هيئة تنظيم الاتصالات
TELECOMMUNICATIONS REGULATORY AUTHORITY
Kingdom of Bahrain - مملكة البحرين

BNET Economic Regulatory Model - A Forward Look

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Purpose: to set out key aspects of the Bahrain market model that are fundamental to developing an appropriate economic regulatory framework for BNET wholesale services and discuss existing economic regulatory models.

Contents

Executive Summary

1. The fourth and fifth National Telecommunications Plans defined the Government's Policy of establishing a single wholesale network provider for all national fibre services.
2. BNET was created as a separate legal entity in 2019 within the Batelco Group. Batelco's fibre assets were transferred to BNET under an Asset Transfer Agreement signed in June 2021. Since 2019, BNET has built its corporate capabilities to enable it to fulfil its mandate as the National Broadband Network and operate without relying on Batelco.
3. BNET's licence requires that it only supplies its services on the terms and conditions in its Reference Offer which must be approved by the TRA.
4. The Telecommunications Law requires the Reference Offer to be fair and reasonable. If the TRA does not approve the Reference Offer, it may determine the terms and conditions including the prices that BNET must use to provide its services.
5. In 2018, the TRA published its "New Economic Regulatory Framework".[1] In 2019 the TRA amended the access regulation which required the TRA (if it did not approve the BNET reference offer) to determine BNET's prices based on Long Run Incremental costs.[2]
6. The TRA believes that Bahrain's competitive telecommunications framework should enable BNET, supporting its wholesale customers, to develop the products that are needed and to set prices that enable the Kingdom's strategic objectives to be achieved. However, given BNET is a monopoly, there will be occasions when it is necessary for the TRA to intervene if market pressure does not deliver the appropriate outcome. The TRA believes, given the developments in the market since BNET's creation in 2019, it is now time to review the economic regulatory framework under which BNET's reference offers would, if they could not be approved, be determined.
7. A key high-level strategic objective for the TRA is to ensure Bahrain is one of the best-connected places in the world. This means BNET's Reference Offers should be assessed against ensuring Bahrain has:
    - Sustainable world-leading broadband infrastructure that is capable of providing broadband services, at globally competitive prices ensuring everyone can fully participate in the digital economy.
    - Dedicated fibre services that meet the needs of businesses ensuring the telecommunications sector fully supports Bahrain as one of the best places to establish and operate a business.
    - Connectivity capability that enables Licensed Operators (e.g. Mobile Network Operators), to continue to provide the most advanced services possible, at prices

[1] TRA, *Report on the New Telecommunications Economic Regulatory Framework for the Kingdom of Bahrain, Economic Regulatory Framework*, 15 April 2018.

[2] Long Run Incremental Costs models were developed in the early 1990s to set prices for interconnection services. However, this model is not appropriate for all BNET. Indeed, if it was to be used, it would adversely impact the markets' competitive dynamics. See the section on Cost Standards. Furthermore, as per October 2023 the Telecommunications Law has been amended and no longer requires that tariffs are based on forward-looking incremental costs.

that sustain Bahrain's global competitiveness. This means that Licensed Operators, which can no longer deploy their own fibre infrastructure, are not cost disadvantaged compared to other countries.

- BNET is a sustainable business that makes a reasonable return, is attractive to investors and therefore can access funds to invest to ensure that Bahrain always has world class fibre infrastructure and services.

8. To help develop our thinking the TRA has:
    - Reviewed the framework that was developed by the TRA in 2018.
    - Considered the various position and other papers that it has published.
    - Held discussions and workshops with other regulators that have national broadband networks or are developing policy for fibre investments.
    - Held discussions and a workshop with leading international academic and commercial economists.
9. In this document, we share some preliminary views regarding key aspects of BNET's future economic regulation. We propose to hold a number of stakeholder workshops to build a shared understanding with all stakeholders before formally consulting on any changes.

Introduction and background

10. BNET was created in 2019 as a separate entity responsible for deploying and managing Bahrain's National Broadband Network. BNET was established following the legal separation of Bahrain Telecommunications Company (Batelco), in line with the policy set out in the Fourth National Telecommunications Plan (NTP4)[3], and the principles stated in the New Economic Regulatory Framework (the "NERF")[4].

