

STRATEGIC CASE STUDY

Nyala: 2 March 2021

MARKING SCHEME

The answers detailed below show some but not all possible answers that were accepted by the marking team. Marks were awarded for other valid answers that might not be included in this document.

Key to marks:

Calculations or the manipulation of numerical data.

Most calculations will be straightforward such as the creation of accounting ratios to interpret financial performance, or assessment of the sensitivity of particular estimates.

Some specific calculation marks may be allocated but candidates should not be judged solely on whether figures are 'correct', but on how they reached their figures and the reasonableness of their assumptions and approach.

Narrative

The candidate will be required to demonstrate in their narrative responses, an assessment of the impact and implications of the analysis performed and application of appropriate elements of the syllabus as part of further critical evaluation. Narrative responses should demonstrably inform decisions being faced within the case scenario.

Marks will be awarded for the evaluation of the information given in the context of the specific issues raised by the case scenario. It should demonstrate consideration of an appropriate breadth of issues, such as financial and non-financial perspectives, stakeholder considerations, ethical considerations, strategic risks and the strategic objectives and environmental context of the organisation. Candidates will be expected to demonstrate professional judgement in drawing from this evaluation appropriate conclusions, making practical and relevant recommendations and focusing their answer to suit the user(s).

The allocated marks should again be seen as a guide. Some additional credit may be awarded (within the total marks available for the section concerned and subject to the requirement for appropriate coverage of a breadth of relevant issues) for points which have been developed with particular insight or cogency.

The marking scheme will identify (in bold) points of particular significance for which marks will be ring-fenced. This will limit the marks awarded to candidates who miss the most salient issues.

Reasonable credit may also be given for any points which have not been included in the marking scheme but are clearly valid in the context of the candidate's own calculations or preceding analysis.

General comments:

It is essential that candidates answer all the questions as set and meet the requirement to achieve a minimum of 25% of the marks available for each question.

Any attempt to evade the terms of the question on the grounds that the situation depicted in the examination scenario is unlikely to have arisen or occurred, or is improbable in concept, should not be awarded any credit.

Question 1

The Minister of Energy has requested a report, which reviews the governance arrangements of NECSO and assesses how the issue of excess electricity demand should be managed.

Q	Response points	Marks	Syllabus Ref	App'p Std
Q1i	<p><i>With reference to the international framework for Good Governance in the Public Sector published by CIPFA and the International Federation of Accountants, critically assess the degree to which NECSO meets good governance principles, stating any further information that would be useful to have in order to provide a more complete assessment.</i></p> <p>1 mark per developed point to a maximum of 25.</p> <p>The following general point should gain credit:</p> <ul style="list-style-type: none"> Recognition that comments made by Mr Bikoko and Mr Likado while electioneering are not an objective source of information. Any points they make need to be substantiated from other sources or flagged as subjective. <p><i>Behaving with integrity, demonstrating strong commitment to ethical values, and respecting the rule of law</i></p> <ul style="list-style-type: none"> There does not appear to be a culture of acting in the public interest as it is possible that there have been abuses of the expenses policy regarding meetings at hotels. Even if expenses claims are in line with the expenses policy, this would raise a public interest concern around the reasonableness of the expenses policy for which the board is ultimately responsible. In this context, the new CEO and chair have stated that expenses levels at NECSO are high compared to other organisations. It was alleged, but not been substantiated by President Bikoko that many board members have lavish lifestyles beyond their apparent means. This is a potential indicator of abuse of power and corrupt behaviour. Even if not corrupt, it is an indication that excessive incomes may be received by senior leaders, so these potential concerns should be investigated. There is no remuneration committee, so it is unclear how salaries of senior leaders are determined, but there is a risk that the existing board structure allows 	25	CGL: H1, H2, H3, H4 SPD: B1, B3 SPF: A4, B1, B2, C5 BCM: A1, C3 AA: E2 PSFR: A2	K: ARC BA LSP SBMG S: BI EI PSDM B: AV PS

Q	Response points	Marks	Syllabus Ref	App'p Std
	<p>them to award themselves excessive pay rises.</p> <ul style="list-style-type: none"> • While there is no evidence that lower graded staff do not act in the public interest in their work, it is important that leaders promote a positive public interest culture and these behaviours of senior leaders seem likely to make it more difficult to promote such a culture throughout NECSO, particularly if there is a lack of tangible improvement in managerial performance as a result. • The review of NECSO's board by Dr Gama and Ms Chigamba identified that the board has no code of conduct. This needs to be put in place for staff and board members covering key ethical behaviours and values expected of them. • It is encouraging that the new Chair and CEO have instigated a widespread staff consultation exercise and seem willing to take on board the feedback that has been received. However, it is important to ensure that this is not a one-off exercise and that formal mechanisms are implemented to consult and communicate with staff. Staff do not feel valued as the communications from management are sporadic or absent e.g. staff do not believe that their substantial knowledge of the organisation is used effectively. • NECSO's credibility is brought into question as it does not appear to have created a culture that values staff, even though staff still demonstrate loyalty to the organisation and pride in their work. This is compounded by a lack of effective performance appraisal systems and staff consultation and communication. NECSO has no robust systematic staff and board appraisal process and without a 360-degree feedback mechanism there is no check on whether the behaviours of people reflect the stated values of the organisation. • Performance indicators appear to be narrowly focused on financial measures, but it is good practice for the board to also measure performance in relation to non-financial objectives, and factors such as leadership, ethics and culture, difficult though that can be. 			

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	<p>Mechanisms such as board self-evaluation, 360-degree appraisal of leaders, staff satisfaction surveys, exit interviews etc can make valuable contributions in this area, and there is no evidence that NECSO deploys any such approaches.</p> <ul style="list-style-type: none"> • There is no formal complaints procedure at NECSO. There is evidence from the newspaper article that complaints are received but are often not resolved effectively or in a timely fashion. A formal complaints handling procedure, and associated performance reporting, can provide a valuable insight into operational and ethical performance. • The mix of the board (9/12 Greenbul members) and many senior posts held by members of the same tribe may indicate the organisation is not operating from a fair basis that respects, recognises or encourages diversity and thereby not demonstrating a strong commitment to ethical values. • The existence of leaders from civic, industrial and political areas as board members could be a strength as it may mean that they possess the skills and experience needed as non-executive directors. • However, given such backgrounds, there is more scope for conflicts of interest and the lack of evidence that potential conflicts of interest are declared and assessed at board meetings is a concern regarding the integrity of decision making. • NECSO appears to lack a recognised whistleblowing policy and procedure as indicated by the experiences alleged by the former member of staff as reported in the Nyalan Times. The absence of such a policy means that it is harder for unethical behaviour by the board or managers to be uncovered and dealt with appropriately. • It is also alleged by the Nyalan Times that staff would be subjected to intimidation, harassment and perhaps redundancy if they spoke out about the behaviour of senior management. NECSO's lack of a response on this is not helpful but it does not prove this allegation, so this merits further investigation. 			

