



Allocation and fee model mobile telephony frequency range

**Advice to the Minister of
Economic Affairs**

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1 EXECUTIVE SUMMARY

The Minister of Economic Affairs has asked the AFTA to give advice on the fee model for the allocation of 5G mobile telephony spectrum, partly in response to a report prepared by consultancy firm Stratix.

In this advice, we discuss the Stratix report and the reactions of market participants to this report, and we analyze the recommendations of Stratix using the OECD Competition Toolkit. Our main findings are as follows:

- A dynamic and competitive market for mobile services is in the interest of the business customers and consumers in Aruba and is in the interest of the economy of Aruba in general.
- The allocation of 5G frequency range is reason to adjust the entire fee model for the use of all spectrum by telecom providers for their services. Full implementation of the current fee model would result in a very sharp and unjustified cost increase for the telecom providers, which would hinder the rollout of 5G.
- The AFTA agrees with the Stratix advice to allocate spectrum administratively and not to hold an auction. Auctions are complex, and there is no shortage of spectrum, so the proceeds of an auction would likely be very low. At the same time, spectrum is about the commercial use of a public good, so a usage fee is justified.
- The AFTA also agrees with the Stratix advice not to link the fee to market share or turnover. This is administratively complex and unnecessary, also given the advice of the AFTA on the allocation mechanism (see below).
- The AFTA agrees with Stratix to reserve spectrum range for private networks (which can also create some competitive pressure on existing providers) and for public services.

Partly in view of the risks to competition, the AFTA disagrees with the Stratix advice on a number of points.

- Stratix proposes to allocate all available spectrum among the existing telecom providers and to proceed to reallocation if new entrants were to present themselves. However, such subsequent reallocation would be complex with risks to competition. More importantly, there is no compelling reason to allocate all spectrum, a public good, among private parties in advance. After all, there is no shortage of spectrum.
- Stratix proposes to set a uniform fee that is the same for existing and any new telecom providers. The AFTA does not agree with this. A uniform fee boils down to an unjustified competitive advantage for SETAR. After all, SETAR would have much lower spectrum costs per customer than Digicel. Moreover, a uniform fee would be an entry barrier for potential new entrants.
- Stratix proposes to set a fixed fee for a period of 5 years. According to the AFTA, this period is too short. Network investments typically have a much longer depreciation and (thus) payback period. A period of 5 years leads to uncertainty, which means that market participants are likely to invest less than if a longer period is opted for.

Based on our findings, the AFTA proposes an alternative fee and allocation mechanism with the following characteristics:

- The Government sets differentiated fees for the use of spectrum in the available frequency bands. The fees must be differentiated because spectrum in the different bands represents a different market value for the telecom providers (spectrum in the lower frequency bands typically has a higher value than spectrum in the higher frequency bands).
- It is up to the Government to set the fees. Compared to other countries, spectrum is relatively expensive in Aruba, so it is recommended not to set fees that lead to a considerable cost increase for the telecom providers. With regard to the level of the (differentiated) fees, the AFTA unfortunately cannot give more specific advice because the telecom providers have refused to provide detailed financial information that would allow the AFTA to give more specific advice. The fact that the telecom providers have not provided this information is considered a strong indication by the AFTA that the current level of the total fees is not causing any major problems.
- The telecom providers indicate how much spectrum in which frequency bands they want to purchase and pay the fee set for this. Because of the market share and network differences between SETAR and Digicel, Digicel is expected to have a smaller spectrum requirement than SETAR and will therefore also pay a lower fee. Allocated spectrum cannot be returned to the Government. This ensures that parties have an incentive to make the best use of the purchased spectrum. However, parties can purchase additional spectrum in case of increased demand. This allows the Government to retain control over unused spectrum, and spectrum is expected to remain available for potential new entrants and other uses.
- The AFTA recommends allocating spectrum for a period of at least 10 and preferably 15 years to ensure investment security for the telecom providers and any new entrants. If a system of annual fees is applied, it would be reasonable to apply an inflation adjustment for such a period (the fee then increases annually in line with inflation).

Furthermore, the AFTA recommends imposing a number of additional obligations:

- Minimum quality or coverage requirements for the telecom providers, supplemented by an annual mandatory independent quality measurement. Should imposing such requirements be administratively too complex, it is advised to at least require the telecom providers to have an annual independent quality measurement carried out, with the obligation to make the results thereof public. This is expected to give the telecom providers a strong incentive to maintain the quality of their network and thus service provision.
- The requirement for telecom providers with a dominant market position - with SETAR falling into this category according to a preliminary assessment by the AFTA - to grant third parties, such as *Mobile Virtual Network Operators* (MVNOs), access to their network at cost-oriented rates. This access measure may attract new entrants and, even if no third parties enter the market, give SETAR an incentive to charge competitive rates in the Aruba market. After all, if the rates in the Aruban market are too high, this will attract third parties to enter this market.
- To share the infrastructure required for the rollout of the 5G network, such as antenna sites, also based on cost-oriented rates. Due to the limited economies of scale in the Aruban market, sharing infrastructure can reduce the costs and investments for all parties involved. This promotes efficient use of resources and space and avoids unnecessary financial charges for rolling out and maintaining multiple parallel networks.

2.1 REASON

The Department of Telecommunications Affairs (“DTZ”) of the Ministry of Economic Affairs, Communications and Sustainable Development asked the Dutch consultancy firm Stratix to give advice on the allocation of spectrum and the fee model for the use of frequencies intended to be used for 5G mobile telephony. In July 2023, Stratix prepared the report “Mobile frequencies usage fee - more social value for Aruba” (hereinafter: the Stratix report), in which the allocation of spectrum and the fee model for spectrum in Aruba are assessed and recommendations are made. In its report, Stratix advises setting an annual fee for the use of spectrum, which would apply for a period of five years and would also apply to new entrants. Spectrum would be allocated equally among the telecom providers according to availability.

