, aiming to reduce the complexity of the analysis, may have taken important insights from the actors.

One of the main parties that has been generalized was the EU. The Council and EP were not taken into account for the thesis because of the difficulty and complexity that their answers could provoke in the research. Representing each political group within the EP and each representative within the Council, would have created a heavy burden in the analysis, which would finally not avoid the representativeness problem, as MEPs do not have a better trust than the already mentioned Dutch perspective in their own political parties.

In the first case, the EP consists of 751 representatives from every EU country member. Also denominated MEPs (Members of the European Parliament), the representatives are elected in each of their countries in terms of 5 years and represent domestic political parties (although they may also be independent). Because of the huge imbalances of population between EU members, the MEPs are not exactly representative of the population that backs them. As an example, Germany is represented with the maximum amount of MEPs allowed per country (96), and each MEP represents approximately 850.000 inhabitants, while Malta is represented by the minimum amount of MEPs allowed per country (6), where each MEP represents approximately 72.000 inhabitants (European Parliament, 2014).

After the interviews with the stakeholders were performed, it became clear that the EP was considered by every interviewee as a major stakeholder. However, as the EP is an extremely diverse institution, it is arguable if there is any possibility of obtaining the opinion of the EP as a unique institution. It would be needed to perform interviews to each of the parties or alliances involved in it, and to consider there are 751 MEPs (Members of the European Parliament). This would not only require bearing in mind at least 7 stakeholders more (one for each EP political alliance) to the already extensive list of actors in this analysis, but would also mean assuming the EU members have a certain homogeneity of values. Hofstede (2010) argues that societies share a common set of values, a thought that is shared in this research, as the aim is to search for those social values in the Dutch society (assuming homogeneity within the Netherlands). Several authors have discussed that Europe may share values which are different from those from other regions of the world and can even be part of one of those of the "Western Civilization" (Huntington, 2002). However, thinking of a "European" society seems too daring at this moment where values appear distant even between close regions (Minkov & Hofstede, 2013) and harmonization looks beyond the short term (Grant, 2007; Hermerén, 2008). As the discussion of a "European" identity is still open and would lead to a different research, far from this thesis scope and time deadlines, the EP values were not considered.

In the second case, the Council of the European Union is formed by 28 seats, representing each of the members of the EU. These seats are occupied in 10 different configurations, depending on the policy being discussed, although many countries are represented with permanent representatives. The institution is the representative of the will of each country's governments, and it is fundamental in the approving process of any EU Regulation. Similarly to the EP, it would be hard to determine the "voice" of the Council, as the actors have different interests and insights, and would require a dedicated stakeholder analysis for them; thus, it is determined not to consider their position as body, although one of the stakeholders represents the Dutch government in this body.

## 10.5 Actors not willing to contribute

Although two major stakeholders abstained of or did not reply the initial interviews (ECTA and MKB), their perspectives could be considered within other lobby groups such as GSMA Europe or ETNO and Consumentenbond or BTG, respectively. However, a major limitation occurred when the Dutch political parties did not answer the requests, required according to the first methodological approach.

The thesis research was developed between April-July 2017, months where the political parties across the Netherlands were negotiating a new government. It could be said that the parties did not have the time to answer this thesis research questions, as they may have been busy with other political aspects. Nevertheless, and without believing this research is an extremely important aspect of their political lives, it does not seem acceptable that political parties, which are the ones responsible for representing the will of the population, were the only group that was not interested in helping with the thesis, focused mostly on the public interest of a technology policy. According to most stakeholders involved, the European roaming policy will affect the Dutch population, and this research believes politicians should be more aware about studying the social impacts of the policy.

## 10.6 Non-application of other methods, except for BWM.

The selection of the method was done by two main reasons. Firstly, the BWM was developed by Jafar Rezaei, a TU Delft researcher that has developed scientific articles on the method (2015, 2016), and encourages students into using it. This situation provided an opportunity for the research, as the author of the method was open to give feedback on the proper application of it. Secondly, the method has been applied by other MSc students in the last years, which have provided rich insights on how to improve its usage (Bezerianos, 2016; Halbac, 2015; Kizhakenath, 2016; Kothadiya, 2016). These two reasons have encouraged the research into using the method, as it is applicable as MCDA for the objective of the thesis.

However, other methods could have provided different results. MCDA is a vast concept that includes dozens of different methods, that use different hypotheses for their application. Triantaphyllou (2000) describes in his book many of these methods that could have been applicable instead of BWM. As the research faced time constraints, the BWM was chosen as unique method, although further research could try to compare the results with other MCDMs.

## 10.7 Bounded rationality

One of the major challenges policy analysts face is the combination of technical/numerical concepts with social aspects. The fact that policymaking processes are developed trying to measure aspects which are sometimes difficult to consider, creates not only a constant burden situation for negotiators but also ambiguous scenarios where more than one option may be considered correct. Seen from a rational-mathematical perspective, policy-making is not an easy task as many aspects to be considered are too difficult or too vague to be properly taken into account in an analysis.

A problem of developing these scenarios are the limitations of our own processing system as human beings. Although our brains are amazing machines able to handle vast amount of information, and that even with the advances of technology there is no device able to reach its power, it has several limitations. Simon argues rationality "(...) is concerned with the selection of preferred behaviour alternatives in terms of some system of values whereby the consequences of behaviour can be evaluated" (Simon, 1997, p. 84). It can be seen that this definition mentions a capability issue: whether we can evaluate the consequences; thus, it already considers that our performance in such matters may bound our rational performance.

When decisions are taken, the actors choose between different alternatives according to their interests, beliefs and values. However, and considering our limitations, it could sound naïve to believe we can predict every outcome. March (1994) mentions that actors are bounded because of information constraints and limited cognitive capabilities such as limitations in attention, memory, comprehension and communication. These limitations are addressed by human beings by simplification processes such as editing, decomposing, heuristics and framing. However, this simplification does not mean a rational decision is taken.

However, it is still important to mention that bounded rationality is not a concept that only applies for this research. The challenge of how humans handle complex process is in each socio-technical system and has been addressed by different authors and methods, which are not the focus of this research.

## 10.8 Limitations in the scores

As mentioned in Chapter 8, the final discussion was based in a qualitative approach. This was chosen in order to avoid the uncertainties generated by using numerical mathematical methods with answers related to social values, which are difficult to assess by the interviewees. The weights of the BWM were used to give a ranking value to the criteria, and to reduce the numerical complexity of the results.

However, this simplification creates different uncertainties. A ranking does not tell how far in weight is each criterion from another, and could lead to wrong perceptions of answers. This could lead to believe rankings are equally separated in hierarchy, although some of them may be much more or less important than others.

## 10.9 Further research

### 10.9.1 An ex-post analysis with politicians

With the results obtained in this thesis, politicians could receive interesting insights of the opinions of the population. The insights could be discussed and debated, to understand if their opinion is statistically linked with any of the stakeholders' groups. The results of such research could help in solving the representativeness matters, providing insights on how representative are the groups with the political opinion in the Netherlands.

### 10.9.2 A future WTP for social values

In the determined list of social values of the stakeholders, some of them could be consider measurable. Economy or prosperity could be measurable from a utilitarian perspective, as the economic effects of the policy in the general economy of a country or in its future growth could be estimated.

These measurable values are being chosen within another list of difficult to measure or non-measurable values such as fairness or flexibility. By using a very gross assumption that utilitarianism could be applied, these values can receive an estimated value, coming from the comparison with the measurable values.

This idea would require a strong theoretical analysis of the different methods and theories applied, and how is the state of the art of the comparison between tangible and intangible effects. Nevertheless, it would seem interesting, as policies do not depend only on monetary or measurable matters, and providing a number to those hard-to-measure aspects would help in the discussion.

### 10.9.3 Transplantation of policy

An interesting approach for a future research would be to understand the process of decision-making across the EU and how the European policy is implemented in every country. The values across European countries vary significantly (Hofstede et al., 2010; Minkov & Hofstede, 2013) and choosing a unique policy may be hard, as the base ground of each nation is different. De Jong & Lalenis (2002) propose several ideas to analyse the situation and strategy used by the EC.

### 10.9.4 An approach to capability theory

Although sub-chapter 10.9.2 mentioned the possibility that, from a utilitarian perspective, social values could be measured in terms of money by creating a comparison between themselves. The assumption that the social values have an intangible value that is anyway part of the total value of the policy, allows a

possible comparison between economic and social ideas. However, a relatively new theory criticises this assumption and proposed a different approach.

The capability approach can be considered as “a broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change in society” (Robeyns, 2005). Different from other perspectives, this approach focuses on the capabilities of a person (what somebody is able to do), clashing with other perspectives focused in desire-fulfilment or monetary aspects. It may also be considered as a theory that helps in determining which are the intrinsic values to which a policy should contribute to.

The main contributors of this theory have been Sen (1985) and Nussbaum (1993), and they argue in favour of the importance of the freedoms, or capabilities, as these are the ones that allow people to do whatever they want on their lives. This means that, different from other perspectives, it takes into account not only the final end but the freedom needed to reach that end. The approach considers two main differences Robeyns (2005):

- a) Functionings vs. capabilities: functionings refer to achievements, while capabilities refer to the ability to achieve. Sen (1987, p. 36) argues that “functionings are (...) more directly related to living conditions, since they are different aspects of living conditions. Capabilities, in contrast, are notions of freedom, in the positive sense: what real opportunities you have regarding the life you may lead”.
- b) Well-being vs. agency: in this case, a distinction is done between the personal well-being (feeling yourself better because of helping someone else) and the well-being complemented with commitments (doing something that is not beneficial to the person itself).

Besides these notions, Nussbaum (2013) considers a different (although similar) distinction between capabilities, and adds a defined list of them to what she considers within human development: life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; control over one’s environments. The author has mentioned this is not a definitive and closed list. However, it intends to lower the theory to the ground level, in order to be applied, for example, to compare situations, such as the Human Development Index.

Without aiming to extend on this theory further, it can be easily seen that the approach varies from the one used in this research. However, several points could be used and adapted for further research:

- 1) The approach focuses on capabilities, but most interviewees answered related to the functionings. A new approach could be to train the interviewees into answering questions on the future capabilities of the users thanks to the roaming policy.
- 2) In the BWM survey, it was never clarified if the interviewee had a focus on personal well-being or agency behaviour. It could have been possible that interviewees answered in different perspectives; thus, lowering the quality of the results. Training in these concepts could also be useful for a future approach.
- 3) By using Nussbaum’s capabilities, a more concrete list of criteria may be obtained. For example, an initial approach could be to answer which of the listed capabilities is affected by the policy, and later to determine the values for each of the capabilities selected. This could give more certainty and avoid letting the experts and interviewees to widen the scope.
- 4) Although this sub-chapter does not discuss it, this theory allowed the creation of different indexes to measure well-being, that have taken into account several capabilities that are not easily measurable with the utilitarian perspective. The thesis has worked regarding Intangible Externalities, but has not prepared an initial index to measure policies. Further research could be aimed towards generating a framework to create indexes which could help decision-makers to assess how technological policies affect the population.

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## Appendix I – Experts’ answers to social values

This appendix describes the process of interviews to experts related to the social values in mobile roaming regulation.

The experts interviewed have been:

- a) Dr. AF (Aad) Correljé. Associate professor of the department of Values, Technology and Innovation, within the section of Economics of Technology and Innovation of the Faculty of Technology, Policy and Management of the Delft University of Technology. Dr. Correljé has graduated in Political Sciences at the University of Amsterdam and has wrote his PhD at the Erasmus University in Rotterdam. His current research themes involve an economic/institutional approach to the analysis of public policy, regulation and private strategy development in infrastructure-bound sectors, like oil, gas, power, water supply and flooding protection (TU Delft, 2017a).
- b) Drs. J. (Jolien) Ubacht. Assistant Professor of the department of Engineering Systems and Services within the group of Information and Communication Technology (ICT) of the Faculty of Technology, Policy and Management of the Delft University of Technology. Drs. Ubacht teaches Institutional Aspects of ICT, is Chair of Graduation Coordinators and responsible for the coordination of graduations within the ICT sector. She has researched in areas related to regulation of telecommunications and is currently involved in sharing economy and design principles for self-organizing & adaptive systems (TU Delft, 2017b).
- c) Sander Woutersen. Senior Policy Advisor for ACM, Mr. Woutersen has worked in regulation of telecommunication and has been involved in the creation of the EU Roaming policy guidelines and has provided his expertise for the development of different regulations both in ACM and BEREC. Mr. Woutersen has graduated from Eindhoven’s Fontys Hogeschool with a BSc in Technical Business Administration.
- d) Ing. Sergio de Cola, PMP. Former Director of the National Directorate of Telecommunications within the Ministry of Industry, Energy and Mining of Uruguay and actual Software Development Manager of ISBEL S.A. (Montevideo, Uruguay). Mr. de Cola has graduated as an Electrical Engineer in the University of the Republic, Uruguay, and has occupied consultancy positions for both private institutions and government organizations in national and international level, including for the ITU (International Telecommunication Union, 2014).

The question asked to the experts has been: “In your opinion, what are the social values you believe the regulation in international mobile roaming mostly impacts, both in positive and negative ways? Please list up to 10 of them”. The questions have been answered by e-mail for the cases of A. F. Correljé, J. Ubacht and S. de Cola, while S. Woutersen answered personally. The following list of values has been obtained from the interviews:

*Table 33. List of social values obtained from experts.*

<b>A.F. Correljé</b>	<b>J. Ubacht</b>	<b>S. Woutersen</b>	<b>S. de Cola</b>
Approachability	Accessibility	Availability	Accessibility
Availability	Affordability	Competition	Affordability
Connection	Competition	Control	Democracy
Flexibility	Economy	Flexibility	Prosperity
Presence	Freedom	Freedom	Universality
Resilience	Freedom of choice	Friendship	
Simplicity	Growth	Reliability	
Sharing	Integration	Safety	
Unity	Prosperity	Simplicity	
Universality	Universality		



A summarized list of the considered values, with the number of repetitions, can be found below:

Table 34. List of values selected by experts and number of mentions.

Value	Number of mentions
Accessibility	2
Affordability	2
Approachability	1
Availability	2
Competition	1
Connection	1
Control	1
Democracy	1
Economy	1
Flexibility	2
Freedom	1
Freedom of choice	2
Friendship	1
Growth	1
Integration	1
Prosperity	2
Reliability	1
Resilience	1
Safety	1
Sharing	1
Simplicity	2
Unity	1
Universality	3

Besides the opinions of the mentioned experts, several interviews were performed to different stakeholders involved in the policy. These interviews, which can be found in the Appendix IV, were used to find values that were not considered by the experts. The following social values are mentioned:

Table 35. Added social values to experts' opinions.

Added social values
Certainty
Transparency
Honesty
Integration
Fairness

## Appendix II – Stakeholder analysis

### A II.I – List of stakeholders

The following list shows the name, description and approach of each considered stakeholder for the case:

Table 36. Extensive list of stakeholders.