11. The TRA recognises the monopoly BNET has in the provision of all national fibre services, its strategic importance to the Kingdom, its impact on all other telecommunications operators and services, and that the model used in Bahrain is currently globally unique.

12. As a dominant operator in the provision of wholesale fibre services, BNET is regulated. The purpose of this document is to set out key aspects of the Bahrain market model which we believe are fundamental to developing an appropriate economic regulatory framework for BNET wholesale services, taking into consideration our strategic objectives for the sector. We also discuss existing regulatory models in the context of the Bahrain market and our strategic objectives.

13. BNET provides services which can broadly be grouped into three types[5]:

    - Broadband used by both consumers and businesses;
    - Fibre Services to Businesses; and
    - Connectivity capability for operators' networks.

14. BNET's wholesale broadband is an input into the retail operators' broadband services they market to consumers and businesses. Services that provide connections to Businesses essentially consist of dedicated fibre services such as leased lines used by business customers to connect their sites (e.g., branches of the same bank, data centres, government entities and large organisations) and/or to connect to other parties. These fibre services are tailored to the customers' needs and provide access to voice and data connectivity such as the internet and cloud computing. Connectivity capabilities for operators' networks are facilities that enable Licensed Operators to run their networks, such as facilities to support mobile network radio sites connection between network nodes, core sites, etc.

15. Whilst BNET provides these three categories of services, some elements of the network and BNET's operation and network management's capability can be distinctly associated with these services, but others are shared between the services.

16. There exist differences, in terms of markets and competition, between the three types of services. For example, a retail broadband service would typically require one unit of the wholesale broadband service, e.g. a "Wholesale Bitstream Service" circuit.

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[3] The Fourth National Telecommunications Plan, available at https://www.tra.org.bh/Media/images/National%20Telecommunications%20Plans/NTP4_EnglishTranslation_May20161.pdf

[4] TRA, *Report on the New Telecommunications Economic Regulatory Framework for the Kingdom of Bahrain, Economic Regulatory Framework*, 15 April 2018.

[5] These three types of services do not necessarily constitute separate markets in the sense of economic "market definition".

However, the connectivity capability provided by BNET to mobile operators supports the operations of their mobile networks to provide mobile services (e.g. 4G and 5G). The TRA must ensure BNET provides connectivity capabilities that enables MNOs to provide globally competitive mobile services while striking the right balance between prices and services in line with our benchmarking studies.

17. The main sections of this document can be described as follows:

- Section 1 sets out the principles for the BNET regulatory framework.
- Section 2 discusses regulation models in the context of the Kingdom's market model and objectives.
- Section 3 provides conclusions and next steps.

18. We first provide a brief background on government policy and other documents relevant to the National Broadband Network.

Government policy

19. The fifth National Telecommunications Plan ('NTP5'), which sets out the Government's strategic plan and general policy for the telecommunications sector of the Kingdom was issued in October 2020. NTP5 focuses on progressing the latest technologies, taking into consideration many important aspects such as the growing links between telecommunications, ICT and the wider economy. This supports the Kingdom's wider economic development and, in particular, its role as a regional ICT hub, ensuring it has the network infrastructure and broader policies in place to deliver on these objectives.

20. Key to delivering on Government policy is the regulatory framework. As stated in NTP5, "In light of the changes in the telecommunications market structure due to the separation project and the establishment of [BNET], the Authority shall ensure its regulatory framework is suitable for the new market structure"[6]. NTP4 had set out, amongst other things, a clear policy for an advanced broadband infrastructure and introduced a number of new objectives for the telecommunications market. Key policies included the following:

    a. Ultra-fast broadband products and services will be delivered over a single NBN infrastructure;[7]

    b. This single network will be owned by a separate legal entity, which will be legally and functionally separated from the incumbent operator (Batelco);[8]

    c. The new entity will only provide wholesale products and services, and it will provide these wholesale products and services exclusively to Licensed Operators within the Kingdom of Bahrain;[9] and

6 NTP5, paragraph 21 (i)

7 NTP4, para. 20

8 *Ibid*.

9 *Ibid*, para. 24 d

d. The new entity will deliver wholesale products and services to Batelco, and its competitors on an "equivalence of inputs" basis.[10]

21. The policy effectively set a new model for the Telecommunications sector in Bahrain and, by implication, the structure of the market. It meant a transition from a model of both fixed infrastructure-based competition at the wholesale level and competition at the retail level to a model where competition in fixed broadband fibre-based services operates only at the retail level.