On May 30, 2024, the Minister of Economic Affairs, Communications and Sustainable Development (hereinafter: the Minister) asked the Aruba Fair Trade Authority (hereinafter: the AFTA), pursuant to Article 4.8 of the Competition Ordinance, to give advice on the possible competitive impact of the fee model proposed by Stratix for the use of 5G mobile telephony frequencies in Aruba.

This report contains our advice. It is based on the request for advice and the Stratix report, discussions with stakeholders, including SETAR, Digicel, DTZ and Stratix, and documents submitted by Digicel and SETAR and Digicel’s and SETAR’s responses to a number of questions posed¹ by the AFTA to requests for information.

2.2 PURPOSE AND SCOPE OF THE STUDY

The purpose of this advice is to advise the Minister on the report issued by Stratix on a fee and allocation mechanism for the use of spectrum with a view to promoting competition and a fair and stable telecom market in Aruba.

This study focuses on analyzing the competitive aspects of the allocation mechanism as proposed by Stratix. This involves an assessment of the extent to which the uniform annual amount and the proposed allocation of spectrum among telecom providers influence competitive dynamics, both between existing telecom providers and between potential new entrants. The major focus areas here are the effects on market entry, power relations between telecom providers and incentives for innovation and investment within the Aruban telecom market.

Although the request of the DTZ was aimed specifically at 5G mobile telephony frequencies, the Stratix advice focuses on the allocation of all frequency range for all types of telecommunications. In order to ensure coherence, it is therefore logical that the AFTA also assesses all focus areas. Incidentally, the specific amount of the fee to be paid by the telecom providers for the use of spectrum falls beyond the scope of this advice.

¹ It should be noted that both Digicel and Setar have only been willing to provide partial answers to the questions posed. The AFTA does not have the formal authority in this particular context to require market participants to give full answers.

2.3 READING GUIDE

Chapter three provides a brief summary of the Stratix report and SETAR's and Digicel's responses to this advice. Chapter four contains an explanation of the *OECD Competition Assessment Toolkit (Toolkit)*, as it is appropriate to use this framework to assess the proposals of Stratix. In chapter five, we apply this framework. Chapter six presents alternatives and recommendations made by the AFTA. Finally, chapter seven summarizes the main recommendations.

3 STRATIX ADVICE AND REACTIONS MARKET PARTICIPANTS

3.1 SUMMARY OF THE STRATIX ADVICE

Stratix and the DTZ both emphasize that the current model, based on which an annual fee of Afl. 98,000 per MHz² applies to all frequency bands, is no longer sustainable, especially for the 3.5 GHz band, which is becoming increasingly important for applications such as 5G. This fee leads to unreasonably high costs for telecom providers, which, according to SETAR and Digicel, makes the 5G rollout impossible.

Stratix advises not to apply an auction model for spectrum allocation, as it may lead to inefficiencies in markets without a shortage of spectrum and with only two telecom providers, such as the Aruban market. It is recommended instead that an annual fixed fee per telecom provider be introduced, equal for all existing telecom providers and new entrants, for a period of five years. Furthermore, Stratix proposes to allocate spectrum equally among the existing telecom providers, except for the reserved spectrum for private networks and specific user groups. In that case, unused spectrum would return to the DTZ.³ If new players enter the market, a reallocation would have to take place, with the first user being given priority with respect to an already allocated frequency band.

Stratix also advises not to link the fee to market share or spectrum use to avoid administrative and legal complexity. The determination of the amount of the fee is a political decision, according to Stratix, noting that the current rates are relatively high compared to other countries.⁴

In addition, the Stratix report outlines the following requirements for the new spectrum policy:⁵

- Encouraging use and applications within society.
- Stable revenues for the Government.
- Encouraging competition between the existing telecom providers.
- Supporting new applications from large-scale telecom users.
- Not standing in the way of future developments in technology, economy and society.

Stratix also advises reserving part of the spectrum for private 5G networks and specific user groups, such as public utility companies (for example, for smart meters) and emergency services.⁶ This should help improve cooperation between public services and the corporate sector, without competing with commercial networks.

² Article 2a, paragraph 1, of the Telegraph and Telephone Ordinance in conjunction with Article 2, paragraph b, of the Telecommunication Rights National Decree

³ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 29

⁴ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 32

⁵ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 23

⁶ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 33

Finally, Stratix makes some additional recommendations:⁷

- Adjust the spectrum policy to a “yes, unless” approach, basing approval for equipment on recognition in countries with similar ITU regions and/or where the equipment may be used under similar conditions.
- Encourage cooperation between public services and the corporate sector to promote synergies, rather than the Government developing its own mobile network.
- Ensure that emergency number reachability remains guaranteed even when older 2G and 3G networks are switched off.

3.2 REACTIONS MARKET PARTICIPANTS

3.2.1 SETAR

SETAR has responded positively to the Stratix advice, mainly because of the possibility of additional spectrum range and lower costs, which promotes both innovation and market forces. It emphasizes that the Government should abandon the focus on a budget-neutral spectrum fee, as this could impair innovation and competition. SETAR argues that efficient spectrum use, according to international standards, is crucial, and that clear rules and frameworks are necessary to avoid failures. It believes that spectrum should not be accessible to everyone, and that private networks should be properly regulated to avoid any interference.

SETAR is concerned about the short duration of spectrum licenses (5 years) and argues in favor of a longer period of 15 to 20 years to recover investments in 5G infrastructure. It indicates that it cannot afford to pay more than its current spectrum expenditure. In addition, it supports a simple manageable model for the DTZ, provided with clear rules, and it points out the need for efficient spectrum allocation.