Actor	Description	Approach	Source
ACM	National Regulatory Authority of the Netherlands.	Positional	(Authority for Consumers & Markets)
BEREC	Body of European Regulators of Electronic Communications is the regulating agency of the telecommunication market in the European Union.	Positional	(BEREC)
BEUC	European Consumers' Organization	Reputational	(Bureau Européen des Unions de Consommateurs)
BTG	Dutch non-profit organization which promotes consumer protection for large businesses	Reputational	(Nederlandse Vereniging van Bedrijfstelecommunicatie Grootgebruikers)
Consumentenbond	Dutch non-profit organization which promotes consumer protection.	Social Participation	(Consumentenbond)
Council of the European Union	Body of ministers of each European Union member.	Positional	(Council of the European Union)
DG AGRI	The European Commission Directorate General for Agriculture and Rural Development.	Positional	(European Commission)
DG COMP	The European Commission Directorate General for Competition.	Positional	(European Commission)
DG CONNECT	The European Commission Directorate General for Communications Networks, Content & Technology.	Positional	(European Commission)
DG EAC	The European Commission Directorate General for Education and Culture.	Positional	(European Commission)
DG ECFIN	The European Commission Directorate General for Economic and Financial Affairs.	Positional	(European Commission)
DG EMPL	The European Commission Directorate General for Employment, Social Affairs and Inclusion.	Positional	(European Commission)
DG GROW	The European Commission Directorate General for Internal Market, Industry, Entrepreneurship and SMEs.	Positional	(European Commission)
DG JUST	The European Commission Directorate General for Justice and Consumers.	Positional	(European Commission)

<b>DG MOVE</b>	The European Commission Directorate General for Mobility and Transport.	Positional	(European Commission)
<b>DG REGIO</b>	The European Commission Directorate General for Regional and Urban Policy.	Positional	(European Commission)
<b>DG RTD</b>	The European Commission Directorate General for Research and Innovation.	Positional	(European Commission)
<b>DG SANTE</b>	The European Commission Directorate General for Health and Food Safety.	Positional	(European Commission)
<b>DG TRADE</b>	The European Commission Directorate General for Trade.	Positional	(European Commission)
<b>DIGITALEUROPE</b>	Representative of IT, Telecoms and consumer electronic companies – Lobby firm.	Social Participation	(DIGITALEUROPE)
<b>Dutch Government</b>	General Representation of the government of the Netherlands.	Positional	(Government of the Netherlands)
<b>Dutch political parties</b>	General group representing Dutch political parties	Positional	(Tweede Kamer der Staten-Generaal)
<b>ECTA</b>	European Competitive Telecommunications Association – Lobby firm.	Social Participation	(European Communities Trade Mark Association)
<b>ETNO</b>	European Telecommunications Network Operators' Association – Lobby firm.	Social Participation	(European Telecommunications Network Operators' Association)
<b>European Commission</b>	Executive body of the European Union. For this thesis, it will be represented by the President and Vice-Presidents.	Positional	(European Commission)
<b>European Parliament</b>	Legislative body of the European Union.	Positional	(European Parliament)
<b>GSMA Europe</b>	Represents the interests of European mobile network operators as well as companies in the broader mobile ecosystem – Lobby firm.	Social Participation	(GSMA Europe)
<b>KPN</b>	Dutch MNO	Positional	(Koninklijke KPN)
<b>Large Businesses</b>	General group representing Dutch large businesses.	Positional	
<b>MKB</b>	Dutch non-profit organization which promotes consumer protection for small & medium businesses.	Reputational	(Koninklijke Vereniging MKB-Nederland)
<b>MVNO Europe</b>	Represents the interests of a large number of MVNOs across Europe – Lobby firm.	Reputational	(MVNO Europe)
<b>MVNOs</b>	Group of Dutch MVNOs	Positional	
<b>Private consumers</b>	General group representing individual Dutch consumers.	Positional	
<b>Small &amp; Medium Businesses</b>	General group representing Dutch small & medium businesses.	Positional	
<b>T-Mobile NL</b>	Dutch MNO	Positional	(T-Mobile Nederland)
<b>Tele2</b>	Dutch MNO	Positional	(Tele2 NL)
<b>VodafoneZiggo</b>	Dutch MNO	Positional	(VodafoneZiggo)

## A II.II – Problems formulations

Table 37. Actors' problems formulations.

Actors	Interests	Desired situation / objectives	Existing or expected situation and gap	Causes
<b>ACM</b>	Fight unfair competition, promote competition, help informing customers about their rights.	A competitive international mobile roaming market for Dutch customers.	The regulation can lead to an increase in domestic prices and economic difficulties to MVNOs.	Telecom operators move costs to existing customers. MVNOs cannot compensate losses.
<b>BEREC</b>	Independent, consistent, high-quality regulation of electronic communications markets	A competitive international mobile roaming market inside the EEA.	The regulation can lead to an increase in domestic prices and economic difficulties to MVNOs.	Telecom operators move costs to existing customers. MVNOs cannot compensate losses.
<b>Consumer groups</b>	To defend the economic and social interests of consumers.	Lower or none prices for roaming.	Possible general price increase because of roaming generalization. Lack of standardization in technical and legal framework across countries of the EU.	Need for Telcos to recover the cost. Lack of political will to solve standardization.
<b>Dutch Government</b>	To defend the rule of the law of NL and the policies determined by the government related to Telecom.	To allow citizens to have a better roaming experience in the EU.	Need to balance different stakeholders within the country.	Clashing views between operators and consumers.
<b>EC</b>	To create a Digital Single Market across the EEA.	A seamless elimination of mobile roaming charges.	Possible impact over MVNOs and domestic prices. Disapproval of countries with high influx of tourists	Telecom operators move costs to existing customers. Touristic countries' operators cannot benefit longer from higher roaming prices.
<b>EP</b>	Improve wellbeing of European citizens	Integrate citizens across borders.	Users limit the usage of communication technologies across the EEA.	Cost of roaming.
<b>Lobby Groups</b>	To promote the different public institutions into following the interests of the Telecom industry.	To limit the scope of the new regulation as maximum as possible.	The actual regulation limits the profit of Telecom Operators and risks business plans of MVNOs.	The imbalances of traffic, especially for MVNOs, creates risks in the business plans of the operators.
<b>Telecom Operators</b>	To provide mobile roaming services while obtaining the highest possible profit. To keep their customers satisfied.	This depends on the operator. KPN aims to keep or increase its market share, without affecting its business plans	KPN, as purely Dutch operator, has higher wholesale costs than its competitors, specially VodafoneZiggo and T-Mobile NL. It has	KPN has only its business in the Netherlands, leading to higher wholesale costs than its competitors. The

		<p>because of the roaming usage. It also expects no tolerate the possible impact over the MVNOs, which rent their infrastructure. Similar happens with rest of MNOs. With MVNOs, the expected situation is to be able to continue to be competitive.</p>	<p>uncertainty regarding the future behaviour of the market. MVNOs face risks by not having good contract prices as those of MNOs.</p>	<p>other operators may have an advantage over this. The bargain position becomes a cause of the problem for each actor of this group.</p>
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## A II. III – Power/interest matrix

Table 38. Power/interest matrix.

	<b>High power</b>	<b>Low power</b>
<b>High interest</b>	Key players: BEREC BEUC COUNCIL DG CONNECT EC EP GSMA EUROPE	Subjects: ACM BTG CONSUMENTENBOND DUTCH GOVERNMENT DUTCH POLITICAL PARTIES ECTA ETNO KPN MKB MVNOs MVNOs ASSOCIATION T-MOBILE NL TELE2 VODAFONEZIGGO
<b>Low interest</b>	Context setters: DG COMP	Crowds: DIGITALEUROPE DG AGRI DG EAC DG ECFIN DG EMPL DG GROW DG JUST DG MOVE DG RTD DG SANTE DG TRADE

## A II.IV – Relations between stakeholders

The following table can show the formal (and possible informal) relations between them:

Table 39. Relations between stakeholders.

Stakeholder 1	Stakeholder 2	Relation
EC	Council (within EU)	The EC represents the EU government while the Council represents the ministers of each EU Member. Both institutions are needed to approve legislation, and it can be said that the Council provides more local insights, while the EC has a more regional view.
EC	EP (within EU)	The EP is the representative body of the EU Members' citizens. Its members (MEPs) are elected by citizens across the EU, and they are responsible for approving or amending legislation coming from the EC. Although the members represent citizens of each country, they may act against their own domestic government.
EC	BEREC	BEREC provides assessments about policy projects, actual situation of the markets and technology advances as requested by the EC. They should also create the guidelines in case a Regulation is approved.
EU	Lobby Groups	The different lobby groups try to push forward their agenda, while stopping those regulations that may not be suitable for their industry. They have regular meetings with different DGs as well as MEPs, depending on the issue involved. General information about these meetings can be obtained publicly.
EU	Dutch politics	Dutch political parties are represented in the EP and the government is represented in the Council. They can act and press certain matters of interest for their agendas.
EP	Council	The Council needs to accept the proposed legislation by the EP.
EP	BEUC	Consumers and businesses can press MEPs towards achieving improvements in legislation. This could be done by threatening the power position (changing voting patterns) or through consumer lobby groups such as Consumentenbond.
BEREC	BEUC	The European regulator works together with the Dutch regulator in creating guidelines and recommendations to improve regulations. BEREC creates regulations, which after being approved are enforced domestically by ACM.
Consumers (Consumentenbond, BTG, MKB and BEUC)	Regulators	The consumers may influence the regulators by using opportunities of arbitrage or with formal complaints about abuses of the Telecom operators.
Consumers (Consumentenbond, BTG and MKB)	Dutch politics	Consumers are voters and are defended by laws. The government tries to improve the welfare of consumers while the rest of the political parties also pushes changes.
ACM	Dutch politics	The Dutch government and different parties may influence Regulators (through ACM) into increasing or decreasing controls and regulative pressure.
Telecom Operators	ACM	Telecom Operators refer to those with Dutch permits. They are influenced by ACM's regulation and control, while try to push regulative reforms in favour of their needs.
Telecom Operators	Dutch politics	As key sector of the Dutch economy, operators can influence politicians by changing investment plans, rising or decreasing prices, etc.
Telecom Operators	Lobby groups	Telecom operators from the Netherlands and abroad are part of associations that offer lobbying services. The associations

		influence the EU bodies by different means such as financing activities, providing consultancy, etc.
<b>Telecom Operators</b>	Consumers (in general)	This may be one of the strongest relations, as it is the business-customer link that creates the need for regulation. Telecom Operators, by being regulated, may affect certain aspects that Consumers need.

The previous table shows how each of the relations between actors work and how they may influence each other. This first view is needed to proceed to the next step, understanding the problem definition of each of the actors.



## Appendix III – Interviewee list and interview template

### A III.I – Interviewee list

The following interviews were performed:

Table 40. List of interviews performed with details.

Organization	Representative	Type of interview	Date	Location
ACM	Johan Keetelaar	Personal	19/05/2017	The Hague, NL
BEREC	Elisabeth Dornetshumer	Personal	24/05/2017	Brussels, BE
BEUC	Guillermo Beltrà	Telephone	01/06/2017	-----
BTG	Jan van Alphen	Personal	31/05/2017	Utrecht, NL
Consumentenbond	Inge Piek	Personal	30/05/2017	The Hague, NL
DG CONNECT	-----	Personal	24/05/2017	Brussels, BE
ETNO	Francesco Versace	Telephone	17/05/2017	-----
GSMA Europe	Laszlo Toth	Telephone	26/05/2017	-----
KPN	Paul Knol	Personal	15/05/2017	The Hague, NL
Lebara (MVNO)	Paul Van Straaten	Telephone	19/05/2017	-----
Ministry of Economic Affairs (NL)	-----	Personal	13/06/2017	The Hague, NL
MVNO Europe	Yves Blondeel	Telephone	02/05/2017	-----
Permanent Representation of the Netherlands in the EU	Stefan Koreneef	Personal	24/05/2017	Brussels, BE
Simpel (MVNO)	Raymond Perrenet	Personal	29/05/2017	Amsterdam, NL
T-Mobile NL	Bart Vreke	Personal	30/05/2017	The Hague, NL
Tele2	Bart Heinink	Telephone	31/05/2017	-----
VodafoneZiggo	Walter Kroeze	Personal	29/05/2017	Amsterdam, NL

In the initial stakeholder analysis, MVNOs were considered as a single actor within the telecom group in the Netherlands. However, as mentioned in Chapter 3, there are more than 50 MVNOs in the Netherlands, a larger number than the combined group of the stakeholders considered in this report, which would lead to make an important effort in obtaining every opinion. As MVNOs are still an important party in the analysis, two of them were considered for interviews: Lebara and Simpel. These companies are being considered by ACM within an analysis of the actual situation of the spectrum in the Netherlands for the Ministry of Economic Affairs; thus, they are also considered representative for the thesis.

From the interview requests sent, only two parties did not participate. ECTA motivated its decision in time-constraint issues and MKB did not answer the request.

### A III.II – Interview template

Hello and thanks for your time. I am grateful that you could give me some moments of your agenda for this interview.

My name is Juan Pablo Nieto and I am developing my MSc thesis for Engineering and Policy Analysis for the Faculty of Technology, Policy and Management of the Delft University of Technology.

The MSc thesis topic is related to international mobile roaming, and how the implementation of the Roaming Like At Home policy can affect the social values of customers in the Netherlands. Although there have been several impact assessments and economic analysis of the regulation, there is still little research regarding how the policy may affect the social outcomes in both positive and negative ways.

Because of this, I am going to ask you some questions about your insights on the policy and your personal or professional perspective on the matter. I plan to record this interview, in order to create a summary or transcription of it for the research, which I will gladly send to you later. Also, it is planned to use the names of the interviewees, although in case you request to remain anonymous it can be accepted, and only the institution you represent will be mentioned. If you agree with this, we may proceed with the questions.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?
- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it? (If the person only answers economic values, re-question with social values).
- 3) Do you believe the EU citizens give a great importance to this policy?
- 4) According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?
- 5) Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?  
This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?
- 6) What is your general opinion about the different steps the EU has taken towards the Regulation?
- 7) What was the main objective of your institution regarding the mobile regulation?
- 8) Do you think the regulation is inevitable or sustainable within time?
- 9) Is there any gap or expected situation after the policy has been approved by the EC? If so, do you have any possible solution?
- 10) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?
- 11) Can you mention which are the most important stakeholders in this policy?
- 12) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?
- 13) Do you suggest any specific person that I should contact, who can provide me with more insights on these questions?

The second part of the interview is a mapping of values among different stakeholders. The proposal is to ask you what are the social values that you consider when discussing the concepts of international mobile roaming and regulation.

This part is based on an online survey, where you will be able to give hierarchy to different social values depending on your thoughts. As you could have seen, I sent you a link to answer a survey some minutes before the interview. The survey does not take longer than 10 minutes and I would really appreciate if you could answer it immediately after we had this conversation, as you have been “warmed-up” with the thesis situation.

Thanks for your time. I am grateful that you could answer these questions. After writing the summary or transcript of the interview I will send it to you and, if you would like, I can also send you the final version of the thesis after it is finished.

