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**Contingent Support
Mechanism - Review and
Recommendations**

Prepared for:
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30th November 2011

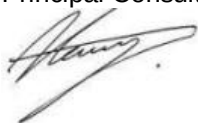
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Executive Summary

The NSC has decided that in the first year of the Energy Audit Management scheme (EAMs) there will be 50 audits with 70% part-financing from the project funds and the remaining 30% from other sources of funding. The total cost for the 50 audits in the first year has been estimated to be a maximum of 7,500,000MUR

With the government providing 70% part financing, the cost will be a maximum of 5,250,000MUR from the project funds, with other possible sources of funding needed to meet the remaining 30% (2,250,000MUR).

KPMG's desk survey revealed limited prospects of financial support for energy audits and / or implementation of the audit recommendations. On the local market, with the exception of four banks which are already participating in the Agence Francaise de Developpement (AFD) scheme, the other banks surveyed do not have a green funding scheme. There may be an opportunity for the Ministry to start another scheme with these banks along the same lines as the AFD scheme where the banks provide the capital and the government pays the interest, effectively producing an interest free loan.

Regionally, some major financial institutions have dedicated funds for energy and climate change programmes for Africa, which represent potential support for energy audits and implementation in Mauritius.

Given that the availability of financial support is a critical success factor and that energy efficiency is a national Government-led initiative, it would make a greater impact with increased likelihood of a commitment from the regional institutions if it is Government that directly makes the request for financial support for Mauritius.

The Government may also consider requesting funding support from the European Union (EU), as the EU is currently the main development partner of Mauritius.

The report describes how the CEB customer database was filtered to identify the top 320 building energy users. Of these, the 50 with the highest annual electricity usage were designated are those targeted for energy audits in the first year of the EAMS – **the Designated customers**.

On the premise that a financial partner or partners will be found to underpin the scheme, a robust Contingency Support Mechanism (CSM) is proposed with sufficient checks and balances incorporated within the application process.

The report also considers options for future government intervention with the best option for future consideration being a levy raised against the largest and/or most energy intensive users with a rebate for agreed reductions in their usage. This rebate would not be 100% and the remainder of the receipts would be ring fenced to fund the provision of:

- Energy audits and the provision of energy efficiency advice (helpline and publications) through the Energy Efficiency Management Office (EEMO), and
- Tax breaks through an Accelerated annual allowance underpinned by list of technologies and qualifying criteria. The list would managed by the EEMO.

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1. Introduction

The UNDP Mauritius Country Office has hired, on behalf of the Ministry of Renewable Energy and Public Utilities, the Building Research Establishment Ltd (BRE), along with its Partners in Mauritius, as consultants to prepare and develop a new regulatory framework for the implementation of an Energy Audit Management Scheme (EAMS) and a Contingent Support Mechanism (CSM) for the Non-domestic Building Stock in the Republic of Mauritius.

The objectives of this project are to develop:

- an Energy Audit Management Scheme, an Energy Audit Manual and a Compliance Mechanism Scheme;
- a Certification programme for energy audit certifications and secure accreditation of a future Certification body in Mauritius by a recognized accreditation body;
- a certified Training scheme and materials for energy auditors;
- **a Contingent Support Mechanism (CSM).**

The inception report (see appendix A) presented possible CSMs for the EAMS:

- Grants;
- Interest free or low cost loans;
- Tax breaks.

The initial aspiration was to cover the costs of the audits and their recommendations, with the favoured mechanism, at that point, being interest free or low cost loans. The report also identified an early task as undertaking a needs analysis for the selected contingent support mechanism, which was to be included within the desk study.

This needs analysis (see appendix B) explored what resources needed to be allocated to the CSM by Government. The Government resource needs will be determined by:

- How many audits are undertaken; in turn this depends on:
 - o Whether the Government wishes the scheme to be ongoing or for a limited period ;
 - o If the criterion for “designated consumer” is set at a constant level, or whether it is tightened over time;
 - o How many assessors are available to perform the audits and their spare capacity to carry them out;
 - o The level of compliance with regulations that require the audits.
- Where the funds to undertake the audits will come from.

The National Steering Committee (NSC), on seeing the initial draft of the report, then decided to limit the audits to 50 projects. As a result, this section of the report was redrafted and the cost calculation confined to a single scenario (see Appendix B – the exert from the desk study report which contains the Needs Analysis).

A local Quantity surveyor was then appointed to provide indicative costs for the “Measures to improve energy efficiency in existing buildings” (see appendix C). This information is intended to inform the auditors and provide base information to the Energy Efficiency Management Office (EEMO) if there is a future decision to support the funding of the improvement measures.

At the same time a series of questions was put forward by BRE to the NSC to clarify points so that the legislation could be drafted (see appendix D). On clarification of these issues a financial advisor, a local office of KPMG, was appointed with the remit to:

- Identify institutions (local and international) that provide financial support for energy audits and implementation of recommendations;
- Carry out a desk / phone survey to obtain information on the nature, form and amount of support, and related conditions;
- Outline the possibilities and scope for Government intervention;
- Prepare a report on the findings.

Their final report (see appendix E) was submitted, to BRE, on the 25th August 2011 and then forwarded to the EEMO for their information.

At this point it should be pointed out that there is still a possible mismatch between the aspiration to do 5000 audits in 5 years and the decision to do 50 in the first year in terms of financing and availability of auditors to carry out the work.

An issue within this part of the project has been the identification of the first 50 “customers” for the audits. Originally, they were to be targeted on a kWh/m²/yr basis.

However, research to acquire data for the total floor area (m²) for the buildings, from the Local Authorities indicated that:

- There is no common reference or identification numbers of the applicants when compared to the Central Electricity Board (CEB) customer list.
- Records for m² for some buildings may not be available at the Local Authorities.
- Some Municipal Councils and District Councils have not kept records for date of completion of constructions.
- We have come to the conclusion that it will be very difficult to collect historical floor area data and to match it to the non-domestic consumers list available in the CEB database.

At this point, the decision was made, by the NSC, to use the CEB kWh/yr data of their top 5000 customers and filter these to remove those with a high process load. Unfortunately, the database did not have enough information within it to carry out this process and the CEB had to do further data collection and clarification. The finalised dataset of the CEB's top 700 clients was passed to BRE on the 25th August 2011. BRE carried out a filtering procedure to remove process based companies and identified 320 clients, of which the top 50 energy users can be targeted in the first year.

These and other issues were raised in a progress report, see Appendix F – *Progress report for UNDP contract PS/MAR2010/003 – Provision of consultancy services for the preparation of an energy audit scheme and a contingent support mechanism in Mauritius*. This was an additional output provided by BRE for the UNDP auditor of the programme.

The 15th NSC meeting held on Friday 7th Oct 2011 (see appendix G) attempted to clarify these issues but seemed to miss the point that the data was not available for the top 5000 customers. However the following points were clarified:

- The target market will be 5000 buildings/sites.
- A 5 year period (not 10 years) to cover the targeted 5000 with a repeat audit every 5 years.
- A 5 year period to cover the targeted 320 buildings and with successive cycles of audits at intervals of every 5 years. The audits will have to be completed within these 5 years and the audit report duly approved by the Certification Body and the EEMO within the same time frame.
- An audit for new buildings, 3 years after they are built.

- For successive 5-year cycles of audits, only new buildings having an age of > 3 years will be considered for selection as designated buildings for the mandatory audits.
- As explained earlier, age of these buildings will be as from the date of start of the CEB Contract, which we consider to be a very reasonable assumption.
- In the first year there will be 50 audits.
- These are the 50 audits that will have to be part-financed with the remaining project funds, as per the Project Document. NSC has opted for 70% part-financing of an audit cost using the project funds, with the remaining 30% coming from other sources of funding. BRE has to identify possible other sources of funding to meet the remaining 30% of the cost for the 50 audits.
- The final completion date for the main project will have to be extended from April 2012 up to end of December 2012; and all these 50 audits must be undertaken before the completion of the project in December 2012.
- There is no link to the building regulations thresholds on floor area.
- No link to thresholds on floor area.
- The CEB kWh/yr criteria will be used to identify the 5000 buildings/sites.
- Selection criteria will be the cumulative total annual kWh of electricity consumed for a base year as per the CEB database.
- Data for m² must be captured by each auditor during the audit for the necessary calculation of the Specific Energy Consumption for each building.
- Based on experience, BRE to suggest the required number of “biggest” customers from each sector/sub-sector or whatever desired category, such that we obtain a total of the 5000 customers.
- CEB will then extract the annual consumption of those 5000 customers (including Name & Address of Owner, Date of start of CEB Contract, etc.) for a reference base year and will forward the list of 5000 designated customers to EEMO.
- Data for m² of each building can be collected independently by the Certified Energy Auditor who will undertake the energy audit. The value for the specific energy consumption for each building will be provided in the energy audit report; and this will be the baseline for comparison with future energy audits.
- There will be no distinction between small and large projects.
- The target customer will have to cover the cost of the audit upfront.
- As specified earlier, the CSM may be a soft loan that the designated consumer can contract from a reliable local or international bank.
- A clearance will be required from EEMO for the necessary disbursement of the loans by the bank.
- The loan will be provided upfront to meet the cost of the audit. Interests have to be paid at regular monthly intervals as from date of approval/disbursement of the loan. The driver for all this will be the future energy savings that can be made by the designated consumers upon implementation of part or all of the energy efficiency measures specified in the audit report.

- At this point in time, we do not know whether or not the government will opt for a CSM for implementation of the audit measures. A “needs analysis” will have to be conducted and this is not included within the scope of BRE’s Contract.

2. Identification of the Designated Customers

BRE were tasked with identifying the first 50 Designated Customers, who will carry out energy audits in the first year of the Energy Audit Management scheme (EAMS). CEB provided the finalised dataset of the CEB's top 700 clients which was passed to BRE on the 25th August 2011. BRE have carried out a filtering procedure to remove process based companies and identified 320 clients, of which the top 50 energy users can be targeted in the first year. The data provided by CEB is limited, due to customer confidentiality, to the following identifiers:

- § An Account Reference – so that the CEB customer can be traced back to the CEB base data.
- § An Installation Type.
- § Economic Activity – An up to 5 word description.
- § KWh usage data for the last 12 months – per month, total annual and monthly average.

Based on the limited information required, a filtering processes was carried out to remove possible process based companies or those with not enough information to identify as building based. The Sector / building types that were removed are listed in appendix H.

This left a total of 320 CEB customers remaining, of which the 50 with the highest annual electricity usage were designated are those targeted for energy audits in the first year of the EAMS – **the Designated customers (see appendix I).**

The NSC wishes to:

- § Target 5000 customers over the lifetime of the scheme.
- § In the first 5 years of the EAMS have the top 320 clients identified above to carry energy audits on their buildings.
- § An audit to be carried out on new buildings, 3 years after they are built but with no link to the building regulations thresholds on floor area and to be identified by the date of start of the CEB Contract.

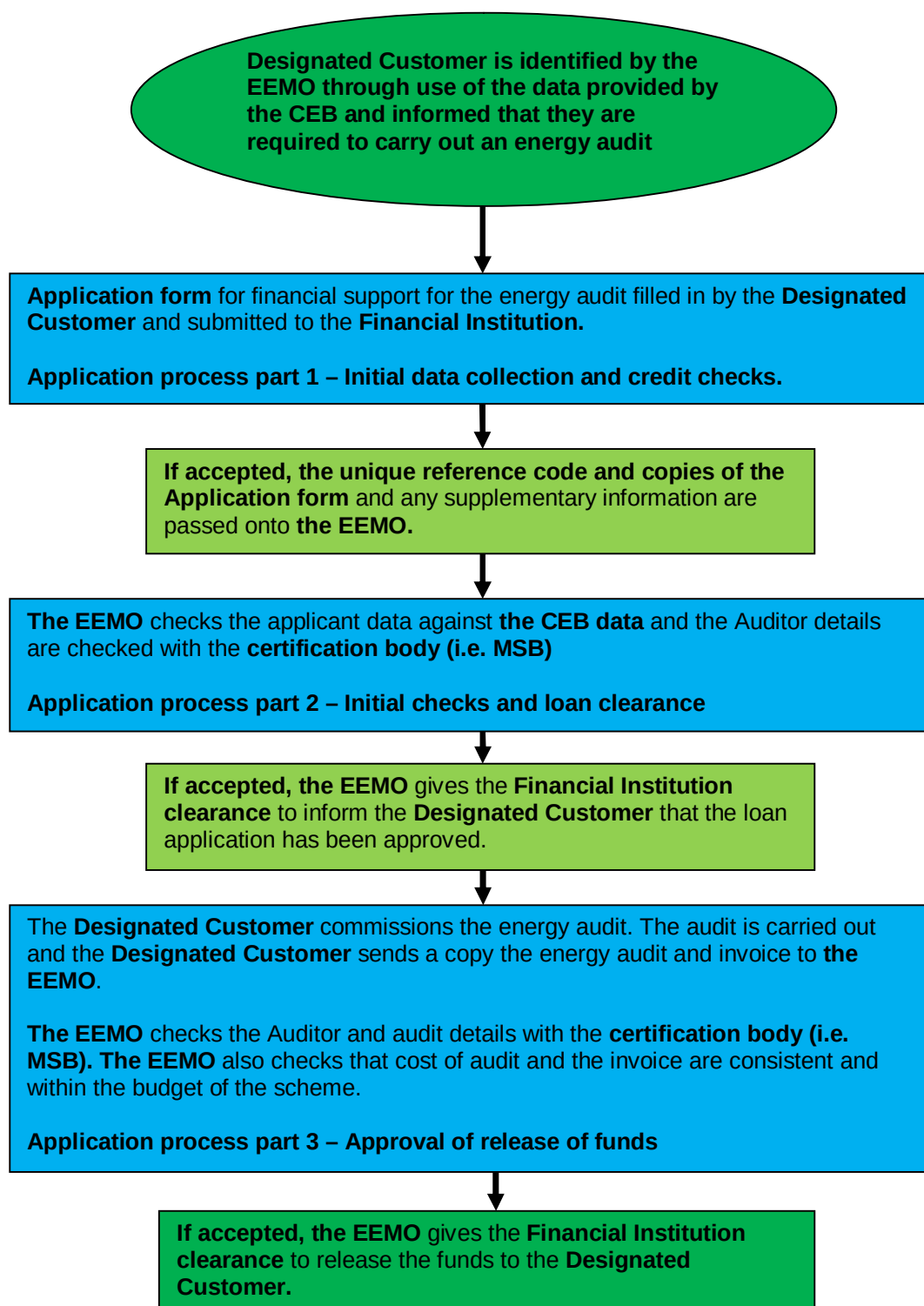
These aspirations will require the EEMO to have a sophisticated database and we recommend that this is updated on an annual basis. This initially would be with the top 320 CEB customers and refreshed with data from the CEB on an annual basis. This needs to be carried out to take into account:

- § Changes in ownership.
- § Changes in activity on the site.
- § Construction or demolition on the site.
- § Changes in energy usage – possibly due to updated processes and /or changes in staff numbers.

We also recommend that the new buildings identified have an energy usage threshold before they are audited. This is because with rapid urban growth there may be issue with capacity building of the auditors. Also, there is an issue with the possible cost effectiveness of the audit and we initially suggest that the energy usage of the baseline 320th CEB customer be used. This threshold can then be revisited and tailored as the EAMS matures as a scheme.

3. Contingent Support Mechanism (CSM)

This section discusses the design of the scheme and possible partners in financing the energy audits. An overview of the envisaged process is given below.



2.1 Outline parameters for the scheme

The NSC has decided that in the first year of the EAMs there will be 50 audits. These will have to be part-financed with the NSC opting for 70% part-financing of the audit cost from the project funds and the remaining 30% from other sources of funding.

Assuming the following:

- Cost of audit assessor: 2,000MUR/hr = 15,000MUR/day (7.5 hr day);
- Time for audits: Content – Survey building, collect metered and other data from client; Process data, enter into audit tool; Gather costs for implementing measures; Prepare report for client; Discuss with client – a maximum of 10 days.

Therefore an individual audit will cost 150,000MUR and the total cost for the 50 audits in the first year will be a maximum of 7,500,000MUR

If the government is 70% part financing then the cost will be a maximum of 5,250,000MUR.

BRE has been tasked with identifying possible other sources of funding to meet the remaining 30% (2,250,000MUR) of the cost for the 50 audits in the first year.

The NSC has specified that the CSM may be a soft loan that the designated consumer can contract from a reliable local or international bank. They would like the conditions to include a clearance procedure by the EEMO for the necessary disbursement of the loans by the bank.

The KPMG Financial Advisor appointed by BRE was tasked to identify a suitable bank that can provide such a soft loan. The interest rate and other terms & conditions of the soft loan will have to be clearly defined by the Financial Advisor.

The intention of the loan is to provide upfront financing to meet the cost of the audit. It is envisaged that interest will have to be paid at regular monthly intervals as from date of approval/disbursement of the loan. The perceived driver for all this will be the future energy savings that can be made by the designated consumers upon implementation of part or all of the energy efficiency measures specified in the audit report.

It is unclear at this time whether the part financing from government will be in the form of a loan or another mechanism such as paying the interest on a commercial loan effectively producing an interest free loan to business. To a certain extent this has no effect on the process to be carried out by the EEMO which will be discussed later in section 2.3.