Finally, SETAR proposes to reduce the spectrum costs to international benchmark values, with a maximum of 2.5 million per operator. It is convinced that lower costs contribute to innovation, which ultimately benefits the end users.

3.2.2 Digicel

Digicel has expressed critical views about the Stratix advice, which in its opinion mainly benefits SETAR. It considers a fixed-fee model without differentiation between frequency bands to be unfair, and it argues in favor of a proportional and market-based fee model that better reflects the varying needs of telecom providers. Digicel points out that the model proposed by Stratix - a uniform annual fee with equal allocation of spectrum - would be a disproportionate burden for it, with a 40% cost increase, while SETAR will pay less. This inequality would arise because Digicel needs less spectrum than SETAR, given its customer base.

While Digicel is willing to maintain its current fee, it considers the Stratix advice unworkable and makes a plea for the introduction of an *Administered Incentive Pricing* (AIP) model to set the spectrum costs more equitably. It also recommends differentiating spectrum costs based on frequency: lower frequencies should be more expensive, while higher frequencies should be cheaper to encourage 5G investments. Finally, Digicel emphasizes the importance of regulations

⁷ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 33

that create a level playing field for all telecom providers.

3.3 COMMENT ON SETAR'S AND DIGICEL'S RESPONSES TO THE QUESTIONS POSED BY THE AFTA

In preparation for this advice, the AFTA submitted written questions to SETAR and Digicel. Those questions concerned, *inter alia*, requests to provide more insight into the importance of spectrum costs in operations to be able to assess the importance of the spectrum costs in the overall cost base of telecom providers.

These questions are relevant given SETAR's and Digicel's responses to the Stratix report, as both parties emphasize that the spectrum costs would be too high and would constitute an obstacle to investments and competition in the Aruban market.

Unfortunately, Digicel and SETAR decided not to give or to give incomplete answers to the questions posed by the AFTA. Access to this information would have allowed the AFTA to form a more accurate picture of the ratio between spectrum costs and the overall cost structure of both companies, which is essential for a detailed evaluation of the impact of these costs on market operations.

Despite this obstacle, the recommendations and conclusions of the AFTA have been prepared based on the best available market information and input from the stakeholders. It should be noted that the most logical conclusion that the AFTA can draw based on parties' choice not to provide the information requested is that the current spectrum fees paid by parties are apparently not problematic. After all, if the current spectrum fees had caused major problems in parties' operations, parties would have had a strong incentive to provide the information requested.

3.4 SIMILARITIES WITH STRATIX: NO AUCTION AND NO EXCESSIVE SPECTRUM FEE

The AFTA supports the recommendation of Stratix not to apply an auction model to the allocation of spectrum in Aruba. Due to the limited demand and large spectrum range, organizing an auction would be unnecessarily complex and, furthermore, could lead to it that there would be little or no need to pay for the use of spectrum. After all, there is sufficient spectrum for the two players active in the market and the probability of new entrants is very small.

Therefore, instead of an auction, the AFTA, like Stratix, prefers an administrative allocation of spectrum, with the telecom providers paying a fee for the spectrum they use. This better reflects market conditions and allows the Government to set an appropriate fee for the commercial use of a public good.

The AFTA considers the *Administered Incentive Pricing* (AIP) model proposed by Digicel on the recommendation of SPC Network, based on opportunity costs, unsuitable for Aruba. This model is effective in markets with a shortage of spectrum but would likely result in a spectrum price near zero in Aruba, given the surplus of spectrum.⁸

⁸ This model bases the spectrum price on opportunity cost, meaning that the price is determined by the value the spectrum would have if it were used for something else. For example, if a frequency band is not used for mobile services but for another technology, such as broadband internet, the price would be calculated based on the value it would have in that alternative use situation. When shortages occur, the cost of not using that frequency band is high because there are few alternatives, and the available resources become very valuable. This means that, when shortages occur, the frequency band becomes a precious resource, and any missed opportunity to use it effectively has a large opportunity cost. In contrast, when there is no shortage (as in the case of Aruba, where the supply of spectrum exceeds demand), the value of the spectrum drops to zero. In theory, no one wants to pay for something that is available in abundance and does not have high opportunity cost. Thus, this model does not always correctly reflect the true value of spectrum.

The AFTA agrees with the conclusion of Stratix that increasing 5g spectrum range in the current fee model would lead to a significant cost increase for telecom providers and should therefore be reviewed. It is legitimate that the Government receives a fee for the use of spectrum, but the amount of the fee should not prevent the development of a competitive and innovative market for telecom services in which telecom providers have incentives to invest and the consumers and business customers benefit from better services and competitive prices. The fact that a competitive and dynamic market for telecom services is crucial to Aruba's economy in a broad sense is also relevant in this context.

3.5 DIFFERENCES WITH STRATIX - POTENTIAL COMPETITION ISSUES

Although the AFTA supports a number of key recommendations made by Stratix, the AFTA sees potential problems with a number of other recommendations made by Stratix. In particular, the suggestions of Stratix to (1) introduce a uniform annual amount per provider, (2) to allocate all spectrum equally among the two telecom providers, and (3) to set a fixed spectrum fee for a period of five years may have an undesirable negative impact on the development of and competition in Aruba's mobile services market.

In the following chapters, we will analyze these recommendations made in the advice and the associated risks to competition and recommend alternatives that could mitigate these risks. In chapter four we outline the assessment framework used for this purpose, and in chapter five we apply this framework.

4 ASSESSMENT FRAMEWORK: OECD COMPETITION ASSESSMENT TOOLKIT

4.1 INTRODUCTION

The *OECD Competition Assessment Toolkit* (hereinafter: the Toolkit) is a tool developed by the Organization for Economic Cooperation and Development (OECD). The purpose of this Toolkit is to help policymakers and regulators identify and evaluate existing or proposed policies from a competitive perspective in a structured manner. The ultimate goal is to promote policy that stimulates efficiency, innovation and economic growth by ensuring healthy competition in the market.