## Appendix IV – Summary of interviews

### A IV.I – Johan Keetelaar – ACM

The interview with Mr. Johan Keetelaar happened on 22nd May, 14:00, at ACM's headquarters in The Hague, Netherlands. Some questions were not asked, as they were already answered by previous questions.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Keetelaar is the Director of Telecoms, Transport and Post for ACM in the past 4 years. He has come from OPTA, the previous telecom regulator of the Netherlands, and actively participates in BEREC's meetings. He has an academic background in Econometrics from the University of Amsterdam.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

In a positive way, Keetelaar argues bill shocks will disappear when users travel, creating less scared users which are used to turn off their mobile services when crossing borders. He also mentions the "European feeling" of the users, and the hope that this policy may increase the sense of a single internal market. On the other hand, there is a possible negative effect that general retail prices may increase to compensate the costs of the RLAH services. Keetelaar believes this policy is more related to allocation rather than generation of welfare, so the waterbed effect can lead to non-expected scenarios, and although there is no certainty in the results, he believes the positive effects outweigh the negative effects.

- 3) Do you believe the EU citizens give a great importance to this policy?

Keetelaar initiates the answer by mentioning his opinion may not be totally representative of the perception of the European citizens, or even the Dutch citizens. In general, he believes people are not caring that much at this moment. He differentiates business consumers and regular consumers; the first group can show a big relief in bills, as small companies can have lower prices, although important companies may not even feel the policy; the second group can have a large benefit, although with the actual situation with accessible Wi-Fi hotspots (among other technologies) across countries, it does not seem the policy will actually have a large effect. It could also occur that depending on the groups of people is the level of importance of the policy: young people may give more importance to it than old groups, etc.

- 4) According to your perception of the EU people, do you think this perception of benefits varies between countries in the EU?

Keetelaar suggests this may be true, as the location of the countries may show the different way of feeling of the users. He has been part in the debates of BEREC, and some countries were more eager to actively discuss the policy than others, showing different situations of interest. The lobbying by operators differed from country to country and some countries may be more affected than others; this could mean retail prices could increase in those countries, affecting the actual situation.

- 5) According to your perception, do you think the effects of the policy vary depending on the region?

The interviewee considers this question is very difficult to predict on time. There are different scenarios that may occur, but as last question mentioned, consumers do care, but not that much. The Netherlands is a country that may have a specific perception according to the level of economic and social development it has, different from other countries that may show differences in these patterns.

6) What is your general opinion about the different steps the EU has taken towards the Regulation?

Keetelaar considers this was a very political process, as it is a key policy for the DSM. Lobby groups made a strong effort to influence the policy, as well as different governments which were influenced by their own telecom industries. The EC had a good process in general, given the pressure of every party. BEREC did a very strong work and the EC did a quite good job.

7) What was the main objective of your institution regarding the mobile regulation?

The interviewee comments there are two main roles in ACM's position. Firstly, ACM needs to enforce the law. The regulator is not a policy-maker, and it needs to control that the operators are not using any strategy (such as legal loopholes) that affects the aim of the regulation and are complying with the policy. Secondly, together with BEREC, ACM needs to publicly advice policy-makers regarding the possible scenarios that may occur and how the market changes with the implementation of the policy

8) Do you think the regulation is inevitable or sustainable within time?

Keetelaar mentions that politically, it was inevitable. The EC had a politically key objective with the DSM, and the roaming policy is an important part of it. In an economic perspective, a regulation would have also been needed as the termination rates were needed to be adjusted. The prices were very high and the regulation helped in increasing the competitiveness. Related to the social concerns, Keetelaar argues that before the regulation, business consumers were overweighing the common users, as they paid high tariffs for the service without having a need of a reduction as they were not price-sensitive. A regulation improves, in social aspects, as the price-sensitive users may access to an "exclusive" service.

Regarding sustainability, it is not clear in economic terms and ACM/BEREC will need to check how the market behaves continuously. However, politically, it must be sustainable as it has a political impact in case it does not.

9) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The interviewee argues that although there are several studies done in the economic part, the justification was political.

10) Can you mention which are the most important stakeholders in this policy?

Keetelaar recommends discussing these questions also with a representative from the Ministry of Economic Affairs, as it was involved in the discussions of the matter within the Council.

11) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee believes this is a very hard question. In a first impression, it could be said that there are some doubts about this. For example, customers that do not travel a lot, with less income, may be paying the bill of the ones that are travelling, even generating an anti-social effect. Prices have been decreasing year by year, and this situation may reverse this positive effect. However, as mentioned, this is not clear yet.

## A IV.II – Elisabeth Dornetshumer – BEREC / RTR

The interview with Mrs. Elisabeth Dornetshumer happened on 24th May, 16:00, at the ATRIUM Meeting Building in Brussels, Belgium. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mrs. Dornetshumer is an economist, with a master degree from the Vienna University of Economics and Business, and she has been working for RTR, the Austrian Regulator for telecommunications, in the Economics Department. She has been involved in the very first roaming regulation in 2007, in a position of analyst, and has been following the evolution of the roaming regulation since then. Since 2014, she is co-chairing the Roaming Experts Working Group, part of BEREC.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

The interviewee mentions this is a very difficult question to answer, as it depends on each of the countries position regarding, for example, travelling patterns or costs for operators. In the end, it has been a trade-off between those countries that have little tourism abroad, but have quite a lot of inbound traffic, with those with large numbers of tourism abroad and a constant traffic outflow.

Some operators have already decided to directly stop their roaming services, something allowed in the regulation, so the question would be if it is better to have a roaming service where I can occasionally go abroad and pay for the service, or to seamlessly travel even if the person does not travel. The costs of this policy may be paid by those who do not benefit from it. It depends on the country it is being discussed, and somebody is going to pay this.<sup>7</sup>

The people that have lower income, who are also looking for lower prices, may face two options: higher average prices or no-roaming services. On the other hand, the people that usually travel may have been able to pay for the service anyway.

- 3) Do you believe the EU citizens give a great importance to this policy?

The interviewee refers to the Austrian case, where the people do give importance to the topic. However, they could have been misguided, as initially the media referred to it as a free-cost policy, something that is not fully correct, as there are still some limitations especially for data services.

- 4) This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The EC has tried to put as argument that the policy helps regarding the social values of the Europeans, but many counterarguments were also used. At the end, legislators knew that they could not get the best of everything, and after the negotiation process finished, it could be said the social aspects were considered. Dornetshumer mentions that the arguments in the impact assessments were not that good, but it was a political decision. The EC worked regarding the consumer surplus in social values terms, but not in specific values involved.

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<sup>7</sup> The interviewee recommends to read the 2014 BEREC Report of RLAH (BEREC, 2014).

5) What is your general opinion about the different steps the EU has taken towards the Regulation?

The personal view of the interviewee is that the process (the evolution of the roaming regulation) was “messy”. When the EC decided in the Roaming III regulation to create the roaming decoupling, where people could buy separated packages of domestic services and roaming services, it later decided to eliminate this before implementing it on practice. Lots of money was spent by stakeholders for the implementation, which never came into effect in the end.

Regarding transparency, although reports are available, the process (especially trialogue) itself can be considered informal and transparency is difficult to achieve.

6) What was the main objective of your institution regarding the mobile regulation?

Dornetshumer mentions article 19, that requires two important points from BEREC: to monitor the prices, as well as the traffic balances and volumes, in a benchmark report done twice per year; a transparency report done from obtained information by operators and NRAs, published once a year. Right now, BEREC is drafting different guidelines and exchanging views from different NRAs to harmonize the implementation across Europe

7) Is there any gap or expected situation after the policy has been approved by the EC? If so, do you have any possible solution?

BEREC cannot comment about a desired or expected situation, but only acts as demanded by the EC. It is too early to evaluate how RLAH will work. The only gap the interviewee sees is how to explain the FUP to the users, which is a complex regulation and leaves room to interpretation.

8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

Dornetshumer does not dare to confirm if it was justified or not, as there were many variables involved in the process. However, she does mention that there was a strong political will involved.

9) Can you mention which are the most important stakeholders in this policy?

The three bodies in the EU (EC, EP and Council), operators, lobby groups and consumer organizations.

10) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

This answer depends on the user involved, as not every person can compensate the costs. However, BEREC cannot give an opinion over this.

## A IV.III – Guillermo Beltrà – BEUC

The interview with Mr. Guillermo Beltrà happened on 1<sup>st</sup> June, 16:30, by a telephone call to BEUC's headquarters in Brussels, Belgium.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Guillermo Beltrà has an academic background in the legal area. He has two Masters, one in law and one in International Relations, focused in EU Public Policy. During his professional career, he has worked for three years as an expert in Public Affairs policy, mainly in the telecommunications area. Afterwards, he became part of BEUC, where he has been working for the last 6 years, leading the tasks of the telecommunication area. He currently has the position of Head of Legal and Economic Department, and he still works in telecommunication areas such as roaming.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Regarding the positive outcomes, Beltrà mentions three key aspects. First, the policy helps in constructing the idea of a DSM and allows consumers to see how the EU can pass geographical borders. This perception will increase as the RLAH policy becomes a normal feature for the Europeans, something hard to imagine some years ago when roaming prices were extremely expensive. Secondly, the policy allows users to continuously do whatever they want with their mobile services in a flawless experience, without any matter where they are. Finally, the third aspect is how the policy helps regarding the equality of the users, as every consumer will have the same right to roam abroad and it will stop being a luxury, becoming a mainstream product.

Regarding the negative side, the interviewee mentions that there are differences in the implementation procedures of the telecom operators, and some of them may truly have more costs than others. Although this problem already happened before RLAH, the policy may add more impact on them, as some operators could need to increase the domestic prices to cross-subsidize the roaming service. This could affect those who do not travel, who may pay to compensate the travellers.

- 3) Do you believe the EU citizens give a great importance to this policy? According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

Beltrà believes they EU citizens do give a great importance, especially those that travel. However, this mostly depends on the travel patterns of the country.

- 4) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The interviewee argues the decision was indeed related to social values, as it was a political decision based on DSM principles. The roaming policy was a flagship for the EC, and it was sold as something that the EU achieved for its citizens. In fact, he mentions it could have been over-sold, as the expectations that citizens have from this policy may not be aligned with the possible results. So, at a political level, it can be said that social values were considered.

However, from a technical level, there is no doubt that economic arguments prevail over political ones, and those were the main drivers for the policy. How to make the market more efficient was an important motivation for the policy

5) What is your general opinion about the different steps the EU has taken towards the Regulation?

Beltrà mentions that this can be considered an over-complex and messy process. He argues that the initial proposal, based in Kroes' idea of ARPs alliances, changed to a RLAH idea because of the intervention of the EP. The Council became involved and after several months of negotiation, they reached an agreement by 2015. The interviewee argues the elections became involved in the process, generating a rush in the deadlines.

The interviewee mentions that the main details of the policy are straightforward, but after the incorporation of several safeguards, the final version became much more complex than expected. The concepts of FUP and sustainability within the policy were added in the last moments of the discussion, a situation that does not fit with a proper democratic process. The EP decided that these areas of the policy were decided to be implemented by the EC, and as most processes were committees are involved, it became opaque and difficult to obtain information about it. BEUC had the chance to influence the process, but not everybody could access that information.

Beltrà argues the final policy is so complicated, that BEREC had to create guidelines to explain the regulation. From a broader perspective, if someone sees the number of layers of institutions that have to be part of the policy, it seems overly complicated.

6) What was the main objective of your institution regarding the mobile regulation?

The members of BEUC need to closely monitor the market and check if the operators are complying with the guidelines proposed by BEREC. In case there is some irregularity, consumer associations need to work together with NRAs to complain with the EC and fix the situations.

7) Do you think the regulation is inevitable or sustainable within time?

The interviewee believes the idea was inevitable, although maybe not every aspect of it. The idea of putting an end to retail roaming fees was inevitable as there is a market failure and a cartel structure at wholesale level. Also, the European mobile industry has been told about the situation since 2005 and did not react about the risk of being regulated by the EC.

Other ideas were also possible, such as Roaming Like A Local, but would leave the operators in a risky situation, as consumers would be able to know the prices of each area of the EU, creating a transparent situation that could affect the MNOs/MVNOs position.

Regarding the sustainability, Beltrà believes it is too soon to argue about it. In the macro-level, the policy seems to be OK, as there are diverse safeguards to keep sustainability. In the micro-level, it is not yet clear, as it is not a policy clear to explain for the consumer, and could lead to a boomerang effect in terms of consumer satisfaction.

The key point in the policy is the wholesale market price regulation. The sustainability depends on how well the numbers were estimated. If the policy is forward-looking, it will work, but in case the estimations were conservative and prices remain high, it could lead to a crash.

8) Is there any gap or expected situation after the policy has been approved by the EC? If so, do you have any possible solution?

BEUC aimed to eliminate retail roaming fees without limitation, although they could accept a very limited FUP related to abuses, for example, in massive SIM reselling across countries. The interviewee still mentions a gap related to the wholesale costs, as it can be easily seen they are still too expensive. However, he mentions the situation could have been even worse.



- 9) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The interviewee mentions it is hard to give an answer to this, but that he is aware of the criticism regarding the methodology used by the EC to reach the final decisions.

- 10) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

Beltrà believes they do compensate. The telecom companies knew that this policy was coming in the following years, and they were getting prepared for it. In this time, the companies could adapt to receive these costs and compensate them with other areas. However, MVNOs may find harder to compensate because they may find a harder situation in compensating their costs.

The interviewee ends arguing that each policy has winners and losers, and that the RLAH policy had the public interest as main goal, helping into the creation of the idea of Europe and its single market.

## A IV.IV – Jan van Alphen – BTG

The interview with Mr. Jan van Alphen happened on 31<sup>st</sup> May, 10:00, at the offices of the ICT Department of the UMC Utrecht in Utrecht, Netherlands. He is chair of the board of BTG, and Mr. van Alphen received me in his personal office.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. van Alphen has performed trainings as teacher and has a background in Design from Eindhoven and Art History from Utrecht, being trained as teacher and historian. While he developed his studies, he worked in communication-related areas (Broadcasting and call-centres) which gave him an introduction on ICT areas. After being Team Leader of a Call Centre, he became the Manager for telecommunications and multimedia within the UMC Utrecht, having tasks in ICT and design. Since 2015, he works in the ICT strategy of the institution, focused in education, and is responsible for the areas of procurement and contracts. He is the Chair of the Board of BTG, accompanied with representatives from the Schiphol Group, the Erasmus University of Rotterdam and the Dutch Police department. He is also board member of INTUG, the International Telecommunications User Group, representing business consumer associations from approximately 50 countries worldwide.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Van Alphen starts providing a background of the situation. He mentions that although there is a compromise with the RLAH policy, each country has a degree of freedom to interpret/translate the guidelines. He is glad for the general commitment towards the policy, but there is still pressure and lobbying from domestic operators to interpret the guidelines according to their beliefs. This concern was also addressed by the ITU in its last Geneva conference, and there are concerns on the application of the FUP between countries. For example, the same telecommunication operator group in the Netherlands and Germany may apply different versions of the guidelines depending on the NRA. The interviewee also argues that this will still give uncertainty to users regarding to the fear of tariffs, as the rules may not yet be clear. Further harmonization is needed, in behalf of the (business) consumer, concurrency within the field of the MNOs. There is more transparency needed in the guidelines. They must be developed into worldwide guidelines in the next phase. ITU wants to work on this item for the next three years.

From the business perspective, the RLAH policy does not intervene in the user contracts regarding the service levels, availability within countries, etc., not solving these issues. Business contracts are longer and larger (including particular agreements) than average retail contracts, and have special agreements which not may be incorporated in the RLAH. BTG will study this topic on behalf of its members.