Q	Response points	Marks	Syllabus Ref	App'p Std
	<ul style="list-style-type: none"> • There is lack of transparency regarding the appointment of board members and inherent conflicts of interest may exist as a result of the board all being political appointees. Staff also allege that senior appointments generally do not follow a transparent process. This practice has been perpetuated by the new government with the process by which the new CEO and chair have been appointed. • It may be appropriate that the recruitment process for senior roles is different, but the perception that exists is damaging for NECSO's culture, and good governance would ensure that there is transparency about the rationale for any differences in the recruitment process that are considered necessary. • On the other hand, the recent senior appointments may be seen as a positive step to increase the diversity of the board and senior management. Mr Likado has changed the chair and CEO and appointed from outside the Greenbul tribe; this may be because he is trying to address a bias within the board towards Greenbul interests. • Mr Likado has, though, also stated he will radically restructure both the board and senior management positions with his appointees, which may be an indication that he is not sincere about wanting to change the culture within NECSO. • There is evidence of widespread corruption in Nyalan government that led to donors being much more reluctant to give money. There is no direct evidence presently that this prevailed in NECSO itself other than allegations of corruption during the election campaign. As an arms' length body, it may have been somewhat insulated from that culture, but the existence of a board full of political appointees and the dominance of the Greenbul tribe, as in government, may mean that the relationship is not so arms' length in practice. • There is evidence, according to the Nyalan Times, that lower level staff are being fired for minor misdemeanours, but this does not appear to be the case where allegations are made of senior managers transgressing regulations. If this is substantiated it would 			

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	<p>indicate a failure by the governing body and senior managers to abide by the rule of law and apply their own regulations consistently, but no one from NECSO or the Ministry have commented.</p> <p><i>B. Ensuring openness and comprehensive stakeholder engagement</i></p> <ul style="list-style-type: none"> • NECSO does produce and publish an annual report, which contributes positively to openness and highlights NECSO's involvement in community initiatives, providing some evidence of engagement with some stakeholders. • However, there is a question mark over the comprehensiveness of the contents of the annual report, in particular the lack of performance information other than financial statements. The lack of information on future plans is also a concern in this regard. • The reports also do not seem to be widely distributed other than being easily available to legislators, which is a barrier to maximising openness and stakeholder engagement. The concerns over the usefulness of the content and its accessibility to most stakeholders, limits how effective the annual report is in relation to this good governance principle. • There are concerns about the effectiveness of the website which, despite internet access not being available to all Nyalans, should be a key part of the overall mechanism for openness and effective stakeholder engagement. The fact that the annual report is not published on the website is telling in this regard. • Mr Likado has criticised the lack of openness regarding past decisions on power cuts; he has vowed that the process for deciding any future programme of cuts would be more transparent. This may be seen as a positive step as to the way NECSO communicates in the future. • A source close to the Ministry of Energy reported in the Nyalan Times suggested that detailed planning for the cuts programme had yet to start. The indicative programme suggests that there will be little change from the past approach. If true, this is at odds with 			

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	<p>Mr Likado's statement to make the process clearer.</p> <ul style="list-style-type: none"> • The lack of comment by NECSO on the critical press article may be seen as a lack of commitment to openness and a constructive approach to engage with customers, albeit via the media. • There is no evidence that any formal consultation took place with individual customers last year before implementing a programme of power cuts. While consultation with large numbers of individuals would be impractical, it should be possible to consult key institutional customers and a sample of other customers and ensure more effective communication with all stakeholders, including gathering feedback and handling complaints effectively. • Stakeholder needs are likely to vary considerably; for example, small business holders feel particularly alienated by NECSO's actions, with there being little evidence of engagement with them other than in response to complaints. The evidence from the newspaper article, however, is of a lack of sensitivity in such responses. • It is encouraging that Mr Likado has said that future decisions will be clearly communicated and that individual citizens would be engaged and informed and that work is progressing on developing a robust communication plan. • The evidence from the newspaper article suggests that customers are not valued, and that opportunities for more effective engagement with them are lost by the way that complaints are handled. <p><i>C. Defining outcomes in terms of sustainable economic, social and environmental benefits</i></p> <ul style="list-style-type: none"> • NECSO does have a mission statement. It does attempt to address the purpose of the organisation and its intended outcomes and there is some visionary ambition in the statement. However, the mission statement has been in place for 20 years and therefore may no longer be relevant. 			

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	<ul style="list-style-type: none"> • The mission statement could be more ambitious in its specification of societal outcomes and be clearer about NECSO's vision in relation to electricity supply and impact on stakeholders. • It is positive that the mission statement refers to sustainability of its service, but the fact that the electricity supply problems have been evident for some years, the apparent lack of consideration of options to resolve these problems, and any solutions being relatively long term ones, does suggest a lack of serious attention being given to NECSO's ability to deliver its intended outcomes on any realistically sustainable basis. • There is no evidence that plans have been developed or implemented to achieve the vision, suggesting that the mission has had limited impact on NECSO's strategic decision making. • The performance management framework for NECSO in its relationship with the Ministry is very simplistic and focused mostly on budgetary control; no emphasis is placed on service delivery, for example, on power supply/cuts, thus creating an imbalanced approach to performance evaluation. • The fact that NECSO have failed to achieve its financial objectives for many years, despite the allocation of supplementary budgets and significant price rises, suggests that even this limited performance management framework is not applied effectively. There is no evidence of any accountability for NECSO's failings, except perhaps some element of democratic accountability with the result of the 2020 election and the decisions taken by the new Minister to replace the CEO and chair. • There is a lack of performance indicators for the board to direct and assess performance in relation to aspects of the mission e.g. the consistency and affordability of the electricity supplied are clearly both major concerns, but performance in these areas is not formally measured. • The lack of staff performance appraisal also may undermine the implementation 			

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	<p>of the mission statement as it may be expected that staff objectives and performance should be aligned to organisational performance objectives.</p> <p><i>D. Determining the interventions necessary to optimise the achievement of these outcomes</i></p> <ul style="list-style-type: none"> • The BotW review questions the role of the board in any strategic planning and decision making. The BotW state that though there is an operational plan, it focuses solely on budget management and plans for maintenance of power plants. There is, for example, no evidence of plans for performance improvement and no evidence of a review of longer term strategy in relation to expanding electricity generating capacity. • NECSO's pricing policy is very crude, with no evidence that the board evaluates whether it is an effective intervention in terms of its overall goals. It does not provide scope to better align the organisation's financial resources to the achievement of its objectives. • There is no evidence that decisions on the power cuts programme in the past systematically involved the assessment of options or assessed the likely impact on intended outcomes before decisions were reached. • This may change under Mr Likado who has indicated that plans are in place to manage the process better. There is evidence that some consideration is being given to the application of impact analysis when designing the programme of planned cuts. • In not requiring the establishment of key performance indicators, the board has not ensured that systems are implemented for gauging the impact of actions taken on intended outcomes. • Though benchmarking is inherently difficult for a monopoly such as NECSO, there are still opportunities for it to benefit from its application and there is evidence that it does not do so. In addition to historical benchmarking, it could look for opportunities 			