4.2 ASSESSMENT FRAMEWORK OECD TOOLKIT

The Toolkit uses four questions to assess whether (proposed) policies and regulations have a significant potential to distort competition. Answering these questions provides insight into the potential anti-competitive impact of such measures. The four questions, applied to the Stratix advice, are:

- 1. Do the (proposed) policies or regulations limit the number of telecom providers that may or can operate in the market?**

This can be done, for example, by granting exclusive rights, introducing a licensing system or imposing requirements unfavorable to new entrants or raising entry barriers.

2. Do the (proposed) policies or regulations limit the ability of telecom providers to compete with each other?

Examples include price regulation, marketing restrictions, quality standards unfavorable to new entrants, higher production costs for some parties (mostly new entrants) compared to incumbents.

3. Do the (proposed) policies or regulations reduce the incentive of telecom providers to compete intensively with each other?

For example, by encouraging self-regulation by the Government, obligations to publish competitively sensitive information or exemptions for certain telecom providers or industries to comply with competition rules.

4. Do the (proposed) policies or regulations limit the ability of customers to choose between different telecom providers?

This can be done, for example, by limiting the freedom of choice of consumers (for example, prohibitions on buying abroad), raising barriers to switching or providing misleading or confusing information (for example, complex interest rates on loans).

COMPETITION ASSESSMENT CHECKLIST



Competition assessment should be conducted if a legal provision has any of the following effects:

<p>A Limits the number or range of suppliers</p> <p>This is likely to be the case if the provision:</p> <ul style="list-style-type: none"><input type="checkbox"/> A1 Grants exclusive rights for a supplier to provide goods or services<input type="checkbox"/> A2 Establishes a license, permit or authorisation process as a requirement of operation<input type="checkbox"/> A3 Limits the ability of some suppliers to provide a good or service<input type="checkbox"/> A4 Significantly raises cost of entry or exit by a supplier<input type="checkbox"/> A5 Creates a geographical barrier for companies to supply goods, services or labour, or invest capital	<p>B Limits the ability of suppliers to compete</p> <p>This is likely to be the case if the provision:</p> <ul style="list-style-type: none"><input type="checkbox"/> B1 Limits sellers' ability to set prices for goods or services<input type="checkbox"/> B2 Limits freedom of suppliers to advertise or market their goods or services<input type="checkbox"/> B3 Sets standards for product quality that provide an advantage to some suppliers over others, or are above the level that some well-informed customers would choose<input type="checkbox"/> B4 Significantly raises costs of production for some suppliers relative to others (especially by treating incumbents differently from new entrants)
<p>C Reduces the incentive of suppliers to compete</p> <p>This may be the case if the provision:</p> <ul style="list-style-type: none"><input type="checkbox"/> C1 Creates a self-regulatory or co-regulatory regime<input type="checkbox"/> C2 Requires or encourages information on supplier outputs, prices, sales or costs to be published<input type="checkbox"/> C3 Exempts the activity of a particular industry, or group of suppliers, from the operation of general competition law	<p>D Limits the choices and information available to customers</p> <p>This may be the case if the provision:</p> <ul style="list-style-type: none"><input type="checkbox"/> D1 Limits the ability of consumers to decide from whom they purchase<input type="checkbox"/> D2 Reduces mobility of customers between suppliers of goods or services by increasing the explicit or implicit costs of changing suppliers<input type="checkbox"/> D3 Fundamentally changes information required by buyers to shop effectively

Source: *OECD Competition Assessment Toolkit*

To assess whether the implementation of the recommendations made by Stratix may involve potential restrictions of competition, the four questions are assessed. To the extent that this shows the existence of potential restrictions of competition, the following questions are relevant:

- **Necessity:** Are the limitations essential to achieving a legitimate policy objective?
- **Limitation:** Are there viable alternatives that are less detrimental to competition?
- **Proportionality:** Do the advantages of the policy outweigh the potential competitive disadvantages?

In this chapter, the proposals of Stratix are evaluated based on the framework outlined above. Only those questions relating to potentially anti-competitive measures are addressed and elaborated in this context. In addition, the necessity, limitation and proportionality of these limitations are reviewed to assess whether the proposal is justified in terms of competitiveness.

5.1 APPLICATION OF THE OECD TOOLKIT QUESTIONS

5.1.1 Uniform annual amount

At first glance, the proposal of Stratix to set a uniform annual amount per telecom provider appears to be a simple and straightforward solution for setting the fee for the use of spectrum by the telecom providers. This approach provides transparency, as the costs of using spectrum are clear in advance and the same for both SETAR and Digicel. This provides predictability, which can be attractive to telecom providers who would like stability in their cost structure.

A uniform fee also results in a low administrative burden for the DTZ. As Stratix indicates, using a fixed-fee model avoids the complex calculations and potential legal disputes that can arise in case of variable-fee models, which are based on market share or actual purchase of spectrum.⁹ However, the questions from the assessment framework show that there are also disadvantages.

- *Does the proposal limit the number of telecom providers in the market? (threshold question 1)*

A fixed annual amount for spectrum that is the same for all telecom providers and also applies to new entrants may raise the entry barriers for new players and does not take into account the inequality between the existing players.

A fixed fee that is the same for all players leads to a cost advantage for SETAR because it has a large market share and can recover its spectrum costs with a (much) larger customer base (lower spectrum costs per customer). Therefore, a uniform fee creates a competitive advantage for SETAR and can further strengthen its current - presumably dominant - market position at the expense of Digicel. Depending on the amount of the fee, this could, *in extremis*, even lead to Digicel's exit. For new entrants, a uniform fee creates an entry barrier that makes new entry even more unlikely.