The interviewee mentions that it is positive that an agreement in roaming was finally achieved, and that there is awareness in European level about the social importance of it. However, in a negative perspective, he repeats the concept of possible diverse solutions in each country, due to the lack of harmonization of policies. Van Alphen mentions the spectrum, as one example that has not been normalized within countries, and that can affect not only the contracts of users and operators, but also the configuration of the devices sold even within a same market. He mentions that the Dutch government is not taking care enough of this effect, that they should be more active regarding international policymaking and discussions, and that the Benelux has not intervened, although ITU has invited them to do so. There is a need for more collaboration, in order to reduce uncertainty within customers. BTG is also aware about the negative effects on pricing outside the European borders.

- 3) Do you believe the Dutch citizens and organizations give a great importance to this policy?

Van Alphen mentions it does. Besides the reduction of costs, there is a needed transparency in the terms of the contracts. More transparency will stimulate the international use by consumers.

- 4) Do you think this varies between countries in the EU? Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?

The interviewee also believes this happens, as there are different travelling patterns between countries, such as between Southern and Northern countries.

- 5) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

Van Alphen mentions the decision-makers are aware of the social values within this policy (as an example, the Dutch government mentioned the availability of mobile communication as a social and economic responsibility), but the main incentive for it was political. So, he argues the social aspects were not considered enough, maybe because of the complexity of determining the effects within the national and international level. The social aspects related to safety also need more attention in international policy-making.

- 6) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee mentions the process of policy-making and the possibility to join the related different kind of discussions was not transparent enough. He finds difficult to look for the EU agenda, and needs to use the press as the main tool to know what is being discussed within the EU. The situation leads to a disorganization of the information and uncertainty, also regarding BTG and INTUG members. Although decision-makers seem to want stakeholders to participate of the meetings and decisions, they do not help in this aspect. There is a need for more clarity in the international ICT-agenda.

- 7) Do you think the regulation is inevitable or sustainable within time?

Van Alphen mentions that there was a political need for this within the perspective of the European membership developments. The roaming policy has an enormous exposure on the way people experience the need for a European legislation, which is shown in the 90 days initial RLAH policy and its immediate modification. He believes this is policy is a base for the future, and does not limit businesses in any way, as there is a constant dynamic environment surrounding the mobile market.

Regarding sustainability, it is hard to determine, as there is a need for operators to change. If operators can adapt and create an environment for innovation, the policy can become sustainable.

- 8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The interviewee believes that to answer this, is firstly needed to evaluate what are the main principles the EU and what are the main issues it has. He believes this policy is the beginning of a larger needed policy framework on ICT, defined on strategic theme's Europe can work on.

9) What was the main objective of your institution regarding the mobile regulation?

BTG needs to translate to its members how the RLAH policy modifies the service contracts they have with their operators, and what can they do regarding to these modifications.

10) Can you mention which are the most important stakeholders in this policy?

Van Alphen mentions the European institutions (EP, EC and Council), the dominant countries (mainly France and Germany), BEREC, OECD, Asian Pac and GSMA.

He comments the Dutch government is not too powerful regarding the policy and remembers the importance of influence by individuals like Neelie Kroes and Prins Constantijn in the international area, criticising the lack of coordination in international representation of the country.

11) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee believes that social values are not always a dominant factor against the economic ones. However, this is not clear and it would be difficult to evaluate the situation. However, social values as freedom of communication and sharing information, safety and privacy are important incentives to work on, related to the development of international ICT-guidelines. We have also to stimulate ICT innovation and the development of new business models. The present and mostly old-fashioned business models prevent the development of innovation. So, there is a need to explore new models.

## A IV.V – Inge Piek – Consumentenbond

The interview with Mrs. Inge Piek happened on 30th May, 16:30, at Consumentenbond's Headquarters in The Hague, Netherlands.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mrs. Piek has a background in Industrial Design, having studied in TU Delft before starting to work at Consumentenbond. She started as a Researcher, focused on some specific products such as drills, followed by ICT devices (mobile phones). In the last 5 years, she became a Campaigner, focused on solving consumer problems. She was involved in the roaming discussions, although nowadays she is focused in data privacy concerns.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

In a positive perspective, consumers do not have surprises on their bill after using roaming services. Piek argues that avoiding bill shocks in a clear positive situation for users.

On a negative side, Piek mentions that there is still little information to assess the possible effects after the policy. However, Consumentenbond is worried about how the information about this policy can flow to the users, as there may be confusions between the roaming prices within the EU and outside of the borders.

- 3) Do you believe the Dutch citizens give a great importance to this policy?

The interviewee mentions that the organization has seen a lot of problems on roaming bills and in the Netherlands, is considered an important point. Dutch consumers are travellers; thus, they give importance to the policy. However, it finally depends on the consumer characteristics, such as the age.

- 4) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

Piek believes the decision was coming from a political perspective, as it was aimed towards the DSM.

- 5) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee mentions Consumentenbond did some campaigning and press releases to make consumers aware about the roaming tariffs and prices. The aspects related to the EU were handled by BEUC in Brussels, so she has not a clear view of the policy process. However, she has a say related to the time needed to approve the policy, as the time that was needed to confirm it was more than expected.

- 6) Do you think the regulation is inevitable or sustainable within time?

Piek mentions that, at least with the limitation of 50 euros of roaming, the operators needed regulation to react. She considers operators are not used to implement these conditions by their own and need some incentives. She also mentions that they had a difficult situation when addressing the real costs for the operators, as not every mentioned cost is real.

Regarding sustainability, Piek argues that the variables the operators normally need to observe to define if a policy is going to affect them and how are many more than just the roaming traffic. At this moment, other new technologies such as quad-play may have a stronger effect on their finances than roaming, so she believes this policy seems sustainable at this moment.

- 7) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

Piek cannot answer the question.

- 8) What was the main objective of your institution regarding the mobile regulation?

Consumentenbond will need to inform the consumer by different media about their rights and the modifications that come from the new regulation and may affect the customers. In a reactive way, it will need to follow complaints related to those operators that are not complying with a proper application of the FUP.

- 9) Can you mention which are the most important stakeholders in this policy?

Piek mentions EP, EC and Council, the different telecommunication operators, BEUC and the Dutch government.

- 10) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee ends the interview by mentioning some unacceptable cases that need regulation, such as excessive roaming bills and letting consumers predict their expenditure. The value of those rights should somehow compensate the costs. However, and although she agrees with operators making profit of their services, she mentions that prices are artificial and operators should not be doing money without doing any work for that. Honesty on prices is needed.

- 1) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee believes they do. However, it is not clear whether regulation was a social need. He ends by suggesting the values of free movement, transparency and fairness in prices as those that could compensate the costs.

## A IV.VI – DG CONNECT (EC)

The interview was performed with a high ranking civil servant from DG CONNECT, and happened on 24th May, 18:00, at the DG CONNECT Headquarters in Brussels, Belgium. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

The interviewee has a background in legal areas and has a vast experience in the telecommunications regulatory sector. No more data is provided in order to keep the anonymity of the person.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

The interviewee believes the users should have confidence while travelling that they could use their mobile services abroad. These artificial barriers should be eliminated. The usage of data is booming and this should also be helped with policies that do not restrict the usage when crossing borders.

On the other hand, there are negative perceptions in some member states, as they believe the introduction of RLAH may have undesirable consequences such as non-travellers paying for those who travel. However, the interviewee believes that the EC has done an intensive work to prevent negative outcomes, and there are safeguards to protect the system.

- 3) Do you believe the EU citizens give a great importance to this policy?

The interviewee believes, according to surveys done by the EC and the reaction by social media, that people do give a great importance to the policy. They have received several citizens' requests and complaints, showing that there is a lot of interest and sensitivity.

- 4) Do you think the perception of the policy varies between countries in the EU?

The interviewee believes it does depend on the countries, as the travelling patterns and habits of each country may modify the perception of the user.

- 5) This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

Firstly, the interviewee mentions there was a clear market failure with abusive prices by the operators; so, it can be deduced that it is not that costs are increasing, but that the excessive profits are being squeezed. Several reports have shown that competitive domestic markets did not show reaction with the roaming caps applied, meaning that the system works. However, he also mentions the RLAH is different in nature; because of this, DG CONNECT has prepared safeguards to prevent negative impacts.

With 28 national markets, it would be hard to achieve a single market in the digital economy and society, and a policy like RLAH is a real benefit. DG CONNECT expects an increase in use of data and the increase in macroeconomic benefits which will lead to societal development. The problem that happens here is the transition.

6) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee mentions this was a challenging process from the start of it, with political, communicational, legal and economic aspects. He believes this process has been transparent as public consultations and the impact assessments have been open and the media has been involved in the process, with the DG CONNECT providing information of it. Consultations were done with the consumer associations and they helped with the development of the policy. The interviewee believes DG CONNECT did a comprehensive process in addressing all the needs.

7) What was the main objective of your institution regarding the mobile regulation?

At this moment, DG CONNECT is working with the regulators on the implementation of the new RLAH regime, but by end of 2018 an interim report will be made on the impact on RLAH on roaming for domestic markets, and by end 2019 a full review of the policy is required. BEREC needs to collect the data from every party to present it on a comprehensive report.

8) Do you think the regulation is inevitable or sustainable within time?

The interviewee argues that without intervention, there would be no incentive for the operators to go towards the direction that the RLAH policy has. The market was un-elastic and there was a need to act, at least limited in time, as the Roaming Regulation expires in 2021. The interviewee hopes that by this year, the market will have a situation where regulation on these matters is not needed any longer.

Regarding the sustainability of the RLAH policy until 2021, he mentions the wholesale market is still a challenge, but the prices have been dropped significantly (and will continue to do so). A review is needed, and the interviewee believes it will arrive on time in 2019. Anyway, still now there is no possibility of predicting the final result.



## A IV.VII – Francesco Versace – ETNO

The interview with Mr. Francesco Versace happened on 17th May, 15:40, by a mobile phone call to Brussels, Belgium. As the time available for the meeting was short, some of the template questions were not asked.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Versace's background is in Political Science and European Studies, including European Law. He has been part of ETNO, as Director of Regulatory Affairs, since 2014. Before this position, he worked for Telecom Italia also in Brussels and had a brief working time with the European Commission.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Versace mentions that the progressive abolishment of mobile roaming charges can be seen as a good achievement to a European Digital Single Market. He believes that there should be a coherence in the approach between all the types of consumers, including those who would not use the roaming services as they do not travel. Market distortions should also be avoided and ROI of the industry should always be kept in mind by the policy-makers. Also, it should be said that a policy of a DSM should not only include this type of regulation, but also other important steps towards harmonization, such as on spectrum management.

He argues that it is very important to develop policies that are good for consumers, also taking into account the long-term interest of consumers and users in terms of improved high-performing connectivity and innovative digital services. The long-term health of the electronic communication sector is key in that respect. The policy needs to give certainty. The telecom sector needs a ROI, and the costs of connectivity need to be addressed. These aspects should be taken with more consideration into the debate, and be clearer.

- 3) Do you believe the EU citizens give a great importance to this policy?

Versace argues it is difficult to answer precisely to this question, and that it may depend on the travelling patterns. People that do not travel may not see that important this policy.

- 4) Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?

The interviewee argues It also depends on the patterns of travel and the repercussions in the domestic level. However, it is difficult to see now how the market will react. Versace mentions that there are substantial differences depending on the countries. ETNO believes the result of the policy, especially the FUP, has not been optimal, as the results have been quite complex to implement.

- 5) What is your general opinion about the different steps the EU has taken towards the Regulation?

There is a very different situation from the starting point in the 2013 Roaming proposal to the one that is being enforced today. There were continuous changes in the policy while it was still being evaluated, such as what happened when the FUP was modified, showing the process was not straightforward.

6) What was the main objective of your institution regarding the mobile regulation?

ETNO aimed to inform the debate from the point of views of the operators in the market, to advocate for solutions that would be easy to implement and understand for consumers and operators alike and avoid distortions in the market.

7) Do you think the regulation is inevitable or sustainable within time?

Versace argues this depends on how it is implemented. Regarding the sustainability, Versace prefers not to comment. Regarding the inevitability, the interviewee argues this was a political decision, rather than an inevitable choice. The solution chosen was after a political negotiation. The market was already showing improvement in the commercial offer and there was a tendency towards decreasing prices.

8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

Versace argues this question is very difficult to answer. The first impact assessment was based in a very different proposal than the one that finally was achieved. It is difficult to have an assessment on the possible results of the policy.

## A IV.VIII – Laszlo Toth – GSMA Europe

The interview with Mr. Laszlo Toth happened on 26th May, 14:00, by a telephone call to GSMA Europe's offices in Brussels, Belgium. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Toth has an MSc. in economics and holds a degree in computer sciences. Prior to joining GSMA in 2011, he spent nine years at the Hungarian public administration, including spells at the Ministry responsible for ICT and at the national telecoms regulator. He has a background in telecom matters and regulation.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

The interviewee argues Consumers want the best combination of coverage, speed, volume and prices both at home and abroad, and mobile operators are continually striving to meet this need through effective commercial and investment strategies.

- 3) Do you believe the EU citizens give a great importance to this policy?

Toth mentions he believes there will be an impact on the general public, which leads users to give importance on the matter.

- 4) According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

Mr Toth believes that, Europeans have different travel habits across the EU and Dutch people travel more than other European users in average, so they will feel more benefits of the policy than others. However, the perception across the countries might not change significantly, because users will be equally happy to see lower prices.

- 5) This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The interviewee mentions there has been many policy aspects taken into account, such as the competition of the EU Digital Single Market. However, he believes there are no detailed studies into the social impact, and these impacts are rather considered as obvious.

- 6) What is your general opinion about the different steps the EU has taken towards the Regulation?

Mr Toth mentions that over the past few years an increasing number of mobile operators have included roaming at domestic prices or as part of national allowances on certain tariffs. Market driven solutions and pro-competitive measures of previous roaming regulations were undermined by the successive waves of detailed and intrusive retail price regulation. Regulators must keep in mind the central role of communications infrastructure in underpinning economic growth and societal development. It is critically important that the overall policy and regulatory mix they deploy serves to encourage, and not undermine, the required investment levels.

- 7) What was the main objective of your institution regarding the mobile regulation?

The GSMA focused on ensuring the introduction of safeguard measures to prevent abusive use of the system. That is needed to avoid distorting domestic markets that have delivered continuous increases in network speed and coverage combined with dramatic price reductions over the past ten years.

- 8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

Political objectives and business interests with regard to roaming have been aligned for some time. For some time now many mobile operators have been offering roaming at domestic prices to better satisfy the needs and requirements of their customers.

- 9) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee believes this question is very hard to assess and cannot comment on it.

- 10) Do you suggest any specific person that I should contact, who can provide me with more insights on these questions?

Mr Toth thinks the European Parliament had a strong participation by adjusting and modifying the Commission's initial proposal. The Commission and Member States had also participated and BEREC had the independent and expert opinion on the regulatory process. The GSMA believes that the mobile industry made constructive contributions during the legislative debate. Consumer associations such as BEUC had also played an important role.