2.2 Sources of financial support and partnering

KPMG were commissioned to carry out a desk study and highlighted the following:

- KPMG Advisory contacted 15 organisations at the date of this report of which 11 banks replied. Enterprise Mauritius, SBI Mauritius and Mauritius Post and Cooperative Bank ('MPCB') do not have any scheme for financing of energy audits and/or recommendations. Four organisations did not respond to the survey.
- The aggregate size of fund available locally is equivalent to around Rs2 billion on the basis of information provided by those who responded to the survey and other information provided to us.
- Enterprise Mauritius formerly operated a scheme where it funded 100% of energy audits by way of grants. It is to be noted Enterprise Mauritius and its support schemes are funded by the Government.

- The Maurice Ile Durable Fund will not finance energy audits and /or implementation of recommendations.
- Only 4 banks in Mauritius provide support for the project in collaboration with Agence Francaise de Developpement (AFD) as part of the “Green Lending Scheme”. The total size of the scheme is EUR40 million (see Appendix H) and only has a maximum of 2 years left to run.
- Mauritius Business Growth Scheme (World Bank-funded) has a fund of USD10 million available as part of broader projects that lead to higher growth for the business.
- The European Investment Bank has expressed interest in energy efficient investments in Mauritius, with the possibility of additional grant support for pilot audits. It can consider funding 50% of projects with amounts varying from EUR10 million to EUR100 million for a group of buildings.

KPMG’s desk survey revealed limited prospects of financial support for energy audits and / or implementation of the audit recommendations. On the local market, with the exception of four banks which are already participating in the AFD scheme, the other banks surveyed do not have a green funding scheme. There may be an opportunity for the Ministry to start another scheme with these banks along the same lines as the AFD scheme where the banks provide the capital and the government pay the interest, effectively producing an interest free loan to business.

The World Bank-sponsored Mauritius Business Growth Scheme is not dedicated to green funding but can provide support as part of broader growth projects.

Regionally, some major financial institutions have dedicated funds to energy and climate change programmes for Africa, which represent potential support for energy audits and implementation in Mauritius.

For instance, the Development Bank of Southern Africa (DBSA) and Industrial Development Corporation South Africa (IDCSA) have an energy and environment scheme which currently does not extend to Mauritius.

In addition, the African Development Bank (AFDB) is currently funding Government’s public sector competitiveness and public debt management reform, but has no energy-related funding programme for Mauritius.

Given that the availability of financial support is a critical success factor and that energy efficiency is a national Government-led initiative, it would make a greater impact with increased likelihood of a commitment from the regional institutions if it is Government that directly makes the request for financial support for Mauritius.

We therefore suggest that Government directly approaches the regional and international institutions for financial support. These may be channeled through local commercial banks (lines of credit) similar to the current AFD lending scheme. The aim gradually is to have most, if not all, commercial banks and other lending institutions (such as leasing companies) to have energy / sustainability / climate change funding programmes.

The relevant contacts for potential regional support are in the appendix A of the KPMG report (see appendix E).

It should be noted that AFD had previously ceased to provide support to Mauritius, but then made a comeback at the request of Government in 2007. Mauritius has benefitted from considerable support from such institutions following visits of the Prime Minister himself to those respective countries. A recent example is the assistance of Singapore to review the water sector. India and China are other partner countries that extend assistance to Mauritius through bilateral agreements in the form of technical cooperation, grants and loans.

Government may also consider funding support from the European Union (EU). The EU is the main development partner of Mauritius. In the 2011 Budget (delivered in November 2010), the Minister of Finance announced a National Programme on Sustainable Consumption and Production to be funded by EU. It includes the formulation of policy, guidelines and rating system for sustainable buildings and construction.

The EU has committed around EUR308 million for the period 2008 – 2013 to be disbursed in tranches subject to fulfillment of certain pre-set conditions (including the preparation of a long term energy strategy). The bulk of the funding constitutes the Sugar Accompanying Measures to support Mauritius in sugar sector reforms and help offset the reduction of sugar prices. Around EUR100 million is earmarked for the promotion of sustainable and equitable development. While EU funding is in the form of general budget support, Government can approach the European Investment Bank (EIB) for long-term soft loans to be channeled through local banks. For instance, the EIB has provided a line of credit of EUR50 million to SBM (in two phases in 2005 and 2011) essentially to support the development of small and medium enterprises. SBM is EIB's local banking partner. Loans are more likely to be on concessional terms and longer maturity when it is Government that makes the request.

2.3 The possible structure of the scheme

As discussed earlier, the NSC has indicated that the CSM may be a soft loan that the designated consumer can contract from a reliable local or international bank. Alongside this a clearance will be required from EEMO for the necessary disbursement of the loans by the bank.

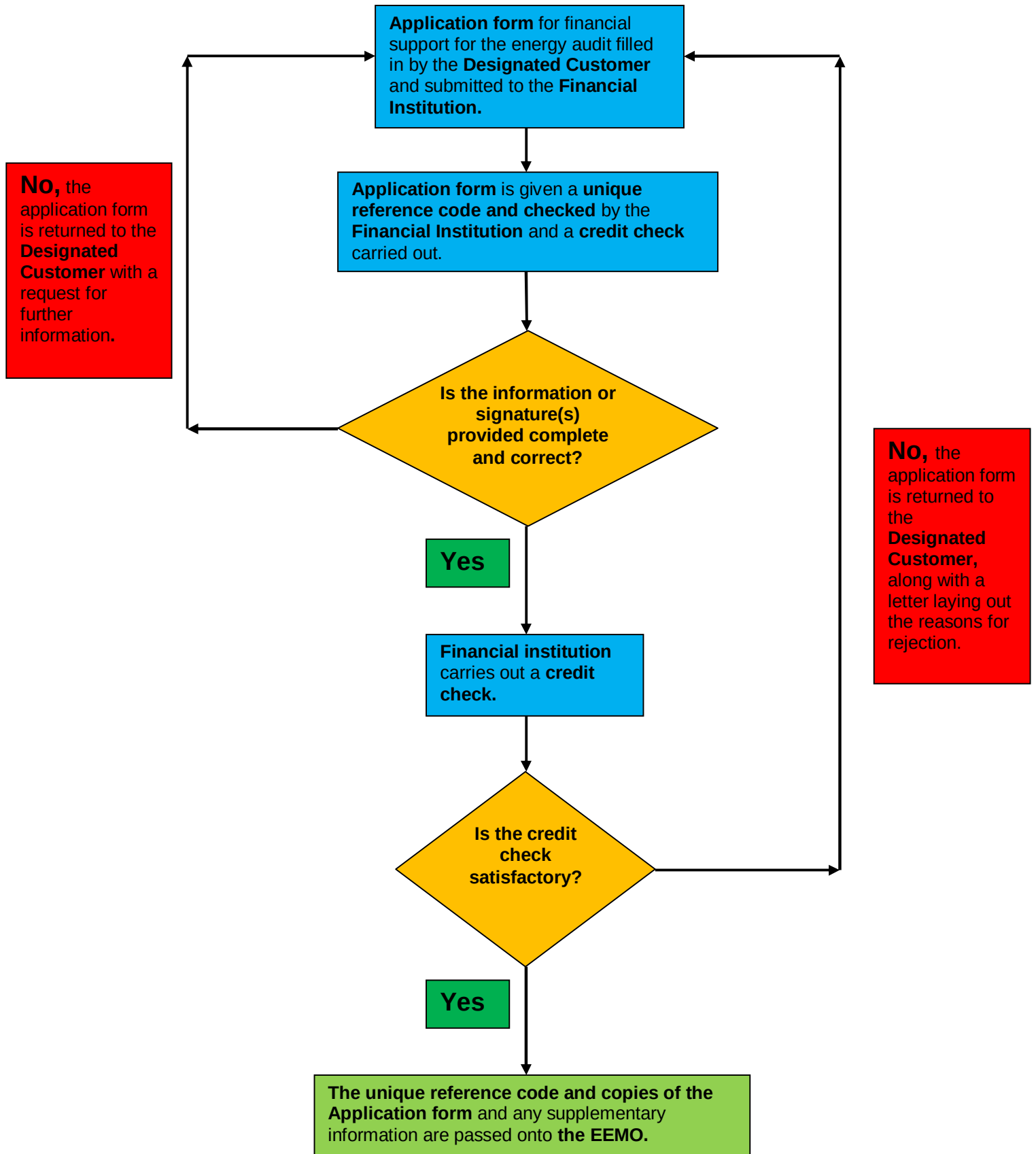
2.3.1 Application process part 1 – Initial data collection and credit checks

As discussed earlier, the NSC has indicated that the CSM may be a soft loan that the designated consumer can contract from a reliable local or international bank. Alongside this a clearance will be required from EEMO for the necessary disbursement of the loans by the bank.

Figure 1 show the mapping of the first stage of the application process where:

- **Designated Customer** – is the company requiring the audit.
- **The Financial Institution** – partner providing the full funding package – this could be either in the form of a loan with government paying the interest or a top-up loan at commercial rates. It is envisaged that this partner will carry out all the administration of the loan including giving the application a **unique reference code (this is needed to track the application throughout the process)**, paying out the loan to the company (**on clearance from then EEMO**) and collecting regular payments from the **Designated Customer**. We also envisaged that any bad debt is taken at the **Financial Institution's** risk and as a result would expect them to carry out a credit and other checks during the application stage.
- The minimum data collection requirements during the application process will include the following:
 - o **Company details**
 - § Company name
 - § Trading name (if different)
 - § Company address
 - § Registration name and number – with evidence
 - § Type of business – PLC, Ltd, Partnership, Private, sole trader.
 - § Have you ever had any receiving order made against you as a Debtor by the Bankruptcy Division of the Supreme Court
 - § Have you ever had any individual voluntary arrangement with of for the benefit of your creditors?

- o **Company signatory**
 - Name
 - Position
 - DOB
 - Contact details – address, email, phone no.
 - § Details and copy of passport or national identity card
 - Have you ever had any receiving order made against you as a Debtor by the Bankruptcy Division of the Supreme Court
 - Have you ever had any individual voluntary arrangement with of for the benefit of your creditors?
 - Have you ever been disqualified as a director?
 - Permission for the **Financial Institution** to pass the **Designated Customer** information onto the **EEMO**
 - Signature of individual
- o **Site details**
 - § Name
 - § Address
 - § Contact on-site- – address, email, phone no.
 - § Type of building
 - § Age of building
 - § Estimated floor area (m²)
 - § Main activity on-site
 - § CEB contract(s) references and account number(s)
 - § Meter reference (s)
 - § Annual energy usage (kWh)- broken down into fuel type
 - § Renewable energy production (if any) per annum (kWh)
- o **Auditor details**
 - Name
 - Position
 - DOB
 - Contact details – address, email, phone no.
 - Company name
 - Trading name (if different)
 - Company address
 - Audit Scheme Registration name and number – with evidence
 - Name of scheme – i.e. Mauritius Energy Audit Certification Scheme
 - Certification number of auditor
 - Valid from
 - Certificate last updated
 - Certification body – i.e. Mauritius Standards Bureau (MSB)
 - Contact details – address, email, phone no.
- **Audit details**
 - § Estimated cost of audit including quote
 - § Estimated Floor area (m²)
- **Financial information**
 - § Bank details (for credit check and payment of loan)
 - § Bank details and authorisation signature (for repayment)

Figure 1: Application process part 1 – Initial data collection and credit checks

2.3.2 Application process part 2 – Initial checks and loan clearance

The role of the EEMO is to act as “Gate Keeper” for this scheme and show due diligence in checking that public money is correctly used. This role will involve the EEMO carrying out checks at both the pre and post energy audit stages to ensure:

- § The correct site is audited.
- § A qualified and certified auditor is used.
- § A “fit for purpose audit” report is produced.

The purpose of this stage is for the EEMO to check consistency of the data submitted by the applicant with data sourced from the CEB database and obtain confirmation from the certification body (i.e. Mauritius Standards Bureau (MSB)) that the auditor details are correct and he is certified to carry out the energy audit.

Due to customer confidentiality the EEMO is in a unique position – both EEMO and the CEB are government bodies and as such can share information. In the shifting process BRE were only allowed to see edited account information – i.e. an account identifier and brief sector description of the organisation. The EEMO will have full access to the account information and therefore the critical checks will be:

§ Checks with CEB data

- § Are the site Name and Address consistent?
- § Do the CEB contract(s) references and account number(s) match?
- § Are the Meter reference(s) correct?
- § Is the Annual electricity usage (kWh) the same?

Figure 2 show the mapping of the second stage of the application process where if there are inconsistencies with the CEB data the EEMO will ask both the applicant and the CEB to check the validity of their data.

Once this check is carried out the EEMO will check auditor data with the Mauritius Standards Bureau. Again a special relationship exists due to both being under the government umbrella. The purpose of this check is to confirm that the auditor is certified and a member of a valid scheme

§ Checks with certification body

- § Are the Auditor details correct?
- § Is the auditor a member of the correct scheme? – i.e. Mauritius Energy Audit Certification Scheme.
- § Is the auditor’s current membership valid and up-to-date?

• Checks with Audit details

- § Estimated cost of audit including quote
- § Estimated Floor area (m²)

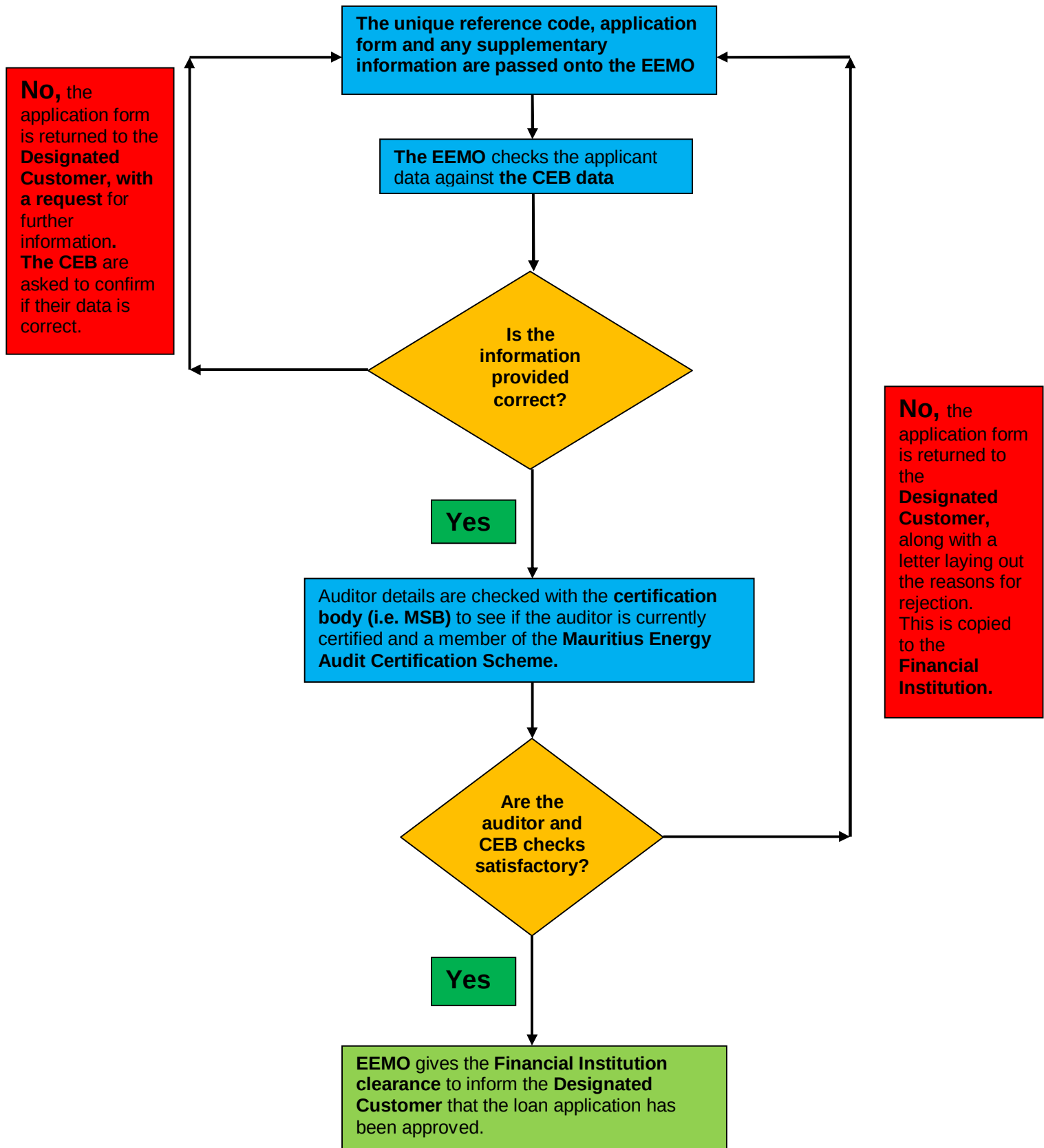
The EEMO will need to check that estimated cost of the audit is within the budget of the scheme. Benchmark costs from Appendix C are given below:

Asset measures	Unit	Grand Total (Rs)
Conduct occupancy survey	per 1000 m ²	Rs. 290.00

Conduct HVAC system survey & interview employees	per 1000 m ²	Rs. 770.00
Conduct walk-around energy audit & identify problems for reporting	per 1000 m ²	Rs. 2,690.00
Conduct energy management survey & interview employees	per 1000 m ²	Rs. 1,500.00
Examine archive & report on findings	per 1000 m ²	Rs. 540.00
Examine electrical layout (if available) or conduct visual inspection	per 1000 m ²	Rs. 290.00
Conduct ventilation and controls survey & interview employees	per 1000 m ²	Rs. 1,020.00

If all the checks are OK, **the EEMO** will give the **Financial Institution clearance** to inform the Designated Customer that **the loan application has been approved**.