- *Does the proposal limit the ability of telecom providers to compete with each other? (threshold question 2)*

A uniform fee does not take into account the differences in scale and the spectrum requirement of telecom providers. This forces smaller telecom providers to bear the same fixed costs as their larger competitors, while they may use less spectrum and also have a smaller customer base. This can lead to an uneven playing field in which the costs are disproportionately high for smaller telecom providers, potentially limiting their ability to compete effectively. Depending on the amount of the fee, this could encourage SETAR to engage in strategic pricing behavior (very low prices followed by Digicel's exit, followed by price increases once SETAR has a monopoly).

⁹ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 32

5.1.2 Equal allocation of all spectrum

Stratix advises allocating all available spectrum among the existing telecom providers, subject to the requirement that any unused spectrum be returned to the DTZ. In case of new telecom providers, a reallocation takes place, with the first user of a frequency band having priority when choosing the spectrum it wishes to retain. Should there be any disagreement between providers, a draw will take place. Based on the questions from the assessment framework, the following potential restrictions on competition can be identified:

- *Does the proposal limit the number of telecom providers in the market? (threshold question 1)*

Stratix advises allocating the spectrum among existing telecom providers, with any unused spectrum being returned to the DTZ.¹⁰ This creates a situation where new entrants may not have access to spectrum, depending on the extent to which existing providers use and return their spectrum. Since Stratix concludes that there is no shortage, there is no need to allocate all spectrum in advance. A more flexible approach, where telecom providers can purchase spectrum as needed and for a fee, will leave unused spectrum that the Government retains control over and that remains available to new entrants.

- *Does the proposal limit the ability of telecom providers to compete with each other? (threshold question 2)*

The proposal of Stratix may limit competition between telecom providers. The inter-company consultation between existing telecom providers on allocating spectrum when new parties enter the market introduces a form of self-regulation that may lead to inefficiencies and possibly a preferential treatment of incumbents. The fact that providers must consult or, at worst, draw lots for spectrum can have a negative impact on the speed and ease of market entry, indirectly restricting competition. This could be solved by introducing a more independent reallocation mechanism that is less dependent on inter-company consultation between telecom providers and more focused on objective criteria such as spectrum use and (future) needs.

- *Does the proposal reduce the incentive for telecom providers to compete with each other? (threshold question 3)*

The proposal of Stratix may reduce the motivation of telecom providers to compete with each other because it allows them to return unused spectrum within the award period. If existing providers know that they can easily return unused spectrum, they may be less willing to use their spectrum efficiently. A more effective approach would be to have telecom providers indicate their spectrum requirement themselves. This could be accompanied by a formula that sets a price for spectrum in the various frequency bands. As a result, the remaining capacity would remain available for new entrants. In addition, returning allocated spectrum during the award period should no longer be possible. This would increase the incentive for existing providers to use spectrum efficiently, promoting competition among them and stimulating innovation.

¹⁰ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 29

5.1.3 Period of 5 years

The proposed period of five years for the spectrum fee yet to be set raises questions about the payback period and its impact on competition. Using the questions, the following potential restrictions on competition can be identified:

- *Does the proposal limit the number of telecom providers in the market? (threshold question 1)*

The proposed period of five years may discourage existing providers from investing. Infrastructure investments, such as those in mobile networks, typically have a (much) longer depreciation and payback period. For the same reason, it may discourage new entrants from entering the market because the payback period for their investments may be longer than this period. Certainty about the spectrum fee over a longer period contributes positively to the incentive for providers to invest.

5.2 NECESSITY TEST

In this phase, the first question to be asked is whether implementing the recommendations made by Stratix is necessary to achieve the policy objective, despite the identified competitive risks associated with these recommendations. In this context, it is important that it be clear what policy objective is being pursued with the new fee model. The policy objective, as identified by the DTZ and further elaborated in the Stratix report, is to develop a suitable and workable model for 5G spectrum allocation and fees.¹¹ This model should fit the specific market situation of Aruba and facilitate the rollout of 5G. However, as indicated, the current fee system is not appropriate, and, ultimately, a more general spectrum allocation and fee mechanism should be created.

5.2.1 Uniform annual amount

The proposal of Stratix to set a uniform annual amount for all telecom providers may limit competition, especially for smaller telecom providers and new entrants who may have fewer financial resources. While this model provides simplicity and predictability for both existing market participants and the DTZ, it is not a requirement to achieve the policy objective of an efficient and workable spectrum mechanism. Less restrictive alternatives are conceivable that would better fit the specific market situation of Aruba, for example, a rate structure that takes into account the actual spectrum requirements of each telecom provider, so that larger providers with higher spectrum requirements pay more than smaller providers with lower spectrum requirements.

5.2.2 Equal allocation of all spectrum

The requirement that unused spectrum should be returned to the DTZ, and that spectrum should be allocated equally among existing telecom providers, as proposed by Stratix, appears to be aimed at preventing unused spectrum and ensuring efficient use. However, the question arises whether this measure is necessary to achieve the policy objective of an efficient and workable spectrum allocation model, or whether there are less disruptive alternatives that are less restrictive of competition. Since Stratix concludes that there is no shortage, the need to allocate all spectrum in advance seems less relevant. Alternative solutions, such as an allocation model based on actual need, can achieve the same efficiency without distorting competition or favoring existing providers.

¹¹ Stratix. (2023). Mobile frequencies usage fee. More social value for Aruba, page 4

5.2.3 Period of 5 years

The proposed period of five years may be too short, in light of the significant investments that telecom providers must make, leaving existing players without a proper incentive to invest and discouraging new entrants from entering the telecom market. When the payback period of investments is longer than the period during which a fixed rate applies, potential entrants may be reluctant to invest in the necessary infrastructure and technology. This raises the entry barriers and leads to a less competitive market. Moreover, the proposed period of five years is not strictly necessary to achieve the policy objective.