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	<p>for comparing performance with electricity providers in other countries.</p> <ul style="list-style-type: none"> • It could also benchmark processes, such as the performance of the customer contact centre, with organisations in other sectors that have similar functions which are regarded as best in class. • The apparent lack of a long term plan to ensure demand for electricity can be seen is an illustration of weak governance. The board should be planning interventions so as to ensure sustainable outcomes in the areas of its responsibility, though this may as much be an issue that can be levelled at the Ministry as much as at the board. • NECSO apparently places little reliance on sub-contractors for any of its activities. While this is not inherently a governance concern, it would be ideal if there was evidence of leaders giving consideration to whether contracting out any of its activities may have improved its performance. <p><i>E. Developing the entity's capacity, including the capability of its leadership and other people within it</i></p> <ul style="list-style-type: none"> • The hydroelectric turbines are aging and it is not clear how much investment has been put into their upkeep though there is evidence of some maintenance being undertaken. There is a significant amount of downtime annually, in part probably due to insufficient planned maintenance being undertaken despite the existence of a schedule for such maintenance. • Though its findings are unknown, the fact that the Audit Committee has not met to consider the internal audit report on procurement is a sign that NECSO's governance structures do not take the importance of procurement policies and procedures sufficiently seriously. Procurement is notoriously prone to corruption and an essential feature of effective budget execution and financial management and the board should ensure robust oversight of the effectiveness of procurement. • Resources invested in senior manager events at the Lake and attendance at international conferences might be evidence of a strong programme of investing in developing leaders. 			

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	<p>There is, however, a lack of evidence of assessing the impact of such interventions and the array of evidence of weak leadership would suggest it is not having a positive impact.</p> <ul style="list-style-type: none"> • Attendance at international conferences may provide the opportunity for networking with other industry professionals and acquiring knowledge of different ways of working and innovations, but there is no evidence that these activities are part of a structured training and development programme driven by organisational and personal development needs and that their impact is reviewed. • Lower graded staff feel neglected with regards their own development and there no evidence of effective knowledge management systems; by not developing staff at all levels NECSO, is in danger of not maximising the value acquired in the knowledge, skills and experience of people working in the organisation. • There is no apparent career progression; this may be due to limited turnover and favouring tribal groups for promotion. On the one hand lack of turnover can be seen as a strength in retaining skills and knowledge, but on the other it is a weakness due to the exposure to new ideas and ways of working that may arise from new recruits. • NECSO does not to have a formal staff performance appraisal system, or regular supervision, or a management development programme; as a consequence, there are huge gaps in being able to maximise the capabilities of staff. This is a failing of the board in not ensuring it is in place and operating effectively. • There is evidence there is good talent within NECSO, that the workforce is well motivated and that perhaps with a properly functioning performance appraisal system, things would be somewhat better. • It is evident that due to the poor handling of the previous power cuts and lack of communication/engagement that networks 			

Q	Response points	Marks	Syllabus Ref	App'p Std
	<p>have not been developed by the board or senior management</p> <p><i>F. Managing risks and performance through robust internal control and strong financial management</i></p> <ul style="list-style-type: none"> • Budget management is the main part of the performance management framework. However, there is no evidence that the failure to achieve financial targets, despite increasing grants and prices, has impacted on performance management practices. This points to weaknesses in internal controls and financial management and misuse of monopoly power. • Despite, annual grants, supplementary grants and regularly raising prices in excess of inflation, NECSO has been unable to achieve its target return and so appears not to have built up the capability to finance the investment needed for the infrastructure needed to meet rising demand. • This situation may point to weaknesses in internal control and financial management within NECSO. It may indicate that funds are being diverted away from potential investment areas. • NECSO has a risk register which is considered at board and senior management meetings, which is a central feature of good governance. However, the absence on the risk register of any assessment of the risks associated with power cuts is a stark omission and evidence that assessment of risks is not integral to the board's decision making and performance monitoring role at NECSO. • NECSO's handling of planned power cuts and the increasing number of unplanned cuts also may indicate that risk management is not integral to decision making. Risk management should be embedded into an organisation's culture but there is evidence from staff that they are unaware of its content and that the risk register is not taken into account in operational decision making. • An Audit Committee does exist which on the surface is a positive feature. However, it has not met for over a year despite its Chair still claiming an additional responsibility 			

Q	Response points	Marks	Syllabus Ref	App'p Std
	<p>allowance. This suggests that it is not providing the objective scrutiny of NECSOs activities and internal control arrangements that is expected in good governance practice.</p> <ul style="list-style-type: none"> • The absence of an annual governance statement removes an ideal opportunity for considering and reporting on the effectiveness of the organisation's risk management policies and processes. <p><i>G. Implementing good practices in transparency, reporting and audit, in order to deliver effective accountability.</i></p> <ul style="list-style-type: none"> • It is not clear that the Board members have particular expertise needed for their roles or that any serious attempt is made to ensure a balanced range of talent is on the board. They largely appear to be political appointees who may or may not meet provide the mix of skills needed. • It was clear that the minutes from many meetings of the board and senior managers were very insubstantial and did not reflect whether proper consideration was given to the relevant agenda items being debated. The minutes did not indicate that board members and managers were held to account if assigned actions were not carried out. This can be seen as a sign of lack of accountability and of an organisation that is not focussed on outcomes. • In response to a recent newspaper article focused on a whistleblower, despite being offered the opportunity, NECSO refused offers to put its side of things. This exemplifies the organisation's view on transparency. • Though there is an annual report produced by NECSO, it lacks focus on performance and plans and is not readily accessible for most stakeholders. • It is encouraging that NECSO's financial statements are stated as applying international financial statements, but the disclaimed audit opinion means that this claim has not been professionally verified. 			

Q	Response points	Marks	Syllabus Ref	App'p Std
	<ul style="list-style-type: none"> • NECSO is audited by the SAI, which in principle is a strength in its governance arrangements. The auditor has, however, been unable to obtain sufficient access to form an opinion on the accounts. This means that the confidence in NECSO being a going concern, with appropriate financial controls and financial management processes in place, is questionable. • An internal audit function in NECSO exists (which is good) but has not reported on anything for a while and reporting lines to an effective Audit Committee do not seem to exist. This points to the lack of influence of the Audit Committee and the strength and standing of audit as a key contributor to good governance. 			
Q1ii	<p><i>Discuss the advantages and disadvantages of the policy interventions proposed by the Behavioural Influence Unit to manage demand for electricity</i></p> <p>1 mark per developed point to a maximum of 5 per option, with at least one advantage and disadvantage required for each option.</p> <p>1. A public information campaign designed to persuade people to switch off appliances and equipment when not in use.</p> <p>ADVANTAGES</p> <ul style="list-style-type: none"> i) Known that something potentially similar has worked elsewhere ii) Simple messages cutting through complex ideas may capture the attention of the public and may elicit a consistent response. <p>DISADVANTAGES</p> <ul style="list-style-type: none"> i) Nyala is a poor country and it seems unlikely that much electricity is wasted in the country ii) Most of the general population do not have lots of appliances in their homes so there could be little scope for reduced demand by switching off electrical equipment iii) NECSO, on past performance, does not have a good track record of communicating with the public and may not be able to effectively manage such a campaign iv) It's not clear how comparable in impact this would be for the public information 	13	SPF: C1	K: BA SBMG S: BI PSDM B: AV PS