Figure 2: Application process part 2 – Initial checks and loan clearance



2.3.3 Application process part 3 – Approval of release of funds

This is the second time the EEMO undertakes its role as “Gate Keeper” for this scheme. The purpose of this stage is for the EEMO to check consistency of the auditor details for the second time with the certification body (i.e. MSB)

The purpose of this check is to confirm that the auditor that actually carried out the audit was that proposed or any alternative is certified and a member of a valid scheme

§ Auditor checks with certification body

- § Are the Auditor details correct?
- § Is the auditor a member of the correct scheme? – i.e. Mauritius Energy Audit Certification Scheme.
- § Is the auditor’s current membership valid and up-to-date?

The second set of checks are concerned with the audit itself to ensure that it has been carried out correctly and in line with the procedures required by the **Mauritius Energy Audit Certification Scheme**.

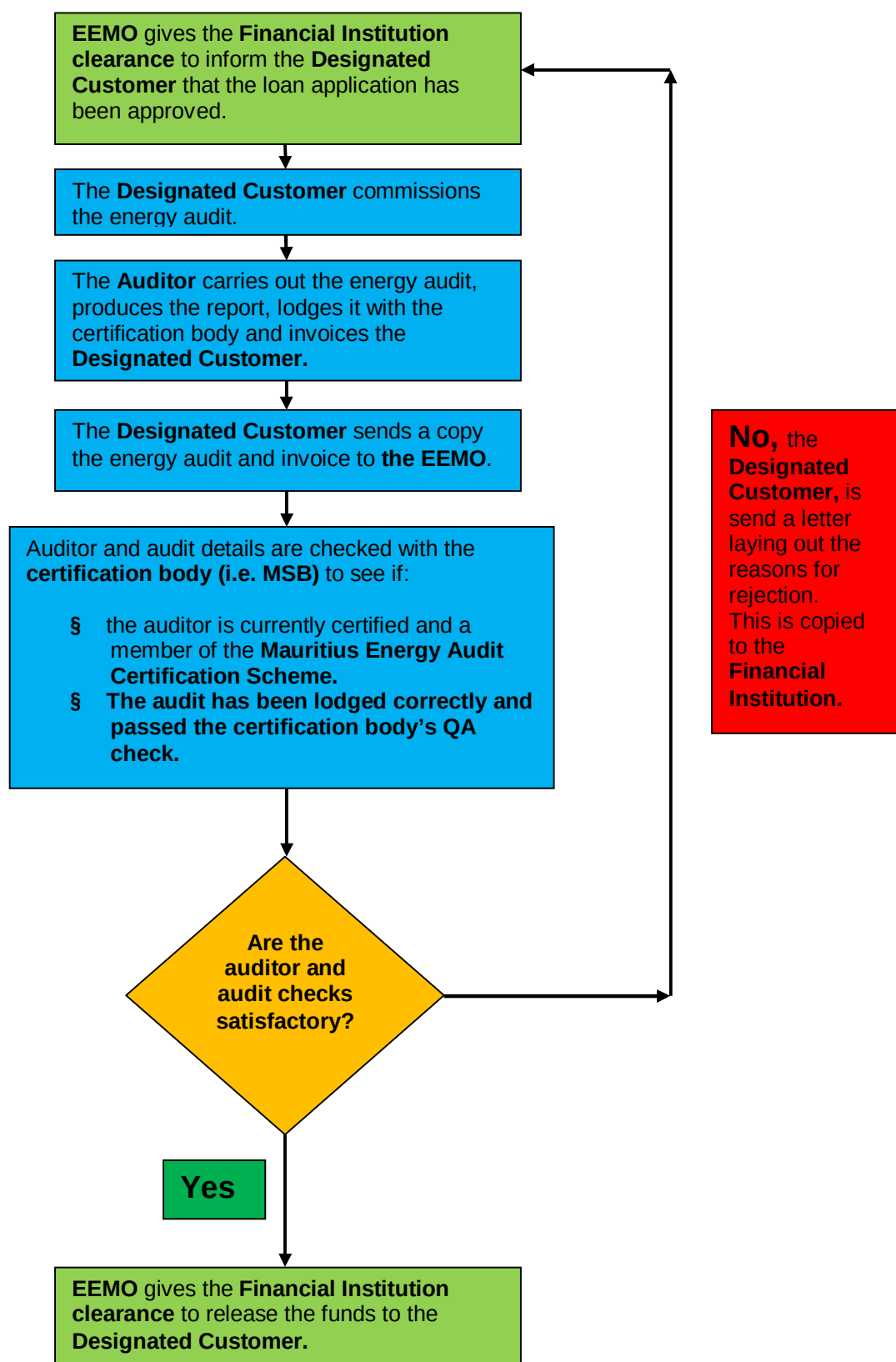
• Checks on Audit details and invoice

- § Date of audit
- § Energy Audit Report (EAR) number
- § Date of lodgement with certification body
- § Floor area (m²)

In addition, the EEMO will need to check that cost of audit and the invoice are consistent and within the budget of the scheme. Benchmark costs from Appendix C are given below:

Asset measures	Unit	Grand Total (Rs)
Conduct occupancy survey	per 1000 m ²	Rs. 290.00
Conduct HVAC system survey & interview employees	per 1000 m ²	Rs. 770.00
Conduct walk-around energy audit & identify problems for reporting	per 1000 m ²	Rs. 2,690.00
Conduct energy management survey & interview employees	per 1000 m ²	Rs. 1,500.00
Examine archive & report on findings	per 1000 m ²	Rs. 540.00
Examine electrical layout (if available) or conduct visual inspection	per 1000 m ²	Rs. 290.00
Conduct ventilation and controls survey & interview employees	per 1000 m ²	Rs. 1,020.00

If all the checks are OK, the EEMO will give the **Financial Institution clearance** to release the funds to the **Designated Customer**.

Figure 3: Application process part 3 – Approval of release of funds

4. Suggestions for future Government intervention

KPMG in their report also consider the various options below for future Government intervention:

Special levy

Government can consider applying a special levy on selected companies and use the proceeds for refunding part of the cost of energy audits. The criteria should be worked out with the Ministry of Energy and Public Utilities, and CEB. The aim is to apply the levy on companies that are heavy consumers of energy beyond a set threshold in highly profitable sectors. Companies that are levied will not benefit from the refund. A similar mechanism is already in place in Mauritius. Banks and fixed / mobile telephone companies have to pay a 'solidarity levy' based on profit and turnover. The solidarity levy was formerly applied to hotels. The proceeds are used to fund social projects and subsidise needy families for education and housing.

The levy is similar to the Climate Change Levy (CCL) currently applied in the UK on the use of energy in industry, commerce and the public sector. Revenue raised through the levy is recycled back to business through a 0.3 percentage point cut in national insurance contributions. The aim of the CCL is to encourage businesses to become more energy efficient and reduce their greenhouse gas emissions. It forms a key part of the overall climate change programme. The CCL is playing a key role in helping the UK meet its targets for reducing greenhouse gas emissions. It is designed to promote energy efficiency, encourage employment and stimulate investment in new types of energy (source: <http://etl.decc.gov.uk>).

The CCL is essentially a tax on the use of energy in the industrial, commercial and public sectors. Certain industries can obtain a 65% discount from the CCL by meeting targets for energy efficiency set out in Climate Change Agreements (CCAs). These Agreements are either between the UK's Department of Energy and Climate Change (DECC) and the sector (or trade) association, or between DECC and the facility operator.

The remaining receipts are currently used to:

- fund energy audits and the provision of energy efficiency advice (helpline and publications) through the Carbon Trust (CT) (<http://www.carbontrust.co.uk/Pages/Default.aspx>), and
- Tax breaks through the Enhanced Capital Allowance (ECA) scheme (<http://etl.decc.gov.uk/etl/>). The ECA scheme will be discussed in further detail in the next section.

Accelerated annual allowance

Accelerated annual tax allowances. We suggest that Government considers amending the tax legislation to include a suitably-defined item of plant and equipment to encompass all energy savings equipment that can be deducted in full in the first year (100% on cost or even higher). This will encourage companies to invest in such equipment and claim against chargeable income. Safeguards should be provided as to what exactly constitutes an energy savings equipment to prevent abuse of the accelerated allowance to reduce tax.

Annual allowances currently fall into two categories: straight line and reducing balance. There are currently no accelerated allowances in the tax legislation. Annual allowances for plant or machinery are on a reducing balance basis. There is no specific reference to energy efficient / energy savings equipment in the list of "plant or machinery". The applicable rates are 50% for electronic and high precision equipment, computer hardware and software, and 35% for "other" equipment. There are no specified exclusions from

the definition of “Plant or machinery” in current legislation. However, the list of annual allowances also includes the following definitions:

“Industrial premises excluding hotels”: 5% straight line basis

“Commercial premises”: 5% straight line basis

“Hotels”: 30% reducing balance basis

“Acquisition or improvement of any other item of a capital nature which is subject to depreciation under the normal accounting principles”: 5% straight line basis

The interpretation and allocation to the various definitions usually is the responsibility of the company filing the tax return.

This is very similar to the UK government’s ECA scheme which provides businesses with enhanced tax relief for investments in equipment that meets published energy-saving criteria. 100 per cent first-year Enhanced Capital Allowances (ECA) allow the full cost of an investment in designated energy-saving plant and machinery to be written off against the taxable profits of the period in which the investment is made. The general rate of capital allowances for spending on plant and machinery is 20% a year on the reducing balance basis.

The scheme provides a tax incentive to businesses that invest in equipment that meets published energy-saving criteria. The Energy Technology List (ETL) details the criteria for each type of technology, and lists those products in each category that meet them. It is managed by the Carbon Trust, on behalf of the Government, and has two parts:

- The Energy Technology Criteria List (ETCL) is reviewed annually to ensure that it reflects technological progress. It sets out the qualifying energy-saving criteria for each class of technology.
- The Energy Technology Product List (ETPL), which is updated at the start of each month and lists the products and technologies that are eligible for an ECA.

There are 17 designated technologies, each with sub-technologies that currently on or have been on the Energy Technology List (ETL) – see Appendix I.

Tax holiday and tax credits

Tax holiday and tax credits were formerly provided as piece meal incentives prior to 2006 for specific sectors which also benefited from reduced tax rates. Such incentives were costly to administer. Since 2006, Government embarked on a tax reform process with the gradual harmonization of the tax system. There is now a uniform tax rate applicable to companies and individuals alike. Most tax holidays and credits have been removed, with the exceptions of a few cases (current tax exemption for Freeport zone to be phased out, expatriate tax credit, foreign tax credit among others).

Thus tax holiday or tax credits for companies engaging in energy efficient investments go against the principle of a uniform and simple tax system.

Grants

Grants are costly to administer. They are part of Government programmes to support needy and low income families (for example, low cost housing) and other social support which have a broad coverage and targeted towards individuals or households. The coverage and importance of the purpose of the grant in Government policy in a sense justifies the cost to Government. It also reflects the Government’s objective for greater social justice and pro-poor approach.

In this context, grant may not be an appropriate measure to fund energy audits of the non-residential building stock in Mauritius.

Recommendations

The best option for future consideration would seem to be a levy raised against the largest and/or most energy intensive users with a rebate for agreed reductions in their usage. This rebate would not be 100% and the remainder of the receipts would be ring fenced to fund the provision of:

- fund energy audits and the provision of energy efficiency advice (helpline and publications) through the EEMO and
- Tax breaks through an Accelerated annual allowance underpinned by list of technologies and qualifying criteria. The list would be managed by the EEMO.

Appendix A – From inception report

A contingency support mechanism can be in the form of one or more of the following fiscal instruments:

- Grants;
- Interest free or low cost loans;
- Tax breaks.

Grants

From our experience these are popular because they are perceived as “free money”. Such schemes need a good application procedure that passes forward only the cost effective projects based on qualification criteria that need to be simple (but not just payback) to ensure savings are sustainable. The sustainability of the measures implemented can be encouraged by having a mixed portfolio of projects, for example where paybacks are 2-3yrs (short term), 3-5yrs (medium term) and some 5-10+yrs (long term). The scheme would need to be linked to the survey/audit and there would have to be a mechanism that shows evidence that the grant-aided measures have been implemented. A clearly understood recovery mechanism, to come into play when the measures are incorrectly implemented, is needed. A down side is that such schemes are expensive to run in terms of administration and marketing, up to 25% of the cost. Such a scheme could be supported by a list of “approved contractors” to ensure the works carried out are up to standard and which could be checked by site visits.

Interest free or low cost loans

These are normally interest free and from our experience not the determining factor in an organisation’s decision making process. They are viewed as a “nice to have” and as a result good marketing is essential. The application process, administration and choice of projects are identical to those of the grant schemes described above. An additional requirement is that loan schemes are normally run on a revolving fund basis where the savings generated by the applicant are used to pay the loan off, thus generating funds for future applications. However, there has to be a lead time between when the loan is given and the measure is put in, and when the savings start to be generated. This means the pot has to be of sufficient size to be able to give out loans for a long enough period, until repayments start to come back to bolster the fund. For these schemes credit checks are essential and a debt recovery mechanism needs to be in place.

Tax breaks

These are not so popular and require good marketing to ensure that the both financial advisors and organisations are made aware of the benefits. They do however normally have the benefit of “piggy backing” on existing legislation and as a result are cheaper to run.

All of these mechanisms could be underpinned with a labelling scheme (eg of products which qualify for a technology list) to ensure any measures installed are to best practice standards. This could be supported by standard specifications aligned with best practice, which have to be followed in order to get the fiscal support. This has been shown to drive up standards in the supply chain and gives the manufacturer an incentive in terms of a label for marketing purposes beyond the scope of the fiscal support scheme. An application process would have to be put in place for such a technology list. This would require the suppliers to provide third party evidence of compliance to the best practice criteria.

Our initial recommendation is that the energy audit scheme could be supported by interest free loans run a revolving fund basis. This would be administered by the Energy Efficiency Office who then can easily link these to the audits. Any plant and machinery specified would meet best criteria similar to those in the UK's Energy Technology List (ETL).

The ETL gives the criteria for each type of technology, lists those products in each category that meet them and is used as a procurement tool for designers, specifiers and purchasers interested in energy-saving capital equipment. Such a list would include technologies such as:

- Air-to-air energy recovery.
- Automatic monitoring and targeting equipment.
- Compact heat exchangers.
- Compressed air equipment.
- HVAC Equipment.
- Lighting.
- Motors and Drives.
- Pipe insulation.
- Refrigeration equipment.
- Solar thermal systems.
- Uninterruptible Power Supply.

An early task will be to undertake a needs analysis for the selected contingent support mechanism, to be included within the desk study.

Appendix B – From desk study report

This section looks at the definition of the Contingent Support Mechanism, how it might operate, potential sources of funding and the scope for recycling funds to enable continuing support, and a needs analysis containing estimates of the costs of the scheme. A review of other possible funding can be found in appendix E,

o Brief for Contingent Support Mechanism

The project includes the requirement for a Contingent Support Mechanism. It is assumed that

- a. This means a financial support mechanism, dependent on criteria set by the Government that will determine whether an audit will be (part) funded
- b. The prospect of financial support in the form of a conditional grant will encourage building owners/operators to undertake energy audits
- c. However the CSM funds will not be used directly to motivate building owners/operators to make improvements
 - i. It will be for the building owners/operators to make the business case for improvements
 - ii. Funds will need to be sought from financial institutions by the building owners/operators for the implementation of recommended measures
 - iii. Up-front funding will need to be arranged, either from internal sources or from financial institutions, to conduct the audits. Only when certain conditions have been fulfilled will the CSM reimburse the building owners/operators for parts of the audits cost.
- d. Government funds will be limited. They have told us that they will assist audits for 30 small buildings and 20 large buildings.
- e. The audit tool MBEAT will provide technical information about the energy cost savings potential for measures, but it will be for the audit assessor to determine the business case for measures using installation cost information gathered specifically for the project.

BRE will help to develop a Contingent Support Mechanism that includes the following elements:

- A definition of “small” and “large” buildings in the context of selecting designated consumers
- A method for selecting 50 designated consumers whose buildings need to be audited, based on specific energy consumption (ie energy consumption per unit area)

- A means of deciding what level of retrospective support (according to the Government, dependent on project size) should be given to the audit so that the cost of energy audits will be shared with the building owner/manager.
- Possible sources of loans and other financial schemes to provide the up-front funding for the audits, and terms and conditions for the repayment of loans, including those where the conditions for contingent support have not been fulfilled.

The Contingent Support mechanism developed will:

- Provide guidelines on the management of the audit funding by Government Institutions such as EEMO and MEPU
- Direct those seeking funding for implementation of recommended measures to a financial institution.

o Options to consider for Contingent Support Mechanism (CSM) methodology

In determining the format and cost of the CSM, the following needs to be considered. Our understanding is that the Mauritius Government has selected the options in bold; BRE will include these decisions (pending further discussion) in the full implementation of the scheme.