22. All Licensed Operators are required, for fibre at any level of the domestic network (e.g. access, core/transmission), to transition to infrastructure provided by BNET. Operators are, however, able to still self-supply non-fibre infrastructure, such as microwave links.

23. This change in the Telecoms model in Bahrain also has implications for regulation. TRA's objective to protect the interests of consumers and end-users by promoting effective competition, remains unaffected. However, its approach to achieving its objectives and, in particular, to regulating wholesale fibre services needs to be tailored to the new situation of the sector in Bahrain.

"New Economic Regulatory Framework" and pricing Position Paper

24. The "New Economic Regulatory Framework" (NERF) issued in 2018 emphasised there are a number of different approaches to regulatory pricing that could be considered for BNET and that the appropriate approach depends, among other things, on the objectives to be achieved, the incentives that the regulator wants to establish as well as the types of services to be supplied in the future.

25. The NERF discussed, among other things, the relative advantages of the main regulatory families: Incentive regulation and Rate of Return regulation. Various models used by regulators around the world were considered. Among those models was the Building Block model (BBM), which is used by regulators to estimate a revenue requirement that allows a regulated entity to recover its efficiently incurred costs.

26. Subsequent to the NERF, the TRA issued a position paper setting out principles for the Costing Methodology for BNET's services.[11]

BNET Reference Offer

27. The BNET Reference Offer ('RO') sets out the wholesale services that BNET supplies to retail operators as well as the terms and conditions of their supply. BNET is required to submit an RO to the TRA for approval.

28. The latest RO was approved in April 2023. In it, BNET added new products, discontinuing others in the process, and rationalised its product set by removing certain speeds/bandwidths for some products and adding new ones. The new RO also came with a doubling of the entry-level broadband speed with the price remaining the same, lower prices for many services, and discounts for volume or time commitment.

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[10] *Ibid*, para. 24 f

[11] TRA, *Principles for the Costing Methodology for Services Supplied by the National Broadband Network of the Kingdom of Bahrain*, 31 December 2020.

29. In the decision approving the 2023 RO, the TRA highlighted the developing competition in the retail markets, and recognised that the sector is now on a path to a more stable, post-separation, dynamic. We said we would review how BNET should be regulated in the future to enable it to meet the Kingdom's objectives while making a reasonable return.

1. Principles for the new regulatory framework

30. To achieve the policy objectives set out in the National Telecommunications Plans and the TRA's strategic objectives, we believe the economic framework should be guided by the following set of principles:

    - Sustainable world-leading Broadband infrastructure that is capable of providing broadband services at globally competitive prices ensuring everyone can fully participate in the digital economy.
    - Dedicated fibre services that meet the needs of businesses ensuring the telecommunications sector fully supports Bahrain as one of the best places to establish and operate a business.
    - Connectivity capability that enables Licensed Operators (e.g., Mobile Network Operators), to continue to provide the most advanced services possible, at prices that sustain Bahrain's global competitiveness. This means that Licensed Operators which can no longer deploy their own fibre infrastructure, are not cost disadvantaged compared to other countries.
    - BNET is a sustainable business that makes a reasonable return, is attractive to investors and therefore can access funds to invest to ensure that Bahrain always has world class fibre infrastructure and services.

31. Within these wider objectives, we also need to recognise that BNET's network is used to provide services of differing nature to Licensed Operators. Our approach needs to take into account the differences in our strategic objectives in the types of services BNET is providing.

2. What model best fits Bahrain?

32. It is important to acknowledge that Bahrain's market model is unique. This stems from BNET's monopoly over fibre infrastructure. This is a unique feature of the Bahrain Telecom sector.

33. It is also important to emphasise that the pricing models/methodologies do not necessarily need to be the same for all services in the market BNET serves. This is because our objectives for the types of services BNET provides are different and so are market dynamics across these types of services. Such differences may need to be taken into account in the pricing methodology.

34. The above means that while a particular methodology might be suitable for pricing wholesale broadband services for example, it might not necessarily be suitable for pricing connectivity capability to run operators' networks, and vice versa. We will need to take into account our objectives in each of these segments, and their market

dynamics. In practice this means that there is a need for the TRA to be able to differentiate, if appropriate, the pricing methodology between these types of services.