Q	Response points	Marks	Syllabus Ref	App'p Std
	<p>campaigns used in relation to the recent pandemic.</p> <p>2. Offer a government backed loan scheme whereby individuals can purchase solar panels and an equivalent for businesses based on diesel generators.</p> <p>ADVANTAGES</p> <p>i) The more pressure taken off the central generating system the less demand there will be when hydro power is in short supply.</p> <p>ii) If successful it may be possible to expand the offer to areas that cannot access the central electricity generating system, thus, increasing supply and negating the need to invest in further infrastructure.</p> <p>iii) It will be easier for companies to manage the risk of business interruptions if they know that electricity will be constant and this will reduce the adverse impact on the wider economy</p> <p>iv) In addition to being able to plan production, it may result in service output rising due to a lack of interruptions due to power shortages.</p> <p>DISADVANTAGES</p> <p>i) The cost and affordability are unknown; Nyala is a low income country and having the ability to pay for such items may be unachievable for many people</p> <p>ii) The size and value of the upfront investment required to underpin the scheme by government is unknown and may not be affordable within current budgets</p> <p>iii) There will be the need to set up an administrative system to agree the loans and collect repayments. This may be prohibitive and uneconomic.</p> <p>iv) The option for businesses would be fossil fuel-based which is contrary to Nyala's environmental aspirations</p> <p>v) Nyala doesn't have a natural source of oil so would have to import it and would therefore be at the whim of oil producers and associated price fluctuations</p> <p>vi) Is it fair to subsidise each entity at the same level when some may be able to afford their own investment?</p>			

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	<p>In terms of the other suggestion from the BIU: communities having their power cut for longer than absolutely necessary to conserve general availability thereby increasing the resource to be diverted towards manufacturing and building the economy. These communities would be rewarded by being prioritised for additional access to extra capacity as it becomes available:</p> <p>ADVANTAGES</p> <p>i) In a crisis, individuals may act collectively, often to their own disadvantage, to promote a greater good. This was demonstrated during the COVID-19 pandemic when the Nyalan government chose to implement temporary lockdown measures and the vast majority of the population supported this in spite of increased hardship in poorer areas due to the inability to access work by many.</p> <p>ii) Any help towards establishing a stronger economy for Nyala to promote itself on the world stage, in line with the new government's vision, should be considered.</p> <p>DISADVANTAGES</p> <p>i) This approach is essentially temporary and once out of the crisis, individuals may revert to more natural, selfish behaviour</p> <p>ii) The deliverability of the rewards for the sacrifices people would make (and the timescale thereon) are far from clear and may be seen as empty promises</p> <p>iii) Assumes that people are prepared to put national interests over and above local and/or tribal interests. There is no evidence that the experience of the COVID-19 pandemic will be translated to such a different situation that may not appear to have the same sense of emergency.</p>			

Q1iii	<p><i>Briefly appraise NECSO's existing pricing policy and discuss whether a differential pricing policy should be implemented by NECSO as part of a demand management strategy.</i></p> <p>1 mark per developed point to a maximum of 12, a maximum of 3 for critique of the existing policy and 10 for discussion of differential pricing.</p> <p>Current policy</p> <ul style="list-style-type: none"> • As a monopolistic provider no matter what NECSO does to its prices, consumers have little choice of alternative suppliers, and there is some evidence that NECSO may already have been exploiting its monopoly power with prices rising at a greater rate than general prices and wages. • Given the pricing policy is very simplistic and crude, there is no evidence that a process has been followed to determine the pricing policy that best aligns with NECSO's intended outcomes. • It is not clear that the impact of the pricing policy is contributing to the strategic need to fund investment in the infrastructure for electricity supply. • NECSO's current pricing policy is very simple, which is a virtue in that users can clearly understand it and it should be the least complex to administer. • Electricity may be viewed as a basic need and there is an equity argument that the pricing policy should take into account the ability to pay in some way, which is not the case with the existing approach. <p>Differential pricing</p> <ul style="list-style-type: none"> • Any form of differential pricing is likely to involve significant price rises to certain user groups (exactly how, depends on the differentiation bases selected). • It can be difficult to arrive at and justify the prices when differential pricing is introduced, particularly for products/services supplied by government bodies. Cost-based pricing is most often applied to such products/services, but differential prices generally mean a 	12	FM: D1 SPD: C2 SPF: A6	K: ARC BA SBMG S: BI PSDM B: AV PS
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	<p>departure from that principle given that different prices will be charged for what is ostensibly the same product/service.</p> <ul style="list-style-type: none"> • However, some form of price differentiation is a common approach by businesses in many sectors. In part, this is because organisations rarely serve markets where customers are a single homogenous group - there is often a case to segment the market into reasonably homogenous sub-groups and to adopt a distinct marketing strategy to each, which may involve a different pricing policy per segment. • It is technically feasible to apply differential pricing with electricity, as arbitrage (whereby users in a segment being charged a lower price buy the product at the lower price, store it and sell it on to users in the higher price segment, undercutting the original supplier's price) is not likely to be an issue. • In theory, it is possible to structure prices according to the time of the day electricity is used so as to try to reduce demand in periods when demand is currently high and increase it in periods when it is low (and potentially the net effect is lower demand overall). So, NECSO may look to charge lower prices for usage between 9pm and 5am than for the rest of the day; given the lack of "excess" income available to most of the population they may be attracted by a discount for usage between 9pm to 5am. • However, as life is currently geared round little or no night time economy and people being used to being in bed by 9pm, it is unclear how successful this is likely to be and if it means that the price for usage between 5am and 9pm would then be higher than it would otherwise be, NECSO could attract major criticism for being perceived to be exploiting its monopoly power. • Many of Nyala's businesses are small enterprises delivering personal services which fall into two categories. Some, such as hairdressers and shops selling directly to the public would be unlikely to be attracted to a discounted night time price as these businesses are not likely to be able to function when people are in bed. Others, such as garages and tailors, may be able to adjust their working patterns to accommodate night 			
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	<p>time operations and so the differential pricing policy may have its intended effect on demand for some users.</p> <ul style="list-style-type: none"> • In producing a policy, it would be necessary to consider in detail the costs and financial benefits that will be derived from such a change. Due to the lack of infrastructure such as street lights and the public transport not running through the night, consideration would need to be given to developing these areas to ensure people remain safe from crime at a potential cost if people were to be out of their homes during the night. • It is difficult to assess the effectiveness of the policy without more market research, in particular the number of people and businesses who would be prepared to change their routines to embrace the differential pricing policy, while recognising the inherent difficulties of consulting people on their likely behavioural change should prices change as people can have an inbuilt incentive to not tell the truth when asked such questions where they would be adversely affected by it financially. • It would also be necessary to calculate how much day time consumption would be shifted to the night time and how this saving could be used in the general population. • Alternatively, NECSO may approach differential pricing differently by segmenting the market differently e.g. charging businesses and certain domestic users at different rates. This would possibly allow benefits to both groups: businesses taking advantage of bulk purchases and protected domestic user groups, for example, people with long term illnesses or older people, receiving a discount. • The financial impact on NECSO of shifting to differential pricing will be quite unpredictable. Currently, the pricing policy is likely to mean that they can forecast income from charges with a fairly high degree of accuracy, but with the unpredictable impact of how much usage will shift, they will be in a very different situation. If the government is serious about no further supplementary budgets that could present particularly difficult financial management challenges for NECSO. 			
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	<ul style="list-style-type: none"> • The cost of systems involved in implementing, promoting and operating a more sophisticated pricing system would need to be assessed. • Given NECSO's track record with regard to external communications and the apparent lack of public trust in it, there is a question mark over whether NECSO has the capability of effectively communicating a differential pricing policy and its rationale so as to get the desired impact. • There can also be sound arguments for differential pricing beyond the potential demand management benefits e.g. it can be used as a form of state intervention aimed at redistribution of wealth by, favouring poorer households (albeit with the challenges/costs) of setting up appropriate systems (including, for example, means testing). It could also be used as a subsidy to industries/sectors that the government wants to give extra support to (by charging them less). 			
Q1iv	<p><i>Formulate the elements that would need to be included in an effective stakeholder communication and engagement strategy for further electricity rationing.</i></p> <p>Up to 1 mark per developed point to a maximum of 10</p> <p>Communications strategy</p> <ul style="list-style-type: none"> • A communication strategy and its ultimate success relies on the strength of the organisational strategy and, within most organisations, the marketing and communication strategies. It is important though that any message can be directly linked with (and is never at odds with) the organisation's mission, vision and strategy. <p>An objective</p> <ul style="list-style-type: none"> • Best practice will come from the ability to construct SMART objectives for the specific campaign or change initiative being run. • As NECSO's stakeholders are diverse, there is likely to need to be more than one message to convey and so a certain level of sophistication is necessary to ensure the desired messages reach the right group. • So that NECSO's leaders can target the messages appropriately, they need to assess the influence and interest of stakeholders classifying them as: 	10	SPD: B1 SPF: B1, C1	K: BA SBMG S: BI PSDM B: AV