1. If the eventual intention is that the entire non-domestic stock should be audited, how long should this take and what level of funding can be given to it
2. The level of human resource (i.e. audit assessors) that could be envisaged to be available – we understand that there will be 50 initially
3. In order that the audit process should progress at a speed to match available resource, there needs to be a method for deciding which designated consumers should undertake energy audits. The possible alternatives are:
 - a. When a permit is granted for refurbished buildings (but this does not capture buildings that are not undergoing major refurbishment)
 - b. Regular cycle (e.g. yearly, biennially or longer periods), perhaps depending also on size of building or electricity bill
 - c. Preliminary check by some central body, e.g. the CEB on all electricity bills
 - d. Any other cyclical event that happens to all buildings that, if it was not allowed to proceed until an energy audit has been completed would be enough of a driver.

Our recommendation is that the selection of designated consumers should be undertaken by the CEB on the basis of electricity consumption per square metre. In order to let the number of audits match the resource available, we recommend that only those consumers above an agreed threshold should be designated as requiring an audit in a given year. This threshold can then be reduced progressively year on year, gradually capturing more buildings at a rate that matches available resources. The details of this process will be resolved during the implementation of the CSM.

We understand that the Mauritian Government has decided to undertake the selection on the basis of information supplied by CEB (electricity consumption) and the potential designated consumers (building area and type). BRE will propose the CSM to work with this selection mechanism.

4. A decision on whether the legislation should demand that every time a consumer is designated, an audit must take place; then a choice of whether or not the measures should be implemented. It should be noted that if there is no financial incentive to carry out the measures (other than the provisional business case developed by the auditor), so it would be difficult to obligate the consumer to implement the measures. Nevertheless, it can be expected that a percentage of consumers will take up the recommended measures in the audit.
5. We understand that the Mauritius Government intends that the project will support up to 80% of the audit cost for smaller projects and up to 30% for larger projects. BRE will suggest thresholds for “small” and “large” projects to help the decision of funding level.
6. If there is to be an obligation on “designated consumers” to undertake an audit, the scenario where the designated consumer is unable to fund the remainder of the audit cost needs to be resolved in discussion with the Mauritius Government.
7. We understand that the Mauritius Government intends that the project support funding is to be regarded as a conditional grant, contingent on whether staged obligations have been met:
 - a. That the audit has been completed
 - b. That the main audit recommendations have been realised.

Thus the designated consumer will need to obtain a loan or internal funding in order to undertake the audit, in advance of the support funding, and will be motivated to complete the audit and implement the recommendations in order to be reimbursed by the contingent support. The recipient of funding will be expected to bear the risk that no savings are realised (e.g. because the recommended measures have not been implemented correctly, because the savings have been taken in terms of improved comfort, or simply because the business size has increased). BRE will formulate a reasonable and fair payment mechanism for the grant, at the stages of completion of the audit and implementation of the measures.

8. Which energy improvement measures would be appropriate to these buildings, e.g. those in appendix A.
9. The cost of implementing these measures, how long they would take to implement them and how long a payback could be anticipated/allowed, e.g. based on experience from Mauritian consultants.
10. The source and size of the funding pot for implementing measures that is available through financial institutions and banks. However, we understand that this funding is no longer part of the CSM. Unless the Government can arrange for special rates to be available by negotiation with the financial institutions, this funding stream will probably operate as a conventional loan. BRE, through its Mauritian partners, will assist by exploring which financial packages are available, identify suitable funding institutions, and capture the appropriate terms and conditions for the loans.
11. Assuming that the funding pot will be limited in size, there needs to be prioritisation of the allocation of funds to the buildings which most need attention, e.g. those which are

a. the most intensive energy users per unit area

- b. furthest above building typical, compared with benchmarks for their building type.

The latter option would be preferable, but more difficult to identify if the selection of designated consumers is to be undertaken by the CEB. The selection criteria are currently under discussion with the Government and the CEB.

- o **Needs analysis**

This needs analysis explores what resources need to be allocated to the CSM by Government. The Government resource needs will be determined by:

- a. How many audits are undertaken; in turn this depends on
 - i. Whether the Government wishes the scheme to be ongoing or for a limited period
 - ii. If the criterion for “designated consumer” is set at a constant level, or whether it is tightened over time
 - iii. How many assessors are available to perform the audits and their spare capacity to carry them out
 - iv. The level of compliance with regulations that require the audits
- b. Where the funds to undertake the audits will come from

In the future it may be possible to audit a larger proportion of the building stock, and the costs of this would then need to be re-evaluated. However, at this stage we understand that the National Steering Committee wants to limit the audits to 50 projects. We have therefore confined the cost calculation to a single scenario.

Assumptions:

Number of projects: 30 small, 20 large

Cost of audit assessor: 2000MUR/hr = 150000MUR/day

Time for audits: Content – Survey building, collect metered and other data from client; Process data, enter into audit tool; Gather costs for implementing measures; Prepare report for client; Discuss with client.

Small projects: 5 days Large projects: 10 days

For 50 projects, using proportions required by Government to be reimbursed:

Total cost to Government when audits complete: 750000MUR

Total cost to Government when measures realised: 1950000MUR

Total potential grant cost to Government if all audits completed and all audit measures are realised:
2.7millionMUR

Total remaining audit costs to be repaid by designated consumers to financial institutions:
2.55millionMUR

Alternative fiscal and funding mechanisms

A contingent support mechanism can be in the form of one or more of the following fiscal instruments:

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- Interest free or low cost loans;
- Tax breaks.

Grants

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Our initial recommendation is that the energy audit scheme could be supported by interest free loans run a revolving fund basis. This would be administered by the Energy Efficiency Office who then can easily link these to the audits. Any plant and machinery specified would meet best criteria similar to those in the UK's Energy Technology List (ETL).

The ETL gives the criteria for each type of technology, lists those products in each category that meet them and is used as a procurement tool for designers, specifiers and purchasers interested in energy-saving capital equipment. Such a list would include technologies such as:

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- Compact heat exchangers.
- Compressed air equipment.
- HVAC Equipment.
- Lighting.
- Motors and Drives.
- Pipe insulation.
- Refrigeration equipment.
- Solar thermal systems.
- Uninterruptible Power Supply.

An early task will be to undertake a needs analysis for the selected contingent support mechanism, to be included within the desk study.

Enhanced Capital allowances

The Enhanced Capital Allowances (ECAs) scheme was introduced in April 2001 to provide incentives for businesses to incur expenditure on energy efficient plant and machinery. The scheme enables businesses to claim a 100% first year capital allowance on investments in prescribed energy saving equipment, which are of a description specified by Treasury order. This enables businesses to write off the whole cost of their investment against their taxable profits of the period during which they make the investment.

The purpose of the scheme is to encourage investment to assist in achieving the Government targets for carbon emissions. A budget of £100m, paid for by Climate Change Levy revenues, was allocated to finance the scheme.

Since its introduction it has become clear that barriers exist to the uptake and success of the scheme. These range from technical barriers, due to the complex Capital Allowances legislation, through to some of the more practical barriers of the scheme. This report sets out some of the technical and practical barriers to the uptake of the ECA scheme, together with experience with the Inland Revenue, and suggests some possible solutions and enhancements to the scheme.

To qualify for ECAs energy saving equipment included within the product list must also fall within the definition of 'plant and machinery'. The first part of this report provides an overview of the capital allowances legislation and case law, both of which provide technical barriers to the scheme in respect of qualifying 'plant'. The second section of part 1 covers the complexities related to the 'ownership' of assets that can further complicate the availability of allowances. The final section provides an outline of other barriers that exist.

Comparison of other tax incentive schemes and overseas energy saving schemes are considered in part 2 of the report. Various tax incentives are in use within the UK to encourage investment in specific areas. The benefits and structure of these schemes are considered in the first section of part 2, which also identifies where attributes of the specific incentives could be considered for enhancements to the ECA scheme. In the latter section, environmental schemes in force in overseas countries are considered in comparison to the UK ECAs scheme.

Finally, the third part of the report suggests possible solutions and enhancements to overcome the potential barriers identified. There are a number of barriers that exist, which affect the uptake and success of the scheme. Some of the proposed solutions detailed in the report include:

- I Special exclusion of energy efficient plant and machinery from the capital allowances definition of plant and machinery (in particular for lighting).
- I Extending the scheme to provide incentives to non-tax payers, developers and loss making companies by offering a form of tax credit.
- I Increasing the amount of relief offered from 100% to 150% of the expenditure incurred.
- I Withdrawing the First Year Allowances exclusion in respect of energy saving plant and machinery which are considered to be long life assets.
- I Extending the technology areas included in the Treasury Order as qualifying for the purposes of CAA 2001 s 180 A (2).
- I Reviewing the rules in respect of second hand assets to enable ECAs to be claimed.
- I Simplification of identification of qualifying expenditure.
- I Continued marketing and publicity of the ECA scheme.

The Enhanced Capital Allowances scheme is generally accepted as an incentive to encourage investment within energy saving plant and machinery. However, with the current barriers that exist it is likely that the original objectives of the scheme will not be achieved.

Appendix C – QS report– Measures to improve energy efficiency in existing buildings

This is a comprehensive list of possible measures that has been resorted and reduced since the previous list, and will be prioritised further when the building energy audit model and its' supporting software have been fully developed.

#	Group	Operational measures	Asset measures	Difficulty	Unit	Total Labour Hour(s)	Total Labour Cost (Rs)	Total Materials (Rs)	Overhead (incl. Transport) & Profit (Rs)	Grand Total (Rs)
1	Management	Has an occupant survey been carried out recently?	Conduct occupancy survey	Low	per 1000 m ²	0.5	Rs. 200.00	N.A	Rs. 90.00	Rs. 290.00
2		Any problems reported by users for poor performance of HVAC system on very hot days	Conduct survey & interview employees	Low	per 1000 m ²	1.5	Rs. 600.00	N.A	Rs. 170.00	Rs. 770.00
3		Has a walk-around energy audit been carried out in accordance with the approved method?	Conduct walk-around energy audit & identify problems for reporting	Low/Medium	per 1000 m ²	4.0	Rs. 2,200.00	N.A	Rs. 490.00	Rs. 2,690.00
4		Is energy managed effectively : for example is there good evidence that responsibility for energy is allocated to specific person(s), building	Conduct survey & interview employees	Low	per 1000 m ²	3.0	Rs. 1,200.00	N.A	Rs. 300.00	Rs. 1,500.00

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		users are encouraged to save energy, and monitoring and targeting is in place?								
5		Is there a previous Energy Audit Report?	Examine archive & report on findings	Low	per 1000 m ²	1.0	Rs. 400.00	N.A	Rs. 140.00	Rs. 540.00
6		Are sufficient meters in place to enable the energy use to be subdivided by end use?	Examine electrical layout (if available) or conduct visual inspection	Low	per 1000 m ²	0.5	Rs. 200.00	N.A	Rs. 90.00	Rs. 290.00
7		Do the building occupiers understand the various modes of ventilation and cooling operation?	Conduct survey & interview employees	Low	per 1000 m ²	2.0	Rs. 800.00	N.A	Rs. 220.00	Rs. 1,020.00
8	Building fabric	Is the condition of the building fabric regularly inspected from the point of view of energy efficiency?	Consider introducing or improving insulation and high reflectivity coatings of flat and pitched roofs, especially at the same time as measures to improve water tightness	Low/Medium	per 10 m ²	2.5	Rs. 1,500.00	Rs. 3,800.00	Rs. 1,150.00	Rs. 6,450.00
9		Are any obstructions or partitions preventing free cross flow of air?	Consider ventilated roof structures to remove heat gain before it	Medium	per 10 m ²	3.0	Rs. 1,500.00	Rs. 2,000.00	Rs. 800.00	Rs. 4,300.00

			reaches the occupied space							
10	Glazing	Are the means to control solar gain easily operable by the users?	Consider applying reflective coating to windows and/or fit shading devices to reduce unwanted solar gain.	Low/Medium	per 10 m ²	2.0	Rs. 900.00	Rs. 1,500.00	Rs. 520.00	Rs. 2,920.00
11		Are windows and skylights cleaned regularly and kept free of obstruction to maximise use of natural lighting?	Some glazing is poorly insulated. Replace/improve glazing and/or frames.	Low	per 10 m ²	2.0	Rs. 800.00	N.A	Rs. 350.00	Rs. 1,150.00
12	Air tightness		Carry out a pressure test, identify and treat identified air leakage to reduce heat gain.	Low/Medium	per 10 m ²	3.0	Rs. 1,450.00	Rs. 750.00	Rs. 540.00	Rs. 2,740.00
13			Consider how building fabric air tightness could be improved, for example sealing, draught stripping and closing off unused ventilation openings, ducts etc.	Low/Medium	per 10 m ²	N.A (unable to provide estimation)	N.A (unable to provide estimation)	N.A (unable to provide estimation)	N.A (unable to provide estimation)	Rs. 0.00
14			Consider constructing	Low/Medium	per 10 m ²	N.A (unable to)	N.A (unable to provide)	N.A (unable to provide)	N.A (unable to)	Rs. 0.00

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			draught lobbies to reduce unwanted air infiltration.			provide estimation)	estimation)	estimation)	provide estimation)	
15			In commercial premises, consider adjusting existing or installing new automatic external door closers or adopting revolving door solutions instead of air curtains.	Low/Medium	per 10 m ²	3.0	Rs. 1,400.00	Rs. 300.00	Rs. 390.00	Rs. 2,090.00
16			Consider fitting existing air curtains with energy saving controls such as door interlocks and occupancy time switches.	Low/Medium	per 10 m ²	2.0	Rs. 1,100.00	Rs. 850.00	Rs. 450.00	Rs. 2,400.00
17			For goods bay doors, consider installing automatic closers to loading bay goods doors or shutters, high speed shutter doors, flexible plastic curtains and/or using expandable entrance collars to connect the	Medium	per 10 m ²	2.0	Rs. 1,100.00	Rs. 850.00	Rs. 450.00	Rs. 2,400.00

			back of delivery vehicles to limit heat gain from loading areas							
18	Air conditioning	Does lack of cleanliness of air inlets and outlets indicate potentially poor system performance?	Have the air inlets been sited properly, away from smoking areas and other air pollution sources?	Low	per 1000 m ² (or ~ 200 kW HVAC system)	4.5	Rs. 2,300.00	N.A	Rs. 540.00	Rs. 2,840.00
19		Are the filters checked regularly?	Do the mechanical ventilation systems have variable volume controls?	Low	per 1000 m ² (or ~ 200 kW HVAC system)	3.0	Rs. 1,500.00	N.A	Rs. 350.00	Rs. 1,850.00
20		Is there a servicing and maintenance plan in place that addresses ventilation and air conditioning plant energy efficiency?	Re-configure HVAC system and create maintenance plan	Low/Medium	per 1000 m ² (or ~ 200 kW HVAC system)	4.0	Rs. 1,800.00	N.A	Rs. 420.00	Rs. 2,220.00
21		Are exhaust systems properly controlled according to requirement, e.g. presence detection or when lights are turned on	Introduce new control system	Low/Medium	per 1000 m ² (or ~ 200 kW HVAC system)	5.0	Rs. 4,000.00	Rs. 48,700.00	Rs. 7,950.00	Rs. 60,650.00
22		Has an air conditioning energy performance inspection been	If any new ductwork is installed, ensure that it is designed for a	Medium	per 1000 m ² (or ~ 200 kW HVAC system)	3.0	Rs. 7,250.00	N.A	Rs. 1,600.00	Rs. 8,850.00

		carried out in the past 5 years?	low pressure drop (aim for specific fan power 1w/l/s)							
23	Central plant	Do pumps have adequate control mechanisms?	Consider a small scale Tri-Generation (heat, cooling, electricity) system as an alternative to conventional separate boiler and chiller systems	Medium/High	per 1000 m ² (or ~ 200 kW system)	30.0	Rs. 25,000.00	N.A (unable to provide estimation)	N.A (unable to provide estimation)	Rs. 25,000.00
24		Are maintenance records available for motors?	The default heat generator efficiency is chosen. It is recommended that all heat generator systems be investigated to gain an understanding of its efficiency and possible improvements.	Medium	per 1000 m ²	7.0	Rs. 3,850.00	N.A	Rs. 850.00	Rs. 4,700.00
25		Are equipment datasheets available, together with the commissioning report and building plans?	Consider introducing variable speed drives (VSD) for fans, pumps and compressors.	Medium	per 1000 m ²	5.0	Rs. 2,750.00	N.A	Rs. 600.00	Rs. 3,350.00
26		Is there a real need for process	Identify options	Low	per 1000 m ²	3.0	Rs. 1,200.00	N.A	Rs. 280.00	Rs. 1,480.00

		steam?								
27		Has a boiler plant energy performance inspection been carried out in the past 12 months?	Carry out inspection	Medium	per 1000 m ²	2.5	Rs. 1,500.00	N.A	Rs. 350.00	Rs. 1,850.00
28		Are the air conditioning systems' heat rejection equipment (condensers) clean and positioned in un-obstructed surroundings away from other heat sources?	Conduct visual inspection & propose changes (if any)	Low	per 1000 m ² (or ~ 200 kW HVAC system)	3.0	Rs. 1,400.00	N.A	Rs. 340.00	Rs. 1,740.00
29	Chillers	Are the chiller evaporating and condensing temperature as per manufacturer's recommendations?	Chiller efficiency is low or the default chiller efficiency has been chosen. Investigate the chiller system to gain an understanding of its efficiency and possible improvements.	Medium	per 1000 m ² (or ~ 200 kW chiller)	3.5	Rs. 2,275.00	N.A	Rs. 525.00	Rs. 2,800.00
30		Are the chiller systems in good condition i.e. free from any leaking, fouling, corrosion, blockages and is it suitably insulated?	Conduct visual inspection & assess performance	Medium	per 1000 m ² (or ~ 200 kW chiller)	5.0	Rs. 3,250.00	N.A	Rs. 700.00	Rs. 3,950.00