35. The main classes of models that are typically used when it comes to economic regulation of infrastructure are, broadly, "Rate of Return" (RoR) regulation and "Incentive" regulation.

Rate of Return Regulation

36. Under RoR regulation, the regulated entity is generally allowed to recover the costs incurred in the provision of services (typically, accounting costs incurred in the previous periods), plus a fair return on a defined set of assets. Because RoR regulation typically allows to recover incurred costs (whether efficient or not), it is sometimes labelled "cost-plus" regulation.

37. RoR regulation is considered to have a main disadvantage, which is to create inefficiency. By providing protection to recover incurred costs plus a reasonable return, RoR regulation provides weak incentives to minimise costs, which are ultimately borne by consumers. It has also been argued that it may incentivise "gold-plating", a situation whereby an entity deliberately spends more than what is necessary or efficient to provide the services.

Incentive regulation (or "RPI/CPI-X")

38. Incentive Regulation was proposed as an alternative to the perceived inefficiency of RoR regulation.[12] Although it is often associated with price or revenue caps, the term includes more than just caps, e.g. various financial and non-financial incentives to 'outperform' defined targets, which can be quantitative or qualitative.

39. Under Incentive Regulation, regulators typically set the prices that the regulated entities must use to sell their services, based on the entities' forecasted costs and volumes (the regulator may also set an allowed revenue for the firm, which can then flexibly set its prices). The price cap, which is set at the beginning of the regulatory period, includes a reasonable return, typically the cost of capital.

40. The initial cap may evolve throughout the regulatory period along a set path, most commonly "RPI/CPI-X", where RPI or CPI (only one is used) are measures of inflation and X represents an efficiency improvement determined by the regulator to be achievable by the entity. Under this form of control, the maximum annual price increases permitted is RPI/CPI-X.

41. Unlike RoR, price caps provide strong incentives to minimise costs as the regulated entity is generally allowed to retain the (profit) difference between the fixed caps and its actual costs if the latter are lower but make a loss otherwise. As such, price caps do not guarantee the regulated entity will recover its costs when actual costs turn out to be higher than expected costs and/or actual demand turns out to be less than expected demand.[13]

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[12] See e.g., Stephen Littlechild, *Incentive- based regulation: An historical perspective and a suggestion for the future,* Florence School of Regulation, Regulatory Policy Workshop Series 2021-2022, Incentive regulation in network industries, 5 November 2021

[13] For example, if the cap for a service is set at BD 10, based on an expected cost of BD 7, the regulated entity will have strong

42. Price caps can be applied either on individual products or, as a weighted average cap on a set (a "basket") of products. They are generally designed to replicate (or encourage the development of) competitive/contestable[14] markets. They often aim to achieve the delicate balance of protecting consumers from 'high' prices (arising from market power and/or inefficiently high costs), while enabling sufficient margins for alternative operators to profitably build their own network where infrastructure competition is sought.

43. Historically, wholesale regulation of Telecommunications incumbents has, in some countries focused on price caps where they generally apply to a basket of services.[15] This is to provide the regulated entity with some flexibility as it is arguably better placed than the regulator to know the market conditions and therefore the relative levels of prices that stimulate demand.

Building Block Models

44. Building Block Models (BBM) are frequently used in Europe and elsewhere in the regulation of utilities, rail infrastructure, and airports, although their precise implementation differs, depending on the sector and the structure of the market. BBM is a pricing framework under which a regulator typically sets an allowed revenue (a "revenue requirement") over the regulatory period for the provision of a given set of services. BBM models are often a hybrid mix of Incentive and RoR regulation.[16]

45. The revenue requirement typically consists of several 'building block' cost components: operating expenditure (OPEX), return on capital (typically a regulated asset base), depreciation allowances, as well as any applicable tax allowances and various incentive components. Incentives under a BBM can exist in the form of some of these blocks being set or critically assessed by the regulator (who might then set them if contested) and may include various targets that reward the firm if they are achieved.

46. The revenue cap in BBM models is typically based on the regulated entity's forecasted volumes and enables the regulated entity to flexibly set its own prices so that its overall expected revenue does not exceed the revenue cap. However, its actual revenues may exceed the cap for various reasons under or out of the control of the entity. The cap therefore enables the regulator to constrain the average level of prices, while providing the regulated entity with the flexibility to set individual prices for various services. Regulators may however choose to restrict the pricing flexibility for particular services, for example the basic level of the services.