	<ul style="list-style-type: none"> ○ Champions – people / organisations that support the planned change – this is foremost likely to be the government and NECSO board. ○ Blockers – people / organisations that oppose the planned change – for example, businesses and householders who will be unhappy about further electricity cuts. ○ Floaters – those whose position or attitude is unclear, or who are yet to become actively involved in this issue – despite the apparent hostility of the Nyalan Times, the wider media are yet to become actively involved in this issue and could, if handled properly, be used to promote the government’s message. <p>A budget</p> <ul style="list-style-type: none"> • There will be a cost involved in formulating and implementing a communications strategy, which needs to be acknowledged and addressed and it is necessary to understand the resources that need to be committed to the task • Early on it needs to be established whether NECSO has the required capacity and capability within existing staff, or from an external agency if currently such expertise is outsourced. It could be inferred from the way the website was designed and maintained that NECSO has no formal PR/marketing department so would not have the capacity and capability to develop a communications strategy. There would be budget implications arising due to this staffing deficit. • Past communications failures may suggest that a new approach is needed and this may require the recruitment/development of new skills, either internally or via an external agency. <p>Target audiences and participants</p> <ul style="list-style-type: none"> • Identifying the correct target audience is a crucial element of designing a successful communication and media strategy. For the process to be successful, leaders need to decide who they are targeting and what reaction or activity is expected as a result. 			
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	<ul style="list-style-type: none"> • Two types of audience exist most commonly: the target audience for NECSO is the public and businesses who would be affected by the power cuts and where there is a definite response required from them when the communication is successful, and a participant community for NECSO is the board, staff, Ministry of Energy, and, possibly, the media, which is involved in distributing the message and positively reinforcing the value to be gained from embracing the strategy. • It is important to define the target audience and participant communities because a media campaign that has been designed for everyone may end up engaging no-one. • Once the target audience has been identified, the message should be adequately tailored. This should take account of demographic and geographic factors; e.g., the Nyalan population is very young, English is spoken widely but not exclusively, the majority of the population live in rural areas and there are tribal differences which may mean there are different approaches in different areas and communities. These need to be considered to focus on what it will take to get them to take the desired action. <p>Types of media</p> <ul style="list-style-type: none"> • Combination of “low-tech” and “hi-tech” is needed: radio, TV and newspapers are very important in passing on information, the extensive use of posters on trees and lamp posts is a mass communication mechanism. • The mobile phone system in Nyala is unreliable so the use of social media, email, texts and web sites has limitations. • NECSO also has a number of high street shops to pass on the message directly to customers and the population is becoming increasingly urbanised. <p>Craft the message</p> <ul style="list-style-type: none"> • The message needs to be conveyed in the clearest way possible and above all should be accurate and honest. Points to consider in crafting the message: 			
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	<ul style="list-style-type: none"> • Keep it simple and explain the cause clearly, without ambiguities. Keep it truthful and honest – avoid ‘spin’ • Emphasise the critical importance of the cause. • Tell people something new, something they had not thought about. • Be engaging, interesting, perhaps even shocking. • Articulate the need to take action, and provide a solution. <ul style="list-style-type: none"> • Messages should also contain the ‘call to action’, making it clear what action people should take to achieve the objectives. In order to be successful, the call to action should be unambiguous, inspiring, and scalable (i.e. make it clear that people can have different levels of involvement in the overall objective). <p>Include a time line</p> <ul style="list-style-type: none"> • Draw up a calendar detailing the proposed implementation of the strategy leaving enough time for each part of the process. The timeline should allow for the ability to test out the message on audiences who represent the target and/or participant communities to ensure they respond to it in the way the leaders are aiming for. <p>Monitoring, measurement and evaluation</p> <ul style="list-style-type: none"> • What does success look like and what is the feedback saying? Include information on any surveys to be conducted, results expected at certain dates or responses want to receive from individuals or organisations. • Establish effective customer feedback mechanisms e.g. complaints procedures, online/telephone surveys. • Determine measures and systems to monitor change in demand patterns; how satisfied are people with the service before cuts, half way through, at the end; is there a reduction in the number of complaints? <p>Prepare for crisis</p> <ul style="list-style-type: none"> • Explain what will happen if this strategy does not work, list possible weaknesses that might need to be addressed. 			
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Question 2

The Minister of Energy has for a briefing paper, which assesses future demand for electricity in Nyala and evaluates options for commissioning additional electricity supply capacity as part of the “Towards Electricity for All” strategy.