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31	Central controls	Have system controls been set up according to the building occupancy schedule?	Consider installing optimum start/stop controls on heating and cooling systems.	Low/Medium	per 1000 m ²	5.0	Rs. 3,000.00	Rs. 15,000.00	Rs. 1,850.00	Rs. 19,850.00
32		Have the HVAC time and temperature settings been checked by suitably qualified persons in the past 12 months?	Consider installing weather compensator controls on heating and cooling systems.	Low/Medium	per 1000 m ²	5.0	Rs. 3,000.00	Rs. 15,000.00	Rs. 1,850.00	Rs. 19,850.00
33		Are any mixed mode changeover controls appropriately set and are adjustments delegated to a suitably qualified person?	Consider installing timer controls to other energy consuming plant and equipment and include optimum start/stop or adjust to suit current building occupancy	Low/Medium	per 1000 m ²	5.0	Rs. 3,000.00	Rs. 15,000.00	Rs. 1,850.00	Rs. 19,850.00
34		If there is a Building Energy Management System, is it operated by suitably qualified staff?	Conduct survey & assess knowledge & skills + provide training (if needed)	Medium	per 1000 m ²	6.0	Rs. 4,000.00	N.A	Rs. 850.00	Rs. 4,850.00
35	Local controls	Is the building humidity tightly controlled (ie not allowed to float	Consider fitting zone controls to reduce over and under heating	Medium	per 1000 m ²	5.0	Rs. 3,000.00	Rs. 12,000.00	Rs. 2,000.00	Rs. 17,000.00

		between 40 & 70% RH)?	where structure, orientation, occupation or emitters have different characteristics.							
36		Check controls to avoid simultaneous operation of heating and cooling systems.	Add local time and temperature control to any local heating systems	Medium	per 1000 m ²	5.0	Rs. 3,000.00	Rs. 8,000.00	Rs. 1,700.00	Rs. 12,700.00
37		Are HVAC controls vulnerable to tampering?	Conduct survey & make changes (if needed)	Low	per 1000 m ²	3.0	Rs. 1,200.00	N.A	Rs. 280.00	Rs. 1,480.00
38	HWS	Is the temperature for hot water appropriate?	Improve insulation on HWS storage.	Low	per 1000 m ²	4.0	Rs. 2,500.00	Rs. 1,200.00	Rs. 750.00	Rs. 4,450.00
39		Is there the schedule for DHW changed for unoccupied periods?	Add time control to HWS secondary circulation	Low	per 1000 m ²	2.5	Rs. 1,200.00	Rs. 1,800.00	Rs. 550.00	Rs. 3,550.00
40		Are electrically heated HWS cylinders or electric point of use heaters fitted with time controls?	Consider installing building mounted solar water heating.	Low/Medium	per 1000 m ²	7.0	Rs. 2,500.00	Rs. 25,000.00	Rs. 3,500.00	Rs. 31,000.00
41		Are the HWS systems in good condition e.g. free from any leaking, fouling, corrosion and suitably insulated?	If HWS is used only for occasional hand washing, consider replacing centralised HWS with point of use system.	Low/Medium	per 1000 m ²	3.0	Rs. 1,200.00	N.A (unable to provide estimation)	N.A (unable to provide estimation)	Rs. 1,200.00

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42		Are water saving measures fitted to hot taps/showers etc (e.g. flow restrictors, diffusers)?	Consider replacing HWS boiler plant with high efficiency type.	Low/Medium	per 1000 m ²	3.5	Rs. 1,400.00	N.A (unable to provide estimation)	N.A (unable to provide estimation)	Rs. 1,400.00
43		Have the HWS systems been assessed as effectively and efficiently matching current demands?	Consider switching water heating boiler to biomass.	Medium	per 1000 m ²	6.0	Rs. 3,500.00	N.A (unable to provide estimation)	N.A (unable to provide estimation)	Rs. 3,500.00
44			Consider installing a ground source heat pump.	Medium	per 1000 m ²	10.0	Rs. 6,500.00	N.A (unable to provide estimation)	N.A (unable to provide estimation)	Rs. 6,500.00
45	Lighting	Has the building lighting strategy been reviewed by experts to ensure that it matches current needs while using minimum energy?	Replace tungsten GLS lamps with CFLs	Low	1	-	Rs. 150.00	Rs600.00	Rs75.00	Rs. 825.00
46		Is lighting maintenance, cleaning and lamp replacement planned and carried out regularly?	Replace tungsten spotlights and tungsten halogen reflector lamps with LED equivalents	Low	1	-	Rs. 150.00	Rs 1850.00	Rs 200.00	Rs. 2200.00
47		Replace 38mm diameter (T12) fluorescent tubes on failure with 26mm (T8) tubes.	Consider bulk replacement of 38mm diameter (T12) fluorescent tubes with 26mm (T8) tubes. Consider	Low	1	-	Rs. 150.00	Rs 850.00	Rs100.00	Rs. 1100.00

Contingent Support Mechanism - Review and Recommendations

			replacing T8 lamps with retrofit T5 conversion kit.							
48		Are the reflectivity of ceilings and other room surfaces appropriate to help reduce lighting power?	Introduce HF (high frequency) ballasts for fluorescent tubes and reduce number of fittings to match lighting requirements	Low	1	1	Rs. 150.00	Rs 3,500.00	Rs 365.00	Rs. 4015.00
49			Whenever fluorescent lighting is due to be replaced to suit new ceiling or partition layouts, install T5 fittings, reducing number of fittings to match lighting requirements	Low	1	-	Rs. 150.00	Rs 1000.00	Rs 115.00	Rs. 1260.00
50			Replace high-pressure mercury discharge lamps with plug-in SON replacements or with complete new lamp/gear SON (DL).	Low	1	-	Rs.250.00	Rs 3650.00	Rs 390.00	Rs. 4290.00
51			Ensure that lighting manual switching allows areas with different occupancy or	Low/Medium	1	-	Rs. 2,500.00	Rs. 25,000.00	Rs. 2750.00	Rs. 30250.00

			activity patterns to be switched independently							
52			Arrange manual switching of lamps in rows parallel with windows so that the row nearest the window can be switched off independently if there is sufficient daylight	Low/Medium	1	-	Rs. 2,500.00	RS 25000.00	Rs.2750.00	Rs. 30250.00
53			Consider occupancy sensing for intermittently occupied areas where individuals are not responsible for control of lighting, e.g. toilets, meeting rooms, etc	Low/Medium	per 1000 m ²	10.0	Rs. 5,500.00	Rs. 12,000.00	Rs. 3,200.00	Rs. 20,700.00
54			Consider daylight sensing with dimming control in rooms where daylight levels vary considerably. Arrange control of lamps in rows parallel with windows so that the row nearest the window can	Low/Medium	per 1000 m ²	10.0	Rs. 5,500.00	Rs. 12,000.00	Rs. 3,200.00	Rs. 20,700.00

			be dimmed independently by the controls without compromising lighting standards for parts of the room distant from the windows							
55	Electrical plant	Are transformers switched off for extended no-load conditions?	Consider installing wind turbine(s), either building mounted or within the curtilage of the site	Medium	per kWe	8.0	Rs. 4,400.00	Rs. 160,000.00	Rs. 18,000.00	Rs. 182,400.00
56		Are ambient conditions transformers operated in according with manufacturer's recommendations?	Consider installing building mounted photovoltaic electricity generating panels.	Low/Medium	per kWe	12.0	Rs. 4,800.00	Rs. 210,000.00	Rs. 23,500.00	Rs. 238,300.00
57			Consider installing a hydro-electric generator if any streams or rivers are close by.	Medium/High	per kWe	15.0	Rs. 9,300.00	Rs. 200,000.00	Rs. 22,900.00	Rs. 232,200.00
58	Ancillary Equipment	Does the ancillary equipment typically operate during peak load time? Can its operation	Conduct survey & make changes (if needed)	Low	per 1000 m ²	4.0	Rs. 1,600.00	N.A	Rs. 370.00	Rs. 1,970.00

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		be delayed without compromising business needs?								
59		Are occupiers encouraged to economise on the use of energy consuming equipment such as business and industrial machinery?	Conduct survey & make changes (if needed)	Low	per 1000 m ²	3.0	Rs. 1,200.00	N.A	Rs. 300.00	Rs. 1,500.00
60		Are power saving options on IT equipment enabled and effectively utilised?	Conduct survey and create awareness	low	per 1000 m ²	3.0	Rs. 1,200.00	N.A	Rs. 300.00	Rs. 1,500.00
61		Are there any items of equipment used within the building that would benefit from automated controls?	Identify potential savings and introduce automated controls	Low/Medium	per 1000 m ²	3.5	Rs. 1,950.00	Rs. 12,000.00	Rs. 2,800.00	Rs. 16,750.00
62		Is a policy in place that ensures energy efficient equipment is procured, for example 'Energy Star' rated items?	Conduct survey and create awareness	Low	per 1000 m ²	2.0	Rs. 800.00	N.A	Rs. 220.00	Rs. 1,020.00
63		Is equipment left on standby overnight and at weekends – can it be switched off manually or by time switches during these	Identify potential savings and introduce automated controls	Low/Medium	per 1000 m ²	5.0	Rs. 3,200.00	Rs. 8,000.00	Rs. 2,300.00	Rs. 13,500.00

		periods?								
64	Vertical transportation	Are stairs open and an attractive alternative to lifts and escalators?	Conduct survey and create awareness of benefits of using stairs	Low	per 1000 m ²	5.0	Rs. 2,000.00	N.A	Rs. 450.00	Rs. 2,450.00
65		Have lift and escalator systems been reviewed by experts for match with current occupiers' needs?	Are lift and escalator systems fitted with energy meters?	Low/Medium	per 1000 m ²	3.0	Rs. 1,600.00	N.A	Rs. 350.00	Rs. 1,950.00
66	Swimming pools	Is the pool complex fitted with energy meters?	Are heat recovery devices installed to pool water and pool hall temperature control systems?	Medium	for a 30,000 Litres pool	5.0	Rs. 2,800.00	Rs. 2,500.00	Rs. 900.00	Rs. 6,200.00
67		Is the pool hall and ancillary wet rooms sealed with air-locked doors or similar?	Consider solar water heating for pool water and showers	Medium	for a 30,000 Litres pool	10	Rs. 5,000.00	Rs. 50,000.00	Rs. 6,500.00	Rs. 61,500.00
68		Is the swimming pool fitted with covers?	Is the pool hall ventilation system controlled on humidity rather than constant volume?	Low	for a 30,000 Litres pool	3	Rs. 1,200.00	Rs. 8,000.00	Rs. 1,800.00	Rs. 11,000.00
69		Where pool covers exist are they used correctly and on a regular basis?	Conduct survey & assess knowledge	Low	for a 30,000 Litres pool	1	Rs. 400.00	N.A	Rs. 150.00	Rs. 550.00

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70	Catering	Are the kitchen facilities fitted with energy meters?	Conduct visual inspection and propose changes (if needed)	Low/Medium	per 1000 m ²	3.5	Rs. 2,200.00	N.A	Rs. 450.00	Rs. 2,650.00
71		Is a kitchen energy efficiency plan in place?	Conduct survey	Low	per 1000 m ²	2	Rs. 800.00	N.A	Rs. 180.00	Rs. 980.00
72		Are catering staff trained in measures to reduce energy waste?	Conduct survey and assess knowledge & skills	Low	per 1000 m ²	4	Rs. 2,000.00	N.A	Rs. 500.00	Rs. 2,500.00
73		Does utilisation of large pieces of equipment vary throughout the day i.e. ovens or dishwashers operated at less than maximum capacity?	Conduct survey	Low	per 1000 m ²	5	Rs. 2,000.00	N.A	Rs. 450.00	Rs. 2,450.00
74		Are refrigerators located away from heat producing equipment such as ovens and dishwashers for thermal isolation?	Conduct visual inspection	Low	per 1000 m ²	2.5	Rs. 1,000.00	N.A	Rs. 250.00	Rs. 1,250.00

Appendix D – points clarified by the NSC on 17th June 2011

1. The target market will be 5000 buildings/sites.
2. A 5 year period (not 10 years) to cover the targeted 5000 with a repeat audit every 5 years.
3. An audit for new buildings, 3 years after they are built.
4. In the first year there will be 50 audits.
5. There is no link to the building regulations thresholds on floor area.
6. The CEB kWh/yr criteria will be used to identify the 5000 buildings/sites.
7. Based on experience, BRE to suggest the required number of “biggest” customers from each sector/sub-sector or whatever desired category, such that we obtain a total of the 5000 customers.
8. CEB will then extract the annual consumption of those 5000 customers (including Name & Address of Owner, Date of start of CEB Contract, etc..) for a reference base year and will forward the list of 5000 designated customers to EEMO.
9. Data for m² of each building can be collected independently by the Certified Energy Auditor who will undertake the energy audit. The value for the specific energy consumption for each building will be provided in the energy audit report; and this will be the baseline for comparison with future energy audits.
10. There will be no distinction between small and large projects.
11. The target customer will have to cover the cost of the audit upfront.

Appendix E – KPMG report

25 August 2011

This report contains 16 pages

Building Research Establishment Limited

Desk Survey Report

Sources of support for energy audits under the
Contingent Support Mechanism

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Introduction

Purpose of report

The purpose of this report is to present the findings of our desk survey of the sources of external financing for energy audits and recommendations under the Contingent Support Mechanism.

Our report is addressed to Building Research Establishment Limited (BRE). BRE has been appointed by the UNDP to develop a new regulatory framework for the implementation of an Energy Audit Management Scheme (EAMS) and a Contingent Support Mechanism for the non-domestic building stock in Mauritius. The project is part of the UNDP Programme for the Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings. The Contingent Support Mechanism allows the possibility of refund of part of the audit cost and implementation of the audit through grants or debt finance from third parties.

Energy efficiency forms part of the long term energy strategy of the Government of Mauritius. The relevant legislation is the Energy Efficiency Act which essentially makes mandatory energy audits of selected buildings over a period of years. The institutional framework will be provided by the creation of an Energy Efficiency Management Office which will be the nodal agency for energy efficiency.

Scope of work

Meeting with the representative of BRE in Mauritius to fully understand the project and key issues;

Identify institutions (local and international) that provide financial support for energy audits and implementation of recommendations;

Desk / phone survey to obtain information on the nature, form and amount of support, and related conditions;

Outline the possibilities and scope for Government intervention;

Prepare a report on the findings.

Disclaimer

This document is addressed to BRE. The document is provided on the basis that it will not be copied or disclosed to any third party or otherwise quoted or referred to, in whole or in part, without our prior written consent.

We also advise that neither the firm nor any member or employee of the firm undertakes responsibility in any way whatsoever to any person or organisation, other than BRE, in respect of the information, set out in this report including any errors or omissions therein, arising, through negligence however or otherwise caused.

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Deva Armoogum

Partner

Highlights

KPMG Advisory contacted 15 organisations at date of this report of which 11 banks. Enterprise Mauritius, SBI Mauritius and Mauritius Post and Cooperative Bank ('MPCB') do not have any scheme for financing of energy audits and/or recommendations. Four organisations did not respond to the survey.

The aggregate size of fund available locally is equivalent to around Rs2 billion¹ on the basis of information provided by those who responded to the survey and other information provided to us.

Enterprise Mauritius formerly operated a scheme where it funded 100% of energy audits by way of grants. It is to be noted Enterprise Mauritius and its support schemes are funded by the Government.

The Maurice Ile Durable Fund will not finance energy audits and /or implementation of recommendations.

Only 4 banks in Mauritius provide support for the project in collaboration with Agence Francaise de Developpement as part of the "Green Lending Scheme". The total size of the scheme is EUR40 million.

Mauritius Business Growth Scheme (World Bank-funded) has a fund of USD10 million available as part of broader projects that lead to higher growth for the business.

The European Investment Bank has expressed interest in energy efficient investments in Mauritius, with the possibility of additional grant support for pilot audits. It can consider funding 50% of projects with amounts varying from EUR10 million to EUR100 million for a group of buildings.

¹ Based on exchange rates of Rs30/USD and Rs40/EUR.