5.2.4 Interim conclusion

The above analysis shows that the proposed measures are not strictly necessary to achieve the policy objective, namely, the development of a suitable and workable model for 5G spectrum allocation and fees in Aruba. The proposal to set an equal amount for all telecom providers and the equal allocation of spectrum may adversely affect competition, especially for smaller providers and new entrants. In addition, the proposed period of five years appears too short to cover the payback period of investments in the telecom market. Alternatives, such as a more flexible rate structure and a dynamic allocation model, offer better opportunities to promote competition and, at the same time, to achieve the policy objective. Consequently, the measures proposed by Stratix do not substantially contribute to the policy objective and are therefore not necessary to ensure an efficient and competitive telecom market.

5.3 LIMITATION TEST

In this paragraph, it is examined whether there are less restrictive alternatives for achieving the policy objective of a suitable and workable spectrum mechanism without unduly harming competition.

5.3.1 Uniform annual amount

A fixed annual amount that is the same for all telecom providers could create a financial barrier for smaller players or new entrants, limiting competition in the market. An alternative with less restrictive effects would be the introduction of a rate structure that takes into account the variations in market value of the different frequency bands and the spectrum requirements of market players. This alternative would provide more flexibility and help smaller players keep costs manageable, while also allowing new telecom providers to enter the telecom market, thus promoting competition. In addition, it ensures a proportional cost allocation.

5.3.2 Equal allocation of spectrum

A less restrictive alternative to the proposed allocation model is the implementation of a dynamic spectrum allocation model that focuses on the actual user needs of telecom providers. This model allows for flexible allocation of spectrum to providers based on their actual and expected requirements, instead of an equal allocation of spectrum among existing telecom providers. Such a system not only promotes a more efficient use of spectrum by encouraging telecom providers to apply for only the spectrum they actually need, but also facilitates entry for new telecom providers. In addition, this model can promote overall market stability by being more responsive to fluctuations in the demand for spectrum.

5.3.3 Period of 5 years

Due to the long payback period for investments, the proposed period of five years may constitute an obstacle to new entrants and discourage existing telecom providers from investing. An alternative would be to have a longer or flexible period for the spectrum rate, which would make the payback period for investments more in line with market realities. This would not only increase the confidence of new telecom providers, but also give existing telecom providers more room to better plan their investments.

5.3.4 Interim conclusion

The above shows that there are alternatives that are less detrimental to competition. A rate structure with scales, instead of a uniform amount that applies to all telecom providers, allows players to better manage their costs. This means they pay rates tailored to their specific needs and capacities. This allows them to respond more flexibly to changes in the market and to plan their investments in new technologies, such as 5G, more easily. In addition, a dynamic spectrum allocation system can promote a more efficient spectrum use. A longer or flexible period for spectrum pricing would encourage both new entrants and existing telecom providers to invest without disrupting the market.

5.4 PROPORTIONALITY TEST

In this paragraph, the proportionality of the proposed measures is evaluated. It is considered whether the benefits of each policy proposal outweigh the potential adverse effects on competition. The spectrum policy should promote market stability and simplicity on the one hand, but not be unduly restrictive for new entrants and smaller telecom providers on the other hand.

5.4.1 Uniform annual amount

A uniform annual amount per telecom provider provides predictability and administrative simplicity, which can be attractive to market players. It allows them to plan long-term investments without unexpected cost increases. Although predictability is an important benefit, a more flexible rate structure, based on actual spectrum use, for example, could be more balanced. This would ensure a more proportional distribution of costs and lower barriers to new entrants. In short, while a uniform annual amount may offer advantages for existing players, the disadvantages for smaller and new providers weigh more heavily. As a result, the current proposal seems disproportionate and potentially anti-competitive.

5.4.2 Equal allocation of all spectrum

Although the proposal of Stratix to allocate the available spectrum among the existing telecom providers may promote market stability and simplicity, these benefits do not outweigh the adverse effects on competition and the entry of new players. The requirement that unused spectrum should be returned to the DTZ, combined with the reallocation of spectrum in case of entry of new providers with the first user of a frequency band having priority, creates a situation where new entrants may not have access to spectrum. This strongly depends on the extent to which existing providers effectively use and return their spectrum. Moreover, the fact that providers must consult or, at worst, draw lots for spectrum can have a negative impact on the speed and ease of market entry, indirectly restricting competition. If spectrum is allocated according to need and paid for, a complicated reallocation mechanism is probably unnecessary because Stratix itself concludes that there is sufficient spectrum available.

5.4.3 Period of 5 years

The proposed period of five years can contribute positively to short-term market stability because it gives telecom providers certainty about their costs. It also increases predictability of revenues for the DTZ and the Government. However, this term may be too short for both new entrants and existing telecom providers, as shown by interviews with them, to profitably invest in the required infrastructure for telecom services. A longer or flexible term would provide more room for investments and stimulate competition.

5.4.4 Interim conclusion

All three proposals show that the benefits do not outweigh the adverse effects on competition. Although a uniform annual amount has advantages, such as predictability and administrative simplicity, the disadvantages are particularly noticeable for smaller and new providers. Likewise, the allocation of spectrum among existing providers can contribute to market stability, but this approach also poses risks to the entry of newcomers, which can hinder competition. The proposed period of five years provides short-term certainty for existing players but does not appear to be suitable for profitable infrastructure investment. Given the proportionality thereof, it is therefore advisable to consider alternatives that have a more balanced impact on the market. An independent spectrum reallocation mechanism and a more flexible rate structure are better options.