Q	Response points	Marks	Syllabus Ref	App'p Std
Q2i	<p><i>In the light of the need to forecast the demand for electricity by 2029, interpret, and evaluate the implications of, the correlation calculated for usage of electricity and population levels between 1969 and 2019</i></p> <p>1 mark per developed point to a maximum of 6.</p> <ul style="list-style-type: none"> Usage is being used as a proxy for demand for electricity usage, therefore, the figures (and the projections) ignore unmet demand (e.g. people who would use electricity if they could either because they're off the grid or there's a power cut) and therefore probably underestimate likely demand. Correlation is used to determine the strength of the relationship between two variables (x and y). The correlation coefficient (r) measures how linear the relationship is between the 2 variables: x and y. For positive correlation, r lies between 0 and 1, the closer r is to zero, the lower the correlation, so a r of 0.934 is evidence of a strong positive correlation between population growth and usage of electricity. However, a close positive correlation where r is near to 1 does not necessarily prove a causal relationship, i.e. that changes in y are actually being caused by changes in x, even though the data has a strong correlation coefficient value. However, the nature of electricity consumption is such that it is reasonable to infer that there is a causal element to this relationship – it is unlikely to be wholly spurious correlation. It is more informative, though, to calculate the coefficient of determination r^2, which here is 0.8723; this means that 87.23% of the change in demand for electricity can be explained by the change in population over the period of the data set. This does, though, mean that near to 13% of the changes in demand for electricity observed over the 50 year period to 2019 are not explained by changes in population levels. 	6	MA: C4	K: ARC FI SBMG S: BI PSDM B: AV PS

Q	Response points	Marks	Syllabus Ref	App'p Std
	<ul style="list-style-type: none"> • In this context, there is evidence from the period covered by the data set where the relationship between population and electricity use is quite different. For example, in the 1983-1984 famine, 350 000 people died, which is reflected in the fall in population recorded in the 1984 census compared to 1979, yet electricity use rose considerably in that period. • A similar finding is observable between the 1999 and 2004 censuses, the period when the HIV/Aids epidemic caused a fall in population. Such instances may suggest that the overall strong correlation is more spurious than may appear on first sight. • In order to seek to maximise the accuracy of any forecast of future electricity demand it is worth trying to assess what other factors may influence demand for electricity, not just population levels. It may not be possible to quantify all or any of these factors and they may not therefore be able to be built into any formula for forecasting future demand, but they could be factored into the forecast on a qualitative basis. 			
Q2ii	<p><i>Based on the Health of the World Committee's revised population growth projections, apply linear regression analysis to forecast the daily usage of electricity in Nyala in 2029, and discuss the reliability of the analysis and other factors that should be taken into account in the forecasting process.</i></p> <p>1 mark per developed point to a maximum of 8, plus calculation marks up to a maximum of 2:</p> <p>1 mark for the revised population forecast and 1 for applying the regression equation to the forecast 2029 population</p> <ul style="list-style-type: none"> • Based on 18m 2019 population and using the HOWC growth of 2.0% = $18 \times 1.02\%^{10} = 21.94\text{m}$. • Based on the HOWC's population forecast, and applying the regression line, electricity demand in 2029 is forecast to be: <p>$y = -24.68 + 14.36 (21.94)$</p> <p>$y = 290.38 \text{ Mw/day}$</p>	10	MA: C4 SPF: B4	K: ARC FI SBMG S: BI PSDM B: AV PS

Q	Response points	Marks	Syllabus Ref	App'p Std
	<ul style="list-style-type: none"> • However, certain caveats should be placed on this forecast, concerning the reliability of the calculated statistical relationship between electricity usage and population growth and the reliability of the population forecast even with a relatively high correlation calculation. • In this forecast we are in effect extrapolating beyond the relevant range of data that we have used to analyse the correlation between electricity usage (y) and population levels (x). Though it seems highly likely that population will grow significantly we cannot be sure that the relationship between y and x will continue to hold for much higher population levels than those observed between 1969 and 2019 and for another 10 year period. • A 50 year period is also arguably a long period over which to create the formula on which the forecast is based as over that time many societal trends and events will have had an impact. • Though the correlation observed between y and x during the 1969-2019 period is strong, it is clear that it is not perfect and factors other population growth can plausibly be argued to affect demand for electricity. • Factors other than population to influence demand for electricity: <ul style="list-style-type: none"> ○ Urbanisation - there could be population growth that was crowded into higher density households, however, there would not be the same increased demand if the same population growth was fragmented over a larger number of households with fewer occupants because families were dispersed. There has been a strong trend towards a higher proportion of the population living in conurbations which is likely to increase electricity use regardless of the overall size of the population. ○ Size of households – It may be that some proportion of electricity consumed in a household would be the same whether the household had, for example, 1 or 2 occupants. 			

Q	Response points	Marks	Syllabus Ref	App'p Std
	<ul style="list-style-type: none"> ○ Changes in volumes and types of organisation might impact demand over time. That isn't directly reflected in the analysis if population is used as the only independent variable. ○ A civil war in Kudu between 1997 to 1999 saw mass movement of refugees with 700 000 people crossing the border into Nyala. The majority returned to Kudu when hostilities ceased in 1999. These people were never recognized as Nyalan citizens so did not feature in official population figures but they had access to basic amenities, so they may have impacted electricity use data. ○ Nyala's economy was affected by the international banking crisis from 2008 with a severe decline in exports, companies being bankrupted and major jobs losses. Regardless of population growth a severe recession will reduce demand for electricity due to there being fewer businesses and so demand from organisations will have fallen. Economic conditions are likely to drive electricity demand, not just population. ○ It is likely that growth in the usage of the internet will have increased demand for electricity regardless of population growth. ○ Since 2014 there has been a growing middle class with demands for higher living standards, mainly based in the cities and working in finance technology, non-government organisations (NGOs) or larger scale entrepreneurs. These groups will use more electricity than people in rural areas as they will make demands for "white goods" such as fridges and freezers, as well as air conditioning and modern technology. ● Changes in behaviours by individuals and businesses over time, potentially influenced by government campaigns or society trends, therefore may impact on electricity usage regardless of population size. This suggests 			

Q	Response points	Marks	Syllabus Ref	App'p Std
	<p>that it may be useful to supplement the statistical analysis with some qualitative analysis in order to gauge the potential for such behavioural changes over the forecasting period.</p> <ul style="list-style-type: none"> • There is a risk of spurious accuracy in producing a single demand forecast based on this statistical analysis. There is a case for applying scenario analysis, whereby a range of forecasts are produced based on different plausible assumptions about variables affecting demand for electricity. • There are also risks associated with the reliability of the population forecast. It is clear that there has been a fair degree of volatility in recorded population levels in Nyala in the last 50 years. There have been periods when it has fallen, periods when it has risen rapidly and periods of more steady growth. • Variations from the underlying upward trend between 1969 and 2019 can be explained by various demographic factors, but events affecting population such as pandemics, wars, and mass migrations are inherently unpredictable and add to the concern that a single point population forecast is a sufficiently sound basis for this analysis. • There is evidence that mortality rates were higher than usual in 2020, due to the direct and indirect impact of the COVID-19 pandemic. This could mean that applying the HOWCs 2% population increase from 2019 as the base year may add to its inaccuracy as it is likely to overstate 2020 population levels. • There is therefore a case for looking to improve the quality of the forecasting by building in some qualitative assessment of the factors influencing demand for electricity and how these may change over the decade. Also, the use of scenario analysis could be useful in assessing how various uncertainties could impact on population and economic activity. 			