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incentives to be more efficient and achieve a cost lower than BD 7, because it will mean it can make a profit higher than the BD 3 it expected. However, if the actual cost of the entity turns out to be BD 11, the regulated entity will make a loss of BD 1, because the cap is unlikely to be changed by the regulator. If the regulator could not commit to keep the price cap unchanged, the price cap would lose its 'high powered' incentive for cost efficiency and would then share similar properties with RoR/BBM models.

[14] A contestable market is defined by William Baumol as a market where firms faces zero entry and exit costs- with no barriers to entry and no barriers to exit, such as sunk costs and contractual agreements. In a contestable market, a monopolist may not charge monopoly prices, because of the threat of quick entry if it does so.

[15] For example, it has been used in the UK over several decades.

[16] See, e.g. UKRN, *UK Regulated Infrastructure- An investor Guide*, December 2014, Section 4 in particular for an overview of regulation models in various UK sectors.

47. BBM models typically include a mechanism that allows for correction in the next regulatory period, if in a given regulatory period, the regulated entity does not recover its costs, including a reasonable return on its investments. This might be the case if, for example, volumes are lower than forecasted volumes on which the revenue cap is based. This is a significant difference with price caps under which cost recovery is not guaranteed.

48. There can be many variations to BBM models, which may depend on the policy objectives, the sector under consideration, market characteristics, etc. For example, some regulators may choose whether the adjustment mechanisms (in case of a revenue shortfall) operate at the end of the period, or within the period, typically each year. The details of any potential BBM model for Bahrain would need to be determined by our strategic objectives and the specificity of the Bahrain model.

49. One of the main motivations for BBM (and RoR) is to incentivise investments as the regulated entity is typically allowed to recover incurred costs. It is worth noting that some sectors where BBM models have been implemented have come under criticism not only for perceived high prices (one of the alleged disadvantages of RoR) but also for underinvestment, when such models are actually supposed to encourage investments. This is the case in the UK Energy and Water sectors where it is alleged there is chronic underinvestment.[17]

Costs standards

50. The cost standard used under either category of regulation can vary. Regulators use a wide range of costs standards depending on the purpose, e.g. setting regulated prices or revenues, resolving regulatory disputes or for enforcement cases, and depending on the particular markets and policy circumstances. These standards include Fully Allocated Costs (FAC), Standalone Costs (SAC), Avoided Costs (AC), Long Run Incremental Costs (LRIC).

51. FAC is an accounting measure of costs generally based on the concept of "activity-based costing". Under FAC, all the firm's relevant costs are taken into account and allocated to its activities. FAC typically includes a return on capital. The SAC of a service/activity is the cost a firm would incur if it was providing only that service/activity. The AC of a service/activity is the cost a firm would save by not providing that service/activity. LRIC is defined as the cost of production of an increment of output. LRIC can have several variations, e.g. depending on whether and how they include common costs ('pure' LRIC vs LRIC+). [18]

52. In Telecoms, the FAC and LRIC standards are the most common for the purpose of setting regulated prices or revenues. LRIC costs are forward-looking, typically determined using an engineering approach, and reflect the costs of a theoretically efficient operator if they were to provide the increment of services today. In contrast, FAC costs can be based on, e.g., past costs (Historical Cost Accounting or 'HCA') or

[17] See, e.g. Financial Times, *England's water groups slashed investment in sewage network in recent decades,* December 2021.

[18] For more details on these types of costs and the relationships between them, see Ofcom, *Cost Orientation*, 5 June 2013, Section "What we mean by cost", pages 27 to 34.

current costs (Current Cost Accounting or 'CCA') which are typically the replacement costs of assets used to produce the service.

53. We consider that using the LRIC standard for all BNET services would be inappropriate and inconsistent with our strategic objectives, in particular to ensure that BNET continues to invest and innovate, for the following reasons.

54. As said above, LRIC modelling is typically forward-looking, based on a theoretically efficient operator which, furthermore, might not be subject to the same BNET imperatives, e.g. full coverage and obligation to supply even where market conditions are unfavourable. As such, LRIC for all BNET is unlikely to enable BNET to fully recover past investments and earn a reasonable return and, therefore, is likely to dampen BNET's incentives to sustainably invest in the future, which would negatively impact market dynamics.