5.5 CONCLUSION

In this chapter, the proposals of Stratix were evaluated based on the four questions from the Toolkit. In addition, the necessity, limitation and proportionality of these proposals were assessed to determine whether they are justified in terms of competition. The analysis shows that the measures proposed by Stratix, including the uniform annual amount, the equal allocation of all spectrum and the period of five years for spectrum rates, lead to several restrictions on competition. These restrictions may make market entry more difficult for new and smaller telecom providers.

Although the proposals offer certain advantages, such as predictability and administrative simplicity, they also pose significant risks to competition in the Aruban telecom market. The uniform annual amount may lead to higher entry barriers and create an uneven playing field, especially for smaller telecom providers and new entrants. The equal allocation of all spectrum seems less relevant, as there is no shortage. Moreover, interviews with Digicel and written feedback from SETAR indicate that the proposed period of five years is insufficient to cover investments, which could hinder the development of the telecom market.

It is therefore essential to carefully reconsider these proposals and to adjust them where necessary to ensure competition in the telecommunications market. In the next chapter, the AFTA presents proposals and alternatives that better reflect the requirements and principles of fair and effective competition.

6 RECOMMENDATIONS

6.1 FLEXIBLE FEE MECHANISM FOR SPECTRUM ALLOCATION

The AFTA prefers administrative spectrum allocation, but not as proposed by Stratix. Stratix advises an annual fixed fee for all telecom providers, with a period of five years, and recommends an equal allocation of spectrum, except for spectrum reserved for private networks. Unused frequencies

should be returned to the DTZ, and, in case of entry of new players, there should be a reallocation with the first user having priority with respect to an allocated frequency band.

The AFTA proposes to base the spectrum use fee on the actual spectrum requirements of telecom providers, taking into account the variations in market value of the different frequency bands. This means that a higher fee must be paid for higher-value frequencies, which may generate more demand or perform better. This differentiated pricing model ensures that larger telecom providers with higher spectrum requirements pay more, while smaller providers with lower requirements pay less. Fees linked to market share may discourage telecom providers from actively competing and expanding their customer base. Also, fees that depend on network size are not recommended, as they may discourage investments in network infrastructure.¹² A differentiated pricing model that takes into account the actual spectrum requirements of telecom providers promotes a fair and balanced cost allocation, which increases accessibility for new entrants to the market and stimulates competition.

In addition, fees based on market share or size can result in complex administrative processes for the DTZ. During our interview, the DTZ indicated that the new spectrum mechanism should be simple, given the limited availability of staff and resources. The AFTA also recommends a period of 10 to 15 years for spectrum fees to ensure investments by telecom providers. A period of five years, as proposed by Stratix, is considered too short by both telecom providers. For this period, fixed annual fees per spectrum band could be set with an inflation adjustment.

6.2 EFFICIENT USE OF SPECTRUM

An essential objective of spectrum allocation is to ensure that spectrum is efficiently allocated to relevant stakeholders in the market. This principle is enshrined in the European Electronic Communication Code (EECC)¹³, which is the basis for the regulation of the telecommunications sector within the European Union. The focus on efficiency is not only recognized within the EU, but also confirmed by international organizations such as the International Telecommunication Union (ITU) and the GSM Association (GSMA).

For the Aruban telecom market, it is important that spectrum management follow these principles to ensure sustainable competition and good network performance. A potential problem is the return of spectrum by telecom providers before the end of the award period, leading to inefficient use. The inability to return spectrum encourages providers to make the best use of the allocated spectrum and to develop innovative solutions, resulting in better coverage and quality of services.

Although Stratix proposes to allocate the spectrum among existing providers to promote stability, the negative effects on competition and the entry of new players may be greater. The combination of reallocation in case of new entrants and procedures, such as consultation or drawing lots for spectrum, may exclude new entrants. This can lead to delays in the access to frequencies required, which can further limit competition. A dynamic allocation model, aimed at actual usage requirements, offers a less restrictive alternative, with flexible allocation of spectrum based on actual and expected requirements.

¹² GSMA. (2022). Best Practice in Mobile Spectrum Licensing. GSMA Public Policy Position, page 14

¹³ Article 45 of the EECC, *Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (Recast) Text with EEA relevance. (europa.eu)

6.3 QUALITY STANDARDS AND ACCESS OBLIGATIONS

GSMA research shows that there is a growing awareness among regulators and policymakers that spectrum pricing and conditions are critical to a country's digital and economic growth.¹⁴ This development emphasizes that the provision of spectrum at reasonable prices must be accompanied by licensing obligations aimed at innovation and growth. These obligations include requirements regarding network coverage, the quality of telecom services provided and third-party access. The AFTA agrees with this starting point.

After all, effective spectrum licensing is critical to encourage the investment required to expand mobile access, meet the increase in demand for data services and enhance the quality, diversity and innovation of the telecom services offered.¹⁵ This is consistent with the broader objective of promoting a sustainable digital infrastructure and ensuring the quality of telecom services within the market.

The AFTA recommends that both quality standards and cost-oriented third-party access be included through regulations or licensing conditions, and that infrastructure sharing be encouraged, with independent oversight of access conditions.

Quality standards could include requirements on minimum coverage ratios and network speed. To ensure that these quality standards are met, it is essential that independent quality measurements be conducted regularly. These measurements should objectively assess the performance of networks based on predetermined criteria, such as coverage and network speed. The AFTA recommends requiring annual quality measurements by an independent third party and making the results public. This ensures transparency and accountability and encourages telecom providers to continue investing in enhancing their services. Moreover, it helps ensure better telecom services for consumers. Should it be difficult to impose quality standards in the context of Aruba, an alternative could be to require telecom providers to at least have annual quality measurements conducted, with the obligation to publish the results thereof.