Q2iii	<p><i>In advance of a more detailed evaluation at a later date, provide an initial assessment of the options put forward by the Head of the Policy Development Unit for delivering TEFA in terms of in terms of:</i></p> <ul style="list-style-type: none"> • <i>Annual cost per megawatt</i> • <i>Environmental impact</i> • <i>Political considerations</i> • <i>Ability to meet demand</i> • <i>Other factors that may be relevant to gauging the strategic fit of the options and delivering TEFA</i> <p>1 mark per developed point to a maximum of 5 per option</p> <p>Calculation marks as per spreadsheet to a maximum of 5</p> <p>Some general issues (points only given credit once)</p> <ul style="list-style-type: none"> • There will be disruption to the environment from any large scale building project, both on people and flora and fauna, and while there are apparent tensions within the coalition over commitment to environmental protection, this is still likely to be a key consideration. • It would be necessary to establish how the favoured option(s) would be financed. This is likely to be a decision within government given the nature of the decision required and the apparent lack of financing capacity within NECSO's reserves. • Given the timeframe over which the options are due to impact, there is a strong case for applying capital investment appraisal techniques to allow for the effect of the time value of money. <p>Kudu</p> <p>Cost</p> <ul style="list-style-type: none"> • Cost is high compared to other options at £165 per Mw, so the impact on prices would need to be analysed and a judgement reached on their affordability and their acceptability given the disquiet that already exists about NECSO's price levels and apparent exploitation of its monopoly power. • There is no mention of inflationary increases within the contract, these could prove to be significant over time which on the one hand would provide certainty of costs and supply over the 10 years, on the other would tie Nyala into the contract whilst other initiatives were being developed. • The chance for a break after 7 years adds some more flexibility, particularly if, by then, other options with a longer lead time may be 	24	SPD C3	K: ARC BA FI SBMG S: BI PSDM B: AV PS
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	<p>operational and can supply the capacity needed.</p> <p>Environmental impact</p> <ul style="list-style-type: none"> • There is the potential that the pipes may go through the Majesty game park which would disturb the wildlife and impact on tourism. Although there is also an argument that high tourist levels are in themselves a negative issue for the environment. • The source of the supply from Kudu is from a coal fired power station and while this is located in another country, it could be argued that Nyala's green credentials would be just as damaged by becoming reliant on this power source. <p>Political considerations</p> <ul style="list-style-type: none"> • There may be employment opportunities for the Nyalan population in relation to laying the cables, though this would only be for a short period. • There have been disputes and political tensions over the Lake most recently regarding the discovery of natural gas. However, these issues were with the last administration and it is unclear what view is taken by the new administration on relationships with Kudu and the level of trust that may exist between the countries. • Nyala took care of a number of Kudu refugees during the civil war. It is unclear if Kudu was markedly reluctant to take back the refugees (or which side the refugees supported), but this may suggest a long history of fraught relations between the countries which may be too challenging to overcome sufficiently for there to be sufficient trust to exist for Nyala to place such reliance on Kudu for vital electricity supply. • If, however, the new administration is looking at international relationships afresh, this could be a good opportunity to demonstrate the new approach, even though convincing the population about the merits of the scheme with Kudu may be very difficult given this long history of tense relations especially if it pushes prices up a lot. <p>Ability to meet demand</p> <ul style="list-style-type: none"> • The option will add 50 Mw/day into the system. Population is forecast to be 21.942m by 2029 with a demand for 290.38 Mw per day. The option will therefore not fulfil all of the expected additional demand through to 2029 but can contribute significantly and may 			
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	<p>be a short term solution whilst other options are being developed.</p> <p>Other considerations</p> <ul style="list-style-type: none"> • Timescale – any offer to buy electricity requires some infrastructure to enable it to be conveyed from Kudu to Nyala; this will take at least 12 months to complete, a little longer than the Storm option, but far quicker than the EnCo and Thayka options. • Risk - The civil war 20 years ago may call into question the stability of the current Kudu regime and its capacity to deliver as we do not know the degree to which the country has recovered. • The history of fraught relationships between the countries may also be a sign that the relationship is not stable enough to place reliance on for something of such fundamental national importance as electricity supply. • Kudu is much larger than Nyala and, although not stated, its population may also be growing and may have a call upon the current excess capacity in due course and may not be able to continue to supply Nyala. <p>Storm Industries</p> <p>Cost</p> <ul style="list-style-type: none"> • Cost per Mw is relatively low at £45, and would be even lower if the manufacturer's claims about the length of life of the batteries is as long as 15 years (the analysis assumes 10 for prudence). • It is the cheapest option and makes good use of resources that currently are untapped i.e. overnight generation. <p>Environmental impact</p> <ul style="list-style-type: none"> • No concerns apparent regarding the siting of the batteries as they will be within the current power stations which produce "clean" energy. It is not clear how disruptive it would be to install them and the disposal of depleted batteries may be an issue. • But there is an issue regarding the parent company around its environmental practices. <p>Political considerations</p> <ul style="list-style-type: none"> • Following independence in 1965 a political culture evolved that did not trust private enterprise, especially multi-national companies which successive Nyalan presidents referred to as 'agents of foreign government', so procuring from Storm would clash with that approach. 			
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	<ul style="list-style-type: none"> • It is known, however, that President Bikoko is trying to change this attitude and culture but is in the early days of his presidency and, politically, it may be too challenging, albeit that TEFA has had widespread support and has as one of its key principles the need to work with partners, potentially other governments and NGOs. • They are monopolistic suppliers which therefore provides the ability to use this to hold the Nyalan government to ransom over the supply and cost of the batteries. • If there was evidence that there was likely to be more supplier options in future then there may be a case to wait to see if the market is opened up in this way. • There are allegations that the parent company is exploiting child labour and, therefore, the Nyala government may not want to do business with such organisations. <p>Ability to meet demand</p> <ul style="list-style-type: none"> • It will add 90 Mw/day into the system. It would therefore meet almost all of the expected additional demand in the next 10 years. <p>Other considerations</p> <ul style="list-style-type: none"> • This is not a generating option per se, but there is a case for it to be put in place as good practice anyway in order to make use of energy that is currently unused during the period of darkness. • This option cannot be directly compared with other options but if found to be affordable could be paired with one or more of the other options to achieve better outcomes and could be a quick solution to be used whilst considering the feasibility of other major schemes. • This option depends on the reliability of the existing generators – it adds no new capacity as such, it just allows the capacity they already produce to be used rather than c.1/3 being lost. If as the current generators age more, they break down more, and indeed reach the end of their functional life, then this option may not help sufficiently, even in the next ten years. <p>EnCo</p> <p>Cost</p> <ul style="list-style-type: none"> • Capital cost is £114 per Mw and adding the operating costs are raises the actual cost to £136 per Mw which is comparable with the Thayka option. 			