55. Because of its design (i.e. based on the costs of an efficient entrant) and potential impacts on the ability of the regulated entity to recover its investments and earn a reasonable return, LRIC is typically only used in situations where infrastructure competition is actively sought.

56. The Telecoms market model is different in Bahrain where BNET is by policy the single fibre provider. As such, LRIC for all BNET services is inappropriate.[19] We need BNET to set its prices for connectivity capabilities to run operators' networks in such a way that these operators find it equally attractive to purchase capabilities from BNET as opposed to wanting to build and run their own fibre networks.

Benchmarking

57. The RoR, price cap and BBM regulations all involve the TRA effectively setting the prices and returns for BNET services. Furthermore, it is possible that BBM models may need to be combined with price caps for certain services so as not to provide BNET with flexibility over the price of certain services. Setting prices, revenues and/or returns at the 'right' level, i.e. that would achieve our strategic objectives while avoiding unintended consequences is a key challenge under these types of regulation.

58. All these approaches (RoR, BBM regulation and price caps) therefore carry the risk of regulatory errors, i.e. for the TRA to set the wrong prices/revenues. This is essentially due to two factors: (i) the uniqueness of the Bahrain market and, as a result, the fact there are no tested regulatory models for the Bahrain situation; and (ii) the asymmetry of information between the TRA and BNET, not only in relation to BNET's costs, technology and investment needs but also, equally important, in relation the market and the demand from BNET's customers.

59. We believe the industry is better placed than the TRA to judge the level and relative prices of BNET product portfolio that would achieve our strategic objectives, e.g. stimulate demand from end users (and in turn, BNET customers i.e. the Licensed Operators). Although a BBM model might be less invasive in that the TRA would not have to set (all) the prices for BNET's services and providing BNET with some

[19] Furthermore, as per October 2023 the Telecommunications Law has been amended and no longer requires that tariffs are based on forward-looking incremental costs.

flexibility, the risk of regulatory error would still exist as we would still have to set the return on capital as well as a number of other variables in the building blocks, including assessing which BNET's investments are efficient to be included in BNET's regulatory asset base that earns a return on capital.

60. The relatively higher risk of regulatory error with the above methodologies, combined with TRA's objectives, makes benchmarking a relevant regulatory tool. By benchmarking BNET's prices to the closest comparable jurisdictions, we can ensure that Bahrain remains globally competitive. Benchmarking has enabled us, in the 2023 RO, to engage with BNET and all Licensed Operators in a way that BNET set prices for the 100Mbps fibre broadband that are in line with many European countries today. Our benchmarking was limited to broadband services, however, in the future we can carry it out on more BNET products although we remain aware of the challenges in terms of comparators and access to published data.

61. We believe benchmarking can help achieve our strategic objectives. Given that we currently collect and publish market indicators, the TRA can track KPIs such as penetration levels, consumer satisfaction, business sentiment (e.g., in terms of the availability and level of connectivity prices in the Kingdom), level of retail competition, etc. Such KPIs, in combination with benchmarking, can provide valuable information as to whether BNET's prices are appropriate, without the need for the TRA to take the risk of setting the (wrong) prices/revenues and potentially derail the development of retail markets and affect BNET's ability to invest.

62. BNET could have incentives to act in a monopolistic way e.g., not be commercially minded with its customers. Should BNET act in this way, the TRA will decisively intervene to ensure BNET acts as if it was subject to competition. BNET's commercial interaction with Licensed Operators is crucial in enabling it to innovate and provide the services that they need to satisfy the needs of end-users, both consumers and businesses. The TRA will ensure BNET always acts in such way.

63. Below, we assess the above methodologies for each of the three types of services.

Table 1: Assessment of regulatory models along the principles of TRA's economic framework