## A IV.IX – Paul Knol – KPN

The interview with Mr. Paul Knol happened on 15th May, 15:00, at KPN's Headquarters in The Hague, Netherlands.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Knol has been working for KPN for over 30 years. He was involved in drafting the first roaming agreements (ATF3), a first attempt in mobile agreements in roaming, prior to GSM. He is a guest lecturer of Telecom Law in Leiden University. He is also the editor and publishes comments in "Tekst & Commentaar telecommunicatie- en privacyrecht", a very well-known publication in telecom regulation in the Netherlands. He is a lawyer and has changed from the legal department of the company to the regulatory area in 2010.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Knol argues that roaming is not seamless, but the tariffs are. Separate networks, with separate licensing and national numbering plans makes hard to a true seamless solution. When a person crosses the border of a country, it does not matter what politicians say, the communication will be cut. He thinks the idea of the single market is more a political wish than a reality, assuming all the technical and regulatory limitations per country.

For the people that travel a lot, the regulation will avoid the risk of bill shocks, showing a positive aspect. In the Netherlands, both in social and business travelling, many end users travel and they will have social benefits from it. On the other hand, it was neglected that a large group of customers do not travel, and that the costs of communication vary from network to network. If retail and roaming prices have the same level, the average costs for an operator will increase, as roaming prices depend on the wholesale prices which are exceeding domestic costs. This could create a problem in the Netherlands, as it is an unbalanced country in travelling patterns with more outbound than inbound traffic. Although retail tariffs are average in EU perspective (and therefore less vulnerable than low tariff countries) there is no sufficient compensation in incoming traffic. This might ultimately be detrimental for people that do not travel, because operators need to recover their costs. The question would be: are implicitly customers that do not travel paying more? Might be a small difference, but is still not researched.

- 3) Do you believe the EU citizens give a great importance to this policy?

A consumer survey should be interesting on this as Knol argues this policy was voiced as a too important matter. Consumer associations have been warning excessively users about the risks of roaming, mainly because of the bills, generating a negative view on the concept. Generally, as the risk for bill shocks will mainly disappear, it will give positive feelings.

- 4) According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

BEREC showed with travel patterns that Dutch people travel more than other countries. So, Dutch people will benefit for this more than other people in many other countries of the EU.

- 5) Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?

It will depend a lot on how prices move. Some countries have low average rates (Baltic states for example). Some indications of increasing prices may already be observed in some countries and the users that do not travel may be negatively affected because of the EU regulation (unless specific national offers enter the market in line with BEREC requirements). This does not happen in the Netherlands. Anyway, it is not possible to have unlimited tariffs with RLAH, and even the “unlimited” data offers in the Netherlands of T-Mobile and TELE2 are limited in roaming. Operators need to limit this.

The telecom operators had a very bad name because of the roaming prices and there is not a good perception of operators in this. The politicians have created this regulation, and operators are adapting to it. But maybe when operators will use the safeguards available in the regulation this might again generate more a negative perception in the public. Operators will thereby spread “negative” news (legitimate restrictions), while politicians will only give the positive news. A key issue for the operators is to positively give accurate information to the users.

Politicians from the EU needed some positive news about what the EU can achieve, something that in recent years did not happen too often. Anyway, in the Commission, the civil servants and BEREC have seen the risks of the policy in a clear way. Someone is going to be hurt anyway, there will be causalities, as BEREC mentioned in its 2014 report. But politicians do not care about such details, and public opinion may see them as heroes, while the details will be handled by the operators. It is needed to be very accurate and realistic with the expectations towards the customers.

KPN does not know the future behaviour in the roaming market, and there is uncertainty regarding how people will be using especially data services abroad. In domestic networks, people use Wi-Fi when possible (home, office), but abroad, maybe they do not find the need to use it and thereby may even use more data than at home. So, this is a critical point that remains to be seen, and will only be known in the following months or years. In the Netherlands data bundles have increased in data volumes and reduced prices, but if roaming would exceed home usage, it is not clear if this may continue to happen.

6) What is your general opinion about the different steps the EU has taken towards the Regulation?

The legislative process in Brussels is always a little bit messy, different from the order in the political process of the Netherlands. In Brussels, the three institutions need to agree. Council and Parliament first discuss the proposals from the Commission separately and need to compromise internally. The Council is particularly non-transparent in this procedure. In a second stage, the institutions need to come to an agreement with each other, based on three proposals that already include compromises. At the end, the institutions need to unify the proposals into one, something that is not transparent and the outcomes become difficult to predict.

The timing was managed particularly in a way where the deadline for roaming was already set before arriving to the final text. Until today (15th May) there is still no final version of the amended Regulation published by the Official Journal and in a month RLAH starts to be implemented. As the institutions could not agree earlier, they set a deadline that just complicates the institutions that implement the policies.

Also, some small modifications appear in the last versions that generate even more uncertainty in operators. For example, it is “clarified” in the Preamble that 1 GB is equivalent to 1000 MB, instead of the regular use of 1GB = 1024 MB. It seems a minor detail, but changing this in every bilateral relation of the billing systems of the countries would be a mess, as every operator uses this relation.

7) Do you think the regulation is inevitable or sustainable within time?

KPN may have a different position than the operators. As KPN is a national operator, it was used to pay large amounts of wholesale tariffs because of excessive prices of companies across Europe, while pan-European companies were benefitting from their possibility to use intra-group accounting. Without regulation, companies as KPN would have had a very tough time and the regulation was needed to allow

smaller and domestic companies to survive. KPN was in a different side of the debate than, for example, T-Mobile, Vodafone, Orange, etc.

However, after the first political discussions on the topic, several detailed features were introduced in the Regulation that are not really needed. Some of these detailed obligations may no longer be needed in the RLAH regulation, such as the SMSs when abroad, and create a tougher operational cost by having to develop and maintain tools to comply with them.

Regarding the question on the sustainability of the roaming service, it is uncertain if the actual tariffs may remain sustainable in time.

- 8) Is there any gap or expected situation after the policy has been approved by the EC? If so, do you have any possible solution?

The question here is if MVNOs may not suffer from the regulation. KPN has MVNOs in its network; thus, if MVNOs are not successful, it may affect the revenue of KPN as it loses traffic. Nowadays, 20-25% of the mobile subscriptions go through MVNOs, so if this is reduced to, for example, 10%, it may affect KPN in a larger extent than MNOs with less MVNO traffic. Also, if the usage of data will have the same behaviour in the domestic market than in roaming, leads to uncertainty.

Knol believes the regulation has a lot of confusion that comes from previous regulations, that required some features that are no longer needed in a pure RLAH environment.

There was a need for regulation, but if it is wanted to create a new market, first it should be tried to simplify the regulations. And there is a risk that politicians could need to change the rules after the implementation of them, as they do not fit with the original intention. This leads to uncertainty. Operators have estimated different scenarios, but they are not clear with this also. And if politicians interfere again, they may lose reliability.

- 9) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The justification is simplified and lets many issues away to go into this way of regulating. Knol agrees with BEREC's statements that show there is a risk that somebody will have to pay for this. It is clear that there was a need for a regulation over the prices, as the market would not make them lower for operators such as KPN, but politicians have become involved and included several details which were not needed.

- 10) Can you mention which are the most important stakeholders in this policy?

Besides the mentioned stakeholders, Knol would consider those players involved in OTT actors, that provide services over the telecom networks. WhatsApp has diminished the SMS and voice market. So, OTT players may be adapting to this new roaming situation, although it is not clear what plans they may have for this.

- 11) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

Knol mentions the complexity of the questions. He mentions that in fixed service, price was not the first option to choose, and they do see other features to choose besides the tariff part. This also happens because the technologies are very different. However, in mobile the technology is mostly the same for every operator, so tariffs become a more important factor. However, differentiation by other services, such as quality of delivery of services may be important to operators to differentiate themselves.

As for other values that customers might find important, except for the prices and quality of services itself, KPN has paid much attention to forms of “corporate responsibility” in recent years. KPN is about to launch a marketing campaign related to how green the company (CO2 neutral) is, showing how important are social values for it. It also sponsors the Rijksmuseum and invests in electronic devices for children that because of illnesses cannot go personally to school (‘Mooiste Contact Fonds’), or de ‘Zilverlijn’, that creates contacts for elderly people.



## A IV.X – Paul Van Straaten – Lebara

The interview with Mr. Paul Van Straaten happened on 19th May, 12:15, by a phone call within the Netherlands. Some questions were not asked, as they were already answered by previous questions.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Van Straaten is the Chief Legal Officer of Lebara. He is a lawyer, and has a broad experience in telecoms and broadcasting, with close to 20 years of experience in these areas.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Van Straaten argues the first positive effect is the cost-benefit relation for users across Europe, who will pay less for roaming services. They will also have a better “European experience”. On the other hand, the negative aspects, if someone has a benefit because of cost reductions, somebody is paying that. MNOs and MVNOs suffer this difference, especially those MNOs with only domestic presence and MVNOs that have imbalance in traffic.

People in countries such as the Netherlands, with a lot of them travelling abroad, will see a benefit from roaming. The MNOs in the countries with more incoming traffic, such as Spain, will see a benefit on the usage of tourists.

- 3) Do you believe the EU citizens give a great importance to this policy?

He believes the citizens do give importance, as the impact for consumers that travel is going to be quite substantial. One of these effects is related to the pattern of usage of roaming abroad. Nowadays, tourists are used to access Wi-Fi spots abroad, but with the new regulation, they may just use their own roaming services. This could lead to a very dramatic increase in the traffic usage.

- 4) According to your perception, do you think the effects of the policy vary depending on the region?

The interviewee uses the same argument as the two previous questions. He mentions this will totally depend on the flux of traffic in the country.

- 5) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

Van Straaten comments that in his personal view, he finds the policy more socially motivated than economically motivated. Policy-makers see that the policy will be received very positively, and perceive the roaming tariffs punish the consumers.

- 6) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee comments that this was a very lengthy process, and that the different stakeholders had the opportunity for different parties to explain their positions, especially MNOs. However, it is known that MVNOs are more affected than MNOs, and this point was not considered. MVNOs help the market enhancing competition, and this regulation may actually be affecting them and stopping this positive effect. It can be seen as counterproductive.

7) Do you think the regulation is inevitable or sustainable within time?

Probably roaming prices would have gone down with time, however surely not as fast as with this regulation. However, Van Straaten believes that without regulation, a RLAH market would not be possible, and the prices would have taken more time to be reduced, although they would finally do.

Regarding the sustainability of the policy to Lebara, he argues it is still difficult to assess as it will depend on the different arrangements they can make with the different MNOs across Europe. The FUP still allows very large windows of abuse and a review of those policies and allowing MVNOs and MNOs more control, would prevent it.

8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The interviewee believes there is not enough data regarding how the roaming traffic can increase after the regulation. He also suggests that domestic MNOs and MVNOs may need to increase their domestic costs to compensate for these extra costs. People who are not travelling may experience an increase in prices, although they do not use the roaming services.

9) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs?

Van Straaten thinks that the normal consumer is not really worried about the high costs of roaming to the extent it has social relevance, as when they are abroad, they use other services such as Wi-Fi. The general feeling of "One Europe" and seamless travel may show a positive feeling, as people can experience the essence of the European Union. But he cannot confirm whether this feeling actually compensates the economic costs of the policy.

## A IV.XI – Ministry of Economic Affairs (Netherlands)

The interview with a policy advisor of the Ministry of Economic Affairs happened on 13<sup>th</sup> June, 10:30, at the Ministry's Headquarters in The Hague. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

The interviewee is an experienced economist and policy advisor working for the Ministry since the year 2000, and has been involved in telecommunication and roaming matters. Because of anonymity matters, this question will not be developed further.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

In a positive perspective, the interviewee mentions that users will avoid high roaming prices. The interviewee believes this policy is not so negative in its effects.

On the other hand, the interviewee argues that if users are expecting too much on this policy, they may face the limitations of it. It is also mentioned there are few negative elements for companies, as a balance has been achieved by implementing a proper FUP.

- 3) Do you believe the EU citizens give a great importance to this policy?

The interviewee believes the citizens of the Netherlands give a great importance to the policy, as they have been receiving several complaints for long time about this. He also mentions that the complaint number was being reduced, as prices went low, and that the problem was slowly being solved. However, until recently (before spring 2016) the prices (especially data) were still excessive.

The interviewee has the expectation that the roaming usage will grow, while the prices will drop.

- 4) According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

The interviewee mentions that Dutch users travel a lot, and that this fact is interesting especially regarding those that travel for holidays. Although he does not mention if Dutch people necessarily see roaming as a need while travelling, they may be more benefitted than other countries of the EU.

- 5) Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?

The interviewee thinks that it does vary. This was also seen in the negotiation between members of the EU, when some countries were protecting more their telecom industries than others (although the population may have not been aware of the position of its own government). Some governments were worried about domestic prices increase because of the roaming regulation.

- 6) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The interviewee believes this was not an economic decision, but it was mostly based in the interest of consumers; thus, the social aspects were considered. The EP did put a lot of pressure and got heavily involved in the development of this policy, showing a public (and social) interest on it.

- 7) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee believes that although the process can be considered messy, it has not been particularly different from the typical EU process. There were opposing perspectives as travel patterns vary across countries of the EU. He mentions several proposals were launched over time, such as an intended structural solution to allow for more competition in the roaming market (including "local breakout"). When RLAH came, it overhauled previous proposals.

Connected with the previous comment, the interviewee mentions that during the RLAH process, retail rates were decided before wholesale rates, putting the horse behind the wagon. Although at a first sight it could be looked as a mistake, it could well be a political and strategic movement to increase the speed of the process, which could be based in the political times of the decision-makers.

- 8) What was the main objective of your institution regarding the mobile regulation?

The Ministry will act in a reactive way, together with ACM, as there is no specific task needed after the approval.

- 9) Do you think the regulation is inevitable or sustainable within time?

The interviewee believes this policy is sustainable on time, thanks to the different safeguards developed in the regulation. However, regarding the inevitability, it could be discussed. Firstly, it is needed to determine which is the true objective behind the decision. Other policies such as RLAL could have avoided many of the safeguards proposed. RLAH needs many exceptions or safeguards to make it work, and it may not seem the easiest to implement. Nevertheless, RLAL would have been difficult to explain to users.

He also mentions that telecom operators had a strong incentive to make money from roaming tariffs. Consumers are not aware of roaming prices, as they are of other prices such as the domestic tariffs; thus, operators could charge higher prices. There was a need of intervention.

- 10) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The interviewee believes the justification was enough, although more research could have been done and they were not very enthusiastic regarding the analysis of cost structures. The analysis left a lot of room to debate and there was a risk of ending with high prices. The pressure of the EP avoided more trouble, but it was clear that this analysis had some flaws. However, the EC had an impressive achievement regarding the time-constraints it faced.

- 11) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee believes they do. However, it is not clear whether regulation was a social need. He ends by suggesting the values of free movement, transparency and fairness in prices as those that could compensate the costs.

## A IV.XII – Yves Blondeel and Morgane Taylor – MVNO Europe

The interview with Mr. Yves Blondeel and Mrs. Morgane Taylor happened on 2<sup>nd</sup> June, 13:00, by a telephone call to MVNO Europe's offices in Brussels, Belgium. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mrs. Morgane Taylor has an academic background in Belgian political sciences and European studies. She has worked in the European public affairs environment, related to think-tanks and consultancies and works nowadays in a consultancy firm that handles the representation of MVNO Europe as a Policy Officer.