Findings summary

Organisation	Size of fund (Rs equivalent)	Type of support	Duration	Payback	% project funded	Coverage
Mauritius Commercial Bank*	Not disclosed	12% grant associated with a soft loan	First come first serve	Min 4 years	85%	Audit and recommendations
Banque des Mascareignes*	Rs600m	12% grant associated with a soft loan	First come first serve	Min 4 years	80%	Recommendations
Mauritius Business Growth Scheme	Rs300m	Soft loan	Unlimited	Min 4 years	100%	Audit and recommendations, as part of broader growth project
State Bank of Mauritius	Not disclosed	12% grant associated with a soft loan	Oct 2013	Min 4 years	85%	Audit and recommendations Special 'ecoloan' for 100% financing of photo-voltaic installations
Enterprise Mauritius	None	n/a	n/a	n/a	n/a	n/a
SBI Mauritius	None	n/a	n/a	n/a	n/a	n/a
MPCB	None	n/a	n/a	n/a	n/a	n/a
Barclays Bank	No response					
HSBC	No response					
Standard Bank*	No response					
European Investment Bank	To be determined after needs analysis of optimal fund size	Soft loan, with possibility for grant funding	To be determined after needs analysis		50% generally	Audit and recommendations

Organisation	Size of fund (Rs equivalent)	Type of support	Duration	Payback	% project funded	Coverage
African Development Bank	Green funding does not extend to Mauritius					
Development Bank of Southern Africa	Green funding does not extend to Mauritius					
GEEREF	No response					
Industrial Development Corporation South Africa	Facility does not extend to Mauritius					

*part of AFD green lending scheme

Survey responses

Mauritius Commercial Bank

No	Description	
1	Name of institution	Mauritius Commercial Bank, in collaboration with Agence Francaise de Developpement
2	Size of fund	EUR40million on a first-come first-served basis, amongst 4 participating banks, including the MCB
3	Type of support	Grant following a soft loan being taken
4	Duration or lifetime of the fund	EUR40million on a first-come first-served basis
5	Eligibility conditions	Company undertaking an eco-friendly project on Mauritian or

		Seychelles territory
6	Payback period	4 years onwards
7	Who can apply	All, as long as minimum loan application is Rs1million
8	Amount of support available to the individual or organisation in monetary value	12% of amount borrowed
9	% of project funded	Up to 85%
10	Does funding cover implementation of recommendations of the energy audit, or limited to the audit only	Yes
11	Other relevant information	None
12	Contact name, phone and email address	Ashwin Foogooa 202 6468 ashwin.foogooa@mcb.co.mu

Banque des Mascareignes

No	Description
----	-------------

1	Name of institution	Banque des Mascareignes
2	Size of fund	EUR 40 million to 4 participating banks Available amount capped at a maximum of EUR 15 millions for Banque des Mascareignes
3	Type of support	Term Loan
4	Duration or lifetime of the fund	Amount will be drawn on a 'first come first served' basis
5	Eligibility conditions	Technical Criteria <u>Renewable Energy</u> Products producing any form of energy (heat, steam, power) without any fossil fuels or any radioactive source Hydroelectricity, geothermal sources, wind power, biomass/biogas, solar energy and sea energy as well as solar water heaters for individual or collective use. <u>Energy Efficiency</u> Improvements in combustion efficiency of fuels Prevention of energy loss Recycling of energy wastes, More efficient use of electricity Investments in energy-efficient machinery Introduction of operational control systems <u>In buildings</u> Reduction of heat from the sunlight

No	Description	
		Efficient air-conditioning systems Energy-efficient construction materials Efficient use of lighting equipment Use and installation of machinery, equipment and materials that contribute to energy efficiency and renewable energy such as combined heat & power (CHP), heat pumps etc <u>Environment Performance</u> <i>Projects that enable reducing natural resource usage or protecting such resources.</i> Waste management: projects that prevent or reduce waste from production and also recycling and disposal plants Wastewater treatment: production processes or other installations that save water, reduce or prevent wastewater Private wastewater treatment facilities in industry and tourism Air pollution control: measures to prevent or reduce emissions and also noise, foul odours and vibrations Treatment of contamination Cost of an eco audit <u>Eco-business</u> Producers/installers of solar water heaters Energy Savings Companies (ESCOs)
6	Payback period	Minimum maturity of loan: 4 years Repayment period of 8 years maximum but depends on type of project, credit analysis/underwriting, equity etc
7	Who can apply	Individual, Companies and small businesses
8	Amount of support available to the individual or organisation in monetary value	Financial Criteria (loan to bank's client): - Maximum total amount of each investment: EUR 7 million - Currency of loan: MUR, EUR or USD

No	Description	
		- Minimum maturity of loan: 4 years
		Amount depends on repayment capacity of borrower
9	% of project funded	80% maximum
10	Does funding cover implementation of recommendations of the energy audit, or limited to the audit only	Only implementation of project
11	Other relevant information	Loan associated with an investment grant: 12% upon due certification of the effective implementation of the investment
12	Contact name, phone and email address	Mr Jean-Jacques Fung 207 8712

Mauritius Business Growth Scheme

No	Description	
1	Name of institution	Mauritius Business Growth Scheme (MBGS)
2	Size of fund	+USD10 million
3	Type of support	Soft loan
4	Duration or lifetime of the fund	Unlimited
5	Eligibility conditions	- Holder of all necessary licenses and permits. - Not involved in Trading and/or Financial Services. - Proof of funds to be submitted (for start-ups).
6	Payback period	Payable as from the fourth year (3-year moratorium) based on incremental turnover growth.
7	Who can apply	Profit-making private sector companies in all sectors excluding Trading and Financial Services as well as start-ups.
8	Amount of support available to the individual or organisation in monetary value	USD100,000 (around Rs3 million)
9	% of project funded	100% (so long as the limit does not exceed USD100,000)
10	Does funding cover implementation of recommendations of the energy audit, or limited to the audit only	Funding covers implementation following audit (in terms of technical assistance such as: redesign of the electrical networking to make it become compliant; preparation of bill of quantities, specifications, schematic drawings, and so forth), provided other business growth components are included as part of a broader project to enable the company to grow faster than it

would have grown. Financing of fixed assets and working capital are not covered (only "HR-Based assistance").

11 Other relevant information See 10. Above

12	Contact name, phone and email address	Mr Henri Stetter	Mr Deven Padiachy
		Manager	Senior Advisor
		Tel: 211-0641	Tel: 253-9060
		hstetter@resortbroadband.com	dpadiachy@yahoo.com

MBGS is operational since 8 months. It is a component of the World Bank-financed Mauritius Manufacturing and Services Development and Competitiveness Project. Its objective is to facilitate the maximum possible growth in private sector economic activity by supporting enterprise productivity and competitiveness, specifically in areas of skills and training, technology upgrading, innovation, standards and marketing. Thus, although not specifically devoted to the energy efficiency and green lending, MBGS can consider such financing as part of broader projects to promote business growth and competitiveness.

State Bank of Mauritius

No **Description**

1	Name of institution	State Bank of Mauritius Ltd
2	Size of fund	Fund size at inception was EUR 40m
3	Type of support	Grant
4	Duration or lifetime of the fund	October 2013

No	Description	
5	Eligibility conditions	• Projects enabling environmental performance, i.e. Projects that enable reducing natural resource usage or protecting such resources. Eligible investments should achieve an environmental performance that exceeds current Mauritian minimum standards and norms. • Bank loan is at the usual commercial conditions freely negotiated by the Bank, in line with the counterparty / project / repayment risks etc • Subject to the Bank's Credit Committee's approval, financial & legal due diligences and other regulatory approvals • Maximum loan of EUR 7m • Minimum equity participation of 15% • Currency: MUR, USD or EUR • Other conditions described in questions 6 to 9 below
6	Payback or repayment period	Minimum maturity of 4 years, including a maximum of 3 years grace period
7	Who can apply	Individuals, Associations and Companies of any size
8	Amount of support available to the individual or organisation in monetary value	12% of loan amount
9	% of project funded	Loan of a maximum of 85% of project with a cash grant of 12% of loan amount
10	Does funding cover implementation of recommendations of the energy audit, or limited to the audit only	• Funding may cover the implementation of recommendations if the latter fall within the eligibility criteria of the AFD Green Lending Scheme • Furthermore, the Bank has a special EcoLoan for up to 100% financing of PV installations at an annual interest rate starting at PLR

No	Description	
11	Other relevant information	• Note that the information provided relates only to the financing of eco audits under the Agence Francaise de Developpement ("AFD") Green Lending Scheme. Other types of green projects can be financed under the same scheme. • Financing shall be on a case by case basis, whether it be for Bank approval or for AFD approval.
12	Contact name, phone and email address	Krystel Dookhith-Burrun 202 1153 krystel.dookhith-burrun@sbmgroup.mu

Potential regional support

European Investment Bank (EIB)

The EIB has extensive experience in energy efficiency investments and is involved in several projects in Europe. For the Mauritius context, EIB presents a potential for funding investments related to the implementation of energy efficiency measures, with the possibility of providing grant funding for technical assistance to accompany the loan financing, similar to the AFD green lending scheme. It should be noted that the Global Energy Efficiency and Renewable Energy Fund ('GEEREF') is part of EIB.

Tentatively, the EIB may consider financing 50% of projects and the amount varies from EUR10 million to 100 million (for example, a group of buildings), and the possibility of additional grant support for pilot audits. However, EIB will also consider how much Government and other funding institutions are contributing. The suggested approach of the EIB is to first determine the needs and optimal fund size, after which the EIB and other donors can define a funding envelope. Spreading the funding between various donors has benefits for risk mitigation, sharing of expertise, and increasing funding availability. Normally the EIB would prefer to see a binding commitment to implement (some of) the findings if audits are grant funded.

On the basis of its extensive experience in energy efficiency investments, the EIB has requested additional information which essentially relates to the legal framework, institutional support, training and accreditation of energy experts, minimum energy performance standards among others. We provide below the list of queries from EIB:

What approach will be used to implement the audits and related investments? For example,

What will be the funding structure?

Is there a role for an Energy Service Company?

Are there energy performance standards established for new/renovated buildings according to legislation in place (building codes)?

Is there a standard legal framework for energy audits and energy certificates?

Are there authorisation procedures in place for independent energy experts carrying out energy audits/energy certificates?

Will there be any grants available for the audits and/or the investment?

What standards will be applied for investments to qualify for funding?

Institutional framework for monitoring, evaluation and quality control of energy audits, energy performance certificates and implemented energy efficient investments;

Procedures for training and authorisation of independent energy experts;

Is there a feasibility study which has been carried out to provide a basis for the anticipated approach (including the analysis of the programme's profitability and the forecast of the demand for financing)?

What is the approximate split of buildings between (i) different economic sectors, (ii) public and private ownership, and (iii) average anticipated investment per sector?

As for the timing of audits, are there any deadlines for implementation in the legislation that was passed?

African Development Bank (AFDB)

The AFDB currently has 12 ongoing projects in Mauritius. It is providing support to Government by way of grants or budget support loans for projects related to public sector efficiency, wastewater management, sewerage, health, irrigation and road infrastructure. There are no energy related projects in its portfolio for Mauritius.

Industrial Development Corporation South Africa (IDCSA)

The IDCSA has committed ZAR 100 billion to funding economic development in Africa, and a significant proportion of these funds will be dedicated to the promotion of the green economy. The IDC is also funding an energy efficiency programme through the South African Department of Energy.

Development Bank of Southern Africa (DBSA)

DBSA has been funding projects in Mauritius. It is also involved in energy efficiency initiatives in Southern Africa. The DBSA has an Energy and Environmental Partnership Programme for Southern and East Africa. The programme is funded by the Finnish Government and aims to promote inter alia energy efficiency aspects in some SADC member states. However, the programme does not extend to Mauritius.

Other funding initiatives in South Africa

In South Africa, the Swiss and German embassies have a strong focus on energy efficiency. The Swiss Embassy is currently funding the development of South Africa's National Energy Efficiency strategy being implemented by the United Nations Industrial Development Organisation.

Conclusion and suggestions for Government intervention

Our desk survey revealed limited prospects of financial support for energy audits and / or implementation of the audit recommendations. On the local market, with the exception of four banks which are already participating in the AFD scheme, the other banks surveyed do not have a green funding scheme. The World Bank-sponsored Mauritius Business Growth Scheme is not dedicated to green funding but can provide support as part of broader growth projects.

Regionally, some major financial institutions have dedicated funds to energy and climate change programmes for Africa, which represent potential support for energy audits and implementation in Mauritius. For instance, the DBSA and IDCSA have an energy and environment scheme which currently does not extend to Mauritius. AFDB is currently funding Government's public sector competitiveness and public debt management reform, but has no energy-related funding programme for Mauritius. Given that availability of financial support is a critical success factor and that energy efficiency is a national Government-led initiative, it would make a greater impact with increased likelihood of a commitment from the regional institutions if it is Government that directly makes the request for financial support for Mauritius.

We therefore suggest that Government directly approaches the regional and international institutions for financial support. These may be channeled through local commercial banks (lines of credit) similar to the current AFD lending scheme. The aim gradually is to have most, if not all, commercial banks and other

lending institutions (such as leasing companies) to have energy / sustainability / climate change funding programmes. We provide the relevant contacts for potential regional support in the appendix to this report.

It should be noted that AFD had previously ceased to provide support to Mauritius, but then made a comeback at the request of Government in 2007. Mauritius has benefitted from considerable support from such institutions following visits of the Prime Minister himself to those respective countries. A recent example is the assistance of Singapore to review the water sector. India and China are other partner countries that extend assistance to Mauritius through bilateral agreements in the form of technical cooperation, grants and loans.

Government may consider funding support from the European Union. The EU is the main development partner of Mauritius. In the 2011 Budget (delivered in November 2010), the Minister of Finance announced a National Programme on Sustainable Consumption and Production to be funded by EU. It includes the formulation of policy, guidelines and rating system for sustainable buildings and construction.

The EU has committed around EUR308 million for the period 2008 – 2013 to be disbursed in tranches subject to fulfillment of certain pre-set conditions (including the preparation of a long term energy strategy). The bulk of the funding constitutes the Sugar Accompanying Measures to support Mauritius in sugar sector reforms and help offset the reduction of sugar prices. Around EUR100 million is earmarked for the promotion of sustainable and equitable development. While EU funding is in the form of general budget support, Government can approach the European Investment Bank (EIB) for long-term soft loans to be channeled through local banks. For instance, the EIB has provided a line of credit of EUR50 million to SBM (in two phases in 2005 and 2011) essentially to support the development of small and medium enterprises. SBM is EIB's local banking partner. Loans are more likely to be on concessional terms and longer maturity when it is Government that makes the request.

Fiscal measures

We consider below the various options available.

Special levy

Government can consider applying a special levy on selected companies and use the proceeds for refunding part of the cost of energy audits. The criteria should be worked out with the Ministry of Energy and Public Utilities, and CEB. The aim is to apply the levy on companies that are heavy consumers of energy beyond a set threshold in highly profitable sectors. Companies that are levied will not benefit from the refund. A similar mechanism is already in place in Mauritius. Banks and fixed / mobile telephone companies have to pay a 'solidarity levy' based on profit and turnover. The solidarity levy was formerly applied to hotels. The proceeds are used to fund social projects and subsidise needy families for education and housing.

The levy is similar to the Climate Change Levy (CCL) currently applied in the UK on the use of energy in industry, commerce and the public sector. Revenue raised through the levy is recycled back to business through a 0.3 percentage point cut in national insurance contributions. The aim of the CCL is to encourage businesses to become more energy efficient and reduce their greenhouse gas emissions. It forms a key part of the overall climate change programme. The CCL is playing a key role in helping the UK meet its targets for reducing greenhouse gas emissions. It is designed to promote energy efficiency, encourage employment and stimulate investment in new types of energy (source: <http://etl.decc.gov.uk>)

Accelerated annual allowance

Accelerated annual tax allowances. We suggest that Government considers amending the tax legislation to include a suitably-defined item of plant and equipment to encompass all energy savings equipment that can be deducted in full in the first year (100% on cost or even higher). This will encourage companies to invest in such equipment and claim against chargeable income. Safeguards should be provided as to what exactly constitutes an energy savings equipment to prevent abuse of the accelerated allowance to reduce tax.

Annual allowances currently fall into two categories: straight line and reducing balance. There are currently no accelerated allowances in the tax legislation. Annual allowances for plant or machinery are on a reducing balance basis. There is no specific reference to energy efficient / energy savings equipment in the list of "plant or machinery". The applicable rates are 50% for electronic and high precision equipment, computer hardware and software, and 35% for "other" equipment. There are no specified exclusions from the definition of "Plant or machinery" in current legislation. However, the list of annual allowances also includes the following definitions:

"Industrial premises excluding hotels": 5% straight line basis

"Commercial premises": 5% straight line basis

"Hotels": 30% reducing balance basis

"Acquisition or improvement of any other item of a capital nature which is subject to depreciation under the normal accounting principles": 5% straight line basis

The interpretation and allocation to the various definitions usually is the responsibility of the company filing the tax return.

Tax holiday and tax credits

Tax holiday and tax credits were formerly provided as piece meal incentives prior to 2006 for specific sectors which also benefited from reduced tax rates. Such incentives were costly to administer. Since 2006, Government embarked on a tax reform process with the gradual harmonization of the tax system. There is now a uniform tax rate applicable to companies and individuals alike. Most tax holidays and credits have been removed, with the exceptions of a few cases (current tax exemption for Freeport zone to be phased out, expatriate tax credit, foreign tax credit among others).

Thus tax holiday or tax credits for companies engaging in energy efficient investments go against the principle of a uniform and simple tax system.

Grants

Grants are costly to administer. They are part of Government programmes to support needy and low income families (for example, roof slabs, low cost housing) and other social support which have a broad coverage and targeted towards individuals or households. The coverage and importance of the purpose of the grant in Government policy in a sense justifies the cost to Government. It also reflects the Government's objective for greater social justice and pro-poor approach.

In this context, grant may not be an appropriate measure to fund energy audits of the non-residential building stock in Mauritius.