In addition, the AFTA recommends requiring parties with market power in the area of the provision of telecommunications services - according to the AFTA's preliminary assessment, SETAR has such power - to grant third parties, such as Mobile Virtual Network Operators (MVNOs), access to their networks at cost-oriented rates. This will allow MVNOs, among others, to effectively compete in the Aruban market with a party like SETAR or to develop new innovative services not yet offered by any company in Aruba. The AFTA also considers the sharing of the infrastructure necessary for the rollout of a 5G network, such as antenna sites, based on similarly cost-oriented rates essential given the small scale of the Aruban telecom market, with limited economies of scale. Sharing network facilities can reduce the costs and investments for all stakeholders and promote a more efficient use of resources and space. This avoids the financial burden of rolling out and maintaining separate parallel networks.

To ensure independence and objectivity, the AFTA recommends that the DTZ be responsible for setting and/or monitoring access and infrastructure sharing rates, possibly in consultation with the AFTA. This oversight would prevent rates for third parties from being set too high, which would make their market entry more difficult, or too low, which could limit investment incentives for the infrastructure provider. International benchmarks for cost-oriented rates can be used as an

¹⁴ Spectrum Assignments: Balanced Pricing and License Conditions to Spur Mobile Growth - Spectrum (gsma.com)

¹⁵ GSMA. (2022). Best Practice in Mobile Spectrum Licensing. GSMA Public Policy Position, page 2

additional reference when setting access rates.

This policy will contribute to sustainable competition and a more efficient use of available resources within the Aruban telecommunications market.

6.4 FLEXIBILITY IN 5G ROLLOUT

Given the potential limited budgets and challenges in 5G rollout, it is not advisable to impose a mandatory 5G rollout. Such an obligation could seriously strain the investment capacity of telecom providers and could lead to unrealistic expectations with regard to the speed and scale of the 5G rollout. The AFTA recommends giving telecom providers the flexibility to tailor their investments to their financial capacities and specific market conditions. This gives them the space to invest in the required infrastructure in a sustainable and strategic manner. Giving telecom providers this freedom will allow them to bring their rollout plans more in line with market demand, ensuring quality of service and at the same time guaranteeing the economic feasibility of the rollout.

Moreover, this flexible approach can stimulate innovation because telecom providers are able to explore new technologies and solutions that fit their specific situation and the needs of their customers. This contributes to a healthy and competitive telecom market and avoids any unnecessary financial pressure on telecom providers that could potentially jeopardize their existing networks and services.

6.5 PRIVATE 5G AND SPECIAL USER GROUPS

The AFTA supports the proposal of Stratix to free up part of the spectrum for private 5G applications, enabling innovative solutions and increasing efficiency in various sectors. In addition, the AFTA is in favor of reserving a small part of the spectrum, approximately 1 GHz to 2.5 GHz, for the smart meter applications of N.V. ELMAR, subject to the condition that it is not offered commercially in competition with existing mobile telecom providers. This ensures fair competition and a level playing field.

Furthermore, the AFTA encourages cooperation between public services and the corporate sector to create synergies and innovative solutions that benefit both sectors. There is also agreement on reserving spectrum for private networks at the port, airport and for special user groups, contributing to reliable connectivity and supporting the economic growth of Aruba.

7 CONCLUSION

In this study, the AFTA assessed the potential impact on competition of the Stratix advice on spectrum allocation and the fee model. The AFTA supports some of the proposals of Stratix, such as avoiding an auction, no high spectrum costs and reserving spectrum for private networks and specific user groups. Still, the AFTA has concerns about the potential anti-competitive effects of other recommendations, such as a uniform annual amount per telecom provider, an equal allocation of spectrum and the period of five years for spectrum fees.

Based on the competitive analysis conducted and feedback from the stakeholders involved, the AFTA recommends considering alternative spectrum mechanisms that are less restrictive of competition while continuing to achieve policy objectives. A dynamic allocation model aimed at the actual spectrum requirements of telecom providers offers a less restrictive alternative. Telecom providers indicate how much spectrum they want to purchase for which frequency bands and pay

the fee set for this. Allocated spectrum cannot be returned to the Government during the award period, which ensures that parties have an incentive to use the spectrum purchased as efficiently as possible. However, parties can purchase additional spectrum in case of increased demand. This model allows for flexible allocation of spectrum based on actual and expected requirements.

In addition, a flexible spectrum fee model is recommended that reflects the actual spectrum requirements and market value differences of frequency bands. This implies that frequencies with a higher value, which may generate more demand or perform better, carry a higher fee. Such a model ensures that providers with higher spectrum requirements pay more than smaller providers, resulting in a fair distribution of costs, greater accessibility for new market entrants and promotion of competition.

Furthermore, the AFTA recommends linking spectrum use to specific conditions that promote the quality of telecom services and market access. This includes coverage and quality standards with annual, independent quality measurements to ensure a high service level. In addition, the AFTA recommends that dominant providers, such as SETAR, allow third parties, such as MVNOs, to access their networks at cost-oriented rates to encourage competition. Infrastructure sharing based on cost-oriented rates is also advised, as this can help to reduce costs and to promote a more efficient use of resources in the small-scale Aruban telecom market.

In addition, the AFTA recommends that spectrum be allocated for a period of at least 10 years, preferably 15 years, to ensure the investments of telecom providers. In case of a system of annual fees, it is reasonable to apply an inflation adjustment (the fee then increases annually with inflation).

Finally, the AFTA emphasizes the importance of flexibility in spectrum management and the rollout of 5G so that telecom providers can bring their investments in line with financial possibilities and market demand. With these recommendations, the AFTA strives for a spectrum policy that encourages both innovation and fair competition, which will ultimately benefit the Aruban telecom market and end users.