Mr. Yves Blondeel runs a small consultancy company for 22 years, specialized in telecommunication regulation in both national and European level. He has worked in the European drafting position papers representing the view of MVNO Europe. Mr. Blondeel provides the expertise for the MVNO association.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Blondeel believes the answer diverges from country to country. In the case of the Netherlands, as retail prices are high, the RLAH policy will not have a large negative effect in the prices and consumers will have a benefit. However, in those countries with very low prices or unlimited bundles, the effects can be more notorious.

From the MVNO's perspective, Blondeel mentions that the organization is in favour of RLAH but that the regulatory framework needs to be adjusted with lower wholesale caps, as it is clear that the costs for the operators are much lower than the maximum caps in data. MVNO Europe has represented not only its members, but a group of MVNOs (DigiMobil) across Europe and procompetitive MNOs (Hutchinson, Play, among others) for this policy answer, as all of them feel threatened about the situation and shared the disagreement related to the prices.

One of the negative outcomes that are already happening before the implementation of the policy, is that some operators are taking out the possibility of roaming from some of the offered subscriptions. This is done because the low domestic prices cannot compensate the possible roaming costs of the users, with some extreme cases in countries that have an important number of users working in other countries of the EU. Of course, this situation depends on the competition and the tariffs structure of each country, but is already showing negative issues for the users.

Blondeel mentions that MVNO Europe has always been in favour of the idea of RLAH because they have a progressive perspective and they feel it is strategic to be aligned with the political position at the moment. Taylor adds that MVNOs need by definition to be more forward-thinkers and innovative than other parties, and this was something that in the long-term was going to occur.

Taylor also includes that MVNOs are in a harder position regarding large MNOs, as they do not have the possibility of selling wholesale roaming services.

- 3) Do you believe the EU citizens give a great importance to this policy? According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

Blondeel believes they do, although it totally depends on the travel patterns of the person. For example, although the mentioned case of the Netherlands may show a positive situation, a Greek person living in a

mountain, that do not travel often, may suffer a higher price of subscription because of being subsidizing those who do travel.

Taylor mentions users may face a negative experience with a possible confusion regarding understanding the policy. The press releases have not helped in educating people about the conditions of the regulation, and although she believes the citizens do give a great importance to the policy, there is a chance of collateral damage. There is a risk of a hostile relation between operators and consumers, and some MVNOs are already receiving complaints because of these situations.

Blondeel adds that the three big MNOs (VodafoneZiggo, T-Mobile and Orange) have a competitive advantage in the wholesale prices, as they can handle their traffic within their own companies or branches. This cannot be easily compensated by the other smaller MNOs and the MVNOs, and a consolidation of the market may occur, reducing the benefit of competitiveness to users.

4) What is your general opinion about the different steps the EU has taken towards the Regulation?

Blondeel begins mentioning the 2013 first process related to TSM (Telecom Single Market) regulation as a very non-transparent process where MVNO Europe could participate thanks to a leak of the documents being discussed. That proposal did not have any point related to the wholesale prices, there were no public consultations and no impact assessments and the different parties were not consulted. MVNO Europe reacted by sending letters and documents to the DG CONNECT. The proposal was sent in August 2013, where Blondeel argues chaos broke out.

Between 2013 and 2015, a very complex and messy process occurred to obtain by end 2016 a final point regarding wholesale prices. Taylor adds that one of the examples of this disorganized process was when Mr. Juncker decided to withdraw the proposed regulation text after it was already sent to the EP, because he understood that limiting the number of days of roaming per year would not lead to a real RLAH policy. Within this example, Blondeel comments he does not remember that a similar situation of proposal withdrawal has ever happened in the telecom sector before. However, he believes the worst part of this withdrawal was that the changes done to the proposal were not transparent and no parties were consulted on this.

5) Do you think the regulation is inevitable or sustainable within time?

Blondeel argues he believes it was inevitable. There was a political motivation from the EC, within the DSM strategy, which is mentioned in the impact assessment. Taylor adds that the importance of the DSM strategy can be seen in the determination of a Vice-President dedicated to the policy (Ansip). Roaming is intertwined with the DSM, and needs to be addressed.

Regarding sustainability, both interviewees answered in different parts of other questions.

6) What was the main objective of your institution regarding the mobile regulation?

As MVNO Europe does not find this regulation fair, it is already preparing arguments and assessments to lower the wholesale prices towards 2019. It also plans to research whether NRAs are checking if the operators are complying with the policy and he expects conflict between NRAs and operators. He also mentions that the non-compliance of the regulation is already happening, for example in Lithuania, where operators are authorized to charge a surplus for roaming although this is not allowed in the regulation. A clash of interests between the Lithuanian regulator, trying not to increase domestic prices, and the EC, may occur. Blondeel expects a similar situation for different countries across the EU.

- 7) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

Blondeel believes the justification is poorly articulated. He thinks it is justified in political terms regarding the DSM policy and the need for tangible results. However, the justification for the level of the caps is poorly justified, or it even has a null justification. Blondeel has a strong disagreement with the method used by the hired consultant by the EC (Tera) to calculate the costs.

Taylor adds that MVNO Europe is not against the objective of the policy, but against the approach and means to reach that objective. She mentions these means are not likely to be acceptable from the perspective of an EU institution.

- 8) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

Both interviewees find very difficult to answer this question. Using a previous argument, Blondeel mentions that if MVNOs are harmed and reduced, a tight oligopoly could be created, generating an increase in domestic prices and reduced social benefits. As a second point, he mentions there is a trade-off between consumers and business users, as this latter group will be the main benefitted of the policy.

Taylor concludes mentioning that MVNOs do not only have an effect in prices of the market, but also in the innovation of it. For example, MVNOs have been working with the M2M market and innovating on it. If MVNOs are not able to compete in the market, not only prices are going to be affected, but also the benefits of an innovate market.

## A IV.XIII – Stefan Koreneef – Permanent Representation of the Netherlands to the European Union

The interview with Mr. Stefan Koreneef happened on 24th May, 9:30, at the offices of the Permanent Representation of the Netherlands to the EU in Brussels, Belgium. Some questions were not asked, as they were already answered by previous questions.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Koreneef works at the Dutch Permanent Representation for the EU as an Attaché for telecom and digital affairs for three years. One of the main topics he has worked on has been the roaming regulation. He has also worked in the Ministry of Economic Affairs also in ICT matters. He has an academic background in Public Administration from the Erasmus University of Rotterdam.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Koreneef argues the fact having in Europe a Digital Single Market, a market without borders is a positive matter. One of the problems of the EU has been that each time a person travelled across every member state, a different roaming tariff was applied, not encouraging the idea of Single Market. It is logical that those tariffs should be eliminated to harmonize the situation.

Koreneef does not think there are negative outcomes, and mentions he is clueless regarding why the telecom operators have not previously developed a similar policy without the need of the EU intervention. There are cases where some telecom operators opened their roaming policies, and the economic effects were positive for them. He believes the policy will work.

- 3) Do you believe the EU citizens give a great importance to this policy?

This question depends on the country. In small countries, such as Luxembourg, people need to travel, while in bigger countries such as Spain people prefer to travel internally. This cannot be generalized but it occurs, changing the perspective of each user depending on its residence place.

It also depends on why the person travels. Consumers suffer bill shocks while businesses can handle them, creating an unfair situation.

- 4) According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

Dutch people travel a lot, so they will be benefitted by the policy. However, a different area that can be developed is the 4G/5G networks, which will have their use increased as tourists will start not using the Wi-Fi services when abroad and continue with their mobile services.

- 5) Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU? This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The cross-border regions are the ones with larger issues on the situation. Regional aspects are important, as the population living there has a regional experience rather than a national one, and needs this policy more.



Social values may be undervalued, something showed in different impact assessments. These are important outcomes of any policy, and Koreneef believes they were not properly addressed in the assessments.

6) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee believes the process has been long and messy, explained in some way because of the lack of willingness of some stakeholders. The process is important regarding the image of the EU, showing the positive aspects of the system.

There were strong forces outside the Council lobbying to stop the policy, especially over southern countries. Although Koreneef's position finally succeeded, the process itself was bumpy and non-transparent. Different players were using "magic numbers" related to the prices and tariffs which did not help much in the debate, as they did not have a lot of arguments.

7) What was the main objective of your institution regarding the mobile regulation?

Mainly, the interviewee talks about a proper implementation of the policy, which is a very hard task to do. The wholesale tariffs will have to be checked in two years. His position is that the traffic will go up and it will compensate the reduction in prices.

8) Do you think the regulation is inevitable or sustainable within time?

The interviewee believes this regulation has taken too much time, more than needed related to the initial objective of the EC. The market was moving towards reducing the prices, in a good direction. However, without regulation, it would have been very difficult to achieve the actual situation. Regarding the sustainability, he believes that with the information used by the Dutch representation it is enough to expect the policy will be sustainable. However, it will be needed to wait for two more years to realise about this.

9) Is there any gap or expected situation after the policy has been approved by the EC? If so, do you have any possible solution?

Koreneef's institution has been discussing the wholesale tariffs with the different stakeholders involved and feel quite optimistic about the situation. There is a gap regarding what every stakeholder wanted, and although some members, such as Spain, have felt wounded by the policy, Koreneef believes the gap is not very wide.

10) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The impact assessment done by the EC shows many insights related to the policy that help in justifying. However, Koreneef believes more assessments could have been done. Anyway, he believes the information provided is enough to justify the policy, although this differs from the perspectives of other member states.

11) Can you mention which are the most important stakeholders in this policy?

He mentions the other member states, operators, EP and lobby groups.

EP is considered to have done a very good job in representing citizens. The lobby groups are more powerful in some countries than others, depending on the position of the domestic operators and the closeness between the private industry and the government.

12) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

In case of the Netherlands, Koreneef believes these social outcomes can compensate the costs, mainly because of the travelling patterns. He found difficult to determine the values involved.

## A IV.XIV – Raymond Perrenet – Simpel

The interview with Mr. Raymond Perrenet happened on 29th May, 11:30, at Simpel's Headquarters in Amsterdam Zuid. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Perrenet has been working in the telecommunication sector for more than 20 years. He has worked for T-Mobile in various functions for 15 years and is now working in Simpel as responsible for Business Development and Business Analytics. His background is Computer Scientist, although he always performed commercial and strategic tasks in his job experience.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

From a consumer perspective, Perrenet argues it is hassle-free. If it is assumed the concept of "One Europe, One Country", it can be deduced this is a positive movement towards that goal. He argues the telecom companies have made difficult this objective, as with their complex tariff schemes it became hard for a consumer to have this European experience.

From an operator perspective, it has negative points. It shows that the industry has not been able to solve the situation itself, and if there is a revenue reduction because of this policy, it will impact the CapEx of the companies. The incumbent telecom operators see a negative impact mostly, something shared with MVNOs. The latter may suffer because of higher wholesale deals with the operators, which will be close to the regulated price caps.

- 3) Do you believe the EU citizens give a great importance to this policy? According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

Perrenet mentions that roaming was in the last positions of the user's top 10 concerns when selecting a mobile company, so he believes in general this is not one of the most important items. Some companies started providing in their bundles calls to the EU, which slowly but surely changed the perception of the consumers towards international services. However, this did not happen many years ago, and was not considered an issue.

Dutch customers, from an operator perspective, give importance to this policy, as they travel more towards Southern countries than vice versa.

- 4) This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The interviewee argues the justification was mainly based in economic matters, and this led to social values involved.

- 5) What is your general opinion about the different steps the EU has taken towards the Regulation?

Perrenet argues it was a long process, not very smooth, where many variables were being taken into account, with several discussions and lobbying from the different stakeholders. Anyway, he believes this process is not very different from the normal processes in the EU.

He understands MVNOs are less heard than other network operators, which are larger in terms of subscribers. Simpel is a Dutch company operating only in the Netherlands, that has no direct representation in Brussels, so each time the firm needs to address a regulatory issue, it contacts ACM.

6) Do you think the regulation is inevitable or sustainable within time?

The regulation was inevitable, as the industry itself did not find a mechanism to secure all interests. Perrenet argues RLAH was a logical decision of the EC, because the difference on prices between domestic and international traffic was too high. Within a political view, it seems logic to go on with this policy.

Regarding sustainability, the interviewee mentions he believes the roaming regulation is sustainable with the prices and paths proposed.

7) What was the main objective of your institution regarding the mobile regulation?

Simpel needs to closely follow the traffic streams and margins after the RLAH starts. Although Simpel's customers have an estimated below of average usage of roaming compared to MNO customers, the situation is uncertain, especially in unlimited voice call and SMS bundles.

8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The interviewee prefers not to argue on this point, although he believes they are justified.

9) Can you mention which are the most important stakeholders in this policy?

The interviewee mentions the local politicians and the Dutch government as important stakeholders of the policy. Politicians face the roaming costs daily and they have an indirect effect over the policy.

10) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

From a consumer perspective, it is illogical to have different rates between countries in the EU when roaming. Perrenet believes it does compensate the costs, and leads to justification.

## A IV.XV – Bart Vreke – T-Mobile NL

The interview with Mr. Bart Vreke happened on 30th May, 10:00, at T-Mobile's Headquarters in The Hague, Netherlands.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Vreke has a background in Dutch law, obtained from the University of Utrecht. He has started working for local governments, specifically in public regulation, and later continued his career in OPTA (the former Dutch telecommunication regulator) for 2 years. He works nowadays in the legal, regulatory and compliance department of T-Mobile Netherlands, specifically in the regulatory area. Vreke covers, among other topics, the areas of roaming regulation, competition law and contracts regarding roaming agreements.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

From a consumer perspective, this policy probably lowers the barriers to use roaming services.

Vreke believes this policy seems to be more a political decision than an economic one, creating a sub-optimal outcome of it. He argues that a regulatory body could base its decisions on economic aspects, but in this case the grounding seems to be mainly politically driven. At the beginning, it was thought as a policy for periodic travel, but the regulation ended up being much broader.

- 3) Do you believe the EU citizens give a great importance to this policy?

Vreke argues roaming is becoming more important each day. Although he doubts users consider roaming as a major factor to decide which company to choose. Even before the EU decided on RLAH, T-Mobile differentiated itself by offering a light version of RLAH, enabling consumers to use a significant part of their monthly allowance in the EU.

- 4) According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU? Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?

The perception of the regulation, both from a consumer and operator perspective, will most likely depend on the pattern of usage. For consumers, it will depend on the expected amount of days abroad in the EU. For operators, it will depend on the balance of roaming traffic (traffic of visitors on network vs traffic of own customers abroad). The aforementioned factors are likely to vary per region.

- 5) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The decision seems to be primarily based on politically based principles. Other factors at least seem to be less important and/or relevant.

6) What is your general opinion about the different steps the EU has taken towards the Regulation?

Due to the lengthy decision-making process and the (many) related substantive changes, the final regulation was difficult to foresee. This makes it for operators very difficult to anticipate the coming regulation.

7) Do you think the regulation is inevitable or sustainable within time?

In general, the market for mobile telecommunications is considered to be competitive. Therefore, the question remains whether or not the operators, driven by the increased consumer demand, would have increased the competition on roaming services. Fact is that operators like T-Mobile already made roaming an important part of the propositions.