- **Appendix A – Relevant contacts for regional support**

Name of institution	Contact Person/s	Telephone	Email
European Investment Bank	Mr Floris Vermeulen	+352 43 79 85100	f.vermeulen@eib.org
	Mr Philippe Brown		p.brown@eib.org
African Development Bank	Mr Chiji Ojukwu	+216 71 10 39 00	c.ojukwu@afdb.org
	Ms Hela Cheikhrouhou		h.cheikhrouhou@afdb.org
Development Bank of Southern Africa	Mr Leon Cornelius	+27 11 313 3136	LeonC@dbsa.org
	Mr Yaw Afrane-Okese	+27 11 256 3592	YawA@dbsa.org
Industrial Development Corporation South Africa	Ms Rentia van Tonder	+27 11 269 3000	rentiat@idc.co.za

- **Appendix B - List of organisations contacted**

1. Mauritius Commercial Bank
2. Banque des Mascareignes
3. Mauritius Business Growth Scheme
4. State Bank of Mauritius
5. Enterprise Mauritius
6. SBI Mauritius
7. Mauritius Post and Cooperative Bank
8. Barclays Bank
9. HSBC
10. Standard Bank
11. European Investment Bank

12. African Development Bank

13. Development Bank of Southern Africa

14. GEEREF

15. Industrial Development Corporation South Africa

Appendix F – Progress report for UNDP contract PS/MAR2010/003 – Provision of consultancy services for the preparation of an energy audit scheme and a contingent support mechanism in Mauritius

1. Inception report (5% - £8830)

Successfully carried out and invoiced 11th November 2011.

The purpose of the kick-off meeting held in September 2010 was for the client and consultant to:

- Clarify the brief and terms of reference;
- Put procedures and processes into place regarding delivery and finances;
- Flesh out the specifications of the deliverables;
- Iron out any other details.

As a result the project management team constructed a revised and more detailed project plan. This included all the tasks and actions required to deliver the project. There has been some slight slippage in this initial part of the project but we are confident that this will be caught up before the originally planned completion date.

Meetings were arranged during visits in September and October 2010 with a view to:

- Engaging with all of the stakeholders.
- Collecting intelligence, especially on:
 - o how the building process works in Mauritius;
 - o sources of expert information;
 - o data sources especially those tied in to the building stock and energy usage;
 - o identifying the key players.
- Painting an initial picture of the Mauritius context;
- Holding a stakeholder workshop.

With the support of Dr. Hon. A. R. Beebeejaun, GCSK, FRCP, Deputy Prime Minister, Minister of Energy and Public Utilities, for Energy Efficiency and, in particular, for this project, the stakeholder workshop received extensive media attention. The event was covered by National TV and reported by radio in their hourly news bulletins, as well as in local press articles.

The agreed draft work programme is given in Appendix A.

2. Part A (10% £17660) – Desk review of International Standards and existing regulations in Mauritius

Successfully carried out and invoiced 8th March 2011.

However, due to the demands of the project the desk study exceed its remit in that it also reviewed and made recommendations in the fields of the Contingency Support Mechanism (CSM) and Accreditation/certification schemes as well as the original scope of energy auditing.

The main outcomes were:

- No suitable audit schemes and standards were available.
- The proposed methodology for the Mauritius Energy Audit Management Scheme (EAMs) based on SBEM will integrate the asset and operational aspects of building performance. A tool, the Mauritian Energy Audit Tool (MBEAT), would be developed from the UK ISBEM software.

- The Mauritian Government needs to decide how many audits are carried out, what the timeframe for these audits are, how the target audience is defined, what financial support is it willing to give and which, if any, fiscal mechanisms is it going to put into place.
- The Mauritian Government needs to decide how the implementation of measures are to be carried out, what the timeframe for these measures are, what financial support is it willing to give and which, if any, fiscal mechanisms is it going to put into place.
- The National Steering Committee (NSG) has shifted the focus to the use of ISO 17024 - Conformity Assessment, as the accreditation vehicle.
- Certification/Accreditation issues are:
 - o The EAMs project ends May 2011 and Mauritas will not be ready until Oct. 2011 to mid 2012;
 - o Even when Mauritas have obtained ISO 17011 they may not offer EN 45011 which is essential for the accrediting the certification body to run the scheme.
 - o There is a need for an interim solution to deal with the above.
- Legislation cannot be drafted until all the issues above are resolved.

Because this has exceeded the scope to cover all the issues within the project, it will be used as the basis of the final report.

3. Additional activity (£4710) – Harmonisation and co-ordination workshop.

Successfully carried out and invoiced 11th May 2011.

A Harmonisation Workshop on “Building Control Bill, Energy Audit Management Scheme, and Standard Designs of Buildings” was held on 14 April 2011 at La Cannelle, Domaine Les Pailles

The main outcomes for this project were that:

- The energy audit tool, MBEAT, output files could be used to build a national registry of the building stock and then a stock model for Mauritius. If the same tool is then adapted for compliance checking of the Building regulations the outputs from this exercise can also be used to build the stock registry and model.
- The registry is a requisite for any data collection for building regulations compliance and the resulting stock model underpins any proposed Energy Labelling System and Energy Performance certification scheme of non-domestic buildings by providing benchmarks.
- The audit tool can be adapted to building regulation compliance and for the production of Energy Performance certificate; indeed, this is the original purpose of the tool in other countries. This would also cut down on the amount of additional resource required to produce future training programmes because there would already be trainers and auditors au fait with the tool, although not for these purposes.

These were adopted by the NSC as future objectives and indicative budgets for this additional work have been put forward by BRE.

The workshop also defined the role of the Energy Efficiency Management Office (EEMO) as:

- Be responsible for identifying the designated consumers, in partnership with the CEB.
- Be responsible for the Contingency support mechanism including:
 - o The processing of applications;
 - o The administration of the scheme;
 - o Due diligence checks;

- o Payment of monies.
- Be responsible for a national registry where:
 - o Energy audits are lodged by the certification body;
 - o Expand the registry to cover building regulation compliance checks and Energy Performance Certificates (EPCs).
- Be responsible for the national registry of auditors.
- Produce and disseminate best practice.
- Produce operational guidelines for the Local Authorities.

4. Part B – Energy Audit Management Scheme

The study of the CSM and the Mauritian legislation were included in the desk study.

Final version of the MBEAT tool, User Guide and associated programmes were loaded onto the website on 16th September 2011.

The link to the webpage is:

<http://www.isbem.co.uk/downloads/MBEAT/index.php?clave=JDF9AJFJFAASDJFKJIWOFJDK>

user: mbeatuser

password: eaudit2U

BRE will host the webpage until the end of the contract by which time it is envisaged that the EEMO will have set-up their own webpage and transferred all of the content.

The NSC has given approval for the rescheduling of BRE's 5% payment from final report to the customization of SBEM/iSBEM with weather data for coastal zone on 25th May 2011. This means a transfer of £ 9065.50 from the final report to this part of the project and a new budget of £62045.50.

An invoice will be raised on the 19th September 2011 to cover this amount.

The main delay with this part of the project was obtaining, purchasing and customising the weather data. Originally, the MBEAT tool had one climatic zone and there was a delay while the Ministry of Energy and Public Utilities purchased the weather data from the Government Metrological services – technically only one zone is required. The NSG then took a policy decision that two weather zones were required. Unfortunately, the second zone had an incomplete data set which had to be customised to be fit for purpose.

Delaying this part of project had a knock-on effect on the delivery of the rest of the project because other parts of the project, such as the training programme, could not be carried out without the finished tool. However, it is hoped to still deliver the project within the final deadline of 31st December 2011.

5. Part C – Accreditation of Energy Audit Management Scheme

The NSC has made the decision that in the long term that Mauritas will be the accreditation body and the Mauritius Standards Bureau (MSB) will be the certification body. Mauritas will be ready to accredit to ISO 17024 - Conformity Assessment, in February 2013 but will require €120K funding to accredit this scheme. MSB can be ready by May 2012 but require a similar level of funding to achieve this. Both parties are in discussion with the Ministry of Energy and Public Utilities regarding funding. In the meantime, an interim solution is required and BRE have proposed the following options:

- Run an uncertified scheme through the Mauritius Standards Bureau until Mauritas is ready. The scheme documentation will be ready by the middle of March and we estimate it will take a month for MSB to get certification systems/procedures in place. MSB would also need to form a scheme steering group, which would consist of stakeholders from Government, Industry and the accreditation body, along with an expert from the field covered by the scheme. Also MSB will need in place an internationally recognised management standard, such as ISO 9001, and to appoint appropriately qualified and trained Scheme and Technical managers. When Mauritas is in compliance with ISO 17024 they would then accredit the scheme and retrospectively allow MSB to certify the auditors. Any handholding and training of MSB staff during this process is not covered by our project specification and would have to be costed separately.
- A certification body already accredited to ISO 17024 and running similar schemes, could help set-up MSB as a certification body to run the scheme until Mauritas is ready. Once MSB have the certification systems/procedures in place, we estimate that the external certification body would take a further month to certify the scheme. MSB will then run the scheme; set, run and mark the examinations; with the documentation of each candidate passed onto BRE global for final certification. Again, once Mauritas are in a position to accredit MSB the documentation etc. of each auditor could be passed back to MSB for certification under the auspices of Mauritas. This is not covered by our project specification and would have to be costed separately.
- Because MSB have no staff qualified to be technical managers, an external technical manager be appointed to run and mark the first examination of the auditors. This group should include staff from MSB (who wish to be technical managers) and staff from the Mauritius Institute of Training & Development (MITD), who wish to be trainers. On passing the examination and showing they have suitable experience and qualifications they can start to undertake their roles as technical managers and trainers respectively (see appendix B)

A decision has yet to be made, by the Ministry of Energy and Public Utilities, with respect to these issues and although they do not directly affect this part of the project they do affect the drafting of any legislation which needs certainty in this area. Indicative budgets for the options above have been supplied by BRE.

With respect to deliverables in this area the roadmap for certification and a full set of scheme documents have been produced. A meeting with MSB and the EEMO was held on 17th August where both parties were walked through the documentation.

The final deliverable, the examination materials, will be produced by the end of October and supplied to the EEMO. In our view they should **not** be made available to MSB until they have suitably qualified technical managers in place who have passed the examination.

6. Part D - Training of Trainers and Auditors

The NSC has made the decision that the training body for this scheme will be the Mauritius Institute of Training & Development (MITD).

A full set of training materials have been produced and a 5 day MBEAT training course was delivered on the 10th August to 16th August to a total of 42 delegates. There was an official launching ceremony of the training with addresses by Dr A.R Beebeejaun and Dr the Hon. V.K. Bunwaree, Minister of Education and Human Resources - the local TV and press were present covering the event. The training delegates consisted of trainee auditors, the MSB staff proposed for the technical roles and staff from MITD proposed as trainers. These delegates will now need to practice with the tool for at least 40 hours before taking the examination. On passing the examination they can take up their roles as long as they satisfy the other requirements of the scheme, as laid out in the scheme documents.

The final deliverable in this section is the revised training materials, which will be delivered in early October 2011 to MITD and the EEMO.

7. Part E - Contingent Support Mechanism (CSM)

The inception report presented possible CSMs for the EAMs:

- Grants;
- Interest free or low cost loans;
- Tax breaks.

The initial aspiration was to cover the costs of the audits and their recommendations with the favoured mechanism, at this point, being Interest free or low cost loans. The report also identified an early task as undertaking a needs analysis for the selected contingent support mechanism, which was to be included within the desk study.

This needs analysis explored what resources needed to be allocated to the CSM by Government. The Government resource needs will be determined by:

- How many audits are undertaken; in turn this depends on:
 - o Whether the Government wishes the scheme to be ongoing or for a limited period ;
 - o If the criterion for “designated consumer” is set at a constant level, or whether it is tightened over time;
 - o How many assessors are available to perform the audits and their spare capacity to carry them out;
 - o The level of compliance with regulations that require the audits.
- Where the funds to undertake the audits will come from.

National Steering Committee, on seeing the initial draft of the report, then decided to limit the audits to 50 projects. As a result this section of the report was redrafted and the cost calculation confined to a single scenario (see appendix C).

A local Quantity surveyor was then appointed to provide indicative costs for the “Measures to improve energy efficiency in existing buildings”.

At the same time a series of questions was put forward by BRE to the NSG to clarify points so that the legislation could be drafted (see appendix D). On clarification of these issues a financial advisor, a local office of KPMG, was appointed with the remit of:

- Identify institutions (local and international) that provide financial support for energy audits and implementation of recommendations;
- Desk / phone survey to obtain information on the nature, form and amount of support, and related conditions;
- Outline the possibilities and scope for Government intervention;
- Prepare a report on the findings.

Their final report was submitted on the 25th August 2011 and will be forwarded within an interim report for this part of the project by the end of September – a draft of the KPMG report has already been submitted to the EEMO for their information.

At this point it should be pointed out there is still a possible mismatch between the aspiration to do 5000 audits in 5 years and the decision to do 50 in the first year in terms of financing and availability of auditors to carry out the work.

An issue within this part of the project has been the identification of the first 50 “customers” for the audits. Originally, they were to be targeted on a kWh/m²/yr basis.

However, research to acquire data for the total floor area (m²) for the buildings, from the Local Authorities indicated that:

- There is no common reference or identification numbers of the applicants when compared to the Central Electricity Board (CEB) customer list.
- Records for m² for some buildings may not be available at the Local Authorities.
- Some Municipal Councils and District Councils have not kept records for date of completion of constructions.
- We have come to the conclusion that it will be very difficult to collect historical floor area data and to match it to the non-domestic consumers list available in the CEB database.

At this point, 17th June 2011, the decision was made to use the CEB kWh/yr data of their top 5000 customers and filter these to remove those with a high process load. Unfortunately, the database did not have enough information within it to carry out this process and the CEB has had to do further data collection and clarification. The finalised dataset of the CEB's top 700 clients was passed to BRE on the 25th August 2011. BRE have just finished filtering out process based companies and have now have identified 320 clients, of which the top 50 energy users can be targeted in the first year.

This will also be included within an interim report at the end of September.

Once the NSG has accepted the interim report, legislation will drafted with a target date of mid November 2011.

8. Part F- Workshop and Training

The aim is to hold these in early December along with the extra deliverables of:

- A 1 day train the trainer course; and
- Training for MSB staff on how to run the examination.

The second of these will only be possible if the MSB staff have already taken the examination and showed themselves to be competent to be technical managers.

Appendix G – 15th NSC mtg

1. The 15th NSC meeting was held on Friday 7th Oct 2011 and the pending issues that required clarifications, were discussed. NSC has decided that BRE will have to submit a **1st draft** of the pending deliverables (such as EAMS documentation, CSM Report, piece of legislation, road map for accreditation, etc..) for necessary preliminary comments from the local stakeholders; these comments will then be taken on board by BRE to submit the final drafts of the pending deliverables.

NSC has requested BRE to submit a revised work plan for completing the remaining of the project at latest by the end of Dec 2011.

A. Referring to your progress report dated 23rd Sept 2011, the decisions taken by the Steering Group have been written in “dark green” :

- The target market will be 5000 buildings/sites.
 - 320 buildings/sites as per final list of designated consumers submitted by BRE.
 - An initial batch of 45 energy auditors have been trained on the use of MBEAT; we are expecting at least 30 of them to be qualified and certified to undertake the audits as from Mid-2012. The 45 are already working either as M&E Engineers or Architects and they will undertake all future audits only on a part-time basis.
- A 5 year period (not 10 years) to cover the targeted 5000 with a repeat audit every 5 years.
 - A 5 year period to cover the targeted 320 buildings and with successive cycles of audits at intervals of every 5 years. The audits will have to be completed within these 5 years and the audit report duly approved by the Certification Body and the EEMO within the same time frame.
- An audit for new buildings, 3 years after they are built.
 - For successive 5-year cycles of audits, only new buildings having an age of > 3 years will be considered for selection as designated buildings for the mandatory audits.
 - As explained earlier, age of these buildings will be as from the date of start of the CEB Contract, which we consider to be a very reasonable assumption.
- In the first year there will be 50 audits.
 - Yes.
 - These are the 50 audits that will have to be part-financed with the remaining project funds, as per the Project Document. NSC has opted for 70% part-financing of an audit cost with the project funds and the remaining 30% from other sources of funding. BRE has to identify possible other sources of funding to meet the remaining 30% of the cost for the 50 audits.

- The final completion date for the main project will have to be extended from April 2012 up to end of December 2012; and, all these 50 audits must be undertaken before the completion of the project in December 2012.
- There is no link to the building regulations thresholds on floor area.
 - No link to thresholds on floor area.
- The CEB kWh/yr criteria will be used to identify the 5000 buildings/sites.
 - Selection criteria will be the cumulative total annual kWh of electricity consumed for a base year as per the CEB database.
 - Data for m² must be captured by each auditor during the audit for the necessary calculation of the Specific Energy Consumption for each building.
- Based on experience, BRE to suggest the required number of “biggest” customers from each sector/sub-sector or whatever desired category, such that we obtain a total of the 5000 customers.
 - Top 320 energy consumers (already done)
- CEB will then extract the annual consumption of those 5000 customers (including Name & Address of Owner, Date of start of CEB Contract, etc..) for a reference base year and will forward the list of 5000 designated customers to EEMO.
 - Top 320 energy consumers (already done)
- Data for m² of each building can be collected independently by the Certified Energy Auditor who will undertake the energy audit. The value for the specific energy consumption for each building will be provided in the energy audit report; and this will be the baseline for comparison with future energy audits.
 - Yes.
- There will be no distinction between small and large projects.
 - No distinction between small and large projects.
- The target customer will have to cover the cost of the audit upfront.
 - Yes.