Regulatory Framework /Principles	Rate of Return regulation / Building Block Model	Incentive regulation (e.g. Price caps)	Benchmarking Key Performance Indicators
Globally competitive prices and services for broadband World-leading Broadband infrastructure providing services at competitive prices for both consumers and businesses in Bahrain	✓Overall levels of Wholesale prices may be constrained, but not as effectively as under a price cap. × Risk for TRA to set prices/revenues that would not achieve objectives and hinder BNET.	✓Overall levels of Wholesale prices are effectively constrained. × Risk for TRA to set prices/revenues that would not achieve objectives and hinder BNET.	✓ Benchmarking prices to the closest comparable jurisdictions may ensure globally competitive prices. ✓ Good availability of published market prices.
Globally competitive connectivity services for businesses Infrastructure providing services meeting the needs for businesses ensuring Bahrain is one of the best places for them to establish and operate			✓ Benchmarking prices to the closest comparable jurisdictions may ensure globally competitive prices. × Limited availability of market prices if business services are bespoke. We may need to monitor business sentiment in Bahrain as well as movements in other markets.
Sustainable global competitiveness for mobile operators Connectivity capability at prices enabling MNOs and OLOs continue to provide advanced services at prices sustaining global competitiveness of Bahrain	✓ Re wholesale prices, same as above, with the difference that, for connectivity capability to operators, BNET's services are only a relatively smaller part of a mobile network used to provide mobile services. This implies that, while constraining BNET's prices is a necessary condition for retail mobile services to be competitive, it is not sufficient- To be so, the whole mobile networks also need to be cost efficient/ competitive ✓ Costs of non-BNET operators who built their own network can be known, so we might be able to ensure BNET's prices are such that they are no worse off by buying BNET's services. × Risk for TRA to set prices/revenues that would not achieve objectives. Which could further impact Bahrain's competitiveness in mobile services.		✓ Benchmarking prices to the closest comparable jurisdictions may ensure globally competitive prices. × No clear availability of market prices if these services are bespoke. However, build costs of non-BNET operators might be available, which would mitigate the lack of price availability.
Sustainable BNET investments to ensure world class infrastructure	✓ Promote and incentivize investment by allowing the regulated entity to	✓ Better control of costs since the regulated entity is generally allowed to	✓ Monitoring and benchmarking enable TRA to track investment and

Regulatory Framework /Principles	Rate of Return regulation / Building Block Model	Incentive regulation (e.g. Price caps)	Benchmarking Key Performance Indicators
providing services to all BNET to successfully and sustainably have the financial capacity to invest in its network, ensuring a world class infrastructure providing services available to all in Bahrain	recover its costs and earn a reasonable return on investments. × Investments made may not be the most efficient, or indeed appropriate as incentives to gold plate are higher under RoR. × Risk for TRA to set return that would not achieve objectives and possibly undermine the sustainability of BNET.	keep the difference between price caps and costs. × Weaker incentives for investment and innovation given the risk of non-recovery of costs. × Risk for TRA to set return that would not achieve objectives and possibly undermine the sustainability of BNET.	financial sustainability of BNET over time. ✓Need for comparative market studies covering groups of companies and other markets. Thus enable comparing capabilities offered by BNET and identifying possible gaps to other markets. This would be available from market financial reports.

64. As can be seen from the above table, there is no single model that can meet all the principles of our framework and the different objectives for the three types of services.

65. Our proposed economic regulatory framework may involve some trade-off between the principles that compose the framework, such as providing competitive pricing and at the same time ensuring that BNET can successfully and sustainably invest in its infrastructure to deliver world class services available to all.

66. Each model has its own limitations. For instance, RoR/BBM regulation might incentivise investment but carry a risk of potentially higher prices for consumers. It might also incentivise investments that are inefficient.

67. If the TRA has to set all prices and revenues in the market, there could be a significant risk to the development of the telecom market in Bahrain and to meeting the strategic objectives of the Kingdom. Information asymmetry between the regulator and operator both in terms of costs (the process of determining or verifying BNET's true or forecasted costs is complex and time-consuming) and market demand may lead to adverse outcomes. The TRA would also need significant additional resources. Under RoR/BBM regulation, the operator is incentivised to overstate its costs or engage in gold plating which may lead to excessive prices.

68. However, benchmarking enables the TRA to differentiate between the three types of services BNET supplies, is light touch and ensures real market indicators drive the development of the market. This is key given the difference in the strategic objectives for the various types of services.

3. Conclusion

69. We think intrusive regulatory intervention (e.g. BBM models or price caps) might carry more risks than benefits to the development of the entire telecommunications market.

70. Therefore, benchmarking may provide a reasonable balance between the need to send appropriate signals to all market players, the ability of the TRA to intervene in the market when necessary and minimises risks to the development of the market.

71. We plan to hold workshops to enable us to engage with all stakeholders to discuss possible changes in the regulatory model we use before we formally consult.