Regarding sustainability, the interviewee finds difficult to answer, as there is a lot of uncertainty related to traffic patterns and usage when the RLAH becomes enforced.

8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

This is difficult to answer. At this point, it is more important to make sure the regulation is at least sustainable. Regarding future regulation, it remains important that the relevant factors are included in decision-making.

9) What was the main objective of your institution regarding the mobile regulation?

T-Mobile needs to monitor the usage to see how the roaming patterns change. However, T-Mobile already had a generous offer related roaming, and this situation limits the company's differentiation possibility with other operators.

10) Can you mention which are the most important stakeholders in this policy?

Vreke mentions the three main institutions of the EU, ACM-BEREC, the telecom sector and the (Dutch) government.

11) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

The interviewee finds it difficult to answer, as "the knife cuts in both ways". A healthy communication market leads to benefits for the consumers, and the Dutch society benefits from healthy operators. However, it is impossible to compare.

## A IV.XVI – Bart Heinink – Tele2

The interview with Mr. Bart Heinink happened on 31<sup>st</sup> May, 15:30, by a telephone call.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Heinink has a background in Sociology and Business Administration. He has worked in telecommunications, specifically in the areas of strategy, regulatory and public affairs. For the last 3 years, he has been working for Tele2 as Manager of Public Affairs.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Heinink believes that in a positive perspective, people will stop worrying about data usage in roaming and will avoid having negative experiences with bill shocks. Customers will also avoid having to access to Wi-Fi networks abroad, as their service will be able to be used.

In the negative side, roaming is still costly for some operators. Two possibilities may arise; firstly, consumers may have to pay the cost difference and secondly, for smaller operators it could become more difficult to compete with larger companies. Another negative comment the interviewee mentioned was related to a possible pan-European consolidation thanks to the advantage of lower wholesale costs for the largest operators, diminishing smaller ones and affecting the competitiveness.

- 3) Do you believe the Dutch citizens and organizations give a great importance to this policy?

The interviewee believes this could be true, as Dutch people can be considered as travellers in comparison to other users in the EU.

- 4) Do you think this varies between countries in the EU? Do you believe that the perception of the good or bad of this policy may vary from region to region within the EU?

As mentioned in the previous question, this depends on the travel patterns. The more the person travels, the more it will value the policy. The same happens with business users.

- 5) Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

Heinink finds difficult to answer the question, although he thinks the values are probably considered. There were many political and social pressure against the limitations and towards the EU to modify the situation, so it could be also said that the political value of it was more considered than the social aspect.

- 6) What is your general opinion about the different steps the EU has taken towards the Regulation?

The interviewee finds the process as a messy experience. There were two important points in the regulation that needed to be properly addressed: the FUP and the wholesale tariffs. The first one was extremely messy, especially regarding the case of the modification of the roaming limitation of days per year. Other points of the FUP were also messy, although most of them have been clarified. However, in the initial FUP,

it was very difficult to Tele2 to decide commercially what steps to take because of the uncertainty. In the second point of wholesale tariffs, it was not extremely messy.

7) Do you think the regulation is inevitable or sustainable within time?

Heinink argues that it could have been inevitable. Although there were other alternatives, such as the ARPs, these were similarly complex as the RLAH policy proposed.

Regarding the sustainability, it is difficult to answer because of the uncertainty on the market. It depends on two aspects: usage and pricing. If usage increases too much, the policy may not become sustainable. The same happens if prices are not reduced.

8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

Generally, Heinink believes the justification was enough. As mentioned, it could be true that some other alternatives were possible. However, the justification for them were similarly correct and Tele2 can understand the arguments of the EC.

9) What was the main objective of your institution regarding the mobile regulation?

After the implementation, Tele2 needs to evaluate the value that its customers give to roaming. The company will need to monitor the type and quantity of traffic in roaming, and will be trying to improve the roaming deals with other foreign operators.

10) Can you mention which are the most important stakeholders in this policy?

The interviewee mentions the EC as main stakeholder, especially DG CONNECT. The EP and Council (member states) had their voice, together with the consumer associations. There was a strong division between Northern and Southern countries.

11) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

Heinink mentions this is a very difficult question to answer. He believes it depends on the perspective. From the point of view of the society it can be seen differently than from an operator cost. As a business, it is very difficult to see positive aspects, especially regarding small operators. Tele2 recognizes that there are advantages, but it is hard to profit from them.



## A IV.XVII – Walter Kroeze – VodafoneZiggo

The interview with Mr. Walter Kroeze happened on 29th May, 9:30, at VodafoneZiggo's Office in Amsterdam. Some questions were not asked as they were answered previously.

- 1) Firstly, I would like to know your professional and academic background. Could you summarize it?

Mr. Kroeze has a degree in Dutch and European law, obtained from the University of Utrecht. He worked for a law firm and later worked for the telecom sector, in VIFKA, a trade association representing manufacturers and providers of ICT services. In 1997, he started working for Ericsson in the Netherlands, Belgium, Sweden and USA, in the telecom regulatory schemes and coordinated the regulatory policy of Ericsson for the EU countries, maintaining contact with the EC and EP. In 2008, he moved to Vodafone, also in the regulatory field, and has been involved in the regulation since that time. In addition to roaming, he also works on areas such as net neutrality and spectrum management. As of 1<sup>st</sup> January 2017, Vodafone and Ziggo formed the joint venture VodafoneZiggo.

- 2) International mobile roaming allows citizens of the EU to travel to other countries seamlessly, using their mobile services like at their home. Which do you think are the most positive or negative outcomes of it?

Kroeze mentions that, as the EU aims to create a European single market, it is quite logical to expect a policy like this one. It will have an effect on the costs of roaming, and consumers will no longer have to feel the need to turn off their devices while travelling. However, from the company's perspective, the process how the current regulation came about is quite remarkable due to the unpredictability of the political decision-making process and the potential impact on the mobile market. Especially Mr. Juncker's personal intervention in the end of the process which led to a political decision on a 90 day FUP to be reworked to the current FUP.

Initially, the roaming market was characterized by had excessive high prices and a lack of transparency, something that the EC tried to improve. At that time, the operators were against the regulation, but Kroeze agrees that the market was not functioning well. VodafoneZiggo (at that time Vodafone), was in a favourable position as it had not only many operating companies in different countries in Europe but also strong alliances with other operators.

He believes the roaming regulation became more political, especially after 2015, as the EU needed a popularity boost. This regulation could be proof that the EU would help its citizens. By 2012, the roaming regulation included provisions requiring the decoupling of roaming from domestic services. Companies were forced to invest in modifying their internal IT and billing systems to be able to comply with the requirements. However, before it could become effective in practice, the EC decided to change the policy to RLAH, leading to a lot of frustration among the operators who had made significant investments that were now rendered useless, as well as potential alternative roaming providers who saw their business case evaporate. Kroeze believes this was a failure of the EC.

He also mentions that initially, Commissioner Kroes created a balanced proposal for a reform of the EU telecoms regulations that included spectrum harmonization (aimed at reducing costs for operators) and roaming provisions (that would impact revenues), but this balanced proposal looking both at costs and revenues did not come to fruition. The interviewee mentions each country has a different cost base, with very diverse spectrum and licensing costs (and tax and employment costs). Although Kroes' proposed policy would have helped to create a more balanced approach, only the revenue impact of the policy (regulation of roaming) survived the political discussions.

The regulation will impact revenues of the operators, and he believes the FUP may have been not properly considered, as there was a political need of reaching an agreement on the policy. The RLAH system may sound easy to implement in theory, but in practice it may require complex and costly changes to IT and

billing systems. Some operators may struggle with this implementation, as their systems are not prepared for it, and the FUP may be hard to apply.

It remains to be seen what the effect of RLAH will be on the market, especially now that the competition on the Dutch domestic mobile market is increasingly fierce.

Kroeze believes the scenarios are not clear, and there is uncertainty about the short and long-term effects. Given the split between the northern EU member states who in general are in favour of low wholesale rates and southern EU member states who generally want the opposite, it remains to be seen if the RLAH model will be sustainable.

- 3) Do you believe the EU citizens give a great importance to this policy? According to your perception of the Dutch people, how do you particularly think the Dutch users will benefit from this policy? Do you think this varies between countries in the EU?

Kroeze mentions he must guess in this area. It is not such an important issue related to the users if they do not travel, and of course it depends on the travel patterns of the countries. Also, non-roamers may end up subsidizing roamers.

- 4) This question is focused on your experience. What do you expect as results of the thesis? Do you believe social values are being considered by decision-makers, or is economy the main argument for this?

The interviewee mentions the case of the bank transfer fees across Europe, which were very expensive and did not allow a real free trade on goods and services, showing that the social value obtained was high. A roaming policy could have a similar effect in this way.

However, Kroeze believes the EC may be over-politicizing the issue. It is not yet clear if the FUP aimed at preventing abuse of roaming will actually work. If these fail, permanent roaming offered by non-domestic MNOSs could distort national markets. This could have a very negative effect on investments in mobile networks, but could also have a significant impact on national governments and NRAs as they could lose control over their domestic markets due to customers using non-domestic providers not subject to control by the national authorities.

- 5) What is your general opinion about the different steps the EU has taken towards the Regulation?

Kroeze believes this process was more unpredictable than usual, especially regarding the mistake of trying to incorporate the decoupling policy, leading to costs for the operators that were in the end made in vain. The goal on the horizon for the EC was clear but the approach was not, and somehow, they have created an artificial business model.

- 6) Do you think the regulation is inevitable or sustainable within time?

The interviewee argues this depends on the effectiveness of the FUP, and if abuse can be tackled. In the roaming regulation, there are provisions to prevent people selling SIMs or other abuses. Although theoretically this is possible, it is not clear if in practice these provisions will be effective.

- 7) What was the main objective of your institution regarding the mobile regulation?

In order to comply with the new roaming regulation, VodafoneZiggo is implementing new commercial propositions. It is considering the options to implement the FUP and is trying to understand the competitor's response. Regulation sets the theoretical ceiling, but market competition sets the ceiling in practice. The company will try to differentiate itself by providing services that are hard to equal by other

competitors. Kroeze mentions that this regulation, may lead to a harmonization of the commercial offers in the market; thus, new approaches may be needed to differentiate VodafoneZiggo's propositions from that of its competitors.

- 8) Nowadays the regulation has already been approved but, what do you think about the motives that lead to it? Were they justified?

The regulation needs to have justified effects in both social and economic aspects, and a proportionality should exist between both aspects. Kroeze believes that, given the discussion of the FUP maximum roaming time (60, 90 days, and the intervention by Mr. Juncker), it shows that the regulation was extremely politically motivated.

Regarding the impact assessments, the interviewee questions the neutrality of them, as they may be created only to justify what was already decided by the EC. A proper economic assessment is needed. However, he admits that at the beginning, the market dynamics were such that they did not lead to much lower roaming rates (although Vodafone was one of the first companies proposing very low roaming bundles, and was stopped by the EC to protect domestic operators).

- 9) Can you mention which are the most important stakeholders in this policy?

The EC, member states, consumers, mobile operators, lobby groups, MVNOs. He also mentions (including private persons who also are consumers) are an important stakeholder and as such have an influence on the strategies of companies. For example, if a pension fund is investing in a telecom operator, and the company loses revenues as a result of the roaming regulation, the total effects could be larger than expected. A general welfare analysis would be needed to bring this to light.

- 10) The policy has economic costs which have been addressed by other studies. Do you think there are social values that compensate these costs? What values? Can you give me your arguments on this?

This was answered in the previous questions.

## Appendix V – List of survey respondents and survey template

### A V.I – List of survey respondents

The following list shows the respondents:

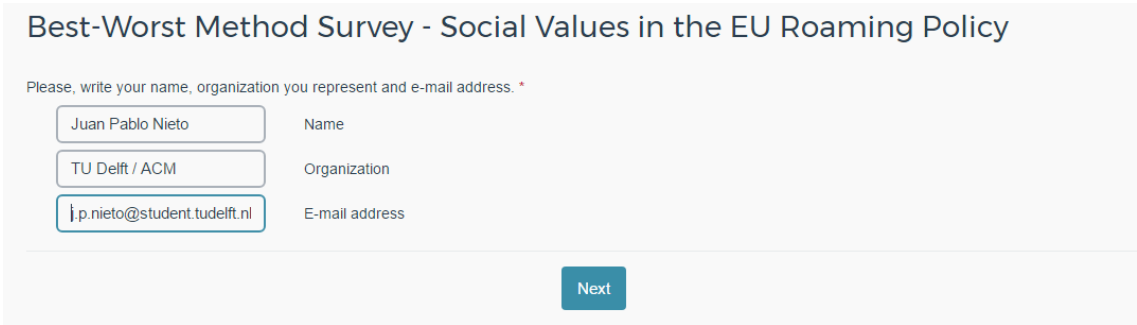
Table 41. List of respondents of BWM.

Organization	Representative
ACM	Johan Keetelaar
BEREC	Elisabeth Dornetshumer
BEUC	Guillermo Beltrà
BTG	Jan van Alphen
Consumentenbond	Inge Piek
DG CONNECT	-----
KPN	Paul Knol
Lebara (MVNO)	Paul Van Straaten
Ministry of Economic Affairs	-----
MVNO Europe	Morgane Taylor
Simpel	Raymond Perrenet
Tele2	Bart Heinink
VodafoneZiggo	Walter Kroeze

### A V.II – Survey template

The BWM survey was performed with the online software interface provided by SurveyGizmo. It consists in three parts explained below:

#### A V.II.I – First part



Best-Worst Method Survey - Social Values in the EU Roaming Policy

Please, write your name, organization you represent and e-mail address. \*

Juan Pablo Nieto Name

TU Delft / ACM Organization

j.p.nieto@student.tudelft.nl E-mail address

Next

Figure 15. First part of BWM Survey.

## A V.II.II – Second part

Dear respondent, Thanks for accepting to respond this short survey. Your input is very valuable and will be used to assess what social values are considered most or least important among stakeholders in the EU Roaming policy.

Please follow the instructions of this survey carefully. If you have any doubt, feel free to contact me before answering the questions.

The following survey will last up to 10 minutes.

1. Social values can be defined as the value that socially collective beliefs and belief systems attribute to the policy. In other words: How much does a society value a certain belief or attitude, such as democracy, honesty, security, etc.

Among the following list of social values, which is the **MOST** important (related to the other values listed) to be considered within the EU Roaming regulation policy?

If you need the definitions of these values, you can find them in the following link:

<http://roamingresearch.blogspot.nl/2017/06/definitions-of-values.html> \*

- Transparency
- Availability
- Flexibility
- Certainty
- Fairness
- Freedom
- Economy
- Prosperity
- Universality
- Integration

Figure 16. First question of second part of BWM survey.

After the option is selected, a new menu appears below this question. In this case, Freedom is used as the selection of the user. The user needs to select the score of each of the other social values considered.

You have selected **Freedom** as the MOST important within the EU Roaming policy.

Please determine the preference of **Freedom** over all the other criteria using a number between 1 and 9.

Definition of 1 to 9 measurement scales:

1: Equal importance

3: Moderately more important

5: Strongly more important

7: Very strongly more important

9: Extremely more important

2,4,6,8: Intermediate values

Example: If Integration scores 7, it means you consider **Freedom** very strongly more important than Integration.