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	<p>Environmental impact</p> <ul style="list-style-type: none"> • Encroachment on the Majesty national park may impact on the wildlife and by extension tourism which would affect the local and national economy. • Once built, nuclear is considered by many as being an environmentally friendly source of power. • The road building programme will bring disruption to the local population and local flora and fauna and will require aggregates to make up the road which will need to be quarried thus having an environmental impact elsewhere. • Bigger highways will increase the amount of traffic and the associated air pollution from exhaust fumes. • The new technology of reusing nuclear waste from around the world may lead to Nyala becoming a "dumping ground" with associated problems in dealing with the waste. <p>Political considerations</p> <ul style="list-style-type: none"> • Following independence in 1965 a political culture evolved that did not trust private enterprise, especially multi-national companies which successive Nyalan presidents referred to as 'agents of foreign government', though it is known that President Bikoko is trying to change this attitude and culture and the principles underlying TEFA were broadly accepted. • Ceding power on the board and maybe taking over NECSO's place in the market is threatening, though given the concerns over NECSO's governance there may be some benefits to this. • Reputation (in Nyala) – President Bikoko is trying to eliminate corruption, but there are rumours that EnCo has encouraged bribery which would be unhelpful in relation to the President's aims to change the culture. • Reputation (internationally) – EnCo are alleged to have not abided by international environmental standards; this could lead others to view Nyala as colluding with such behaviour and might avoid doing business in the country. • There are likely to be significant economic benefits for Nyala from the creation of the associated new highway linking to Kudu and its port, such as better access to export markets. • There will be limited initial construction and operation staff requirement from Nyalan 			
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	<p>people, but there would be employment opportunities associated with the highway construction.</p> <p>Ability to meet demand</p> <ul style="list-style-type: none"> • This is a significant sized scheme able to produce 500 Mw per day. This is more than enough to meet projected demand of 290Mw per day in 10 years' time the lead in time for completing the project is 15 years. • The project would probably therefore deliver significant surplus capacity; though this may be considered wasteful, it may be possible to sell this to other countries if their populations are also growing. However, it is also prudent, to allow for further reduction in capacity from the existing generators given their age. <p>Other considerations</p> <ul style="list-style-type: none"> • Timescales – fifteen years is a long time, and slippage has not been considered. If chosen, other options, such as Storm or Kudu, would need to be deployed in the meantime. • Safety – nuclear power in the past has been inherently volatile and major accidents have happened in the past. If such an accident did occur it is unlikely that Nyala would have the resources to cope and respond in practical and health terms given the nature of the infrastructure. <p>Thayka</p> <p>Cost</p> <ul style="list-style-type: none"> • Cost at £137 per Mw is similar to that of EnCo, but trading electricity for potentially very lucrative mining rights and export taxes currently valued at £25m per year requires further evaluation. • It is unclear if the Thayka government would also be looking for other trade benefits from the partnership with Nyala, but if so an estimate of their costs should also be included in the analysis. <p>Environmental impact</p> <ul style="list-style-type: none"> • Site of new generator potentially affects the breeding ground for the Nyalan Shickels, a unique species of fish; that will be disturbed, though the impact on fish stocks is unclear. The Shickels are protected by the marine conservation area and any planning consideration requires government level approval. • Green Dividend, the global pressure group, could be expected to protest and attempt to disrupt the project through direct action. This 			
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	<p>would attract the attention of the world's media and if not mitigated would not only be a risk to the project but also to Nyala's reputation on the world stage at a time when President Bikoko government is looking to enhance Nyala's world standing.</p> <ul style="list-style-type: none"> • Once constructed the use of hydropower will be one of the most environmentally friendly sources of electricity available anywhere. • Close to an urban population so there would be potential disruption to existing villages through additional construction work and traffic. • There may be additional pressure on land and other resources to accommodate foreign labour as Thayka could bring its own workforce. • There needs to be an environmental impact assessment of mining the cobalt deposits in the remote and pristine Miombo mountains which the Thayka government wants to exploit in exchange for the provision of the hydroelectric generators. <p>Political considerations</p> <ul style="list-style-type: none"> • As the site of the new generator potentially affects the breeding ground for the Nyalan Shickels, it may have an adverse impact on tourism. • The need to take up land that is currently used for housing and businesses may cause criticism for the government. • Impact on other potential partnerships – given Thayka's rise as a "super power" by partnering with this country it potentially shuts off the opportunity to partner with other countries that might offer better, favourable relationships for Nyala. • Colonisation – the terms with any agreement may compromise the independence of Nyala; Thayka already has a significant economic influence elsewhere in Alkebula. In swapping investment for favourable trade terms, Nyala needs to be assured that any such trade-off is worthwhile. • Probable lack of job creation – related to colonisation, Thayka is likely to bring its own labour force to undertake the capital works which is not helpful to Nyala where youth unemployment in particular is high and more jobs are needed. • NECSO can be expected to operate the generators and there is potential growth (unbudgeted) that may create more jobs. 			
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	<ul style="list-style-type: none"> No detailed exploration in the Miombo mountains has yet taken place but the extensive demand for cobalt worldwide may have a potential significant impact on the Nyalan economy. Nyala could miss out on this opportunity if it is tied into a deal to exchange mining rights for power generators. <p>Ability to meet demand</p> <ul style="list-style-type: none"> On the face of it, recommissioning and extending the hydropower electricity system is a significant sized scheme able to produce 500 Mw per day. Whilst this is more than enough to meet projected demand of 290mw per day in 10 years' time the lead in time for completing the project is 15 years. There is no mention of how the reduction in electricity supply when generators are being decommissioned and awaiting replacement will be handled. The costs of operating the system will be picked up by NECSO but there is growth within this project i.e. moving from 3 to 4 generators; no additional costs have been added in to cover the expansion of operating the service. The project would deliver significant surplus capacity but this may be wasteful even though it may be possible to sell this to other countries if their populations are also growing. <p>Other considerations</p> <ul style="list-style-type: none"> Timescale – the usual length of time to build and install the hydropower generators is seven years, Thayka believes its engineers could complete the task in four years. This may be very ambitious, as it is unlikely that Thayka has not conducted a detailed feasibility assessment of the area and delays could be encountered. <p>Credit will be given for mentioning that other options may be able to contribute to TEFA (maximum 2 marks per option)</p> <p>Wind Farms</p> <ul style="list-style-type: none"> The cost and potential contribution to meeting volume needed and timescale are all unknown. There is a joint agreement with Kudu and Sable to protect the wildlife of Lake Nyala, so any development would compromise this agreement. Planning consent is not needed for wind farms to be developed on the Lake but there is a risk to bird life from the turbine blades, 			
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	<p>underwater noise associated with the installation process and the potential to alter the behaviour of fish and birds.</p> <ul style="list-style-type: none"> • It may be acceptable for Nyala to build wind turbines on the Lake but once the precedent is set there would be nothing to stop other countries from exploiting this source and potentially having the Lake littered with unsightly windmills. • This would be a major construction project which would disrupt the local population and the environment but may produce some jobs. <p>Solar Panels</p> <ul style="list-style-type: none"> • Quick and easy to install and would helping the poorer parts of the population living in rural areas. • Cost – at this stage it is donated so no cost to government or individuals, but that may be unlikely if this was scaled up. • Scalability – currently no evidence that this can be scaled up, but this may still be part of the wider TEFA strategy. • Commercial potential – more information would be required to assess how this would be developed and how it would be managed. 			
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