(i) Contingent Support Mechanism

- Grants/Soft Loans/Tax Breaks for undertaking energy audits
 - As specified earlier, the CSM may be a soft loan that the designated consumer can contract from a reliable local or international bank.
 - A clearance will be required from EEMO for the necessary disbursement of the loans by the bank.

- The KPMG Financial Advisor appointed by BRE will have to identify a suitable bank that can provide such a soft loan. The interest rate and other terms & conditions of the soft loan will have to be clearly defined by the Financial Advisor.
- The loan will be provided upfront to meet the cost of the audit. Interests have to be paid at regular monthly intervals as from date of approval/disbursement of the loan. The driver for all this will be the future energy savings that can be made by the designated consumers upon implementation of part or all of the energy efficiency measures specified in the audit report.
- Grants/Soft Loans/Tax Breaks for implementing energy audit measures
 - At this point in time, we do not know whether or not the government will opt for a CSM for implementation of the audit measures. A needs analysis will have to be conducted and this is not included within the scope of BRE's Contract.

B. Additional funds have been acquired by the Ministry and it will now be possible for

us to proceed with the following supplementary project activities :

- (i) Interim Certification of the initial batch of 45 trained Auditors
- (ii) Implementation of the EAMS, including capacity building of MSB
- (iii) Accreditation of the Certification Body, including capacity building of MAURITAS

MEPU will appoint an International Certification Body already accredited to ISO 17024 and running a similar scheme, through a tendering process, for the implementation of the EAMS and for the interim certification of the auditors.

An International Accreditation Body will also be appointed for the Accreditation of the Certification Body and for the necessary capacity building of MAURITAS.

C. All additional activities related to the Building Control Bill Project (e.g., amended scheme, amended MBEAT, etc..) and set up of a National Registry will be implemented at a later stage, with the appointment of a suitable Consultant.

Appendix H – List of all the sectors excluded from the Top 700 list

Sector / building type	Reason for exclusion
ANIMAL FOODS	Industrial process
Aquaculture	Industrial process
ASSEMBLY	Industrial process
BASALT PRODUCTS.	Industrial process
Bottling of gas	Industrial process
carton fabrication	Industrial process
Chemical products industry	Industrial process
Cold Storage	Further details required (Process?)
CONTRACTOR	Further details required
CUBIC SUGAR	Industrial process
DETERGENTS	Industrial process
Detergents production	Industrial process
DYEING	Industrial process
EXHIBITION & MARKET FAIR	Further details required
FARMING.	Industrial process
FIRE SERVICES FOR PORT AUTHORITY	Not relevant
FISH CANNING	Industrial process
FISH MEAL.	Industrial process
Fish processing industry	Industrial process
Food & Beverages	Industrial process
FOOD & DRINKS.	Industrial process
FOODSTUFF PRODUCER	Industrial process
Fossil, Chemicals and Basalt	Industrial process
FROZEN FOODS	Industrial process
FUEL DEPOT.	Industrial process
GARAGE	Not relevant
ICT park	Not relevant
IMPORT & EXPORT OF FISH	Industrial process
IMPORT & DISTRIBUTION OF CIMENT	Industrial process
IMPORT & DISTRIBUTION OF EDIBLE OIL	Industrial process
IMPORT & DISTRIBUTION OF FLOUR	Industrial process
IMPORT & DISTRIBUTION OF FUEL	Industrial process
IMPORT & DISTRIBUTION OF GAZ	Industrial process
IMPORT & SALES OF FISH	Industrial process
IMPORT & SALES OF FUEL	Industrial process
IMPORT & DISTRIBUTION OF CIMENT	Industrial process
IMPORT OF FRUITS	Industrial process
Ind Irrigation - Do Not Use	Industrial process
INDUSTRIAL- CHICKEN INDUSTRY	Industrial process
INDUSTRIAL- CHICKEN INDUSTRY / CHICKEN	Industrial process
PRODUCTS-- SAUSAGES, BURGERS.....	Industrial process
INDUSTRIAL- CHICKEN PRODUCTS--	Industrial process
SAUSAGES, BURGERS.....	
INDUSTRIAL- FREEZING OF VEGETABLES	Industrial process
INDUSTRIAL- MANUFACTURE OF BABY	Industrial process
NAPPIES	Industrial process
INDUSTRIAL- MANUFACTURE OF EDIBLE OIL	Industrial process
INDUSTRIAL- MANUFACTURE OF	Industrial process

INDUSTRIAL GAS FOR INDUSTRIES, HOSPITALS,CLINICS...	Industrial process
INDUSTRIAL- MANUFACTURE OF PLASTIC BAGS	Industrial process
INDUSTRIAL- MANUFACTURE OF SOFT DRINKS	Industrial process
INDUSTRIAL- MANUFACTURE OF SOFT DRINKS & BEERS	Industrial process
INDUSTRIAL- MANUFACTURE OF WINE & SHOP FOR WINE	Industrial process
INDUSTRIAL- MANUFACTURE OF YOGHURT, ICE CREAMS...	Industrial process
INDUSTRIAL- MARGARINE & BUTTER MANUFACTURING	Industrial process
INDUSTRIAL- TEXTILE MANUFACTURING	Industrial process
Irrigation of vegetables	Industrial process
IRRIGATION.	Industrial process
Juice Production	Industrial process
Laundry services	Industrial process
Manufacture of Alluminium tubes	Industrial process
MANUFACTURE OF ANIMAL FOODS	Industrial process
MANUFACTURE OF CLOTHES	Industrial process
Manufacture of concrete blocks	Industrial process
Manufacture of face(watch)	
MANUFACTURE OF FERTILIZER	Industrial process
Manufacture of fishing components	Industrial process
MANUFACTURE OF FROZEN FOODS VEG & NON VEG	Industrial process
Manufacture of glasses for watches	Industrial process
Manufacture of Jeans	Industrial process
manufacture of leather products	Industrial process
Manufacture of links for watches	Industrial process
MANUFACTURE OF LIQUOR	Industrial process
MANUFACTURE OF PLASTICS	Industrial process
MANUFACTURE OF PLASTICS PIPES	Industrial process
MANUFACTURE OF SWEETS & BISCUITS	Industrial process
Manufacture of Synthetic Jewels	Industrial process
Manufacture of T-shirts	Industrial process
Manufacture of watch components	Not relevant
MANUFACTURE OF WATCHES	Not relevant
MANUFACTURING	Industrial process
Manufature of concrete blocks	Industrial process
MANUFACTURE OF WATHES	Industrial process
MARKET	Industrial process
MONITORING NAVIGATIONAL ACTIVITIES.	Industrial process
Other	Industrial process
Other Products	Industrial process
Packaging milk powder	Industrial process
Paint production	Industrial process
Perishables, Farming & Service	Industrial process
Plastic and chemical product	Industrial process
PLASTIC INDUSTRY	Industrial process
Poultry	Industrial process
Poultry Farm	Not relevant
Printing activities	Not relevant
PRINTING OF NEWSPAPER	Industrial process

Printing press	Industrial process
PRISON	Industrial process
Private radio station	Industrial process
PROCESSING POTATOES.	Industrial process
Producing Iron bars	Industrial process
Production of cattle feeds	Industrial process
Production of electric wires	Industrial process
Production of textile stickers	Industrial process
PUMPING	Unkown activity
REFINERY OF ALCOHOL	Industrial process
REPAIRS & CONSTRUCTION OF SHIP	Industrial process
Sewage	Industrial process
Site visit needed	Industrial process
Soap manufacturing	Not relevant
Soft drinks production (Eski)	Industrial process
Steel bars production	Industrial process
Stone crusher	Industrial process
Street Lights	Industrial process
Sugar Cane - Irrigation	Industrial process
Sugar Mills	Industrial process
TEA INDUSTRY.	Industrial process
Textile Manufacturing	Industrial process
Textile & Garment	Industrial process
Textile industry	Industrial process
Textile industry Not in operation	Industrial process
Textile manufacturing	Industrial process
TEXTILES.	Not relevant
TREATMENT OF WASTE WATER	Not relevant
Tyre rebuild	Industrial process
WASTE MANAGEMENT.	
WATER TREATMENT	
Water Utility	
Wood & Paper Products	

Appendix I – Top 50 high end energy users identified for the first tranche of energy audits

Account Ref.	Installation Type	Economic Activity	Total	Ave-Mth
844	WR02	Commercial complex	12,556,393	1,046,366
170000	TC06	CALL CENTER	9,518,337	793,195
4032496	HR01	Large Hotels	8,853,577	737,798
31368	HR01	Large Hotels	8,713,131	726,094
99356	HR01	Large Hotels	7,797,458	649,788
171132	HR01	COMMERCIAL- HOTEL RESORT	7,529,847	627,487
122596	HR01.	LARGE HOTEL.	7,143,573	595,298
192860	HR01	COMMERCIAL- HOTEL RESORT	6,997,484	583,124
171148	WR03	COMMERCIAL COMPLEX- SHOPS, RESTAURANTS..	6,916,622	576,385
3440028	HR01	Large Hotels	6,782,439	565,203
50176	HR01	Large Hotels	6,716,206	559,684
3704044	HR01	Large Hotels	6,071,270	505,939
146024	FI01	Banks	5,956,872	496,406
146932	TC04	Travel and Cargo	5,536,621	461,385
4372484	HR01	Large Hotels	5,463,553	455,296
4432024	SV02	Health	5,114,867	426,239
4888040	HR01	Large Hotels	5,104,438	425,370
145436	HR01	HOTEL	4,839,860	403,322
192872	HR01	COMMERCIAL- HOTEL RESORT	4,739,749	394,979
48152	HR01	Hotel Services	4,711,977	392,665
50240	HR01	Large Hotels	4,585,922	382,160
169032	WR03	Supermarkets / Hypermarkets	4,404,650	367,054
29600	FI01	Banks	4,315,066	359,589
3376	RR02	Air mtius building Offices	4,271,672	355,973
30544	HR01	Large Hotels	4,260,933	355,078
50288	HR01	Large Hotels	4,220,753	351,729
168896	HR01	HOTEL	4,184,998	348,750
48176	HR01	Large Hotels	4,049,303	337,442
146212	HR01	HOTEL	3,966,261	330,522
120624	HR01.	LARGE HOTEL.	3,923,843	326,987
3056448	HR01.	LARGE HOTEL.	3,887,127	323,927
194000	HR01	COMMERCIAL- HOTEL RESORT	3,873,005	322,750
2548584	FI01	Banks	3,831,439	319,287
49496	HR01	Large Hotels	3,791,577	315,965

1648380	HR01.	LARGE HOTEL.	3,790,509	315,876
170048	HR01	Large Hotels	3,756,826	313,069
4256424	WR03	Supermarkets / Hypermarkets	3,598,510	299,876
193296	HR01	COMMERCIAL- HOTEL RESORT	3,596,979	299,748
193756	HR01	COMMERCIAL- HOTEL RESORT	3,524,002	293,667
122744	HR01.	LARGE HOTEL.	3,424,945	285,412
123588	HR01	Large Hotels	3,170,084	264,174
192808	HR01	COMMERCIAL- HOTEL RESORT	3,155,530	262,961
171336	HR01	COMMERCIAL- HOTEL RESORT	3,122,242	260,187
145148	HR01	HOTEL	3,106,913	258,909
168904	HR01	HOTEL	2,955,999	246,333
3628596	HR01.	LARGE HOTEL.	2,951,004	245,917
28792	TC06	Offices public services	2,744,088	228,674
3096196	TC06	CALL CENTER	2,692,415	224,368
50748	WR03	Supermarkets / Hypermarkets	2,454,796	204,566
4316100	HR01	Large Hotels	2,194,384	182,865

Appendix J – AFD lending scheme

AFD GREEN LENDING SCHEME

Preserving tomorrow's business

To facilitate transition to green growth

Green growth stimulates several markets, particularly in the area of sustainable energy, natural resources management and pollution abatement. Financing this growth on a global scale is a major challenge AFD aims to address. AFD partners with 4 commercial banks, building on their capacity to drive and catalyze "green" investment decisions.

Who is concerned?

Anyone (companies, individuals, association) having a green investment project which can be related to:

- Renewable Energies ;
- Energy Efficiency ;
- Environmental Performance ;
- Ecobusinesses.



What kinds of investments are eligible?

All **renewable energy** investments are eligible. A renewable energy investment can be defined as an asset producing any form of energy (heat, steam, power) without any fossil fuels or any radioactive source.

The **energy efficiency** investments eligible could be either a retrofitting or a modification of existing installations inducing a reduction of energy consumptions for a same level of production, either a Greenfield investment inducing a significant energy savings compared to the standards prevailing in the country.

40m \$

~ Two years!
~ not not big enough!
~ short payback. (min 4yrs)
(10-12 yrs max)

The **environment performance** investments would allow reducing natural resources use or protecting such resources above the standards prevailing in the country.

All investments in **ecobusinesses** companies are eligible. An ecobusinesses company could be described as a company whose objects will increase the availability and/or quality of Renewable Energies, Energy Efficiency, and Environmental Performance equipments and services.

What kind of financial support can be expected?

The AFD green lending scheme principle is to associate a bank loan with a grant.

The bank loan is at the usual commercial conditions freely negotiated with its clients.

The maximum amount of the loan is 7 M€ (no minimum imposed, but every bank is free to adopt a specific stance).

A minimum equity participation of 15% is asked.

The minimum maturity is 4 years and a grace period of 3 years maximum is possible.

The currency loan could be either in MUR, EUR or USD.

12% of the loan amount is transferred as a grant to the beneficiaries once the eligible investments are duly implemented.



How to apply?

All the potential beneficiaries shall submit their project to one of the banks partners of the scheme. In association with the AFD, the bank will assess the program retaining both financial and green criteria.

List of Partners

The Mauritius Commercial Bank



The State Bank of Mauritius



Banque des Mascareignes



Standard Bank



Agence Française de Développement
Bâtiment Dias Pier
Le Caudan Waterfront
Port-Louis
Tel: 213 64 00 – Fax: 213 64 01
Contact email: jacquierf@afd.fr
website: www.afd.fr (portail Maurice)



Appendix K – Technologies on the Energy Technology List (ETL)

1. Air-to-Air Energy Recovery Devices

- a. Plate heat exchangers (or recuperators).
- b. Rotating heat exchangers (including thermal and desiccant heat wheels)
- c. Run-around coils.
- d. Heat pipe heat exchangers.

2. Automatic Monitoring & Targeting (AMT)

- a. Portable AMT Equipment
- b. Component Based AMT Systems

3. Boiler Equipment

- a. Automatic Boiler Blowdown Control Equipment
- b. Biomass Boilers and Roomheaters
- c. Burners with Controls
- d. Combustion Trim Controls
- e. Condensate Pumping Equipment
- f. Condensing Economisers
- g. Flue Gas Economisers
- h. Gas-fired Condensing Water Heaters
- i. Heat Recovery from Condensate and Boiler Blowdown
- j. Hot Water Boilers
- k. Localised Rapid Steam Generators
- l. Optimising Controls for Wet Heating Systems
- m. Retrofit Burner Control Systems
- n. Sequence Controls
- o. Steam Boilers

4. Combined Heat and Power

5. Compact heat exchangers

6. Compressed Air Equipment

- a. Electronic Drain Traps
- b. Energy Saving Controls for Desiccant Air Dryers
- c. Flow Controllers
- d. Master Controllers
- e. Refrigerated Air Dryers with Energy Saving Controls
- f. Ultrasonic Leak Detectors

7. Heat Pumps

- a. Air Source: Air to Water Heat Pumps
- b. Air Source: Gas Engine Driven Split and Multi-Split (including Variable Refrigerant Flow) Heat Pumps
- c. Air Source: Packaged Heat Pumps
- d. Air Source: Split and Multi-Split (including Variable Refrigerant Flow) Heat Pumps
- e. Ground Source: Brine to Water Heat Pumps
- f. Water Source: Split and Multi-Split (including Variable Refrigerant Flow) Heat Pumps
- g. Heat Pump Dehumidifiers

8. Heating, Ventilation and Air Conditioning (HVAC) Equipment

- a. Close Control Air Conditioning Equipment
- b. Heating, Ventilation and Air Conditioning (HVAC) Zone Controls

9. High Speed Hand Air Dryers

10. Lighting

- a. High Efficiency Lighting Units
- b. Lighting Controls
- c. White Light Emitting Diode Lighting Units
- d. Motors and Drives

11. Integrated Motor Drive Units

- a. Permanent Magnet Synchronous Motors
- b. Single Speed AC Induction Motors
- c. Switched Reluctance Drives
- d. Variable Speed Drives

12. Pipework Insulation

13. Radiant and Warm Air Heaters

- a. Biomass Fired Warm Air Heaters
- b. Radiant Heating Equipment
- c. Warm Air Heating Equipment

14. Refrigeration Equipment

- a. Absorption & Other Heat Driven Cooling & Heating Equipment
- b. Air-Cooled Condensing Units
- c. Automatic Air Purgers
- d. Automated Permanent Refrigerant Leak Detection Systems
- e. Cellar Cooling Equipment
- f. Commercial Service Cabinets
- g. Curtains, Blinds, Doors and Covers for Refrigerated Display Cabinets
- h. Evaporative Condensers
- i. Forced Air Pre-Coolers
- j. Packaged Chillers
- k. Refrigeration Compressors
- l. Refrigeration System Controls
- m. Refrigerated Display Cabinets

15. Solar Thermal Systems

16. Thermal Screens (for horticulture)

17. Uninterruptible Power Supplies