If you need to access the definitions of each criteria, please access the following link:

<http://roamingresearch.blogspot.nl/2017/06/definitions-of-values.html> \*

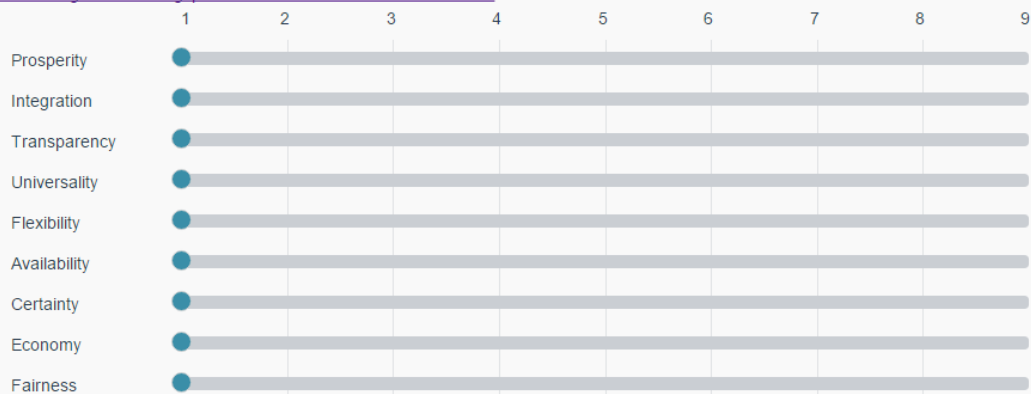


Figure 17. Second question of second part of BWM survey.

### A V.II.III – Third part

3. Social values can be defined as the value that socially collective beliefs and belief systems attribute to the policy.  
In other words: How much does a society value a certain belief or attitude, such as democracy, honesty, security, etc.

Among the following list of social values, which is the **LEAST** important (related to the other values listed) to be considered within the EU Roaming regulation policy?

If you need the definitions of these values, you can find them in the following link:  
<http://roamingresearch.blogspot.nl/2017/06/definitions-of-values.html> \*

- Universality
- Certainty
- Freedom
- Fairness
- Prosperity
- Availability
- Transparency
- Flexibility
- Economy
- Integration

Figure 18. First question of third part of BWM survey.

After the option is selected, a new menu appears below this question. In this case, Economy is used as the selection of the user. The user needs to select the score of each of the other social values considered.

You have selected **Economy** as the LEAST important within the EU Roaming policy.

Please determine the preference of every value over **Economy** using a number between 1 and 9.

Definition of 1 to 9 measurement scales:  
1: Equal importance  
3: Moderately more important  
5: Strongly more important  
7: Very strongly more important  
9: Extremely more important  
2,4,6,8: Intermediate values

Example: If Integration scores 7, it means you consider Integration very strongly more important than **Economy**.

If you need to access the definitions of each criteria, please access the following link:  
<http://roamingresearch.blogspot.nl/2017/06/definitions-of-values.html> \*

	1	2	3	4	5	6	7	8	9
Fairness	●								
Prosperity	●								
Transparency	●								
Universality	●								
Freedom	●								
Availability	●								
Certainty	●								
Integration	●								
Flexibility	●								

Figure 19. Second question of third part of BWM survey.

#### A V.II.IV – End of the survey

Dear Juan Pablo Nieto, thanks for your time. Your response is very valuable for the thesis.

After the report is presented, you will be able to access to the thesis results in an online document, which will be sent to your e-mail address [j.p.nieto@student.tudelft.nl](mailto:j.p.nieto@student.tudelft.nl).

Best,

Juan Pablo Nieto

*Figure 20. Final message of BWM survey.*

## Appendix VI – Best-Worst Method

The Best-Worst Method is a newly created MCDM by Dr. Jafar Rezaei (2015, 2016), based in pairwise comparison. The method provides an improved approach than AHP, as it is demonstrated a best performance in the tests with real-world data. The main advantages of BWM are:

- a) As it is a vector-based method, it requires fewer comparisons than AHP (matrix-based).
- b) The consistency ratio is used to check the level of reliability because the output of BWM is always consistent, different from most MCDMs.
- c) It can be combined with other MCDMs.
- d) It only uses integers as scores, decreasing the complexity of the method.

These following steps are needed by the method to obtain the weights of the criteria in the general application of the BWM:

- 1) Determine a step of decision criteria.  
A set of criteria ( $c_1, c_2, c_3, \dots, c_n$ ) needs to be determined. In this thesis case, social values such as integration, universality, etc. are used as criteria.
- 2) Determine the best and the worst criteria.  
The respondents need to determine from the selected criteria, which is the best and the worst of them according to their opinion on the subject. No comparisons are made at this point.
- 3) Determine the preference of the best criterion over all the other criteria using numbers scores between 1 and 9.  
Number 1 represents equal preference while number 9 represents the maximum preference of the selected best criterion over the consider criterion. The resulting vector is:

$A_B = (a_{B1}, a_{B2}, a_{B3}, \dots, a_{Bn})$  where  $a_{Bj}$  indicates the preference of the best criterion B over criterion j.

- 4) Determine the preference of all the criteria over the worst criterion.  
The step also uses scores from 1 to 9 being 1 equal preference and 9 the maximum preference of the considered criterion over the selected worst criterion. The resulting vector is:

$A_W = (a_{1W}, a_{2W}, a_{3W}, \dots, a_{nW})^T$  where  $a_{jW}$  indicates the preference of the criterion j over the worst criterion W.

- 5) Find the optimal weights ( $w_1^*, w_2^*, w_3^*, \dots, w_n^*$ ).

For this step, it is needed to minimize the maximum absolute differences  $\left| \frac{w_B}{w_j} - a_{Bj} \right|$  and  $\left| \frac{w_j}{w_W} - a_{jW} \right|$  for all j.

Considering every weight is positive and the sum condition, the following is the summarized problem:

$$\min \max_j \left\{ \left| \frac{w_B}{w_j} - a_{Bj} \right|, \left| \frac{w_j}{w_W} - a_{jW} \right| \right\}, \text{ s.t.}$$

$$\sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j.$$

The previous model is equivalent to:

$$\min \xi, \text{ s.t.}$$



$$\left| \frac{w_B}{w_j} - a_{Bj} \right| \leq \xi, \text{ for all } j.$$

$$\left| \frac{w_j}{w_W} - a_{jW} \right| \leq \xi, \text{ for all } j.$$

$$\sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j.$$

By solving this last part of the model, the optimal weights ( $w_1^*$ ,  $w_2^*$ ,  $w_3^*$ , ...,  $w_n^*$ ) and  $\xi$  are obtained.

The method uses a Consistency Ratio to determine the level of reliability of the solution found. This ratio can be calculated with the following equation:

$$\text{Consistency Ratio} = \frac{\xi}{\text{Consistency Index}}$$

The Ratio exists between 0 and 1, and the closer is to 0, the more consistency it shows and the more reliable the comparison is.

A linear model of BWM has been used in this research to determine the results. The linear model allows to find a unique optimal solution instead of several of them, and proposes the following problem while calculating the weights in Step 5:

$$\min \max_j \{ |w_B - a_{Bj} w_j|, |w_j - a_{jW} w_W| \}, \text{ s.t.}$$

$$\sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j.$$

The model can be transferred to the following linear programming problem:

$$|w_B - a_{Bj} w_j| \leq \xi^L, \text{ for all } j.$$

$$|w_j - a_{jW} w_W| \leq \xi^L, \text{ for all } j.$$

$$\sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j.$$

This last problem is linear, with a unique solution.  $\xi^L$  can be considered the indicator of consistency, as there is no need of a Consistency Index as the non-linear version.

## Appendix VII – Results of BWM

### A VII.I – Best criteria

Table 42. BWM answers of best criteria per actor.

	Fairness	Economy	Certainty	Integration	Availability	Transparenc	Universality	Prosperity	Freedom	Flexibility
ACM	9	6	1	5	5	7	5	6	6	7
BEREC	8	4	8	5	1	8	2	5	9	2
BEUC	3	3	5	3	1	4	5	5	3	4
BTG	2	4	3	2	2	1	2	5	2	3
Consumentenbond	1	5	7	7	3	7	5	7	6	7
DG CONNECT	1	4	3	5	3	4	2	4	4	6
KPN	3	1	2	4	4	4	4	3	4	4
Lebara	1	3	3	3	6	4	4	7	6	6
Ministry of Economic Affairs	1	4	2	7	4	2	1	8	3	7
MVNO Europe	9	8	1	8	9	9	9	8	8	8
Simpel	7	6	4	7	4	1	5	6	6	5
Tele2	4	3	6	1	2	3	2	3	3	7
VodafoneZiggo	4	5	1	6	3	2	7	5	6	4

### A VII.II – Worst criteria

Table 43. BWM answers of worst criteria per actor.

	Fairness	Economy	Certainty	Integration	Availability	Transparenc	Universality	Prosperity	Freedom	Flexibility
ACM	8	5	7	1	5	7	3	5	5	3
BEREC	1	8	7	4	8	5	6	5	2	4
BEUC	7	9	7	7	9	6	5	1	7	7
BTG	7	6	8	7	8	9	8	1	7	8
Consumentenbond	9	5	3	7	5	5	3	3	7	1
DG CONNECT	9	4	7	4	6	6	8	8	3	1
KPN	4	8	5	3	3	3	1	3	3	3
Lebara	6	6	7	6	5	8	6	3	1	3
Ministry of Economic Affairs	9	7	7	1	3	3	7	3	3	5
MVNO Europe	2	2	2	2	2	2	2	1	2	2
Simpel	3	4	5	5	6	4	2	5	5	1
Tele2	8	9	7	6	7	8	6	4	7	1
VodafoneZiggo	6	6	9	5	5	9	6	7	1	6

## Appendix VIII – List of MNOs and MVNOs in the Netherlands

Table 44. List of MNOs in the Netherlands.

MNO
KPN
VodafoneZiggo
T-Mobile NL
Tele2

Table 45. List of MVNOs in the Netherlands.

MVNO	MNO provider	MVNE provider
*bliep	Tele2, T-Mobile	No
12Connect	VodafoneZiggo	PrivateMobility
88 Mobile	T-Mobile NL	Elephant Talk Communications
A1 internet	VodafoneZiggo	PrivateMobility
A3BC	VodafoneZiggo	PrivateMobility
AH Mobiel	KPN	No
Aldi Talk	KPN	No
Bel Centrale	VodafoneZiggo	PrivateMobility
BEN	T-Mobile NL	No
Benemen	VodafoneZiggo	PrivateMobility
BLU Telecom	VodafoneZiggo	PrivateMobility
Brite	VodafoneZiggo	PrivateMobility
Budget Phone Company	VodafoneZiggo	PrivateMobility
Budgetsim	KPN	No
CargoFone	KPN	No
Choozze	T-Mobile NL	Elephant Talk Communications
Combird	VodafoneZiggo	PrivateMobility
Dean Mobile	KPN	No
Deka Mobiel	VodafoneZiggo	Teleena
Dekatel Telecom	KPN	No
Delight Mobile	KPN	No
Dirk Mobiel	VodafoneZiggo	Teleena
Eenvoud Telecom	T-Mobile	No
Eilie	KPN, VodafoneZiggo	Teleena
Emobiel	VodafoneZiggo	Teleena
Fieber	KPN	No
FirmTel	VodafoneZiggo	PrivateMobility
Foize	VodafoneZiggo	PrivateMobility
Galaxy Business Networks	KPN	No
Helder Telecom	KPN	No
Hema Mobiel	KPN	No
Hollandsnieuwe	VodafoneZiggo	No
Infopact	VodafoneZiggo	PrivateMobility
Intercity Communications	KPN	No
Internet Overall	KPN	Aspider NGI
Jumbo Mobiel	KPN	No
Kruidvat Mobiel	KPN	No
Lebara	KPN	No
Limesco	T-Mobile NL	No
Lycamobile	KPN	No
Maxitel	VodafoneZiggo	PrivateMobility

MCS	VodafoneZiggo	PrivateMobility
Mobicross	KPN	No
Motto Communications	VodafoneZiggo	PrivateMobility
One Central	VodafoneZiggo	PrivateMobility
Orca Group	VodafoneZiggo	PrivateMobility
Ortel Mobile	KPN	No
Pocos	VodafoneZiggo	PrivateMobility
PostNL	KPN	No
Raffel Mobiel	VodafoneZiggo	PrivateMobility
Redworks	VodafoneZiggo	PrivateMobility
Robin Mobile	KPN	No
SB Business Communicatie	KPN	No
Simpel	T-Mobile NL	No
Simyo	KPN	No
Skilje	KPN	No
Socia-Telecom	KPN	No
Solcon Mobiel	T-Mobile NL	No
SOS mobile	KPN	No
SpeakUp	T-Mobile NL	Elephant Talk Communications
Stipte	T-Mobile NL	No
TAM ONE	VodafoneZiggo	PrivateMobility
Tele2 Nederland	T-Mobile	No
Telesur	VodafoneZiggo	Teleena
Telfort	KPN	No
Telfort Zakelijk	KPN	No
Tismi	VodafoneZiggo	PrivateMobility
Toggle Mobile	VodafoneZiggo	No
TrendCall	KPN	No
Truphone	VodafoneZiggo- KPN <sup>8</sup>	No
TSV	VodafoneZiggo	PrivateMobility
Vectone	KPN	No
Voiceworks	KPN	No
VrieService	KPN	No
Yes Telecom	KPN	No
Youfone	KPN	No
Zetacom	VodafoneZiggo	PrivateMobility
Ziggo Mobiel	VodafoneZiggo	No

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<sup>8</sup> Truphone announced this change recently, moving from VodafoneZiggo to KPN (Telecompaper, 2017).

## Appendix IX – Ranking of values per actor

The values are ordered regarding the ranking (from 1 to 10) given by the weights estimated in the BWM. If a group of values has an equal ranking, the range of rankings is used for all.

Table 46. Ranking of values per actor.

	Fairness	Economy	Certainty	Integration	Availability	Transparency	Universality	Prosperity	Freedom	Flexibility
ACM	9	4-6	1	10	2-3	7-8	2-3	4-6	4-6	7-8
BEREC	10	4	7-8	5-6	1	7-8	2-3	5-6	9	2-3
BEUC	2-5	2-5	8-9	2-5	1	6-7	8-9	10	2-5	6-7
BTG	6-8	9	6-8	2-5	2-5	1	2-5	10	2-5	6-8
Consumentenbond	1	3-4	6-9	6-9	2	6-9	3-4	6-9	5	10
DG CONNECT	1	5-8	3-4	9	3-4	5-8	2	5-8	5-8	10
KPN	3-4	1	2	5-9	5-9	5-9	10	3-4	5-9	5-9
Lebara	1	2-4	2-4	2-4	7-8	5-6	5-6	9	10	7-8
Ministry of Economic Affairs	1-2	6-7	3	10	6-7	4	1-2	9	5	8
MVNO Europe	7-10	2-6	1	2-6	7-10	7-10	7-10	2-6	2-6	2-6
Simpel	8-9	5-7	2-3	8-9	2-3	1	4	5-7	5-7	10
Tele2	8	4-7	9	1	2-3	4-7	2-3	4-7	4-7	10
VodafoneZiggo	4-5	6-7	1	8	3	2	9	6-7	10	4-5